# North Korea Development Report 2002/03

Edited by Choong Yong Ahn

> KOREA INSTITUTE FOR INTERNATIONAL ECONOMIC POLICY

# **NORTH KOREA** Development Report 2002/03

*Edited by* Choong Yong Ahn

KOREA INSTITUTE FOR INTERNATIONAL ECONOMIC POLICY







# North Korea Development Report 2002/03

Edited by Choong Yong Ahn

Choong Yong Ahn is the president of the Korea Institute for International Economic Policy. He received his Ph.D. from Ohio State University. He was a professor in the Department of Economics at Chung-Ang University in Seoul. Dr. Ahn is currently serving as the Chair of the APEC Economic Committee and as a member of the Presidential Economic Advisory Council in Korea. He has written extensively on issues related to East Asian development and economic cooperation in the Asia-Pacific region. His recent publications include "A Search for Robust East Asian Development Models After the Financial Crisis: Mutual Learning form East Asian Experiences" (Journal of Asian Economics, 2001) and "Financial and Cooperate Sector Restructuring in South Korea: Accomplishments and Unfinished Agenda" (Japanese Economic Review, 2001). He was bestowed with the Okita Research Award from the National Institute for Research Advancement in Japan on the book, Gendai Higashi Asia Geizairon (Modern East Asia Economy), published by Iwanami Shoten in 2000.

## KOREA INSTITUTE FOR INTERNATIONAL ECONOMIC POLICY

300-4 Yomgok-dong, Seocho-gu, Seoul 137-747 Korea Tel. (822) 3460-1114 Fax. (822) 3460-1144 URL: http://www.kiep.go.kr



Price USD 20

The Korea Institute for International Economic Policy (KIEP) was founded in 1990 as a government-funded economic research institute. It is the world's leading institute on the international economy and its relationship with Korea. KIEP advises the government on all major international economic policy issues, and also serves as a warehouse of information on Korea's international economic policies. Further, KIEP carries out research for foreign institutes and governments on all areas of the Korean and international economies.

KIEP has highly knowledgeable economic research staff in Korea. Now numbering over 100, our staff includes 37 research fellows with Ph.D.s in economics from international graduate programs, supported by more than 40 researchers. Our staff's efforts are augmented by our affiliates, the Korea Economic Institute of America (KEI) in Washington, D.C. and the KIEP Beijing office, which provide crucial and timely information on the local economies. KIEP has been designated by the government as the Northeast Asia Research and Information Center, the National APEC Study Center and the secretariat for the Korea National Committee for the Pacific Economic Cooperation Council (KOPEC). KIEP also maintains a wide network of prominent local and international economists and business people who contribute their expertise on individual projects.

KIEP continually strives to increase its coverage and grasp of world economic events. Expanding cooperative relations has been an important part of these efforts. In addition to many ongoing joint projects, KIEP is also aiming to be a part of a broad and close network of the world's leading research institutes. Considering the rapidly changing economic landscape of Asia that is leading to a further integration of the world's economies, we are confident KIEP's win-win proposal of greater cooperation and sharing of resources and facilities will increasingly become standard practice in the field of economic research.

> Choong Yong Ahn President

### KOREA INSTITUTE FOR International economic policy

300-4 Yomgok-Dong, Seocho-Gu, Seoul 137-747, Korea Tel: 02)3460-1114 / FAX: 02)3460-1144,1199 URL: http://www.kiep.go.kr

# **NORTH KOREA** Development Report 2002/03

*Edited by* Choong Yong Ahn

KOREA INSTITUTE FOR INTERNATIONAL ECONOMIC POLICY

KOREA INSTITUTE FOR INTERNATIONAL ECONOMIC POLICY (KIEP) 300-4 Yomgok-Dong, Seocho-Gu, Seoul 137-747, Korea Tel: (822) 3460-1144 Fax: (822) 3460-1144 URL: http://www.kiep.go.kr

Choong Yong Ahn, President

Published August 22, 2003 in Korea by KIEP 2003 KIEP ISBN 89-322-0035-1

# Preface

North Korea has been in political and economic straits since the collapse of the socialist bloc in the early 1990s. Several problems remain as obstacles to the recovery of the North Korean economy, including a continued deterioration in overall production, economic inefficiency, difficultly in foreign relations, and political and military frictions with the outside world. Therefore, North Korea's economic development should be made on the basis of the reform and opening of the economic system and the building of peace on the Korean peninsula through improved relations with neighboring countries. This process will contribute to the building of a peaceful structure on the Korean peninsula and international stability as well as having a positive influence on North Korea itself.

Since the mid-1990s, South Korea and the international community have continued to support North Korea during severe economic difficulty by providing humanitarian aid to alleviate food shortages. However, international assistance to North Korea has not been accompanied by internal economic reform, and food shortages were only assuaged in the short run. Looking at these circumstances, the reform and opening of North Korea could be the most fundamental condition for economic recovery and the expansion of international assistance.

North Korea, however, has showed some signs of change in its economic management since 2002. Its major innovative policies can be summarized as a partial introduction of free market prices and revison of the distribution system, the revaluation of a foreign exchange rate, the expansion of managerial autonomy in the corporate sector and the strengthening of the incentive system. This new economic policy has been seen to be more comprehensive than the partial reforms of the economic management system made in the past.

However, due to North Korea's insulation from the outside world, the international community knows little about the North Korean economy or how it is managed. Therefore, the most fundamental task in incorporating North Korea into the international society will be to understand the workings of North Korea, especially its economic system. Recently, the changes in North Korea's economic system have attracted outside interest, but there is much confusion as to the characteristics of the changes and their future direction due to the lack of comprehensive data. This is principally because North Korea operates independently from the global econom-

### 4 | North Korea Development Report 2002/03

ic system and therefore does not share information with other economies. Consequently, this lack of information has limited the research on the North Korean economy greatly and efforts to systematically collate the research that has been completed has been lacking. Accordingly, policy makers, researchers and students experience confusion and difficulty when attempting to understand North Korea.

To enhance the understanding of readers in Korea and abroad, KIEP is releasing both English and Korean versions of the "North Korea Development Report." This report was enabled through a research collaboration agreement between the Korea Institute for International Economic Policy and the JWK International Corporation, a private consulting firm in the United States.

KIEP conducts research on North Korean economy in terms of a regional multilateral equation as related with the United States, Japan, China and Russia. This report has analyzed the North Korean economy in terms of international political economic relations, including the North Korean economic system, organization and the status of various industries. Furthermore, North Korea's macroeconomic policy, financial policy and institutions, cost management, logistics system, state enterprise management, science and technology policy, social welfare system and defence industry are included in this report. It also deals with the development of inter-Korean economic cooperation and the international community's role in North Korean economic development.

We believe this report provide good reference material for policy makers, researchers, students and those who have interest in North Korean affairs. We thank the authors who have actively participated in this report and the experts on North Korean economy who have given valuable advice on format. We also thank the JWK International Corporation for providing financial assistance and helping us to initiate this report.

KIEP will endeavor to provide understanding and systematic assessment on North Korea by analyzing changes in the North Korean economy and by publishing the "North Korea Development Report" annually to continue diversified and indepth studies from international perspectives. We hope that the "North Korea Development Report" will contribute to enhancing the quality of research on North Korea, making it available to the international community.

> August 2003 Korea Institute for International Economic policy

> > President Choong Yong Ahn

# Contents

Preface	3
Contributors	15
Part I. Introduction	
I. Overview	21
II. Current Status of the North Korean Economy	32
1. Macroeconomic Status	32

46

# Part II. Industrial Development and Problems

2. North Korean Economic Trends by Sector

III. Social Overhead Capital	55
1. Current Status of North Korea's SOC	55
2. Problems in North Korea's SOC	80
IV. The Agricultural Sector	83
1. Characteristics of North Korea's Agricultural Structure	83
2. Grain Production in North Korea	86
3. The Agricultural Management System and Production Structure	93
4. The Market System for Agricultural Products and	
the Distribution System	95
V. Industrial Structure and Production	102
1. Characteristics of North Korea's Industrial Structure	102
2. Production in Major Industrial Sectors	111
3. The Industrial Management System	126
VI. The Defense Industry	133
1. Characteristics of North Korea's Defense Industry	133
2. North Korea's Defense Industry and Its Development Process	139
3. Problems in North Korea's Defense Industry	158

VII. The Energy Sector and Energy Policy	164
1. North Korea's Energy Policy: Self-Reliance and	
Developing Alternative Energy Sources	164
2. Energy Supply and Demand	165
3. North Korea's Energy Policy Problems	168
4. North Korea's Energy Sector Reform and Future Tasks	171
5. Prospects for the Energy Sector	184
VIII. The Information and Communications Technology Sector	189
1. The Communications Infrastructure	189
2. The ICT Industry	198
3. Problems in the ICT industry	210

# Part III. Economic Management System and Mechanism

221
221
227
236
244
244
247
256
259
259
267
284
293
293
306
329

# Part IV. Fiscal, Finance and Commercial Management

XIII. Public Finance and Fiscal Policy	337
1. The Role of Public Finance in North Korea	337
2. Financial Revenue and Expenditure	343
3. Central Budget and Local Budgets	354
4. New Challenges for Fiscal Policy	355
5. Fiscal Policy Problems and Prospects	358
XIV. The Monetary and Price Management System	362
1. Characteristics of North Korea's Financial System	363
2. North Korea's Financial System Problems and Future Tasks	382
3. The Price Management System	391
4. Conclusion	398
XV. The Commerce and Distribution Systems	402
1. The Nature and Concept of Commerce in North Korea	402
2. Development Trajectory of Commercial and Distribution System	as 404
3. Commercial and Distribution Organizations	413
4. Types of Commerce in North Korea	418
5. The Price Structure of Commercial Distribution	425
6. The Size of Commerce and Distribution in North Korea	426

# Part V. International Economic Relations

XVI. Foreign Economic Relations	439
1. Changes in Foreign Economic Policy	439
2. The Current Status of North Korea's Foreign Economic Activities	443
3. Recent Economic Relations with Major Countries	449
XVII. Special Economic Zones	468
1. Lessons from the Rajin-Sonbong Economic and Trade Zone	468
2. North Korea's Special Economic Zone Policy	477
3. Prospects for the Development of SEZs	484

XVIII. Inter-Korean Economic Relations	491
1. Inter-Korean Trade	491
2. South Korea's Investment in the North	504
3. Non-Commercial Economic Relations between North and	
South Korea	519

# Part VI. Strategies for North Korea's Economic Reconstruction and Future Tasks

XIX. North Korea's Tasks for Economic Reconstruction	533
1. Tasks for the North Korean Economy	533
2. Guidelines for Economic Improvement	535
3. Economic Concept Change	536
4. The Direction of Economic Reform	537
5. Prospects for Changes in the North Korean Economy	546
XX. The Roles of the International Community in North Korea's	
Economic Reconstruction	547
1. The United States	548
2. Japan	555
3. Russia	559
4. European Union (EU)	563
5. International Organizations	566

# Tables

<table 2.1=""> Comparison of National Income between North and South Korea</table>	35
<table 2.2=""> Industrial Structure of North Korea</table>	37
<table 2.3=""> Estimates of North Korea's Total Population and Working Population</table>	n 39
<table 2.4=""> Government Budget Size</table>	41
<table 2.5=""> Estimate of Detailed Budget Expenditure</table>	42
<table 2.6=""> Foreign Trade with Russia (Soviet Union) and China</table>	45
<table 2.7=""> Major Trade Partners of North Korea in 2001</table>	46
<table 2.8=""> Annual Food Deficit and Food Imports</table>	47
<table 2.9=""> Energy Supply Trends in North Korea</table>	49
<table 2.10=""> Raw Material Supply Trends</table>	50
<table 2.11=""> North Korea's External Debt (Estimates)</table>	51
<table 3.1=""> Goals in the Energy Sector</table>	58
<table 3.2=""> Power Facility Capacity and Electricity Status by Year</table>	59
<table 3.3=""> Construction of Small and Medium-sized Power Plants</table>	60
<table 3.4=""> Hydroelectric Power Plants in North Korea</table>	61
<table 3.5=""> Status of Thermal Power Generation in North Korea</table>	62
<table 3.6=""> Comparison of Railways in North and South Korea</table>	64
<table 3.7=""> West Railway Lines in North Korea</table>	67
<table3.8> East Railway Lines in North Korea</table3.8>	67
<table 3.9=""> East-West Railway Lines in North Korea</table>	67
<table 3.10=""> Inland Railway Lines in North Korea</table>	67
<table 3.11=""> West Circular Lines in North Korea</table>	68
<table 3.12=""> Road Extension in North Korea</table>	73
<table 3.13=""> North Korea's Road Extension by Level</table>	73
<table 3.14=""> North Korea's Road Structure by Level</table>	73
<table 3.15=""> North Korea's Main Road Network</table>	75
<table 3.16=""> Facilities at Major Trade Ports in North Korea</table>	79
<table 4.1=""> Trends in North Korea's Grain Trade</table>	90
<table 4.2=""> North Korea's Food Supply by Year</table>	92
<table 5.1=""> Growth Rate by Industrial Sector in North Korea</table>	108
<table 5.2=""> Industrial Structure of North Korea</table>	109
<table 5.3=""> Results of North Korea's Key Industries' Production (Year 2000)</table>	110
<table 5.4=""> Productivity of North Kora's Steel Industry</table>	114

<table 5.5=""> North Korea's Key Steel Manufacturers</table>	114
<table 5.6=""> North Korea's Nonferrous Metal Production Capacity</table>	116
<table 5.7=""> Nonferrous Metal Production Capacity by Factory and Product</table>	117
<table 5.8=""> North Korea's Main Electric Factories</table>	119
<table 5.9=""> North Korea's Key Electric Home Appliances</table>	121
<table 5.10=""> Chemical Fiber Production Capacity and Key Factories</table>	124
<table 6.1=""> North Korea's Defense Industry and Economic Development Plan</table>	147
<table 6.2=""> The Number of North Korean Munitions Factories</table>	150
<table 6.3=""> The Annual Conventional Weapons Production Capacity</table>	152
<table 6.4=""> The Development of Bio-Chemical Weapons</table>	156
<table 6.5=""> Status of Material Preservation for Nuclear Activities in North Korea</table>	157
<table 7.1=""> North Korea's Energy Policy</table>	165
<table 7.2=""> Changes in North Korea's Energy Supply and Consumption</table>	167
<table 7.3=""> Comparison of Changes in the Energy Supply of</table>	
North and South Korea	167
<table 7.4=""> North and South Korean Generating Capacity</table>	167
<table 7.5=""> Causes of North Korean Energy Shortages</table>	170
<table 7.6=""> Status of Small and Medium-sized Power Plant Construction</table>	174
<table 7.7=""> Status of Medium-Sized Plant Construction by Province in 2001</table>	176
<table 7.8=""> Reconstruction of the Electricity and Energy Sectors in 2001</table>	176
<table 7.9=""> Examples of Energy Sector Technology Improvement in 2001</table>	177
<table 7.10=""> Inter-Korean Electricity Cooperation</table>	179
<table 7.11=""> Share of Construction Cost by Country (February-August 2002)</table>	183
<table 8.1=""> Inter-Korean Telecommunication Connections</table>	196
< Table 8.2 > Major ICT Equipment Producers in North Korea	209
<table 10.1=""> Examples of the Yonhap Company</table>	251
<table 10.2=""> Example Enterprises under the Yonhap Company</table>	251
<table 10.3=""> The Reorganization Status of the Yonhap Companies</table>	255
<table 11.1=""> Comparison of North and South Korean Medical Security System</table>	269
<table 11.2=""> Disability Allowances in North Korea</table>	271
<table 11.3=""> North Korea's Social Insurance Premium Payment</table>	274
<table 11.4=""> Comparison of Social Insurance Systems of North and South Korea</table>	274
<table 11.5=""> Comparison of Public Aid System in North and South Korea</table>	276
<table11.6> Comparison of the Child Welfare System in North and South Korea</table11.6>	280
<table 11.7=""> Comparison of North and South Korea's Senior Welfare System</table>	282

<table 11.8=""> Changes in the Aged Population in North Korea</table>	290
<table 12.1=""> Economic Development Programs and Major Science &amp;</table>	
Technology Policy of North Korea	294
<table 12.2=""> Scientific Research Institutes in North Korea and China</table>	309
<table 12.3=""> Research Goals for Science &amp;</table>	
Technology Development by Year 2000	313
<table 12.4=""> Major Research during the "March of Suffering"</table>	314
<table 12.5=""> The Five-Year Science &amp; Technology Development Plan and</table>	
the Key Areas of High-Tech Development	315
<table 12.6=""> Number of College-Level Institutions in North Korea</table>	322
<table 13.1=""> Government Budget and North Korean GNI</table>	343
<table 13.="" 2=""> Annual Trends in North Korean Revenue</table>	345
<table 13.3=""> Composition of Budget Revenue by Sector</table>	347
<table 13.4=""> Changes in North Korea's Revenue and Expenditure</table>	349
<table 13.5=""> Total Annual Expenditure and Its Increase Rate</table>	351
<table13.6> Composition of Budget Expenditure by Economic Sector</table13.6>	353
<table 13.7=""> Central Budget and Local Budget Classification</table>	355
<table 13.8=""> July 1 Reform Measures and the Direction of Economic Changes</table>	356
<table 14.1=""> Expenditure in the People's Economy</table>	365
<table 14.2=""> North Korea's Budget Expenditure Trends</table>	366
<table 14.="" 3=""> North Korea's Budget Revenue</table>	367
<table 14.4=""> Cash Circulation by Province</table>	384
<table 14.5=""> Household Foreign Currency Holdings in North Korea</table>	385
<table 15.1=""> Recent Increases in Prices and Wages</table>	411
<table 15.2=""> Changes in North Korea's National Economic Management</table>	412
<table 15.3=""> Retail Goods Distribution According to Ownership Type</table>	427
<table 15.4=""> Distribution of Retail Products by Ownership Type and</table>	
Annual Growth Rate	430
<table 15.5=""> Volume of Cash in Circulation by Region</table>	431
<table 16.1=""> Trends in North Korea's Foreign Trade</table>	444
<table 16.2=""> Major Export Items</table>	445
<table 16.3=""> Major Import Items for North Korea</table>	446
<table 16.4=""> North Korea's Major Trading Partners</table>	447
<table 16.5=""> Foreign Investment Trends of North Korea, China and Vietnam</table>	448
<table 16.6=""> Trends of North Korean Trade with China</table>	451

<table 16.7=""> Trends in Border Trade between North Korea and China</table>	452
<table 16.8=""> Status of Joint Ventures between North Korea and Chochongnyon</table>	455
<table 16.9=""> Trade between North Korea and Japan since 1990</table>	457
<table 16.10=""> North Korea's Trade with the United States</table>	459
<table 16.11=""> Investment from U.S. Firms to North Korea</table>	460
<table 16.12=""> Trends of North Korea's Trade with Russia, 1990-2001</table>	462
<table 17.1=""> Development Targets of the RSETZ</table>	469
<table 17.2=""> Foreign Direct Investment in the RSETZ</table>	470
<table 17.3=""> Investment in the RSETZ (as of the end of 1997)</table>	471
<table 17.4=""> Investment Amount in the RSETZ (as of the end of 1997)</table>	472
<table 17.5=""> Comparison of Tax Exemption Benefits in North Korea,</table>	
China and Vietnam	488
<table 18.1=""> Inter-Korean Economic Cooperation Promotion</table>	492
<table 18.2=""> Details of South Korea's Trade with North Korea</table>	494
<table 18.3=""> South Korea's Annual Imports from North Korea by Item</table>	495
<table 18.4=""> South Korea's Exports to North Korea</table>	497
<table 18.5=""> Average Volume of Processing Trade (1992-98)</table>	499
<table 18.6=""> Inter-Korean Transport by Sea (1998)</table>	500
<table 18.7=""> Comparison of Transport Fee</table>	501
<table 18.8=""> Cost Structure of Electronic Products</table>	501
<table 18.9=""> Inter-Korean Marine Transport Route</table>	502
<table 18.10=""> South Korean Investment in the North (as of August 2000)</table>	511
< Table 18.11> South Korean Governmental Aid to North Korea (1998-May 2002)	523
<table 18.12=""> Government Support for Private Organizations (1998-May 2001)</table>	524
<table 20.1="">U.S. Economic Sanctions Against North Korea</table>	550
<table 20.2=""> U.S. Humanitarian Assistance to North Korea</table>	552
<table 20.3=""> Potential Contributions through Japan's Settlement Package</table>	558
<table 20.4=""> Major North Korean Industrial Facilities Being Constructed</table>	
with Soviet Assistance	563
<table 20.5=""> Economic Assistance from Europe to North Korea (1995-2000)</table>	565
<table 20.6=""> Humanitarian Assistance through the UN Consolidated Appeal</table>	
for North Korea (1995. 9-2002. 12)	567

# Figures

<figure 2.1=""> Growth Trend in Major Industrial Sectors</figure>	36
<figure 2.2=""> The Total Population Increase and Working Population Rate</figure>	38
<figure 2.3=""> Work Capable Population, Economic Participation</figure>	
and Working Population	40
<figure 2.4=""> Trends of Foreign Trade since 1990</figure>	44
<figure 3.1=""> North Korea's Railway Network</figure>	65
<figure 4.1=""> North Korea's Agricultural Management System</figure>	96
<figure 4.2=""> Product Distribution Procedures</figure>	97
<figure 4.3=""> Agriculture Production and the Distribution Structure in North Korea</figure>	98
<figure 4.4=""> The Production and Distribution Structure of Collective Farms</figure>	99
<figure 4.6=""> The Production and Sales Structure of Collective Farms</figure>	100
<figure 5.1=""> The Factory and Enterprise Management System</figure>	125
<figure 6.1=""> The Locations of Munitions Factories in North Korea</figure>	149
<figure 6.2=""> International Connection for the Development of Ballistic Missiles</figure>	
in North Korea	155
<figure 10.1=""> The Characteristics of North Korea's Socialist Economic Management</figure>	246
<figure 10.2=""> The Management System of State-owned Enterprises</figure>	250
<figure 10.3=""> The Economic Management of North Korea</figure>	252
<figure 10.4=""> North Korea's Industrial Management System</figure>	254
<figure 11.1=""> The Medical System in North Korea</figure>	269
<figure 12.1=""> The Administrative Organization of the North Korean Academy of</figure>	
Sciences	307
<figure 12.2=""> Yearly Changes in North Korea's Higher Education Organizations</figure>	320
<figure 13.1=""> Economic Model for Industrial Activities</figure>	339
<figure 13.2=""> The Public Finance System</figure>	340
<figure 14.1=""> North Korea's Financial Institutions</figure>	370
<figure 14.2=""> Differences between State-Fixed Prices and Market Equilibrium Prices</figure>	397
<figure 15.1=""> Commercial and Distribution Organizations in North Korea</figure>	414
<figure 15.2=""> The Price Structure of Commercial Distribution</figure>	426
<figure 16.1=""> China, Russia and Japan in North Korean Trade</figure>	450
<figure 18.1=""> South Korea's Annual Trade with North Korea</figure>	493

# Contributors

**Byung-Min Ahn** is head of the Transport Policy & Market Analysis Division at the Korea Transport Institute. He holds a PhD in Public Law from Tsukuba University in Japan. The focus of his research has been analysis of the North Korean transport and logistics system. His numerous publications on the topic include "Restoration of the Seoul-Shinuiju Line: Review and Outlook" (*East Asian Review, 2002*) and *A Study on the Role-Sharing Between Central & Local Government to Facilitate the Development of Transport System in South and North Korea Border Area* (KOTI, 2002).

**Myung Chul Cho** is a Research Fellow at the Korea Institute for International Economic Policy. He received his PhD in economics from Kim II Sung University in Pyongyang, North Korea and taught at the same university between 1987 and 1994. His main research areas include North Korea's current economic situation and problems, future directions for economic reform, inter-Korean relations and Sino-North Korea economic relations. His recent publications include: *Patterns and Performance of External Financing in Transitional Economics* (2000) and *The Current Status of Market Economy Education in North Korea and the Possible Measure of Inter-Korean Cooperation* (2001).

**Yong Seung Dong** is a Chief of North Korea research team at Samsung Economic Research Institute (SERI). He received his B.A. from Yonsei University. He has written several books on inter-Korean economic cooperation, and his recent publications include *The Changes of North Korea's Economic Policy and intra-Korea Economic Cooperation* (KorCham, 2002).

**Ihk-Pyo Hong** is a Senior Researcher at the Korea Institute for International Economic Policy. He holds a BA and MA in Political Science from Hanyang University, Seoul. Specializing in the North Korean economy, his publications include *Early Policy of Reform and Opening in China and Vietnam and the Direction of Reform in North Korea* (KIEP, 2000) and *Expansion of Special Economic Zones in North Korea: Possibility and Direction* (KIEP, 2001).

**Chul-Whan Kim** is a professor in the Defense Science Department at the Korea National Defense University. He graduated from Korea Military Academy (1970) with a bachelor's degree in science and from Seoul National University another bachelor's degree in engineering (1974). He worked for the Korea Military Academy as a professor for 10 years (1974 - 84), receiving his MS (1979) and PhD (1982) in Materials Engineering from the School of Engineering at Purdue University. He has published several papers on the science and technology of North Korea and several books on weapons system aquisition and defense research and development.

**Myeong Nam Kim** is the Director of the Office of International Projects at the Korea Gas Corporation. He holds PhD in fuel and energy from Leeds University in England. He has been involved in the Northeast Asian Energy Project since 1996 and is a working level representative of the Korean party for the trilateral (Korea, China and Russia) joint feasibility study for Irkutsk PNG project. His research focuses on energy conservation and efficiency, and his many publications include *Low Nox Combustion in Gas Turbine*.

**Woon-Keun Kim** is Director of Research Center for Agriculture, Forestry and Fishery of Northeast Asia. He currently serves as Chairman of Korean Agricultural Policy Association. He holds a PhD in economics from Korea University. The focus of his research has been the analysis of North Korean agriculture, especially the food situation and agricultural policy. His other research interests include agricultural trade and food security in Northeast Asian region. He has published numerously on these topics, and his publication include *Assessing the Food situation and Agricultural development strategy in North Korea*.

**Yungbong Kim** is Professor in the Department of Economics at Chungang University. He holds a PhD in Economics from the University of Colorado, Boulder, and lectures on economic systems and the history of economic thought. He currently writes columns regarding economic and social issues for the Hankyung Economic Daily and the Munhwa-ilbo. The focus of his research has been the analysis of North Korean economy and economic integration and unification. His publications include *Economic Systems* (1986), *Dde-Han Minguk* (Republic of Korea) (1999) and *Current Issues and Environment of the Unification of Korea* (2000).

**Choon-Geun Lee** is a Research Fellow at the Science and Technology Policy Institute in Korea. He holds a PhD in Engineering from Seoul National University. The focus of his research has been science and technology policy in North Korea and China. His publications include *The National R&D System and S&T Human*  Resources Training System in North Korea, Study on High Technologies (IT, BT) Development Trends in North Korea and S&T Cooperation with North Korea through the Korean Scientist Network in North-East Asia.

**Jong-Seok Lee** is the Head of Research Committee and the Chief of North Korean Study Center at Sejong Research Institute. He holds a Ph.D. in Political Science from Sungkyunkwan University in Seoul. He specializes in inter-Korean relations and wrote *Understanding Contemporary North Korea (2002)* and *A Study on the Sino-North Korea Relations 1945-2000 (2002)*.

**Jong-Woon Lee** is a researcher at KIEP specializing in the North Korean economy. He studied international development at Saint Mary's University and the University of Toronto at the graduate level. He has written extensively on North Korea's external economic relations, and his recent publications include "North Korea's Trade Expansion with Western Countries in the Early 1970s and Its Implications on North Korea's Current Attempts at Economic Rehabilitation" (*Journal of International Economic Studies*, 2002).

**Sam-Sik Lee** is a Senior Researcher at the Korea Institute for Health and Social Affairs. He currently serves as a member of the National Pension Finance Analysis Committee for the South Korean government. The focus of his research has been the sociological and demographic analysis of social phenomenon and social welfare. His other research interests include reproductive health, specifically for adolescents. He has published numerously on these topics, and his publications include *Demographic Dynamics in North and South Korea and Socio-demographic Policy Issues under Reunification* (Korea Institute for Health and Social Affairs).

**Suhk Sam Park** is Chief Economist of the North Korean Economic Studies Team at the Bank of Korea. He received his MA in economics from Korea University and studied at the University of Texas in Austin. The focus of his research has been on the North Korean economy and intra-Korean economic cooperations. He has published numerous articles, including "North Korean Banking System: Today and Tomorrow" (*Journal of Economic Policy,* 2002) and *Studies of the North Korean Private Economy* (Bank of Korea, 2002).

**Jae Bong Ro** is a senior research fellow at the Korea Institute for International Economic Policy (KIEP). He received his BA from Seoul National University and his MA and PhD from Cornell University. He has served in various capacities during his lengthy affiliation with KIEP, including head of the Southeast and South Asia Research Division, director of the Planning and Coordination Department, executive director of the APEC National Study Center and the Korea National Committee for Pacific Economic Cooperation (KOPEC). He has published extensively on topics related to economic integration and international trade in the Asia-Pacific region.

**Deok Ryong Yoon** is a Research Fellow at the Korea Institute for International Economic Policy. Before joining KIEP, he worked at the Korea Economic Research Institute under the Federation of Korea Industries. He received his BA, MA and PhD in economics from Kiel University in Germany. Besides numerous papers and books, he is the author of *Economic Cooperation and Unification Costs* (Samsung Economic Research Institute, 1998) and "Asian Monetary Cooperation: A Search for Regional Monetary Stability in the Post Euro and the Post Asian Crisis Era" (*Economic Papers*, 2000). Recently he has published *Searching for a Better Regional Surveillance Mechanism in East Asia* (KIEP, 2002).

# Part I Introduction

# I. Overview

### Choong Yong Ahn and Jae Bong Ro

North Korea made changes to its economic management system starting in July 2002 and has been trying to change its economic policy regarding the Sinuiju special economic and administrative zone since September 2002. North Korea has tried to change its economic institutions in five ways: increasing state prices and income, partially revising the distribution system, realizing the foreign exchange rate, decentralizing state planning and expanding corporate sector autonomy, and strengthening the merit system. Although there were difficulties in the initial stage of reform, including the arrest of the governor of the Sinuiju special economic zone (Yang Bin of the Euro-Asia Group), the Sinuiju special economic zone (SEZ) has great significance wherein it has characteristics of economic openness with its partial inclusion of market factors. In addition, the possibility of economic change in North Korea increased with the improvement of economic management during the second half of 2002; specifically, the emergence of the North Korea-Japan summit and the construction of the Gyungui (Seoul-Sinuiju) and Donghae (East Coast) railroads.

The new economic policy is comprehensive in terms of the scope of change when compared with the partial economic management changes of the past. In addition, as rapid policy changes were made in a number of sectors simultaneously, the spillover effect on the North Korean economy has been great. For example, North Korea raised the state price of daily necesseties asymmetrically. Rice is now purchased at 40 won/kg and sold at 44 won/kg, in contrast with the prices of the past (purchased at 0.8 won/kg and sold at 0.08 won/kg). Therefore, the state purchase price of rice per kilogram was raised by 50 times and its state sale price by 550 times. The prices of food products was raise up to 50 times while the cost of using buses and subways rose from 0.1 won to 1 won and 2 won respectively. In addition, the income of North Korean residents increased dramatically, so that a producer was

### 22 | Part I. Introduction

able to have a monthly income of 2,000 won, 18 times higher than the previous 100-150 won.

Considering the range and speed of North Korea's recent economic policy changes, it may not be enough to evaluate this as a transition into a market economy, however we cannot deny that these measures have reduced the problems brought about by the previous economic management system and enhanced the efficiency of the national economic system.

Interest in the North Korean economy is increasing as the changes are made to its economic management system to overcome the economic crisis. However, this interest is limited to basic-level research, seeing that an interpretation of North Korea's economic changes are difficult to determine as accurate data is not always available. This shortage of data is mainly due to the closed nature of North Korea. To overcome this setback, synthetic studies are necessary on North Korea's recent economic trends, economic management and policy changes, fiscal and financial management and foreign relations.

This report gives an overview to North Korea's macroeconomic policy and economic status and offers policy suggestions for economic recovery in the North. The systematic synthetic analysis of the overall economy is divided into six parts: Introduction; North Korea's Industrial Development and Problems; Economic Management System and Mechanism; Fiscal, Finance and Commercial Management; International Economic Relations; and Strategies for North Korea's Economic Recovery and Future Tasks. Those contributing to this report are KIEP researchers and domestic experts on North Korean finance policy, monetary and finance institutions, business systems, business management systems, science and technology policies, the social welfare system, the logistics industry, social overhead capital, international economic relations and inter-Korean economic relations. Research on North Korea's future economic policy and international support for North Korea's economy have been included in the scenario of North Korea changing its domestic economic management and joining the international economy.

Chapter 2 reviews the status of the North Korean economy. With the accumulation of inefficiencies due to its closed self-subsistence policy and planned economic system, the North Korean economy, which grew at a relatively high level until the mid-1970s, is in long-term chronic economic recession. The economic situation was particularly aggravated when its socialist allies began to make the transition to market economies in the early 1990s. Its economy shrank at an annual rate of 4.3 percent, almost 40 percent of 1989's indicators.

In a turnaround, North Korea moved to positive economic growth in 1999 and escaped economic stagnation. The recent economic recovery has been seen as a result of the stabilization of the Kim Jung-II regime, the expansion of fiscal expenditure to boost economic restoration, increases to humanitarian aid from international communities and the inflow of foreign capital, which helped to normalize manufacturing operations to some extent.

However, some experts argue that this economic trend is not enough to conclude that North Korea is entering a virtuous cycle of growth. This argument is based on the fact that the heavy and chemical industries – the key to industrial recovery in North Korea - continued to show negative growth rates, with the exception of 1999.

The roots of North Korea's economic difficulties are in the structural problem of supply side, which affects almost every aspect of economic life. North Korea's economic hardships appear in the form of shortages in food, energy, raw materials and foreign currency due to lack of supply. Therefore, economic recovery will be almost impossible if there are no fundamental solutions offered.

Part II, North Korea's Industrial Development and Problems, analyzes North Korea's social overhead capital, agricultural and manufacturing sector, energy sector, defense industry, and information and communications technology sector.

In Chapter 3, Byungmin Ahn of the Korea Transport Institute analyzes the status of North Korea's social overhead capital and points out the problem of obsolescence brought about by the lack of proper maintenance and repair of facilities, as well as the deterioration of economic efficiency due to relatively low levels of operation. For example, the actual operating rate of North Korea's hydroelectric power plants is about 20 percent due to outdated power facilities and frequent breakdowns. Its thermal power plants use coal as fuel, but the supply of coal is not efficient because of transport bottlenecks and outdated mining equipment. Moreover, the breakdown rate of equipment is high and the overuse of aged equipment results in the decline of power generation. Harbor facilities, particularly for trade ports, container cargo equipment and multipurpose quay cargo equipment are wholly lacking. In addition, large-scale dredging is needed as the shallowness of harbors prevents large ships from entering ports.

In Chapter 4, Woon-Keun Kim of the Research Center for Agriculture, Forestry & Fishery of Northeast Asia finds that the production and technology levels of North Korea's agriculture are extremely low due to the lack of investment arising from disproportionate emphasis on the heavy industry since the North Korean regime took up its policy of economic development in parallel with military expansion. Low material incentives for farmers brought about by the state monopoly over agricultural products and cooperative ownership caused farming productivity to fall. Consequently, North Korea's agriculture, stagnant since the late 1980s, saw further decline from 1993 to 1997 when the country suffered severe famine. This caused agricultural productivity to reach a ceiling. Recent expectations are that a series of reform measures will be made as a breakthrough to food shortages, focusing on specific areas rather than the economy as a whole. Woon-Keun Kim considers the possibility of the Chinese model being introduced first within a specific area, then on a

### 24 | Part I. Introduction

national scale if it is successful.

Chul-Whan Kim, a professor at the Defense Science Department at the Korea National Defense University, examines North Korea's defense industry. The prime purposes of the North Korean economy are the pursuits of building both the socialist economy and the armed forces, thus putting priority on the development of heavy industry for the benefit of the military. North Korea has continued the strategy of parallel development of the economy and national defense since the policy was adopted at the Fifth Session of the Party Central Committee in December 1962. Kim pointed out that the defense industry first policy, following the concentration on the heavy industry, has largely aggravated the economic crisis. In other words, the failure of the heavy industry first policy paralyzed the other economic sectors, resulting in the imbalanced and extraordinary growth of the munitions industry.

The production of the North Korean defense industry accounts for 30 percent of the total national production, thus surpassing the production of civilian enterprises. The scale of defense industry production can be seen when compared to the former Soviet Union, wherein the defense industry only contributed to 8 percent of total national production. Noting that North Korea has driven the defense industry as part of its heavy industry development, it is assumed that the defense industry is the foundation of heavy industry and is being used as a major tool for earning foreign exchange. That is to say, although the defense industry accounts for more than 50 percent of the economy, it acts as a large burden on the economy. This is in contrast to the market principle of operating and managing industries that are efficient and productive. Should the two countries unite, it is expected that this military focus will pose a large barrier both for the unification of defense and for economic integration. Therefore, the downsizing and privatization of the munitions industry is essential if the industrial structure is to reform. The accompanying reduction of investment in the development of weapon production will remove several economic sanctions from other countries, including the U.S., and create investment in North Korea, ultimately making a major contribution to the development of the Korean economy.

In examining the energy shortages in North Korea, Myeong Nam Kim, director of the International Project Office in Korea Gas Corporation, underlines the importance of energy in overcoming North Korea's economic troubles. Energy supplies dropped dramatically in the early 1990s, and as North Korea's industrial structure is dependent on the heavy industry, which consumes large amounts of energy, the lack of energy has played a major role in the drop of industrial productivity in North Korea. One of the major reasons for the energy shortage has been the continuous reduction in coal production. Under its self-reliant economy stance, North Korea has developed an energy provision system focusing on coal and based on large amounts of coal reserves. Coal is used in almost every industry and in most thermal power plants. However, with the deterioration of equipment for coal mining, the failure to introduce new equipment and problems in the provision of materials following its economic recession, coal production has steadily decreased since the mid-1980s. North Korea's energy supply worsened from 1989 in 2000. The supply of oil was halved and, combined with the decrease in coal production, caused electric power generation to decrease from 1990 to 2000.

Kim finds that limiting new energy infrastructure to the construction of the Gaeseong Industrial Complex will not be a solution to the nationwide energy crisis, instead serving only to boost that particular area. Therefore, in order to solve the energy crisis, North Korea has to abandon the notion of self-reliance and move in the direction of actively accepting modern technology and capital from abroad to diversify energy sources and make efficient use of energy. The stable acquisition of energy, establishing an effective and balanced energy supply system and diversifying energy sources will be critical for North Korea to solve the energy shortage.

In Chapter 8, Jong-Woon Lee of KIEP examines North Korea's information and communication technology industry and the communications infrastructure. North Korea's telecommunications network has been developed mainly for administrative purposes, emphasizing the functions of *jihuitongshin* (network for administrative orders) and *sanuptongshin* (liaison among major industrial bases) rather than civilian/commercial uses. In addition, the authorities control information flows out of concern that criticism of the system or a change in public opinion will arise with the inflow of external information and information exchange. Therefore, industries related to the communications infrastructure are underdevelopment and the quality of telecommunications services for the public is low. The normal operation of the communications sector seems impossible due to the deterioration of relevant equipment, following insufficient investment resources and inefficient management. Indeed, modernizing the communications industry will be difficult considering North Korea's economic difficulties.

North Korea has been stressing IT industry promotion as an innovative strategy for economic recovery since the late 1990s. For example, in the 2000 New Year joint editorial of North Korea's major newspapers, science and technology was highlighted as one of the three major pillars for building *gangsungdaeguk* (a powerful nation). In addition, special computer programming classes for talented students were established in selected high schools and computer science colleges and research institutes specializing in information technologies were established at universities. There have also been various IT exhibitions, nationwide program development contests and seminars on the process of 'spreading information' - all of which underlined the importance of fostering the IT industry and IT exports. Due to this support, the software industry has developed remarkably despite the industrial recession.

However, although North Korea recognizes the industrial role of the communi-

### 26 | Part I. Introduction

cations industry and the need to expand and modernize its equipment, North Korea cannot see any significant accomplishments in the development of the industry as a whole due to the lack of resources for investment and the information controls. Moreover, as the Wassenaar Agreement is applied to information-related equipment and technology, it will be difficult to introduce outside technology. Therefore, application will be one of the biggest obstacles for the development of North Korea's communications industry.

Part III, Economic Management System and Mechanism, examines North Korea's enterprise management system, social security system and social services as well as the science and technology policy and national R&D system.

In Chapter 10, Myoung-Chul Cho of KIEP analyzes the enterprise management system, emphasizing that North Korean enterprises are different from capitalist countries because production is managed by and economic system is based on socialist economic ideology. The main characteristics of management were analyzed in terms of the limits imposed by state-run enterprise management and state economic policy.

The centrally controlled management system for North Korean enterprises is defined by both the party-controlled system (which emphasizes political/policy instruction and control) and the government controlled system (which emphasizes administrative instruction and management). The foremost characteristics of party control are setting economic objectives and giving management directions to enterprises. Economic planning is drafted by the party and issued to production sites. Long- and short-term plans and indicators are subject to approval by the party and are then given to enterprises.

North Korean enterprises have limited autonomy in their management. Accordingly, labor standards, living costs and incentives, as well as company profits and their usage, facility criteria, materials usage criteria and management forms are controlled by government administrators. State-run enterprises carry out production activities according to state plans and are evaluated based on the criteria of the state, as opposed to evaluation based on market business performance.

In Chapter 11, Sam-Sik Lee (a senior researcher at the Korea Institute for Health and Social Affairs) examines North Korea's social security system and social service. National social security was institutionalized early in North Korea to achieve universal social welfare according to socialist ideology. North Korea enacted many welfare policies and social security laws to emphasize the superiority of socialism soon after the Korean peninsula became independent from Japan in 1945.

However, North Korea's social security system has several weaknesses, the least of which is not the lack of financing. The welfare system is faced with several problems; meanwhile realistic medical security is not being realized. Although there are income guarantees in place, such as pensions, industrial accident compensation and unemployment insurance; there are no social measures to cope with the discontinuation of income for those who are not subject to social security. Moreover, even those who are subject to social security receive insubstantial benefits due to the economic crisis, food shortages and the small workforce.

To improve social welfare in North Korea, Lee suggests epochal changes to the system, finance and institutions. Among these changes are extending social welfare from certain restricted classes to the people as a whole. In addition, he stresses the importance of securing financial resources to finance this universal welfare. Seeing that it is almost impossible to receive funding from individuals or organizations, it will be important to secure the resources from the state budget. To that end, it will be necessary to drastically cut military spending and use it for welfare.

In Chapter 12, Choon-Geun Lee, a Research Fellow from the Science & Technology Policy Institute, elaborates on the characteristics of North Korea's science & technology policy, the national R&D and human resources training systems, and the problems and prospects associated with science and technology. North Korea's science and technology policy has been constructed and developed alongside economic development strategies and the education policy. In particular, the 'heavy industry first' policy, the self-rehabilitation policy and the strategy of developing the economy and national defense in tandem have greatly influenced economic policy. Consequently, in science and technology, emphasis has been focused on heavy industry, including the machine manufacturing industry, the development and use of energy, and the modernization of military weapons. However, due to the concentration on heavy industries, the R&D system has witnessed several problems with the mobilization of resources for state planning. The lack of R&D resources was aggravated with the contraction of trade following the collapse of other socialist states in the late 1980s and the adverse natural conditions of the 1990s.

Part IV, Fiscal System and Finance and Commercial Management, examines North Korea's public finance and fiscal policy, monetary and price management system, and commercial and distribution systems.

In Chapter 13, Deok Ryong Yoon of KIEP analyzes the status and structure of financial revenue and expenditure. In North Korea, fiscal policy (an economic policy instrument) is implemented through a vertical system that gives priority to "the people's economic plan." This plan consists of a financial plan for each government-based hierarchical structure, the financial plan of "the people's economic sector" and financial plans for agencies and enterprises.

According to Yoon, North Korea's fiscal spending reveals that the government's control, which is stronger than in any other socialist nation, past or present, has a single organization controlling fiscal policy through the centralized managed economic system. Budget revenue and expenditure is controlled directly by the

### 28 | Part I. Introduction

Workers' Party, which allows the state to manipulate the budget politically. This system has fallen short of meeting the demands of the people, especially in showing bureaucratic traits. In addition, the government has given priority to producer goods over consumer goods and put more emphasis on savings than consumption. Consequently, the economy has been unable to support the needs of the people and the government has remained indifferent to the need to improve social needs.

Yoon finds that North Korea is showing signs of gradually opening its economy and reforming domestic institutions. However, he expected such changes would bring even more hardship to the economy in its initial stages. What is more, passive and minimal opening to preserve the political power of the socialist regime would do more harm than good to North Korea, increasing budget expenditure while decreasing budget revenue. It will therefore be necessary to modify the revenue and expenditure structure of North Korea's public finance fundamentally.

In Chapter 14, Suhk-Sam Park, an economist with the Bank of Korea, examines the monetary and price management system. North Korea has maintained a monobank system, with the central bank not only in charge of note issuing, currency control and payment settlement, but also of commercial/monetary functions such as private deposits, industrial loans and insurance. This structure – typical of socialist countries and adopted by the former Soviet Union, Eastern European countries and China–is the opposite of a market economy's two-tier banking system. Park points out that the mono-bank system increases demand for funds while lowering the efficiency of capital use in the overall economy. This is because it maintains a capital supply system focused on national finance but the payment of principles is not mandatory in national finance.

In Chapter 15, Myoung-Chul Cho examines the characteristics and problems with commercial and distributional systems. North Korean commerce is managed and operated through a commerce management system and product supply system. The former is in charge of managing and directing commerce while the latter secures products and supply. The product supply system was originally based on an order system, but according to Cho, the order system no longer works due to worsening economic conditions. Therefore, the supply function of commerce is now restricted to the equal allocation and distribution of products.

Part V, North Korea's International Economic Relations, examines the status of the North's foreign economic relations and problems, its past and present special economic zone policy and the future of inter-Korean economic cooperation.

In Chapter 16, Ihk-Pyo Hong of KIEP finds that North Korea's fundamental problems come from its socialist economic system by evaluating the North's foreign economic relations. If North Korea retains its socialist system instead of introducing reform and an open-door policy, the gap between the North Korean economy and the world economy will only deepen and its external relations will worsen. In particular, the foreign economic sector has to play an important role in mitigating North Korea's economic difficulties since North Korea's economic reality is such that it is not capable of independent recovery alone.

Hong asserts that decisive policy changes will be necessary for the foreign economic sector—in particular, the transformation from a closed, self-reliant position to an export-oriented development strategy. Since the early stages of socialism, North Korea has had an import-substitution strategy based on self-reliance. This entails importing intermediary materials to meet domestic demand while using domestic technology and capital for domestic processing, assembling and producing. Although the import substitution strategy may be suitable for countries like China that have high domestic demand, North Korea has low domestic consumption and low internal demand. Therefore, North Korea needs to convert from an import-substitution strategy to an export-oriented development policy. Foreign investment is necessary for modernizing North Korea's industrial facilities and production structure.

In Chapter 17, Hong asserts that North Korea needs to learn from successful model countries such as China. He emphasizes using special economic zones ( i.e. China's Shenzhen SEZ) as the most effective alternative to resuscitating the foreign economic sector and acquiring know-how on facilitating investment and SEZ management. It is recommended that North Korea legalize SEZs in order to enhance the investment environment and bring in capital and technology. In addition, North Korea needs to strengthen the competitive edge of state-owned companies by promoting decentralization, making trading companies and local factories responsible for management activities. By inviting foreign direct investment through improved investment environments, North Korea will have to improve export quality, increase the capacity for imports through foreign currency earnings and enhance the competitiveness of domestic industries.

In Chapter 18, Myoung-Chul Cho, Jong-Seok Lee and Yong Seung Dong evaluate the economic cooperation between North and South Korea over the last 10 years and present policy tasks for the facilitation of inter-Korean economic cooperation. The authors analyze the inter-Korean trade structure in terms of imported items, exported items and processing trade. They also analyze the trends of the inter-Korean trade, noting that recent growth has slowed and pointed to several obstacles that are preventing the facilitation of the inter-Korean trade: high port fees, the uncertainty of the North Korean regime, the unsteady external environment, U.S.-North Korean relations, and the lack of legal and institutional mechanisms for reducing political and military conflict between North and South Korea. To improve these problems, efforts should be made at both the governmental and private levels. Policy tasks for the South Korean government are given, including the preparation of supporting measures to improve existing port fees, minimizing non-economic uncer-

### 30 | Part I. Introduction

tainties in inter-Korean trade by reconsolidating legal institutions and intensifying business support. In addition, it is recommended that the private sector reduce port fees at the corporate level, attempt to guarantee profits from business with North Korea and contribute support in building mutual trust between North and South Korea through multilateral channels.

Looking at South Korea's investment in the North Korea for the last 10 years, the authors evaluate that there has been a significant change in the North's external economic policy, as the North is now receiving capital from the South in the form of direct investment. The authors also look at possible directions for investment to the North using past case studies and examining investment problems cited by businesses in South Korea.

They also evaluate that inter-Korean non-commercial economic relations make a positive contribution to improving inter-Korean relationships and alleviating North Korea's economic difficulties. More specifically, South Korea's economic support for North Korea has contributed to reducing military tension on the Korean peninsula, reinforcing inter-Korean cognation, opening private-sector exchange and improving the image of South Korea for the North Korean public. However, as can be seen from many of the current North-South economic projects, inter-Korean non-commercial economic relations are still experiencing many problems. The authors suggest a number of policy directions to enhance inter-Korean economic cooperation, including public awareness campaigns in the South on the necessity of economic assistance to North Korea, developing non-commercial economic exchanges in areas of mutual benefit, developing non-commercial economic exchanges in sectors that could promote a market economy in North Korea and maintaining consistent economic policy toward North Korea.

Finally, Part VI, Strategies for North Korea's Economic Reconstruction and Future Tasks, examines North Korea's economic tasks and major plans, prospects for economic reform and the roles and tasks that neighboring countries and international organizations will take in promoting economic reconstruction.

Jae Bong Ro and Choong Yong Ahn of KIEP review imperatives and suggest strategies for improving North Korea's economy. To do so, the authors briefly examine problems in the North Korean economy, drawing on some basic principles for economic improvement, and suggest conceptual background for adopting economic incentives and price mechanisms. In addition, they review specific alternatives such as privatization, liberalization of the economic system, reforming external windows and restructuring as well as infrastructural and legal reform.

The report takes into consideration the strategies needed to improve North Korea's economic situation. The economic problems were examined based on sector and concept changes, such as the introduction of economic incentives and price mechanisms. In addition, specific improvement measures, such as the privatization of production, the liberalization of economic systems, the reform of foreign economic relations, the building of infrastructure, the restructuring of the industrial system and the reorganization of economic laws, were examined.

In order for the North Korean economy to see reconstruction, there needs to be internal solutions (including economic reform) and tasks from international communities—especially neighboring countries. In consideration of the extremely low economic efficiency that resulted from the chronic supply shortage and technology deterioration, outside economic support and cooperation will be essential. Therefore, North Korea needs to take consistent positive measures to reform and open to a level that the international community can recognize. It is based on these measures that North Korea can obtain assistance for its economic restoration from neighborhoods and international organizations.

If North Korea takes a positive position in improving its foreign relations, even if a dramatic policy change (i.e., a shift to market economy) does not accompany this move, international communities should also accelerate economic support within the framework of leading it to reform and opening. The reconstruction of the North Korean economy and the expansion of foreign economic cooperation will not only stabilize the external environment around the Korean peninsula, but also contribute to the building of an economic and secure cooperative system in Northeast Asia. However, because neighboring countries are strongly involved in the international community, international support for North Korea's economic recovery will be greatly affected by its diplomatic policies and domestic political interests. In addition, aiding North Korea will be a large burden for only a few economies to shoulder when considering the enormous costs such a move would entail, thus multilateral cooperation needs to be considered in the form of collaboration between neighboring countries and international organizations.

# **II.** Current Status of the North Korean Economy

Myoung-Chul Cho

# 1. Macroeconomic Status

### A. National Income and Economic Growth Rate

North Korea uses the terms gross social product (GSP) and net material product (NMP) instead of gross national product as its economic growth indicators.<sup>1</sup> Even though North Korea uses the concept of national income to evaluate the standard of living, it differs from the general term. The definition of national income in North Korea could be different depending on the perspectives of the following two issues: first, national income can be seen as either social reproduction or as an aggregate of individual income; second, national income can be seen as a result of either physical productive labor or general economic activities. The first issue raises questions on the relationship between gross social product and national income, while the second issue questions the relationship between productive labor and non-productive labor.

For a long time, economists in socialist countries and capitalist economists over the concept of national income. Economists in socialist countries criticized capitalist economists for completely separating national income from social reproduction process and thus defining national income as mere statistical figures. As a result of

<sup>&</sup>lt;sup>1</sup> According to the North Korean official view, "gross social product" is the total amount generalizing the material value produced in every production sector of a society during a certain period. "National income" is the "newly created value in the year after redeeming the consumed means of production out of gross social product" (*Dictionary of Economy*, Vol. 1, 1995. Pyongyang: the North Korean Academy of Social Science. p. 754). Therefore, national income does not include the non-productive service sector, as in the case of capitalist economies.

this connection, political economic studies in socialist states considered national income a "part of gross social product including newly created values." This differs greatly from the definition given by capitalist-economists; that national income is the arithmetic sum of every individual of the society, regardless of whether it is original income or derivative income.

Furthermore, North Korean economists have criticized capitalist economists for including non-physical elements (various service sectors) in national income. Socialist economists deem national income as being achieved through physical and productive labor, differing completely from the capitalist view. In a capitalist economy, nation income is divided into four sectors: ¤ all products and services that are produced to be marketed by private firms and public corporations (including services for durable goods, e.g. housing); ¤Łall public services provided by government for consumption (including military service); ¤@all products and services provided by non-profit organizations such as churches and education institutions; and ¤Œ some products and services produced by households for self-consumption (including services). However, contrary to prior definitions, North Korea believes that nation income is the total amount of consumer goods produced in one year and the sum of the means of production used for extended reproduction, hence leaving out values created in the non-physical economic sector (service sector).

Moreover, North Korean economists argue that capitalist countries are using non-unitary methods in defining the concept of national income; in other words capitalist countries are using inconsistent definitions of national income. They continue to argue that national income is not the sum of separable incomes within a society, but the total income of the entire society. Thus, the North Korean economists' idea of separable income allows for the income of an individual resident and the income of an individual enterprise.

Another reason that North Korea considers national income in the context of social reproduction is that national income is categorized as social reproduction, which is inseparably related to gross national product. North Korea explains that the concept of social reproduction is based on a number of basic principles. First, social reproduction is classified into simple reproduction and extended reproduction. Second, social consumption should be divided into productive consumption and non-productive consumption. Social production should then be classified into Class I (producing the means of production) and Class II (producing consumer goods). Third, the value of social production is divided into three elements: C (value of the means of production), V (value of labor) and M (profit).

With these general principles as guidelines, national income is defined as a part of GSP: under this definition, it constitutes the product part that incorporates newly created values that are be used for accumulation and consumption. GSP is the sum

### 34 | Part I. Introduction

of society's production during a certain period, including all the individual levels of productions. It not only includes consumption goods, but also various means of production, final products and intermediate products. Consequently, North Korean economists argue that overlaps will occur in GSP and its size will vary.

Gross social product is the aggregate sum of use values generated over a certain period. This value includes both the newly created value in that period and the value created before that period. The definitions of net material product and gross social product both reflect the outcome of social reproduction, but they are not used interchangeably in some aspects. Primarily, net material product does not reflect overlapping factors. It deducts overlapping areas in gross social income, which means it can reflect the outcome of social production with relative accuracy, without being affected by the structure of the North Korean economy. In North Korea, final product = gross national product-intermediate product (overlapping factor). The final income is defined by the amount of hours of labor used for producing consumer goods and the means of labor. In other words, the time spent creating the use value that becomes the final product serves as the basis for defining final income. Therefore, the final product incorporates both the newly created value over a period and the value created before that period. In North Korea, gross social product is composed of three value-based elements:  $\square$  the value of consumed means of production,  $\square$ E the value created by labor for self and  $\alpha \phi$  the value created by labor for society. National income consists of the values of labor for self and for society. However, when accessing the macroeconomic status of North Korea, researchers and economic institutions outside North Korea convert such indicators into capitalist economic terms for the purpose of practicality and comparability: they use GNI (Gross National Income) and GNI per capita for GSP and national income. The Bank of Korea and the Ministry of Unification in South Korea have also announced the estimated national income of North Korea since the early 1990s on the basis of the national account system used by the UN. North Korea's 2001 nominal GNI is estimated at \$15.7 billion, one twenty-seventh (1/27) of South Korea's nominal GNI. North Korea's GNI per capita is \$706, or one-thirteenth (1/13) of South Korea's GNI per capita (see Table 2.1). It is said that the North Korean economy from the mid-1970s suffered from longstanding and chronic economic downturns from the mid-1970s due to the accumulated economic inefficiency resulting from its restricted and structured system. In particular, the sudden disruption of economic relations with socialist bloc countries resulted in serious economic difficulties, averaging an annual growth rate of -4.3 percent during the 1990s.

Recently, North Korea has experienced positive economic growth dating back to 1999 due to inter-Korean economic cooperation and increased support by the international community. North Korea recorded a growth rate of 6.2 percent in 1999, showing signs of economic recovery. In 2000, the economic growth rate was 1.3

percent and individual industrial sectors such as the mining, construction and service industries experienced rapid recovery; a trend that continued in 2001. The North Korean government emphasized the reform of the existing economic structure and the strengthening of international competitiveness as the most important tasks in economic rehabilitation in 2001. As a result of emphasizing economic recovery, North Korea achieved a 3.7 percent annual growth rate. While the agricultural sector showed a relatively favorable tendency compared to other industrial sectors in 2001, mining and construction industries seemed to record moderately positive growth thanks to the government's assortment of technology improvement projects and rehabilitation projects for industrial facilities and factories.<sup>2</sup>

The recent economic recovery of North Korea is a result of the stabilization of the Kim Jung-II government, the expansion of fiscal expenditures to boost economic restoration, increased humanitarian aid from international communities and the inflow of foreign capital. These factors helped to normalize manufacturing operations to some extent.

However, some experts argue that this economic trend is not enough to confirm that North Korea is entering a virtuous cycle of positive growth. This argument is based on the fact that the heavy and chemical industries, essential to the industrial

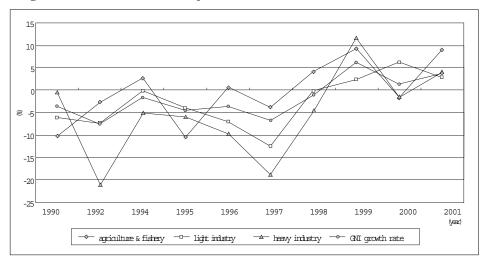
										(Unit: \$	100 mill	ion, %)
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GNI												
N. Korea (A)	231	229	211	205	212	223	214	177	126	158	168	157
S. Korea (B)	2,523	2,949	3,143	3,452	4,017	4,881	5,183	4,740	3,168	4,021	4,552	4,221
(B)/(A)	10.9	12.9	14.9	16.8	18.9	21.9	24.2	26.8	25.1	25.5	27.1	26.8
GNI												
per capita												
N. Korea (A)	1,142	1,115	1,013	969	992	1,034	989	811	573	714	757	706
S. Korea (B)	5,886	6,810	7,183	7,811	8,998	10,823	11,380	10,307	6,742	8,581	9,628	8,900
(B)/(A)	5.2	6.1	7.1	8.1	9.1	10.5	11.5	12.7	11.9	12.0	12.7	12.6
Growth rate												
N. Korea	-3.7	-3.5	-6.0	-4.2	-2.1	-4.1	-3.6	-6.3	-1.1	6.2	1.3	3.7
S. Korea	9.0	9.2	5.4	5.5	8.3	8.9	6.8	5.0	-6.7	10.7	8.8	3.0

<b><table 2.1=""></table></b>	Comparison	of National Inc	ome between N	orth and South Korea

Source: The Korean National Statistical Office. Comparison of Economic and Social Aspects of South and North Korea.

<sup>&</sup>lt;sup>2</sup> The Korean Ministry of Unification. 2001. *General Evaluation and Prospect of the North Korean Economy*. (Press Release, December 21, 2001).

#### 36 | Part I. Introduction



<Figure 2.1> Growth Trend in Major Industrial Sectors

recovery of North Korea, have retained negative growth rates; 1999 remains an exception (see Figure 2.1).

## **B. Industrial Structure**

North Korea has maintained a development strategy of "simultaneous development of light industries and agriculture with priority on heavy industries" to build a selfreliant and independent national economy. Thus, the proportion of heavy industries is relatively high in the North Korean industrial sector. Yet, this policy has caused serious imbalance in the entire industrial sector. Although strong emphasis on a selfreliant economy and heavy industry helped fuel rapid industrialization at the initial stage (until the early 1970s), it brought about little progress in light industries and agriculture, thus causing a serious shortage of consumers goods and food. Moreover, the industrial structure of North Korea shows a disproportional growth of militaryoriented heavy industries since the government has simultaneous development strategies military and economy. The current ratio of heavy industries to light industries in North Korea is almost 3:1, which is similar to the ratio of advanced industrial nations. In fact, it is an abnormal structure due to the lagging light industries.

While pursuing heavy industrialization, the North Korean government sustained strong protection policies for farmers and supported the agricultural sector to ensure self-sufficiency for food (considered the basis of an independent economy). The proportion of agricultural in the overall industry is high (see Table 2.2). Agriculture, forestry and fishery industries took more than 25 percent on average in North

(Unit: %)

								```	Cinc. 70)
Classification	1956	1960	1970	1980	1990	1995	1999	2000	2001
Agriculture/fisheries	26.1	28.9	21.5	20.0	26.8	27.6	31.4	30.4	30.4
Mining/manufacturing sectors	40.1	41.3	57.3	60.0	42.8	30.5	25.6	25.4	26.0
SOC/services/government	33.8	29.8	21.2	20.0	30.4	41.9	43.0	44.2	43.6

#### <Table 2.2> Industrial Structure of North Korea

Source: The above figures are developed from several publications of the Korean Ministry of Unification, KDI and Bank of Korea.

Korea's industrial structure until the 1980s and rose to about 30 percent recently. However, the mining and manufacturing industries, which recorded 60 percent in 1980s, fell to 26 percent in 2001.

It should be noted that the proportion of the service sector continues to increase.<sup>3</sup> The increasing proportions of the service and agriculture/fishery industries, along with the decreasing proportions of the mining and manufacturing sectors, are the results of the significant drop in the production of heavy industries as opposed to the expansion of agricultural and service sectors. In fact, as North Korea ignores the service sector as a producer, the proportion of the service sector is not high. The recent proportional increase of the service sector, however, seems attributed to the increasing number of construction projects such as a hydroelectric power plant, highways and housing, rather than active pursuits of commerce, distribution and finance.

Recently, the proportion of light industries is growing in the country's economic structure – a result of the implementation of the "August 3 Consumer Goods Production" policy, which is aimed at recycling used materials and producing consumer goods. Regional economic authorities are actively pursuing industrial rehabilitation in accordance with the "self-reliance policy of local economy."<sup>4</sup> Since the early 1990s, regional governments have built livestock complexes, fish farms, poultry farms, small and medium-sized power plants, houses, food material bases and food factories to promote economic recovery by following the guiding principles of the central government.

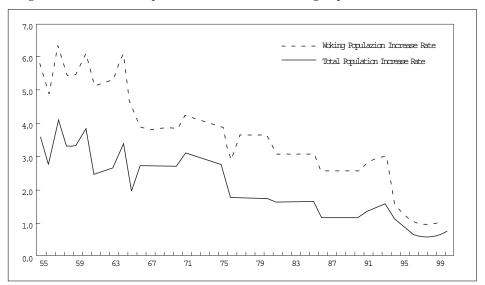
<sup>&</sup>lt;sup>3</sup> North Korea divides its economy into six categories when estimating gross social product: agriculture, manufacturing, construction, transportation, telecommunications (productive communication) and commerce. Although electricity, gas and water supply, are included in industrial production costs, the service sector is not included. According to this method of mining and manufacturing industries accounted for 42.8 percent of gross social production in 1990.

<sup>&</sup>lt;sup>4</sup> Since 2000, North Korea has noticeably sought to build 'basic food stations' in every province that include livestock complexes, fish farms, poultry farms, small and medium-sized power plants, housing and coal mines.

## C. Population and Labor Force

North Korea submitted population statistics from 1946 to 1987 to the United Nations Population Fund (UNFPA) for the first time in 1989, and with the help of UNFPA, conducted of census between 1989 and 1994 using modern methods. Table 2.3 outlines this data by showing the estimated figures of North Korea's total population, workable population (productively capable population) and working population (economically active population). The workable population here refers to the population over the age of 15. Considering the planned economic system of North Korea, the working population is the same as the employed population. Thus, the unemployment rate is zero percent. The growth rate of the working population of North Korea seems to be increasing faster than that of the total population. As shown in Figure 2.2, the ratio of the working population to the total population has been growing continuously. The North Korean labor mobilization characterists shown here are common in socialist economies.

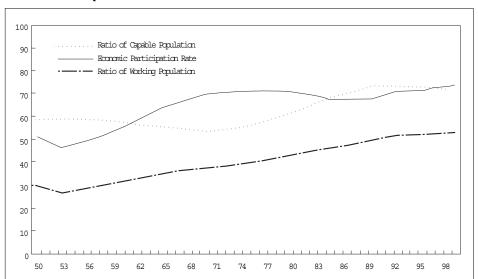
The factors deciding the ratio of working population is calculated from the ratio of workable population (workable population/total population) and economic participation rate (economically active population/workable population).<sup>5</sup> Looking at Figure 2.3, the increase in the working population ratio was supported by the increase in the economic participation rate until the mid-1970s and afterwards by the increase in the workable population rate.



<Figure 2.2> The Total Population Increase and Working Population Rate

	<b>Total Population</b>	Workable Population	Working Population
1950	9,746	5,682	2,924
1951	8,482	4,950	2,457
1953	8,486	4,958	2,373
1954	8,491	4,966	2,293
1955	8,797	5,150	2,425
1956	9.113	5,340	2,566
1957	9,359	5,458	2,691
1958	9,742	5,654	2,860
1959	10,060	5,810	3,016
1960	10,392	5,973	3,182
1961	10,789	6,171	3,373
1962	11,054	6,289	3,545
1963	11,334	6,415	3,728
1964	11,632	6,548	3,925
1965	12,020	6,731	4,160
1966	12,020	6,824	4,349
1960	12,232	6,958	4,516
1968	12,924	7,094	4,689
1969	13,274	7,233	4,868
1909	13,633	7,255	5,054
1970	14,002	7,519	5,248
1971	14,002	7,812	5,469
1972	14,430	8,109	5,695
1973	15,304	8,109	5,926
1974	15,738	8,715	6,160
1975	16,172	9,024	6,399
1978		9,024 9,330	-
1977	16,452	9,530	6,581
1978	16,737 17,027	9,040	6,819
1979	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	7,067
1980	17,322 17,622	10,312 10,661	7,323 7,588
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
1982	17,908	11,097	7,819
1983	18,198	11,550	8,057
1984	18,493	12,022	8,303
1985	18,792	12,513	8,556
1986	19,097	13,024	8,816
1987	19,317	13,358	9,043
1988	19,539	13,701	9,275
1989	19,764	14,052	9,513
1990	19,991	14,412	9,757
1991	20,221	14,782	10,008
1992	20,495	14,978	10,286
1993	20,798	15,195	10,584
1994	21,123	15,428	10,900
1995	21,353	15,592	11,061
1996	21,543	15,726	11,202
1997	21,684	15,786	11,318
1998	21,810	15,834	11,428
1999	21,942	15,886	11,541
2000	22,082	15,943	11,659
2001	22,250	16,020	11,793

<Table 2.3> Estimates of North Korea's Total Population and Working Population (Unit: 1,000)



<Figure 2.3> Work Capable Population, Economic Participation and Working Population

As shown in Figure 2.3, the increasing rate of the workable population has slowed since the growth of the economic participation rate reached the critical point. The decrease of the labor input rate is regarded as one of the main causes of the depletion of external growth sources in socialist economies; this trend is also characteristic of North Korea. Although the trend of labor population input does not precisely reflect the actual increase of the labor input, labor hours per capita and intensity of labor, estimated data regarding the working population could serve as a basis for evaluating the total labor productivity (GNP/working population) and total factor productivity.

## **D.** Fiscal Expenditure

The main functions of fiscal policy can be summarized as resource allocation in managing a planned economy, controlling economic participants' performance and income distribution. North Korea's fiscal expenditure occupies a much higher proportion of total GNI than seen in capitalist countries. This is due to the fact that the North Korean government is bearing the responsibility of creating the capital, investment and operating costs attributed to individual firms as well as taking full responsibility for social consumption<sup>6</sup> such as medical care, education and housing.

The North Korean Ministry of Finance would release the national budget of the

previous year and the coming year (known as the the Government Fiscal Report) at the Supreme People's Assembly. However, with the worsening economic situation, North Korea did not release fiscal reports for five years from the seventh session of the 9<sup>th</sup> Supreme People's Assembly in 1994. North Korea resumed announcing its fiscal status at the second session of the 10<sup>th</sup> Supreme People's Assembly on April 8, 1999. According to the official announcement, the fiscal budget was \$9.1 billion in 1998 and \$9.22 billion in 1999; this meant annual decreases of 21.9 percent from 1994, when the fiscal budget amounted to \$19.19 billion (see Table 2.4). In particular, the fiscal budget of 1998 fell by 52.6 percent compared to that of 1994, which reflects the severe economic situation of North Korea. The rapid shrinking of the fiscal budget led to the decline of capital investment, one of the main cause of negative growth during the 1990s.

The national budget for 2001 was \$9.76 billion, about 2 percent higher than that of the previous year. North Korea's national budget was only one-eighth (1/8) of South Korea's budget size, but still large when considering the ratio of North Korea's GNI to South Korea's GNI (one to 27). For instance, the GNI ratio of South Korea in 2000 was 17.2 percent, but that of North Korea was 57.1 percent.<sup>7</sup>

North Korea's fiscal budget has shown continuous deficits since 1999, unlike its

	In US dollar (100 million)	In won (100 million)	Exchange rate of US dollar/won
1998	143.9	316.6	2.20
1990	163.7	355.2	2.17
1992	185	394	2.13
1993	187	402	2.15
1994	191.9	414.4215	2.16
1995	(157.8)	(323.4974)	2.05
1996	(118.0)	(252.5220)	2.14
1997	91.3	197.1195	2.16
1998	91.0	200.1521	2.15
1999	92.2	200.1821	2.17
2000	95.7	209.553	2.19
2001	97.6	215.708	2.21

<Table 2.4> Government Budget Size

Notes: 1) The figures of 1995 and 996 are estimates based on the annual decrease rate of 21.9% since 1994 (the figure of 1997 is estimated by the Bank of Korea).

2) All figures are settled accounts by year except for 2001 (estimate).

Source: The Korean Ministry of Unification.

<sup>&</sup>lt;sup>6</sup> In North Korea, social consumption is called social policy expense in fiscal expenditure listing.

#### 42 | Part I. Introduction

past balances. In the budget allocation, priority in supplying public funds is given to five key areas for economic recovery - energy, agriculture, coal mining, metal, railway and transportation industries - as well as the science and technology sector.

North Korea has been using a new settlement method for budget expenditure items since 2001. The "additional policy expenses" once included in the "people's economy expense" was appropriated in the "people's policy expenses," and the ratio of each item was changed according to the changes in the expenditure items. The people's economy expense dropped from over 60 percent to 40.1 percent in 2001, whereas the people's policy expenses doubled from 19 percent to 38.2 percent. The "state management expenses" also greatly increased from 1-2 percent to 7.4 percent. The recent increase in people's policy expenses is due to the government's public pledge of "a dramatic improvement in the people's daily lives." State management expenses rose, not because of increased management expenses, but as a result of increased working expenses of the central government and "non-productive organizations" while implementing projects related to economic policies.

One of the most significant changes in North Korea's fiscal system is that the

AT 1 100 111

					(Unit: 100 r	nillion won, %)
	1994		2000		2001	
		Composition		Composition		Composition
Total annual expenditure	414.4	100.0	209.6	100.0	215.7	100.0
People's economy expenses	281.0	67.8	84.0	40.1	86.3	40.0
People's policy expenses	78.7	19.0	80.1	38.2	82.1	38.1
Military expenses	48.1	11.6	30.0	14.3	31.3	14.5
Management expenses	6.6	1.6	15.5	7.4	16.0	7.4

#### <Table 2.5> Estimate of Detailed Budget Expenditure

Note: In 2001, North Korea announced a 2.7% annual increase of "people's economy expenses" and a 2.5% annual increase of "people's policy expenses." "Socio-cultural policy expenses" was used instead of "people's policy expenses" in 1994.

<sup>&</sup>lt;sup>7</sup> The South Korean National Statistical Office (2001). *Comparison of Economic and Social Aspects of South and North Korea.* p. 65. There are some statistical inconsistencies when comparing the ratio of public budget to GNI. In terms of the data for North Korea, GNI statistics were derived from the estimate given by the Bank of Korea, but the budget size was announced by North Korea, which may have contradictions. However, the data should be sufficient for a comparison between South Korea and North Korea.

collection system of revenue for central agencies has been changed from the "regional collection system" by state-owned firms into a "sectional collection system" by ministries and management departments of the central government. The characteristics of the sectional collection system recently put into effect are as follows. First, ministries and management departments in charge of the economy have become units for revenue collection. In the past, subordinate agencies would individually collect revenue guided by revenue collection plans from the ministries and management departments. But with the new revenue collection system, the ministries and management departments are directly collecting revenue and are responsible for the collection and execution of budget in their sections.

Second, the ministries and management departments can create resources for public funds and use their own funds. The firms used to pay for the revenue through the fiscal and monetary organs in their regions without passing through the ministries and departments. However, the ministries and departments nowadays can receive the budget in their own accounts and meet their expenses.

Third, in the past, the ministries and departments only collected statistics on profits from subordinate enterprises. Recently, the ministries and departments collected profits from the subordinate enterprises not only in the form of cash, but also on a material basis. When observing the new revenue system, the Ministry of Finance was more accurate in forming the fiscal expenditure corresponding to the sources of budget revenue actualized in economic sectors through the ministries and departments. In respects to fiscal expenditure, separating the public funds to be spent by the Ministry of Finance and the funds to be spent by the ministries and management departments enhanced mutual responsibility.

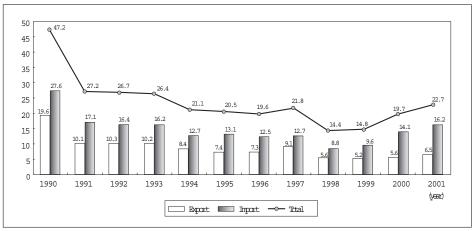
## E. Foreign Trade

The North Korean foreign trade increased continuously for the last 30 years, from \$0.31 billion in 1960 to \$5.24 billion in 1988. In the 1990s, however, it decreased to \$1.44 billion due to the breakdown of foreign trade with the former socialist bloc. From 1999, it showed signs of slow recovery, reaching \$1.97 billion in 2000 and \$2.27 billion in 2001.<sup>8</sup> Figure 2.4 shows the change in North Korea's foreign trade since 1990.

Two main events boosted trade growth in 2000 and 2001 from the minimal growth of 1999. First, foreign currency from inter-Korean economic cooperation projects such as the Mt. Geumgang tour program was put into the import settlement.

<sup>&</sup>lt;sup>8</sup> According to KOTRA, North Korea's commercial imports and exports were \$650 million and \$1.62 billion in 2001, respectively, with a \$970 million deficit (see http://www.kotra.or.kr/main/info/nk/trade).

#### 44 | Part I. Introduction



<Figure 2.4> Trends of Foreign Trade since 1990

Source: KOTRA (2002). Trend of North Korea's Foreign Trade.

Second, international assistance to North Korea continued while the demand for industrial infrastructure improvement increased.<sup>9</sup> Ultimately, the growth in foreign trade owes thanks to the grant-type aid from international communities, humanitarian economic cooperation and the increase in imports to industrial facilities rather than an increase in the rate of foreign exchange earning stemming from the recovery of industrial productivity. As shown in Figure 2.4, the leading factor for the increase in foreign trade was the increase in imports. The annual export increase rate was -7.9 percent in 1999, when foreign trade began to grow, and 8.0 percent in 2000, while the annual import increase rate was 9.3 percent and 46.5 percent, respectively. This trend continued in 2001, the year marked by an annual import increase rate of 117.7 percent (\$1.62 billion), where the annual export increase rate was also 117.7 percent (\$0.65 billion).<sup>10</sup>

The decrease in North Korea's foreign trade in the 1990s was brought about by the decline in trade with the former Soviet Union. The volume of trade with the former Soviet Union in 1990 was \$2.57 billion, accounting for more than half of the total trade volume of North Korea. It shrank to \$0.46 billion in 1991 and continued to fall to \$46 million in 2000 and \$68 million in 2001 (see Table 2.6). The former

<sup>&</sup>lt;sup>9</sup> KOTRA (2001). Changes in North Korea's Foreign Trade from 1990 to 2001. p. 14.

<sup>&</sup>lt;sup>10</sup> The dramatic increase in imports in the first half of 2001 was mainly because of rice aid from WFP and Japan (\$534.85 million). During the period, imports from Japan increased by 215.7 percent annually, but exports to Japan decreased by 10.2 percent. Excluding rice aid, the imports from Japan decreased by 34.1 percent. See more details in KOTRA, *The Situation and Characteristics of North Korea's Foreign Trade in 2001* (http://www.kotra.or.kr/main/info/nk/trade).

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Total	24.7	4.6	3.2	3.5	1.5	0.8	0.6	0.84	0.65	0.50	0.46	0.68
Russia	Export	10.5	1.8	0.7	0.5	0.4	0.1	0.2	0.17	0.57	0.01	0.04	0.05
	Import	15.2	2.8	2.5	2.9	1.1	0.6	0.4	0.67	0.08	0.49	0.42	0.64
	Total	-	-	6.9	9.0	6.2	5.4	5.6	6.5	4.1	3.7	4.88	7.40
China	Export	-	-	1.5	2.9	1.9	0.6	0.6	1.2	3.5	0.4	0.37	1.67
	Import	-	-	5.4	6.0	4.2	4.8	4.9	5.3	0.57	3.3	4.51	5.73

#### <Table 2.6> Foreign Trade with Russia (Soviet Union) and China

(Unit: \$100 million)

Sources: KOTRA. Foreign Trade Agency Reports (various issues).

Soviet Union was the main supplier of energy and raw materials such as crude oil and cooking coal. Since the economic relationship between Russian and North Korea was so close, the deterioration of foreign trade between the two countries proved detrimental to North Korea's economic difficulties.

In contrast, trade with China increased in the early 1990s. The shear size of trade with China in 1993 was \$900 million, an annual increase of 28.6 percent. China supplied 77.2 percent of crude oil and 68 percent of grain to North Korea, which alleviated the economic shock inflicted by the decline in trade with the former Soviet Union. Since the breakdown in trade relations with the Soviet Union, China has become the largest trade partner of North Korea; it is recorded that China occupied 32 percent of North Korea's total foreign trade in 2001. Henceforth, China has been the main supplier of food, crude oil and industrial facilities necessary for North Korea's economic recovery.

Recently, however, there seems to have been a change in North Korea's trade partners. The 1990s show that North Korea placed more weight on China and Japan, up to two-thirds of total trade, unlike its past attachment to the former Soviet Union and China. Nonetheless, the size of trade with Asian countries (such as India, Hong Kong, Singapore and Thailand, along with inter-Korean trade) has been growing since 1998.<sup>11</sup> Generally, inter-Korean economic cooperation is not included in foreign trade because it is considered an "internal transaction." When included, South Korea took the third largest share of foreign trade in 2001. Thus, North Korea's trade partner with the highest trade balance surplus is changing from Japan to South Korea. In conclusion, it is said that the recent trade recovery is a result of both the North Korean economic cooperation.

<sup>&</sup>lt;sup>11</sup> For more details, see KOTRA. "The Situation and Characteristics of North Korea's Foreign Trade in 2001." *North Korea Newsletter* (November 2000).

## 46 | Part I. Introduction

								(Ont. 9 th	ousand, %)
	Country	Ex	port	Im	port	To	otal	Sha	are
	Country	2000	2001	2000	2001	2000	2001	2000	2001
1	China	37,214	166,727	450,824	573,131	488,038	739,858	24.7	32.6
2	Japan	256,891	225,618	206,760	249,077	463,651	474,695	23.5	20.9
3	India	25,542	3,060	142,881	154,793	168,423	157,853	8.5	7.0
4	Thailand	19,522	24,922	188,301	109,586	207,823	134,508	10.5	5.9
5	Singapore	2,875	3,050	46,245	112,298	49,120	115,348	2.5	5.1
6	Germany	25,574	22,756	53,575	82,077	79,150	104,834	4.0	4.6
7	Hong Kong	46,384	37,974	68,451	42,555	114,835	80,529	5.8	3.5
8	Russia	3,404	4,541	42,881	63,794	46,285	68,335	2.3	3.0
9	Spain	12,693	12,637	15,312	31,626	28,005	44,263	1.4	1.9
10	UK	1,305	2,034	25,338	40,713	26,643	42,747	1.4	1.9
Sun	n of 10 Countries	431,405	503,319	1,240,568	1,459,650	1,671,973	1,962,970	84.8	86.5
Tota	l Trade Amount	565,805	650,208	1,406,530	1,620,291	1,972,335	2,270,499	100.0	100.0

(Unit: \$ thousand %)

<Table 2.7 > Major Trade Partners of North Korea in 2001

Source: KOTRA.

## 2. North Korean Economic Trends by Sector

The economic difficulty of North Korea is deeply rooted in structural problems of supply, affecting almost every aspect of economic life. As a result, North Korea's economic hardships appear in the form of shortages in food, energy, raw materials and foreign currency.

## A. Food Shortages

As shown in Table 2.8, food production in North Korea since the early 1990s has been between 3.5 million and 4 million tons and the annual food deficiency has been between 1.5 million and 2 million tons. Food production was at its lowest between 1995 and 1998, during the so-called March of Hardship period. Statistics from 2001 show that the overall supply of crop materials increased due to favorable weather conditions and the timely supply of fertilizers by South Korea; food production reached 3.95 million tons with a 10 percent growth rate. Unfortunately, as shown in Table 2.8, the food shortage problem still remains.

Interestingly enough, North Korea's food crisis already existed in the mid-1980s due to the failure of North Korea's own agricultural policy. The so-called *Juche* farming method<sup>12</sup> was first introduced in the mid-1970s. North Korea's average production was 4.15 million tons in the 1980s, leading to an average of 2 million-ton

								(0		oo tons)
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Demand	576	569	576	580	578	583	541	551	518	529
Supply	443	427	388	413	345	369	349	389	422	395
Deficit	133	142	188	167	233	214	192	162	96	134
Import	83	109	49	96	105	163	104	107	-	-
Absolute of Deficit	50	33	139	71	128	51	88	55	-	-

#### <Table 2.8> Annual Food Deficit and Food Imports

(Unit: 10.000 tons)

Notes: 1) Demand is based on the amount of reduced rationing.

2) Supply is the previous year's production amount.

3) Imports are the sum of North Korea's imports and foreign aid.

Source: The Korean Ministry of Unification

deficits over the decade. By reducing rations per capita from 700g to 456g and using food aid from the Soviet Union and China, North Korea was able to mask its food problem. Beginning in the 1990s, however, the decrease in agricultural input due to the collapse of the Soviet Union brought about a sharp decline of food production to less than 4 million tons. Without the natural disasters, the rice production in 1990 was reduced by 32.5 percent annually and the total crop production fell by 26.8 percent. Deteriorating due to economic difficulties, natural disaster devastated the foundations of agriculture and accelerated the structural problems of food shortage for three consecutive years.

Therefore, the international community began to support North Korea in 1995, leading to a gradual alleviation of the famine situation. Keep in mind that this recovery was achieved through aid from the international community; the food problem remains a structural problem.

The government took a number of measures to solve the food shortages. To begin with, the government enacted changes to the *bunjo gwanlije* (team management system) as a way of improving of the agricultural management method in 1996. The number of farms in one *bunjo* (team) was reduced from 20 to seven. As the assigned production amount was reduced, members of *bunjo* were able to sell surplus crops at a farmers' market. From 1997, an independent (self-supporting) accounting system was introduced to some collective farms and farmers could elect

<sup>&</sup>lt;sup>12</sup> The *Juche* farming method is defined as "a scientific method of farming based on the climate and agricultural characteristics of Korea and intensive farming method to intensify agricultural production based on modern technology" (*Collection of Kim Il-Sung's Writings*, Vol. 8, p. 419). This farming method, however, was neither scientific nor technological. It was a food-centered and land-intensive farming system that involved excessive fertilizer use, single-crop farming and intensive culture farming leading to exhaustion of soil and lowered productivity.

farm managers.

In addition, the North Korean government put into effect the two-crops-a-year system in arable lands with over 100,000 ha under the Rehabilitation Plan of North Korean Agriculture set up by the UNDP<sup>13</sup> introducing the *saigeuru* (multiple harvesting) method for corn. Since 1999 in particular, the government has made some modifications to the *Juche* farming method; a golden rule for emphasizing "timely harvest" and "in the right place harvest" in a crop production-centered farming system. Furthermore, the government stressed a "potato-farming revolution" to introduce new produce to soil exhausted from corn farming.<sup>14</sup> The government tried to resolve the food shortage through potato farming while establishing the Department of Potato Production under the Ministry of Agriculture and Potato Production.

North Korea is also enforcing large-scale land adjustment projects in Gangwon Province (October 1998-April 1999, 30,000 ha), North Pyeongan Province (October 1999-May 2000, 55,000 ha) and South Hwanghae Province (October 2000-February 2002, 100,000 ha). However, these measures are not enough to improve the level of technology in use as North Korea has maintained a socialist collective farming system. North Korea's food shortage is expected to continue because of the lack of fundamental reform.

## **B. Energy Shortage**

The energy supply has fallen significantly since the beginning of the 1990s. Since North Korea's industrial structure was a large consumer of energy, the sudden decrease in the energy supply obviously deteriorated industrial production, particularly in heavy and chemical industries.

The shortage of energy is mainly due to the continuous decline in the production of coal. Since North Korea developed its energy supply system based on abundant coal reserves, along with the economic downturn, out-dated mining equipment, obsolete facilities and transportation bottleneck brought about the reduction of coal production from the mid-1980s (some 70 percent of North Korea's energy supply is dependent on coal). The coal production decrease by 11.6 percent from 37.5 million

<sup>&</sup>lt;sup>13</sup> According to the Korea Rural Economy Institute, North Korea's two-crop farming increased from 38,000 ha in 1997-1998 to 70,000 ha in 1998-1999 and 100,000 ha in 1999-2000.

<sup>&</sup>lt;sup>14</sup> It is reported that potatoes were mostly planted in arable lands in Cheongdan county, Byeokseong county and Yeonan county of South Hwanghae province after land adjustment (Rodong *Sinmun*, May 31, 2001). According to the FAP and WFP, potato farms grew from 48,000 ha in 1998, 170,000 ha in 1999 and 200,000 ha in 2000 to 400,000 ha in 2001. This means that one-sixth of the total arable land in North Korea has turned into potato production.

tons in 1985 to 31.35 million tons in the 1990s and, as of 2001, the production had dropped to 23.1 million tons, showing a 30 percent decrease compared to the level of 1990.<sup>15</sup>

Moreover, electricity production has been steadily decreasing since 1990. The ratio of hydroelectric power plant production to thermal power plant production is 6:4; this significant decrease in thermal power production is due to the shortage of coal production. The bulk use of low quality coal was one of the major reasons for the inefficiency of thermal power plants. In the case of hydroelectric power plants, most of the facilities were constructed either during the Japanese colonial period or in the 1950s and 1960s with technological assistance from the Soviet Union. Consequently, these power plants have low efficiency and often malfunction. The amount of power generated in 2001 was just 20.2 billion kWh, a 30 percent decrease compared to 1989, and the amount of generated electricity is only 25 percent of actual capacity.

Faced with energy shortages, the North Korean government has pushed for a solution since 1998, citing that a solution to the energy shortage would resolve the food problem and other economic problems. Through building small and middle-sized power plants that use natural resources such as tidal power and wind power, as well as constructing large-scale hydroelectric and thermal power plants, the North Korean government tried to improve the energy situation. The small and medium-sized power plants, however, are not very helpful in providing the power necessary for the industrial normalization. For instance, the Anbyeon Unit 2 hydroelectric plant and Taecheon thermal plant are not reducing the current energy crisis since irregular rainfalls and shortages in coal supply hinder the full-operation of these

											(01111)		
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Coal	3,508	3,315	3,100	2,920	2.710	2,540	2,370	2,100	2,060	1,860	2,100	2,250	2,310
Coal	6.3	-23.4	-6.4	-5.8	-7.2	-6.3	-6.7	-11.4	-1.9	-9.7	129	7.1	2.7
Crude Oil	-	252	189	152	136	91	110	94	50.6	50	31.7	39	58
		-	-25.0	-19.5	-10.5	-33.0	20.8	-14.6	-46.2	-1.2	-36.6	23	48.7
Power	294	277	263	247	221	231	230	213	193	170	185.7	194	202
Generation	4.2	4.2	-5.0	-6.1	-10.5	4.5	-0.4	-7.4	-9.4	-11.9	9.2	4.5	4.1

(Unit: 10.000 tons, %)

Source: The Korean Ministry of Unification, The Bank of Korea

<sup>&</sup>lt;sup>15</sup> The South Korean National Statistical Office (2001). *Comparison of Economic and Social Aspects of South and North Korea*. p. 54.

## 50 | Part I. Introduction

plants. The existing power plants also require full-scale repairs and new equipment, as well as new power transmission and supply facilities. Hence, without economic assistance from international communities, the energy crisis will remain an ongoing structural problem of the North Korean economy.

## C. Shortage of Raw Materials

The shortage of raw materials is another factor lowering the operational rate of industrial facilities in North Korea. The collapse of the socialist bloc at the beginning of the 1990s was the major reason behind the raw materials supply. This shortage can be traced by observing the changes displayed in Table 2.10.

The supply of basic materials such as metal, nonferrous metal, steel, cement and fertilizer have continued to decrease since the early 1990s. Recovering slightly in 1999, levels decreased again in 2000 (except for cement). In 2001, the supply of raw materials showed a substantial recovery. This was related to the recent recovery of the North Korean economy. Nonetheless, Table 2.10 shows negative growth in the heavy chemical industry, implying that the link between materials and industry has failed.

## **D. Shortage of Foreign Currency**

The shortage of foreign currency is another problem hindering the economic recovery of North Korea. Although most countries borrow foreign currency from overseas when facing depletion of domestic resources and capital, North Korea has not only defaulted on its foreign borrowings, it also lacks proper means of earning foreign currency.

Contrary to propaganda that paints North Korea as having achieved economic self-reliance, North Korea depended upon foreign capital assistance at their country's inception in 1945. A total of \$4.75 billion in foreign debts composed of

									(		
Туре	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Metal	816.8	574.6	476.3	458.6	422.1	344.0	291.0	289.0	378.6	379.3	420.8
Nonferrous Metal	22.7	17.8	16.4	16.0	15.4	11.6	10.8	9.7	11.7	9.6	9.2
Steel	316.8	179.3	185.9	172.8	153.4	120.8	101.6	94.5	124.3	108.6	106.2
Cement	516.9	474.7	398.0	433.0	422.0	379.0	334.0	315.0	410.0	460	516.0
Fertilizer	108.1	104.3	121.2	99.3	91.0	72.1	58.0	52.7	77.0	53.9	54.6

(Unit: 100.000 tons)

## <Table 2.10> Raw Material Supply Trends

Source: The Bank of Korea. The Estimate of North Korea's GNP (various issues).

grant-type aid (\$1.28 billion) and credit assistance (\$3.47 billion) was brought in and used for economic building, enhancing the military and building economic cooperation among socialist countries. About 43 percent of the total amount (\$2.04 billion) came from the Soviet Union and China before the 1960s and \$1.24 billion was from Western countries in the early 1970s.<sup>16</sup> However, North Korea's foreign debts have accumulated since the country faced default in the late 1970s, amounting to \$12.46 billion, or 74.2 percent of nominal GNI as of 2000.

Consequently North Korea needs to resolve its foreign debt problems in order to overcome the shortage of foreign currency. According to an evaluation report from the U.S. Congress in 1995, North Korea's international credit rating was 167 out of 170 countries; according to *Euromoney* magazine, it rated at 176 out of 178 countries. Hence, North Korea needs to pay more attention to raising its credit rating in the international financial market.

<table 2.11=""></table>	North	Korea's	External	Debt	(Estimates)
-------------------------	-------	---------	----------	------	-------------

(Unit: \$100 million, %)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
External Debt	78.6	92.8	97.2	103.2	106.6	118.3	120.0	119.0	121.0	123.0	124.6	N.A.
ED/Nominal GNI	34.0	40.5	46.0	50.3	50.3	53.0	56.1	67.2	96.8	77.8	74.2	N.A.

Source: The Bank of Korea

<sup>&</sup>lt;sup>16</sup> The Korean Ministry of Unification (2002). Summary of North Korea 2000. p. 385.

## Part II

# Industrial Development and Problems

## **III. Social Overhead Capital**

## Byung-Min Ahn

## 1. Current Status of North Korea's SOC

## A. Concept and features of SOC in North Korea

The concept of social overhead capital (hereafter SOC) has yet to be comprehensively set down. Although they are many views on what SOC entails, major consensus is that the definition can be divided into three concepts. First, SOC is indirect resources that help advance production by using direct resources. The second view is that SOC provideds public commodities and goods that are indispensable to living and that do not arise from market mechanisms. Third, SOC embodies resources operated by the public body (this view focuses on the identity of the actors taking up projects).

Despite the divergent views defining the term, there are no objections to the fact that SOC refers to resources that promote higher living standards, facilitate effective use of land and provide an indispensable foundation for the long-term development of society and economy. Moreover, SOC contributes to the economy and productivity, spurs improvement in living environments and encourages safe land development (The Japanese Association of Civil Engineering, 1995). Even though social overhead capital creates external economies and the benefits of SOC investment are both continuous and long-term, participation from private bodies remains scarce due to the public nature of SOC, the immense size of SOC investment and its long-term investment collection period. For this reason, SOC is not attractive to the private sector, private investment in SOC has gradually increased in recent years.

North Korea regards SOC as a capitalist concept. A few examples of SOC

include railways, roads, harbors, airports, telecommunications, energy, water supply, drainage and tideland reclamation. Simply put, SOC is infrastructure that monopolistic capitalists invest their money in because they need it for their own business activities rather than for the economy or public welfare. For this reason, capitalists make SOC investment despite its high risk and low profit.<sup>1</sup> In this respect, North Korea regards SOC as part of basic construction involving the maintenance or extension of fixed facilities that are either productive or nonproductive. The focus of SOC centers mainly on the industrialization and normalization of basic infrastructure. North Korea has said that all resources are focused on productive construction to ensure the expansion and reproduction of socialism.<sup>2</sup>

North Korea's Comprehensive National Development Plan, including basic construction, should not damage arable land, should build cities of an appropriate size and should take regional development prospects and military needs into consideration. The principle of building cities of an appropriate size is a reflection of socialist/communist construction demand, which aims to avoid disproportionate concentration of industrial production in urban areas as well as concentrations of population and transportation that would cause developmental disparity between cities and rural areas.<sup>3</sup>

Indeed, North Korea views SOC as a production activity. Yet SOC is built, maintained and managed regardless of demand. Therefore, the key problem with SOC North Korea lies in the construction, maintenance and management of the industrial infrastructure on the basis of construction principles with limited investment resources under a planned economy.

## **B.** Current Status of SOC

## 1) Electricity

As the technological level of industrial facilities improve, electrical power production in North Korea is becoming increasingly important. Power production equipment is as an important factor in determining the technical level of production.<sup>4</sup> Therein, North Korea regards the energy industry as "the frontline of building socialism" (2000 New Year Speech) and "the most important factor of building

<sup>&</sup>lt;sup>1</sup> See Dictionary of Economy (1985). The North Korean Academy of Social Science.

<sup>&</sup>lt;sup>2</sup> See Bang, Wanjoo (1988). Survey of Chosun. Encyclopedia Press. p. 167.

<sup>&</sup>lt;sup>3</sup> Kim, Suyeon (1992). *The Great Reform in National Land Management*. The North Korean Social Science Press. p. 30.

<sup>&</sup>lt;sup>4</sup> Choi, Woonsuk (1992). *National Land Management and Building National Economy in Socialist Society*. The North Korean Social Science Press. p. 13.

socialist economy" (2001 New Year Speech), relying on the energy industry to lead an economic breakthrough.<sup>5</sup>

In 2000, Chairman Kim Jung-Il visited the Naepyeong power plant, the Anbyeon Youth Power Plant and the power plant built by People's Army Unit 308 for field guidance. In 2001, he visited the Taecheon power plant and the Beoman power plant for field guidance. The country's regional economic goals for 2002 show that the energy industry is featured in most of the regional governments' major objectives, as shown below.

- \* Pyongyang: increase in power generation and timely completion of the Sangwongunmin power plant
- \* Gaeseong: large-scale establishment of small and medium-sized power plants
- \* Jagang province: expansion of the construction of the Ganggye youth power plant, Jangja River power plant, Wiwon power plant and Heungju youth power plant
- \* Ryanggang province: construction of small and middle-sized power plant
- \* Gangwon province: timely completion of power generator assembly for Anbyeon Second Unit youth power plant
- \* North Hwanghae province: normalization of small and middle-sized power generators such as the Beoman power plant in Seoheung county and Suan Youth power plant and expansion of the construction of Yeseong River power plant
- \* North Hamgyeong province: completion of the second-phase construction of Eorangcheon youth power plant and Suseongcheon stair-type power plant
- \* South Hamgyeong province: dam construction for the Geumjin river power plant, completion of the construction for Seongcheon River stair-type power plant and transmission tower
- \* North Pyeongan province: increase in operating capacity of power generators in the Taecheon power plant and Supung power plant, and construction of small and medium-sized power plants
- \* South Pyeongan province: reinforcement of generating capacity of the Bukchang thermal power plant

Since the inception of the socialist regime, North Korea's energy policy has pursued balanced development of hydroelectric power generation and thermal power generation to avoid concentrating on hydroelectric power generation, which

<sup>&</sup>lt;sup>5</sup> The joint editorial of *the Rodong Sinmun* (Workers' Daily), *Chosun Inmingun* (Chosun People's Army) and *Youth Junwi*. January 2002.

supplies over 90 percent of power. Initially, North Korea's first Seven-Year Plan (1961-1970) intended to raise the proportion of thermal power generation to 32 percent, but it only reached eighteen percent. As a result, North Korea's power supply system depended on hydroelectric power until the end of 1960s. During the 1970s, North Korea put more weight on the construction of thermal power generation. Consequently, thermal power generation rose to 43 percent after the Six-Year Plan (1971-1976). North Korea further increased the proportion of thermal power plants in the second Seven-Year Plan (1978-1984) to 68 percent by 1984. The third Seven-Year Plan aimed at building the Taecheon power plant and increasing energy production. However, most of the power production goals assigned by the economic plan were not achieved.

North Korea soon turned its attention to thermal power plants because of the advantages in construction cost, duration and number of workers involved. North Korea has plenty of coal for fueling thermal power plants. In addition, the operating capacity of hydroelectric power plants during the dry season drops, severely decreasing hydroelectric output. For these reasons, the demand for balanced development of both kinds of power plants quickly arose.

Geographically, North Korea has abundant water resources and large quantities of anthracite that can be used for hydroelectric generation. Annual water resources

Classification	Duration	Goals
Six-Year Plan	1971-1976	<ul> <li>- increase power generation to 28-30 billion kWh</li> <li>- complete construction of the Seodusu power plant, initiate construction of the Geumseong hydroelectric power plant and the Gicheon power plant, normalizing small and medium- sized power plans.</li> <li>- maintain and repair electric power supply system</li> <li>- expand campaign for energy conservation</li> </ul>
The Second Seven-Year Plan	1978-1984	<ul> <li>- increase power generation to 56-60 billion kWh</li> <li>- complete construction of the Daedong River power plant, the Wiwon power plant and Heuicheon second unit power plant</li> <li>- increase power cable transmission site following the expansion of newly established industrial centers</li> </ul>
The Third Seven-Year Plan	1987-1993	<ul> <li>- increase power generation to 100 billion kWh by building hydroelectric plants</li> <li>- complete Taecheon power plant construction and increase small and medium-sized hydroelectric plants</li> <li>- increase thermal power plants using low-heat briquettes</li> </ul>

<table 3.1=""></table>	Goals in	the Energy	Sector
------------------------	----------	------------	--------

are estimated to be 55.6 billion tons, 85 percent of which is for industrial use, and most of this is used for hydroelectric power generation. The total amount of water used for hydroelectric power is around 43 billion tons. Currently, the potential hydroelectric generating capacity of North Korea is around 8.3 million kWh and developable hydroelectric power per  $km^2$  is 77.4 kW. The rate of developable hydroelectric power per 1 km^2 is comparatively higher than the world average of 50 kW.

In the case of thermal power generation, North Korea has a wealth of high heatvalue anthracite, therefore North Korea's thermal power plants are situated around major anthracite production sites: near the Suncheon, Deokcheon, Bukchang, Gaecheon, Gujang and Daedong mines in Pyeongan province. The Cheongcheon River thermal plant is located in the Anju mining area and the Cheongjin thermal plant is located in the northern mining area in North Hamgyeong province. North Korea received aid from the former Soviet Union and China: The Soviets helped with thermal power generation while China provided aid in hydroelectric generation through joint projects.

For 1999, the capacity of electric facilities rated around 7.4 million kW and electricity production was at 19 billion kWh. The capacity of generating facilities and electricity production of North Korea were 16 percent and 8 percent of South Korea's, respectively. North Korea's hydroelectric output of 4.45 million kW outstripped South Korea's 3.15 million kW. However, North Korea's thermal power output was only 2.95 million kW, a tiny proportion of South Korea's 50.94 million kW. Though North Korea lacks nuclear power generation, South Korea produces around 13.7 million kW.

As mentioned, North Korea is expanding the construction of small and mediumsized power plants of under 1 million kW to supply electricity for small-scale regional factories and households. The construction of small and medium-sized power plants began in 1982 under orders from Kim II Sung. It is estimated that since 1996, about 6,700 small and middle-sized power plants have been constructed across North Korea. However, most of them are small (under 100 kW) for the regional supply of electricity and are not helpful in stabilizing the power supply.

Classification		1974	1985	1990	1996	1999
Generating capacity (10,000 kW)		433	595	714	739	739
Generating amount (100 million kWh)		174	251	277	213	186
	Hydroelectric	97	123	156	125	103
Туре	Thermal	77	128	121	88	83
	Nuclear	-	-	-	-	-

<Table 3.2> Power Facility Capacity and Electricity Status by Year

Source: The Korea Development Bank (2002), reconstructed from Industries in North Korea. p. 261.

Hence, North Korea recently began focusing on building a limited number of small and medium-sized power plants with improved average power generating capacity.

Recently, the North Korean Central Broadcasting Agency announced that North Korea has initiated the construction of 250 small and middle-sized power plants all across the country, 40 of which are completed.<sup>6</sup> According to the report, North Korea is able to supply power for household electric heating and factories in small towns and districts, as well as irrigation water to paddies and dry fields. Moreover, the newly acquired power generating capacity is several tens-of-thousands of kW and scores of small and medium-sized power plants are in the last stage of construction.<sup>7</sup> North Korea has also built seven wind power generators with the help of the Nautilus Institute in the United States. The generators are reported to be in operation, but their generating capacity is only 9 kW per unit.

North Korea hydroelectric generation facilities are the Seodusu, Unbong, Wiwon, Heocheonjang, Jangjin River, Ganggye Youth, Bujeon River, Taepyeongman, Daedong River power plants, including the 0.7 million kW Supung power plant. Hydroelectric power plants in construction as of 1991 were the Taechon, Mt. Geumgang, Geumya River, Heuicheon and Nam River power plants. The Taecheon power plant is one of the four Nature Improvement Projects proposed at the fourth plenary session by the Sixth Central Committee of the Korea Workers' Party; currently it is in the first stages of construction. The Mt. Geumgang power plant in Tongcheon is estimated to generate about 0.8 million kW, and when completed, it will be the largest hydroelectric power plant in North Korea.

The major thermal plants in North Korea are Pyongyang, Eumgi, Cheongcheon River and Suncheon thermal plants, as well as the 1.6 million kW capacity Bukchang thermal power plant. Bukchang, Pyongyang and Unggi thermal power plants were built with the aid of the Soviet Union.<sup>8</sup> All but one of these power plants

Classification	Until 96	1997	1998	1999	2000	2001	Total
Number of plants	185	300	5,000	1,000	130	80	6,695
Total generating capacity (kW)	90,000	60,000	36,000	80,000	26,000	18,400	310,400
Average generating capacity per generator (kW)	486	200	7	80	200	230	46

<Table 3.3> Construction of Small and Medium-sized Power Plants

Source: The Korean Ministry of Unification. Weekly Newsletter on North Korea (issue 612).

<sup>&</sup>lt;sup>6</sup> North Korean Central Broadcasting Agency. Nov. 3, 2002

<sup>&</sup>lt;sup>7</sup> The Korean Ministry of Unification. Weekly Newsletter on North Korea. Volume 616 (November 1-7, 2002).

## <Table 3.4> Hydroelectric Power Plants in North Korea

(Unit: 10,000 kW)

Name	Location	Capacity	Construction Period	Notes
Supung	Sakju, N.Pyeongan province	70	1941-1944	50% of generated power is transmitted to China
Seodusu	Daeheungdan, Yanggang province	39	1941	Interchangeable drainage area
Heocheon River	Heocheon county, S.Hamgyung province	39	1940-1943	Toshiba of Japan
Jangjin River	Yeonggwan county, S.Hamgyung province	39	1938	5th unit was completed in 1967
Bujeon River	Sinheung county, S.Hamgyung province	23	1932	German technology
Buryeong	Buryeong, Cheongjin city	4	1940	Stair type, interchangeable drainage area
Dokro River	Manpo city, Jagang province	9	1959	Was initiated by Japan (1937), completed with aid from the former Soviet Union
Ganggye Youth	Manpo city, Jagang province	25	1964	Was initiated by Japan, completed by North Korea
Unbong	Jaseong county, Jagang province	20	1970	North Korea-China joint project; 50% of 0.4 million kW is tunnel type
Mirimgabmun	Sadong district, Pyongyang	8	1982	Daedong River floodgate
Bonghwagab- mun	Gangdong county, Pyongyang	2	1983	Daedong River floodgate
Daedong River	Deokcheon county, S.Pyeongan province	20	1983	
Taepyeong-man	N. Pyeongan province	10	1987	North Korea-China joint project
Taecheon	Taecheon county, N. Pyeongan province	35	1988	Interchangeable drainage area, joint facilities with China (North Korea capacity)
Wiwon	Wian county, Jagang province	39	1990	Provides 50% of power generated to China
Nam River	Gangdong county, Pyongyang	14	1993	North Korea's own technology Most recently completed power plant,
Anbyeon Youth	Anbyeon county, Gangwon province	10	2000	Plans for further expansion
Total		405		

## Source: The above data are developed from Jung, Woojin (1996). *Energy Industry in North Korea* (Government Press Agency) and Korea Electric Power Corporation (1998). *Study on the Structure of Electricity System of South and North Korea.*

<sup>&</sup>lt;sup>8</sup> The generating facilities aided by the Soviet Union are reported to be Supung power plant (0.7 million kW), Pyongyang thermal plant (0.5 million kW), Bukchang thermal plant (1.6 million kW), Unggi thermal plant (0.1 million kW,), east Pyongyang thermal plant (50,000 kW), Seonbong thermal

use coal for fuel (Eumgi thermal plant only using heavy oil for fuel). During the third Seven-Year Plan (1987-1993), power plant construction in Eastern Pyongyang, Anju, Sariwon, Haeju, December and Gimchaek was planned, but only a very few of them, including the Eastern Pyeongyang thermal plants, are in operation.

From an early stage in its regime, North Korea has shown interest in nuclear power generation, holding great expectations for nuclear power under its self-reliant energy policy. This is because nuclear power plants would allow North Korea to maximize its abundant uranium reserves and eliminate its dependence on oil imports, which could contribute greatly to solving the energy crisis it now faces. In the third Seven-Year Plan, North Korea announced that it would build a 0.44 million kW nuclear power plant with the assistance of the Soviet Union. However, this plan was held back by the disintegration of the Soviet Union and the ensuing economic stagnation.

Although it is said that North Korea has no nuclear power plant, it operates a

Name	Location	Capacity	Features
Ivanic	Location	Capacity	
			Completion of construction of 1 <sup>st</sup> unit in 1972 and
Bukchang	Bukchang, S. Pyeongan	160	2 <sup>nd</sup> unit in 1984; largest power plant in North
			Korea
Pyeongyang	Plains of Pyongyang	50	Completed in 1970; aided by USSR; uses waste heat
Sonbong	Unggi county, N. Hamgyeong	20	Completed in 1977; aided by USSR; uses
			petroleum
Cheongcheon River	Anju county, S. Pyeongan	20	Completed in 1977
Cheongjin	Cheongjin city	20	Completed in 1986; Chinese assistance
Suncheon	Suncheon county, S. Pyeongan	20	Located in Suncheon vinylon factory; aided by
			China
Eastern Pyeongyang	Nangnang district, Pyongyang	5	Construction started in February 1989 to be
			completed within the near future
December Power Plant	Daean district, Nampo city	5	Completed in 1996
	Total	300	

## <Table 3.5> Status of Thermal Power Generation in North Korea

(Unit: 10,000 kW)

Source: The above data are developed from Jung, Woojin (1996). *Energy Industry in North Korea* (Government Press Agency) and Korea Electric Power Corporation (1998). *Study on the Structure of Electricity System of South and North Korea*.

plant (0.2 million kW) and Cheongjin thermal plant (0.15 million kW). For details, see Alexander Timonin (1996). "Forecast of Economic Cooperation among South Korea, North Korea and Russia" in *Tongil-Kyongjae (The Unified Economy)*. 1996 January Issue. Hyundai Economic Research Institute.

5,000 kW pilot nuclear power plant in Yeongbyeon, which started construction in 1979 and began operation from 1986. This pilot power plant was modeled after the Calder Hall nuclear power plant with a cooling system; it uses graphite and carbon dioxide as moderators and natural uranium for fuel.

## 2) Railway

Railways are the major means of transportation in North Korea, accommodated by roads. Railways carry 90 percent of freight and 60 percent of passenger traffic. North Korea actively constructed railroads to establish a transportation network for economic purposes and to restore the railway built by the Japanese during the period of occupation (1910-1945).

Commenting on the importance of railroads, Kim Il-Sung stated: "In order to build a new country, we need to rebuild the destroyed industries and achieve economic prosperity. To that end, we need to restore the railway, which is the national artery, and normalize transportation."<sup>9</sup> Kim continued with: "the railway system can be compared to the circulation of blood in our bodies. Stable operation of the railway will guarantee agricultural and industrial productivity, allowing prompt construction of a democratic economy and guarantee people's lives."<sup>10</sup> These statements from Kim Il-Sung show the elevated status and key role of railways in the North Korean economy.

North Korea's emphasis on the railway is due to its mass transportation capacity, timely transportation, short transportation time and low transportation costs. The average traction weight of electric locomotives in North Korea is around 1,300 tons-comparatively higher than the 1,000 ton average loading ability of North Korea's coastal maritime transport. The cost of railroad transportation in North Korea is reported to be 34 percent and 53 percent of automobile and maritime transport, respectively. The average transport distance of North Korean railroad freight is about 160 km, 15 times the automobile freight transport distance and 1.7 times the coastal maritime transport distance.

The basic direction for the transportation system in North Korea was set in December 1977 at the first session of the Sixth Supreme People's Assembly. Kim Il-Sung proposed the development of a centralized and containerized transportation system. He emphasized the need for connecting transportation as well as improving the railroad transportation capability, electrification, automation of signals, production of railway cars and the construction of new tracks.<sup>11</sup> Thus, the basic direction of

<sup>9</sup> Korean Worker's Party Press. Collection of Kim Il-Sung's Writings. Volume One. p. 398.

<sup>&</sup>lt;sup>10</sup> Korean Worker's Party Press. Collection of Kim Il-Sung's Writings. Volume Two. p. 294.

North Korea's railway policy is to ensure a stable transport supply for "the people's economy" by strengthening the physical and technical aspects of the railway, so that it can hold a central role in the execution of North Korea's development plan.

North Korea stressed the establishment of rules and order —mimicking military practices by strengthening ideology through teaching —to obtain control in the railway transport sector. Such emphasis reflects that freight transport ability has reached its limit and the antiquated railway facilities are dangerous. By establishing and carrying out freight transport initiatives such as the "100-Day Battle" and "An Accident-Free Railway" campaigns, North Korea established rules and order. It also operates the military-like Youth Battalion as part of its railroad construction project enterprises.<sup>12</sup>

The total North Korea railroad network at the end of 2001 was 5,224 km long, including narrow gauge tracks. This is a 20 percent increase from 1965; the extension of railroad in South Korea is 3,125 km, or 60 percent of North Korea's level.

The allotment rate of transportation vehicles, which is an indicator of structure of transportation methods, shows that the railway is responsible for 92.8 percent of freight per transport ton/km in North Korea, which is more than four times the 20.0 percent level of South Korea. Moreover, North Korea's passenger transport rate is twice the rate of South Korea.

	Classification	South Korea	North Korea
Length of route (km)		3,125	5,224
Electrification	Length (km)	661	4,211
Lieumcauon	Electrification rate (%)	21	81
Dual gauge	Length (km)	901	156
Dual gauge	Dual gauge rate (%)	29	3

<Table 3.6> Comparison of Railways in North and South Korea

Source: Internal data of the Korea Transport Institute.

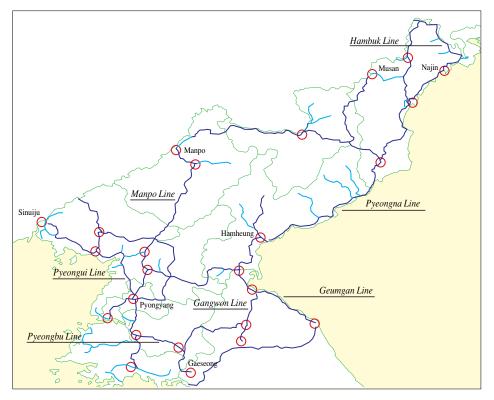
<sup>&</sup>lt;sup>11</sup> According to the definitions from the *Chosun Unsusa* (the History of North Korean Transportation): "centralized transport system refers to cars with large-scale cargos such as minerals and coal that are linked to trains that go directly to their destination without stopping for loading or unloading. Containerized transport system refers to a transport system that circulates cargos from factories and enterprises in standardized containers. Connecting transport system refers to a system using the coordination of different kinds of transport such as railway, automobiles and ships." (Park, Manhyup. 1988. p. 401-402)

<sup>&</sup>lt;sup>12</sup> After the initiation of the Youth Mechanized Company for Pyongyang Railway Unit under the Pyongyang Railway Department in March 1973, a Youth Mechanized Company was organized in all railway units under all railway departments including Hamheung, Cheongjin and Gaecheon. In addition, fatigue parties such as the April 25 Battalion and the *Pibada* (Sea of Blood) Royal Guards were organized to improve productivity.

The electrification rate of North Korea is 81 percent, comparatively high than the 21 percent rate of South Korea. This is due to an increased usuage of railroads tailored to North Korea's geographical features and energy supply. In addition, 98 percent of the lines are single-track, with low operation speeds due to aged and low-quality equipment.

On January 25, 1954, North Korea and China signed the North Korea-China Railway Operation Agreement. This agreement allowed for the operation of passenger trains from Pyongyang to Beijing (starting in June 3, 1954). Along with the Sinuiju-Dandong line that connects Pyongyang to Beijing, Manpo-Jian, Namyang-Tumen Railway lines are in operation. The Cheongjin-Namyang-Tumen line uses the Cheongjin port as the point of intermediate freight transport between Japan and Guilin, Liaoning and Heilungjang in China.

From October 1983, the Shinuiju-Dandong line started passenger services in the Pyongyang-Beijing section (operated solely by China) running from Pyongyang-Sinuiju-Dandong-Tianjin-Beijing. The total length of the shuttle service is 1,347 km,



## <Figure 3.1> North Korea's Railway Network

taking about 22 hours and operating four times a week.

The Namyang-Tumen line was finished in the 1960s under the Borderline Travel Train Operation Agreement to ensure exchanges between borderline residents in North Korea and China. However, with the frequent incidents of North Koreans defecting to Manchuria through this line during the 1990s, North Korea unilaterally closed it down. leaving the agreement still standing.

The Hongeui line, an international railway connecting to Russia, was established in 1963, linking Hongeui to Tumen River. It connects the Hambuk line all the way to Khasan Station in Far Eastern Russia, crossing the Tumen River Railway Bridge. This railway also connects to Russia's Siberia railway, Vladivostok-Khabarovsk-Irkutsk-Omsk, and is operated under the North Korea-Russia Joint Borderline Railway Commission. Freight from Russia seems to be using this line. Starting from April 1987, a 10,214 km, weeklong shuttle service of international passenger trains running through Pyongyang-Khasan-Khabarovsk-Baikal-Moscow has been provided twice a week.

North Korea's geographical adjacency to Russia and China allows for a railway network connecting the two for the transportation of international freight and passengers. The International Transportation Office of the Department of Railway is in charge of the national railway operation, while International Transport Centers are located in Sinuiju, Manpo, Namyang and the Tumen River area.

Before independence in 1945, North Korea operated six lines to China and one line to Russia, but three of the China lines were destroyed in the Korean War (1950-1953). Currently, four international lines are operating: three China lines (Sinuiju-Dandong, Namyang-Tumen and Manpo-Jian) and one Russia line (Tumen River-Khasan).

The transport capabilits of trains in North Korea continued to rise until the 1980s on account of facility improvements and the introduction of large-scale equipment. As a result of the economic crisis of the 1990s, North Korea's rail transportation has reportedly been suspended.

The major freight items carried on railway are coal (32 percent), minerals (12 percent) and construction materials (8 percent), followed by metal (6 percent), lumber (6 percent), grains (4 percent) and chemical fertilizer (3 percent). The regional structure of transport freight shows that South Pyeongan province, North Hamgyeong province, South Hamgyeong province and North Pyeongan province carry 80 percent of all freight transport in North Korea, 30 percent, 24 percent, 17 percent and 10 percent of all freight transport in North Korea, respectively.

North Korea constructed 80 central freight stations around the country that were equipped with facilities such as trailers, cranes, warehouses, and loading and unloading sites. Central freight stations are located in Pyongyang, Gaecheon, Hamheung and Cheongjin Railway Offices to cover freight transport, but there is no means of

Name	Block	Distance (km)	Notes
Pyeongeui	Pyongyang-Sinuiju	225	Became electric in 1964
Pyeongbuk	Jeongju Youth-Cheongsu	121	
Baegma	Baegma-Southern Sinuiju	44	
Pyeongbu	Pyongyang-Gaeseong	187	
Pyeongnam	Pyongyang-Pyeongnam Hot Spring	90	
Pyeongdeok	Deokcheon-Gujang Youth	192	

## <Table 3.7> West Railway Lines in North Korea

## <Table 3.8> East Railway Lines in North Korea

Name	Block	Distance (km)	Notes
Pyeongna	Ganri-Najin	781	Railroad construction in the Pyongyang-
i yeongilu	Guni i tujii	,01	Cheongjin block in 1992
Sinheung	Hamheung-Bujeon Lakeside	92	Became electric in 1992
Deokseong	Sinbukcheong Youth-Sangri	52	
Heocheon	Dancheong Youth-Honggun	80	
C1	Yeohaejin-Geumgol	63	Heavy transport of minerals from
Geumgol			Sangunsong to Omongri
Hambuk	Banjuk/Hoeryeong-Najin	327	
Musan	Mt. Gomu Youth-Musan	58	For transport of iron ore from the Musan Mine
Gangwon line	Gowon-Pyeonggang	145	
Mt. Geumgang Youth	Anbyeon-Mt. Geumgang	102	Began operation in April 1997

## <Table 3.9> East-West Railway Lines in North Korea

Name	Block	Distance (km)	Notes
Youth Icheon	Pyeongsan-Sepo Youth	141	Began operation in 1972
Pyeongna	Ganri-Najin	781	Cheongjin-Najin block opened in 1965

## <Table 3.10> Inland Railway Lines in North Korea

Name	Block	Distance (km)	Notes
Manpo	Suncheon-Manpo border line	303	
Youth Palwon	Gujang Youth-Palwon Youth	40	Cheongsu line and Manpo line were connected
Ganggye	Ganggye-Nangnim	57	
Mt. Baekdu Youth	Gilju Youth-Hyesan Youth	142	Began operation in 1990 (electric railroad)
Baekmu	Baekam Youth-Musan	187	
Samjiyeon	Wilyeon-Motga	82	Used for visiting Kim Il-Sung's battle site

Name	Block	Distance (km)	Notes
Hwanghae Youth	Sariwon Youth-Haeju port	100	For transport of iron ore in Eunnyul Mine
Eunnyul	Eunpa-Cheolgwang	118	
Baecheon	Jangbang-Eunbit		

## <Table 3.11> West Circular Lines in North Korea

transportation that carries freight from producers to stations and from stations to end users.

North Korea's major railway lines of consist of 10 key lines and 90 branch lines: The west lines (Pyeongui line, Pyeongbu line) connect the west side of the Korean peninsula. The east lines (Pyeongna line, Mt. Geumgang Youth line, Hambuk line). The inland lines (Manpo line, Mt. Baekdu Youth line) connect inland cities, and the east-west lines (Youth Icheon line, Pyeongna line) connect the east and west sides of North Korea. Tables 3.7 through 3.11 show the status of major east-west express railway lines.

The following give the recent status of freight transport by major lines.

(1) Pyongbu line: Pyongbu line refers to the 187km long line from Pyongyang to Gaeseong. The Hwanghae Joint Iron Mill, February 8 Cement Joint Enterprise, Sariwon Textile Factory and Hwangbuk District Anthracite Collective Enterprise are located along this line. Freight transport on this line is based on freight from those enterprises, with coal taking up the highest percentage of carried freight. Raw metals such as pig iron and steel are transported to Pyongyang.

Six central freight stations are located at Gaeseong, Pyeongsan, west Sariwon, Seoheung, Hwangju and Junghwa. West Sariwon Station is in charge of freight from Sariwon city and the Bongsan area. Major freight consists of anthracite, fertilizer, steel, lumber, construction stone, sand and gravel. Gaeseong Station is in charge of freight from Gaepung, Panmun and the Jangpung area. The major incoming freight includes anthracite, fertilizer, salt, steel and cement; the major outgoing freight contains construction stone (granite) and scrap iron.

(2) Pyeongui line: The Pyeongui line extends 225km, connecting Pyongyang to Sinuiju. The whole railway became electric in August 1964. With the change to electric railway, its transport capacity and transit ability improved. There are seven central freight stations located in Sinuiju, Yongcheon, Dongnim, Jeongju, Sinanju, Sukcheon and Seopo.

The railway passes through the industrial areas of Cheongcheon River and Sinuiju, Bukjung and Nakwon Joint Machinery Enterprises, Yongampo Shipyard, Cheongcheon River thermal plant and Anju District Joint Mining Enterprise. The major freight are coal, minerals, metal, wood and cement. Anthracite from Gaecheon and Soonchun is sent to Pyongyang and bituminous coal from Sinuiju and Anju is sent to the Cheongcheon River thermal plant. Sinuiju Station, which deals with international trade freight, is a borderline station bisected by the Yaru River that connects to Dandong Station in China. This station deals with overseas trade freight. Major export freight is anthracite and imported freight is coking coal. Imported coking coal is supplied to Hwanghae Joint Iron Mill from Sinuiju Station to Jangcheon Station of the Songnim line.

(3) Pyeongna line: Pyeongna line passes through Suncheon-Gowon-Hamheung-Dancheon-Gilju-Cheongjin, connected all the way to Najin. It is responsible for 85-90 percent of west-east freight exchange. This line became electric during the Six-Year Economic Plan (1971-1976), thus improving transport capacity. There are 17 stations on this line including Gowon, Hamheum and Najin.

Most of the freight carried on the Pyeongna line is fuel and raw materials such as coal and minerals used in factories and enterprises, as well as construction materials, fertilizer and metals that are produced from these facilities. Coal is sent from Suncheon Joint Cement Factory throughout the country, including Nampo port, a major export harbor. Metal is sent from major industrial areas in the east, like Gimchaek Joint Iron Mill, to major factories in the west.

The Pyeongna and Gangwon lines are directly connected to the plateau central freight stations and to Youth Icheon line, making it partially responsible for east-west freight. Freight items include imported coking coal and wood, minerals, metal, fertilizer and marine products. Coking coal is imported from China through Namnyang Station on the Hambuk line and sent to Hwanghae Joint Iron Mill via the Gangwon line and Youth Icheon line. Chemical fertilizers are sent from Hamheung to the plains in North and South Hwanghae provinces. Grains are produced in the plains of North and South Hwanghae provinces and sent to the east.

Hamheung station is connected to Sinheung Youth line and Jangjin line and handles freight to the Hamheung industrial area. Major incoming freight includes coal, minerals, building materials, salt and fuel. Major outgoing freight contains chemical fertilizer, chemical products, building materials and other industrial products.

Banjuk station is near Cheongjin station and connected to Hambuk line, creating a circular line in North Hamgyeong province. This is a particularly important railway because it links foreign trade freight from China and Russia in the borderline areas. Its major freight items are coal, wood, minerals, fertilizer, cement and marine products. Najin Station is connected to the Hambuk line and transports fuel and material freight supply to the Najin-Sonbong industrial area, where products are manufactured and distributed throughout the country. Pyeongna line's is mostly connected with maritime logistics and runs alongside Najin, Cheongjin, Gimchaek and Hamheung ports along the east coast. Heungnam port is connected to factories and enterprises in the Hamheung area, including the Heungnam Joint Fertilizer Enterprise, Buryeong Joint Alloy Steel Enterprise, Heungnam Refinery and Yongseong Joint Machinery Enterprise. Dancheon port is connected to the Dancheon Magnesia Factory and Dancheon Refinery. Factories in the Gimchaek area, such as the Seongjin Joint Steel Mill, are connected to Gimchaek port. Cheongjin Steel Mill and Gimchaek Joint Iron Mill are connected to Cheongjin port, and freight from the Tumen River area is stored at the Najin-Sonbong port for joint transport.

(4) Manpo line: The Manpo line traverses the Gwanseo area and connects the western plains and Ganggye and Heuicheon, which are military industrial areas. Manpo line first became electric in 1980. It plays an important role in transporting freight from mining areas such as Gaecheon and Gujang, and mechanical industrial centers such as Heuicheon, Jeoncheon, Ganggye and Manpo.

The basic freight transported along the Manpo line is coal and wood. Coal produced at the Gujang mining area and Joyang mine is sent to major factories and enterprises through Gaecheon and Gujang. A lumber refining workshop is located in the Unbong area, where hundreds of thousands of tons of wood are sent nationwide through Manpo.

Manpo line and Gaecheon line are connected to the Gaecheon central freight station. Due to the branching of Joyang mining line, 70 percent of the freight is coal. The Gujang central freight station, an important transportation point where the Youth Palwon and Pyeongdeok lines cross, handles coal and cement.

(5) Hambuk line: Bordering China and Russia, Hambuk railway plays an important role in foreign freight transport. There are five central freight stations on this line: Sonbong, Saebyeol, Onseong, Hoeryeong and Buryeong. Hambuk line is connected to Namnyang station and Tumen station in China while Hongeui line, a branch line of Hambuk line, is connected to Khasan station in Russia from the Tumen River station. Major freight items are coal, minerals, wood, crude oil, chemical fertilizer and coking coal. Coal from Hoeryeong, Secheon, Musan and Onsung is transported jointly by the Hoeryeong, Musan and Hambuk lines. Major foreign trade freight is magnetic iron concentrate, magnesia krinka, colored metal and colored metal concentrate.

Hoeryeong station is the branching station for the Hoeryeong mining line that delivers products from Hoeryeong and nearby coalmines such as those in Gungshin, Secheon, Dongpo and Sungpyeong to areas around the country and mainly handles coal and minerals. Buryeong Station is adjacent to Gomusan Station and delivers freight from the Musan line and steel concentrates transported from Chulseong Station; cement from Gomusan Cement Factory is also important freight at Hoeryeong.

Onsung central freight station is near Namnyang Station and plays an important role in handling imported and exported freight to and from China. Its major import freight is coking coal and major export freight is steel concentrate, talcum powder, steel and marine products. Tumen River Station intermediates trade with Russia. Its major imported freight includes wood and crude oil, and its major export freight is magnesia, chemical fertilizer, steel, colored metal and colored metal concentrate. Freight imported from Tumen River Station is carried to Najin-Sonbong in conjunction with maritime transport.

## 3) Roads

North Korea's roads supplement the railway system and are usually used when travelling short distances. Roads are considered "an important aspect of the people's economy and a means to meet transport demand, guarantee economic development and ensure convenience for the people" (B.M. Ahn et al. 1998, 88). The established principles for building roads in North Korea are "solving transportation problems in remote mountain areas, mechanizing rural areas and constructing roads that do not encroach on farmland." Average transportation distances by road are 30 km (B.M. Ahn et al. 1998, 89).

Mots of the roads in North Korea, having been built during the period of Japanese occupation, became deformed and relatively unusable with time. Like the railway system, roads in North Korea were constructed by the Japanese for transporting materials and military purposes. Consequently, most roads ran from North to South, connecting with port cities. To supplement the existing road network, North Korea repaired and built new roads and bridges in the inland area.

Until the 1980s, roads in North Korea were primarily used as a means of connecting major railway stations or ports. The basic policy was that only in areas without railroad or water transport networks would the road act as a means of long distance transport. However, North Korea recently started to emphasize the importance of road transport, signaling that it seeks to abandon the railway-based transportation policy. North Korea evaluates road transport as effective in mobility and speed and able to carry freight whenever desired. In addition, it is reported that for distances of 150-200 km, road transport is the cheapest mode of transport; the cost of road construction is less than 10 percent of the cost of railway construction.<sup>13</sup>

<sup>&</sup>lt;sup>13</sup> Research Institute of Geographical Studies of the North Korean Academy of Social Science. *Compendium of Geography of Chosun* (Volume 20, Transport Geography). p. 259.

## 72 | Part II. Industrial Development and Problems

*The 1990 North Korea Almanac* states that North Korea's total road network (levels I-VI) was around 75,500 km. However, when counting only roads of level IV and higher (allowing two-way passage), the total extension of roads in North Korea is about 23,300 km. The total length of highways in North Korea is 661 km, with six routes paved with concrete or asphalt. The second Pyongyang-Nampo highway, which started construction in 1998, was completed in 2000. It extends 46.3 km with 12 lanes and is paved with asphalt.

There are 10 level I roads in North Korea: Pyongyang-Gaeseong, Pyongyang-Nampo, Pyongyang-Wonsan, Pyongyang-Sinuiju, Pyongyang-Manpo, Wonsan-Najin, Bukcheong-Hyesan, Sariwon-Haeju, Wonsan-Goseong and Wonsan-Gimhwa. Although there are still unpaved sections in these roads, most of the Pyongyang-Gaeseong, Wonsan-Goseong and Sariwon-Haeju routes are paved. The level I Pyongyang-Gaeseong route runs almost parallel to Pyeongbu railway line. From Sariwon, the level I Sariwon-Haeju road branches out into other roads. Five level II roads (Pyeongsan-Huicheon, Pyeongsan-Haeju, Gaeseong-Haeju, Hwangju-Songnim and Geumcheon-Majeon), also branch out. Major freight on this route consists of agricultural products, fertilizer and minerals.

The level I Pyongyang-Sinuiju road passes through about 100 bridges, including the Cheongcheon River Bridge and Daeryeong River Bridge, and four level II roads (Shinanju-Gaecheon, Shinanju-Nampo, Bakcheon-Chosan and Jeongju-Sakju) branch out. Major freight on this route is agricultural products and fertilizer. Level I roads are narrow and curved, and their tunnels and bridges are timeworn and in a serious condition. As shown in Table 3.12, North Korea's road extension increased by 17 percent over 28 years from 20,000 km in 1970 to 23,407 km in 1998. This compares to South Korea's twofold increase from 40,244 km in 1970 to 86,990 km in 1998. Although there could be many reasons for the sluggish road construction, it is argued that North Korea's policy of focussing on rail transportation is the major reason.

In June 1964, North Korea rated its roads from levels I to VI and set out management responsibilities for each type of road.<sup>14</sup> Level I roads connect the capital city with provincial capitals. Level II roads connect provincial capitals with provincial capitals, and level III roads connect provincial capitals with counties. Level IV roads connect counties to villages, level V roads connect towns to towns and level VI roads connect villages to villages. The central government is responsible for managing highways and levels I-III roads, regional governments are responsible for level

<sup>&</sup>lt;sup>14</sup> In June 1964, Kim Il-Sung ordered the Department of Internal Affairs and Urban Management Council to divide the roads into six levels for effective management and road maintenance, while assigning management responsibilities for each road.

IV-VI roads. The composition of roads by level is shown in Table 3.13 and Table 3.14.

The total road extension of North Korea is 60,538 km (based on the 1982 data). About 80 percent of these roads are under level IV, less than 2.5 m wide, which is not suitable for automobile use. Considering North Korea's low road construction rate, such status will have improved much since.

## <Table 3.12> Road Extension in North Korea

(Unit: km)

Year	1970	1975	1980	1985	1990	1995	1996	1997	1998
Extension	20,000	20,670	21,000	21,735	23,000	23,339	23,369	23,377	23,407

Note: Level V and VI roads are excluded.

Source: The South Korean National Statistics Office (1999). Comparison of Social and Economic Aspects of South and North Korea. p. 75.

Level	Number of routes	Length (km)	Proportion (%)	Paved length (km)	
Highway	7	682.0	1.1	682.0	
Level I	10	2,289.7	3.8	921.4	
Level II	29	4,299.6	7.1	283.3	
Level III	145	5,939.3	9.8	386.8	
Level IV	638	8,334.2	13.6	203.3	
Level V	-	7,697.4	12.6	41.4	
Level VI	-	31,744.5	52.0	46.9	
Total		60,986.7	100.0	2,565.1	

## <Table 3.13> North Korea's Road Extension by Level

Source: Research Institute of Geographical Studies of the North Korean Academy of Social Science (1988). p. 336.

## <Table 3.14> North Korea's Road Structure by Level

Level	Level	Lanes	Width (m)	Shoulder width (m)	Daily vehicle passage (no.)
1	Roads connecting capital and provinces		Over 3.5	Over 1.5	Over 3,500
2	Roads connecting provinces	2	3.5	1.0	1,500-3,500
3	Roads connecting province-county, county-county	2	3.0	0.75	500-1,500
4	Roads connecting county-town	2	2.75	0.5	200-500
5	Roads connecting towns	2	2.5	-	100-200
6	Roads connecting villages	1	-	-	Under 100

Source: Korea Research Institute for Human Settlements. *Handbook of North Korea's National Development*. p. 402.

#### 74 | Part II. Industrial Development and Problems

The role of roads in North Korea is to increase automobile transport to achieve normalization of production and construction by supplying the necessary raw materials, industrial materials and equipment, and to ensure close connection and balance of production and consumption. It also aims to reduce the cultural, social and economical gap between urban and rural areas. Roads are an important factor in evaluating the level of cultural and technical development of a country, and they play an important role in the cultural and economic development of North Korea.<sup>15</sup> Therefore, North Korea considers roads "an important component of people's economy" and "a means to meet transport demand, guarantee economic development and improve people's lives." It should be noted that North Korea considers roads important for leverage should there be war. North Korea has stated "the more developed roads are and the higher the utilization of transport system through the improvement of roads, the stronger coordination between the front line and the home front will be, guaranteeing high mobility of military activities and creating advantages for victory."<sup>16</sup>

North Korea has seven highways: Pyongyang-Sunan, Pyongyang-Wonsan, Pyongyang-Nampo, Pyongyang-Gaeseong, Pyongyang-Heuicheon, Wonsan-Mt. Geumgang and Sariwon-Sincheon. Their total extension is 682 km. The road network in North Korea can be broadly divided into five groups. There are two Yellow Sea routes: Panmunjeom-Gaeseong-Geumcheon-Sariwon-Hwangju-Junghwa-Pyongyang-Sunan-Sukcheon-Jeongju-Yongcheon-Sinuiju, and Haeju-Jaeryeong-Nampo-Pyeongwon. There are two East Sea routes: Poseong-Wonsan-Hamheung-Seongjin-Gilju-Cheongjin-Najin-Ungjin-Aoji-Onseong; and Pyeonggang-Wonsan-Hamheung-Cheongjin-Soksari-Huchang.

The routes connecting the east and west are the Pyongyang-Wonsan Highway and the Jangsangot-Songhwa-Jangyeon-Nampo-Pyongyang-Gangdong-Yangdeok-Deokwon route. There are three northern inland routes: Pyongyang-Icheon-Goksan-Yangdeok-Heuicheon-Chosan; Sinbukcheong-Gapsan-Hyesan; and Yongjamri-Taecheon-Sangyongpyeong-Musan. The route connecting the west and east of northern North Korea along Yaru River and Tumen River is the Sinuiju-Supung-Chosan-Manpo-Huchang-Hyesan-Hoeryeong-Onseong route.

North Korea mobilized the army, workers and the members of the Workers' Party to construct and repair roads. The government started mobilizing soldiers in 1974 to construct the Pyongyang-Wonsan highway.<sup>17</sup> Party members and workers

<sup>&</sup>lt;sup>15</sup> Kim Jungi, Lee Chungwan and Oh Muil (1991). *History of Transport in Chosun 3 (Automobile transport)*. p. 11-12.

<sup>&</sup>lt;sup>16</sup> Kim, Suyeon (1992). *Great Changes in National Land Management Project*. The North Korean Social Science Press. p. 107.

<sup>&</sup>lt;sup>17</sup> "Kim Il-Sung guided the highway construction plan and gave the People's Army the task of carry-

Route group	Notes			
	Connected to South Korea and linked to China with the possibility of connecting with western			
Yellow Sea group	coastline highway. Panmunjeom-Gaeseong-Pyongyang-Jeongju-Sinuiju route and Haeju-			
	Nampo-Pyeongwon route.			
East Sea group	Passes through Najin-Sonbong area, Shinpo light water reactor area and the Mt. Geumgang			
Last Sea group	tourism area. Linked with northeastern China and Russia.			
West-east	The road connecting North Korea's west and east is the Pyongyang-Wonsan Highway and			
connecting group	Jangsangot-Nampo-Pyongyang-Yangdeok-Deokwon route. Because the Nangnim mountain			
connecting group	range crosses through North Korea's central area, roads are narrow and have a steep gradient.			
Northern	Made with the purpose of developing natural resources in North Korea and most of the roads are			
inland group	unpaved. Existing roads are Pyeonggang-Chosan, Pyonggang-Huchanggan, Sinbukcheong-			
intana group	Hyesangan and Yongjamri-Musan.			
West-east	The roads in Sinuiju-Chosan-Hyesan-Onseong follow the North Korean and Chinese border,			
borderline group	connecting the mountains with areas around the border. Most are unpaved, 4-8 m wide, with 1-2			
borderinie group	lanes.			

#### <Table 3.15> North Korea's Main Road Network

were mobilized to construct regional level I-VI roads. Forestry workers and engineers were put to work to construct roads in forested areas.

North Korea manages roads through road management agencies. It established agencies in 1978 to oversee highways and major expressways (levels I-IV). Level IV-V roads are managed by relevant cooperative farms and state-owned ranches. Historical battle site roads are managed by relevant management agencies. The government has designated two Road Protection Weeks every year, one week in March or April and one week in September or October, during which everyone has to participate in road repair work.<sup>18</sup> This is overseen by the Department of Social Security, and overseers are dispatched to construction sites for technical guidance.

## 4) Ports

Due to the division of the Korean peninsula, North Korea faces geographical limits in connecting the east and west coasts. As maritime transport between the east and west coasts of North Korea require passage through the Korea Strait, east-west

ing it out. The People's Army started constructing highways according to the order of the Party in March 1974" (Kim, Suhyeon. op. cit., p. 110).

<sup>&</sup>lt;sup>18</sup> In 1978, Kim Il-Sung ordered public participation in road construction and repairs. "The project must be carried out by the whole public. All organizations and enterprises with cars and people should also participate in the road management of their towns" (*Collection of Kim Il-Sung's Writings*. Volume 23. p. 198).

maritime transport is virtually impossible. Therefore, North Korea's maritime policy before the 1960s was limited to improving and repairing the existing ports and coastal transport.

However, after the implementation of the Seven-Year Development Plan in 1961, North Korea focused investment on maritime transport and ports. The target of the Seven-Year Plan in the maritime transport area was to "ensure coastal transport, expand connects to railways and, in particular, improve foreign trade using our ships. Important ports such as Nampo, Heungnam, Cheongjin, Wonsan and Dancheon will be enhanced and equipped with modern facilities to enable the entrance and exit of big vessels."

Indeed, with the increase in oil imports during the expansion of foreign trade in the 1970s, much effort was made for the construction of wharves exclusively for crude oil transport and the expansion of loading and storing facilities in harbors.<sup>19</sup> Under such basic goals, North Korea maintained and reinforced existing trade ports and newly established trade ports such as Najin, Songnim and Haeju. In addition, the government promote the construction of freighters. As a result, based on the *1990 North Korea Almanac*, North Korea's freight passage capacity increased sixfold in 10 years from 1980-1989 and the loading capacity of ships increased many times over.

There are eight trade ports, five pelagic marine base harbors and 30 fishery ports. The trade ports are at Cheongjin, Najin, Sonbong, Heungnam, Wonsan, Nampo, Songnim and Haeju. Based on the 1998 data on port facilities, the combined wharf size is 15.6 km (Cheongjin: 5.3 km, Nampo: 1.9 km, Najin: 2.3km), loading capacity is 35 million tons (8.4 percent of South Korea) and amount of freight handled is 16 million tons (2.1 percent of South Korea). However, due to the aged port facilities, the usage rate is only 3 percent, in sharp contrast to the 90 percent railway usage and 7 percent road usage. Due to the obsolete port facilities in for foreign trade, excessive freight costs hinders trade expansion between North and South Korea.

Although North Korea's coastline is about 3,000 km, it is separated completely into east and west regions due to its geographical characteristics. Thus, organic marine transport along coastlines is physically impossible. In addition, because trade with major trade partners is possible by road transport, the development of the shipping industry is further hindered. There are no multipurpose wharves that can handle

<sup>&</sup>lt;sup>19</sup> In June 1975, Kim Il-Sung declared at the Joint Conference of the Political Committee of the Central Party Committee and the Department of Political Affairs that "our ports have not come out of the level of the Japanese rule. The international position of our country is rising, so in order to strengthen foreign trade, ports should be well managed."

container freight. Loading and unloading facilities are not automated. Due to outdated facilities management, poor control in port management and a lack of transport information, problems arise even when freight handled is smaller than the unloading capacity.

(1) Cheongjin port: Cheongjin port is located in Cheongjin of North Hamgyeong province and was constructed in the 1930s. Cheongjin port is divided into an east port and west port, and it is the center of freight and foreign trade of North Korea. It has a more developed land transport network compared to other ports, with railway network and road network directly connected to it. The railway is connected to Russia and China via the circulating railway of Cheongjin-Najin section and the Cheongjin-Onseong section. A broad-gauge mixed track (with four standard rails) runs from Russia to Cheongjin. The distance from Cheongjin to other major border stations is as follows: 146 km to Namnyang, 96 km for to Sambong and 120 km for Tumen River. As Cheongjin port handles freight from China to Japan, it may become a foothold for international multi-transport.

Cheongjin's total land area is  $1,013,750 \text{ m}^3$  (east port:  $192,500 \text{ m}^3$ , west port:  $821,250 \text{ m}^3$ ) and the distance from anchorage is 1.8 knots (3,334 m) for the east port and 1-2 knots (1,852-3,704 m) for the west port. Its total freight handling capacity is reported to be 8 million tons, but in order to fulfill such handling capacity, the modernization of facilities is necessary. The current capacity is estimated to be around 3-3.5 million tons.

(2) Najin port: The Japanese constructed Najin port, located in Najin of North Hamgyeong province, in 1938. Najin port hasan area of 38ha and its total storage facilities are 20.3ha, including a 2.8-ha storage area and a 17.7ha cargo stacking area. There is a 16 km line running to the port with an 11.7km broad-gauge rail-the same guage as Russia's railway. The Soviet Union used Najin exclusively from the beginning of the socialist regime until 1974, when it was converted into a trade port. Najin port has three wharves and 10 berths. The wharves were constructed with steel and concrete. Water depth is at 9.7 m and 10,000-ton vessels can come alongside the berths. The annual loading ability of Najin port is 3 million tons, but 0.11 million tons is actually handled.

North Korea has divided its Najin port development plan into two stages. The first stage is to increase loading capacity by 10 million tons by modernizing loading facilities, port service and storage facilities. The main goal is to increase the loading capacity of the first wharf to 1.2 million tons, the second wharf to 3.8 million tons and the third wharf to 5 million tons. The second stage is to construct wharves 4, 5, 6, 7 and build a 50 ha cargo stacking area, a 14 km train entrance track, a 2.7 ha storage area and a 700-m conveyer line. In addition, the mid-term plan is to build a

quay that allows the anchoring of 0.1-0.2 million ton vessels and obtain a total freight handling capacity of 20 million tons, 12 million tons of iron ore and coal, and 8 million tons of containers.

(3) Heungnam port: Heungnam port is located 20 km off southeast of Hamheung. The construction began in 1927 and finished in 1930. Compared to other ports, the geographical location and natural conditions of Heungnam port are favorable. Geographically, it is free from wind and waves, and the harbor area is fairly large. It is the best port on the eastern coastline, with the tidal range of only about 30 cm. The anchorage site is located around 10 knots from the southeast area of the port.

Heungnam port has four quays, and three 10,000 ton freighters and two 4,000ton freighters can anchor there simultaneously. There are five cranes (large 10 ton cranes and small 2 ton cranes) in the quays and a comparatively high number of small loading machines. The total area of the port is 0.2 million m<sup>2</sup> with three storage areas, a 25,000 m<sup>2</sup> cargo stacking area on cement floor and two private rail lines. Major exports from this port are magnesium, fertilizer, cement, steel and machinery, with imports of mostly light industrial products from Russia.

(4) Haeju port: Haeju port is located in the southwest of Haeju of South Hwanghae province and 200 km off Incheon port. This is a newly developed foreign trade port opened in September 1973. This port has one 300 m quay. The water depth is 12 m at high tide and 7 m at low tide. The waves in the anchoring basin are rough and the wind is strong, two bad conditions for anchorage (anchors move easily under the sand). Haeju port has two 10 ton quay cranes, three 2 ton quay cranes and one cargo stacking area. In addition, a private rail is directly connected to the quay. The major freight handled at this port is cement.

(5) Songnim port: Songnim port is located to the northeast of Nampo port: the depth of water near the port is 18 m and around the middle it is 23 m. The depth of water at low tide is 9 m and 15 m for the central route, and while 0.1 million ton vessels can drop anchor, they are affected by the tide. There are three quays at Songnim port. One is a quay exclusively for raw steel and the other one is a quay exclusively for oil where 10,000 ton vessels can anchor. North Korea plans to develop this port as a raw material trade port, as 20,000 ton vessels can enter at high tide. There are two cranes at this port, one of which can handle loads of up to 18 tons. As for port facilities, there are three 1,000 ton crude oil tanks, one 5,000 ton crude oil tank and three oil pipelines.

(6) Nampo port: Nampo port is located 70 m southwest of Pyongyang at the lower part of the Daedong River. The tidal range of the port is 1.6-6.3 m, and the depth of water is 12-13.5 m at high tide. It is the biggest international trade port on North Korea's west coast. Nampo port is divided into east and west quays. Both quays are concrete straight embankments. The east quay is about 300 m long and the water depth is 5.3-8.9m at low tide, while the west quay is 250 m, and the depth of water at low tide is 7 m. Mostly foreign ships are anchored at this port.

Nampo port has nine quays and five anchorages; three 10,000 ton freighters and two 3,000-ton freighters can anchor at the same time. There is a coal quay at the east end of the port, with a maximum water depth of 10 m, allowing the anchorage of 10,000-ton freighters. Major handled freight items are anthracite, cement, steel, tractors, various mechanical equipment, light industrial products and agricultural products.

During the implementation of the second Seven-Year Plan, North Korea carried out a full-scale expansion of Nampo port; upon harbor dredging, all the companies in the port were moved elsewhere and breakwaters were built from the south lighthouse of the east quay along the river to the coal quay in the east. The cargo stacking area was also expanded. A quay exclusively for grains was constructed on an island near Nampo port and a modern quay was built in Yongnam village, 8 km off Nampo port. The water level was raised by building a large embankment at Daedong River, that allowed the direct entrance of vessels into Pyongyang.

Name	Quay extension(m)	Major equipments	Major equipments		
Cheongjin	5.270	15-ton cranes	- Facility and equipment enhancement in 1974		
Cheoligjin	5,270	15-1011 chantes	- Intermediary trade of China with Japan in 1983		
Houngrom	Heungnam 1.630 10-ton general and - H		- Has 10-ton gantry cranes		
Heungnam	1,050	gantry cranes	- Opened in 1960 as trade port		
Najin	2,280	5 to 15-ton cranes	- Opened as trade port in 1974		
Wonsan	2,250		- Opened as trade port in1976		
w onsan		-	- Currently used for military purposes		
Nome	1.890	5-ton cranes,	- Connects Pyongyang with highway electric trains		
Nampo	1,890	maritime cranes	- East port is used as a quay for coal		
Haeju	1,350	10-ton cranes	- Opened as trade port in 1974		
Con continu	700	18-ton cranes	- Opened as trade port in 1975		
Songnim	/00	10-1011 Cranes	- Exclusive quay for Songnim Steel Mill		
Sonbong	600		- Developed as oil import port		

<Table 3.16> Facilities at Major Trade Ports in North Korea

Source: Lloyd (1996). Ports of the World.

# 2. Problems in North Korea's SOC

The paramount problems in North Korea's SOC are its obsolescence due to a lack of proper maintenance and repair's for facilities, as well as the deterioration of economic efficiency because of low operating levels. The problems in the SOC sectors are further expanded on below.

## A. Electricity

The actual operating rate of North Korea's hydroelectric power plants, including the hydrosphere of Yalu River and Tumen River, is at about 20 percent due to outdated power facilities and frequent breakdowns. In particular, since power plants in Hamgyeong province were constructed during the Japanese occupation, most of them are outdated, resulting in low power-generating capacity.

The power produced in the Yalu River hydrosphere is supplied to the industrial areas of Pyongyang, Nampo, Gaeseong and Sinuiju areas, which are also densely populated regions. If the energy demand from these regions is not met on time, the consequences would be tremendous for North Korea's industries. Therefore, it is necessary to develop new power resources and repair existing power generation facilities along the Yalu River, that are currently managed jointly by North Korea and China. If necessary, it is recommended that neighboring countries participate in the repair and improvement of facilities and have the right to sell electricity according to investment proportions.

North Korea's thermal power plants use coal as fuel, but the supply of coal is not efficient because of transport bottlenecks and outdated mining equipment. The breakdown rate of equipments is high and the overuse of aged equipment results in declining power generation. Since most of the thermal plants in North Korea were built with the Russian, the repair and improvement of the facilities could be carried out by a consortium of relevant foreign countries, including Russia (power generator and wiring by Russia, supply of equipment parts and construction by South Korea, and the supply of labor and civil construction of general power plants by North Korea).

## B. Railway

The parts of the Pyeongeui, Pyeongbu and Pyeongna railways that would be linked to the now disconnected Trans-Korea Railway (Gyungui line) need to be repaired immediately. Investment priority should be given to maintaining Manpo line, which connects with China and Russia and the Pyeongnam line, which connects Pyongyang with Nampo. For these railways, a gradual development plan should be made according to the analysis of freight volume trends and the parts of the line that need to be upgraded from single to double tracks(electric single tracks need to become electric double tracks). Immediate attention should be given to making Pyeongeui and Pyeongbu railway double-tracked. Along with the recommendations above, the establishment of new traffic information system will facilitate improvements to communication and signal systems, the transfer speed of freight and an overall reduction of empty carriages.

# C. Road

The six disconnected roads between South and North Korea should be restored, and the Najin-Wonjeong, Pyongyang-Gaeseong and Pyongyang-Wonsan roads, as well as the supplementary roads connecting the Cheongjin, Wonsan, Nampo, Haeju and Najin ports, should be upgraded and improved.

Along the yellow sea, the Gaeseong-Pyongyang Highway and Pyongyang-Anju Highway need to be improved. The level I parts of the Anju-Sinuiju route should be upgraded to two lanes on at least one direction. For the East Sea group of roads, Mt. Geumgang-Wonsan Highway should be maintained and the existing roads in the Wonsan-Onseong section should be expanded into a highway. For the group of roads moring east-west across the country, the Pyongyang-Wonsan Highway should be expanded. In the Northern inland area, the Anju-Heuicheon and Heuicheon-Manpo routes should be paved and maintained.

## **D.** Port

The most urgent task involving the ports in North Korea is the improvement of facilities to expand harbor capacity. Therefore, in the short run, establishing and dredging harbor facilities and creating an operation system are strongly recommended. Particularly for trade ports, container cargo equipment (mobile harbor cranes, top-lifters, etc.) and multipurpose quay cargo equipments (multipurpose cranes, fork trucks, etc) need to be established. Since low water depths limit the entrance of large ships, large-scale dredging is needed. Naturally, in the long run, North Korea needs to improve the capability of its major trade ports and develop specialized ports. In addition, ports exclusively for large container ships should be developed for foreign trade and used as a base for the intermediate handling of Russian and Chinese freight.

# References

\* In Korean

- Ahn, Byungmin and Jun, Ilsoo et al. 1998. *Comprehensive Traffic Network in Preparation of Unification*. Seoul: The Korea Transport Institute.
- Bang, Wanjoo. 1988. Survey of Chosun. Pyongyang: Encyclopedia Press.
- Choi, Woonsuk. 1992. National Land Management and Building National Economy in Socialist Society. Pyongyang: The North Korean Academy of Social Science Press.
- Kim, Jungi, Ri Chunggwan and Oh Muil. 1991. *History of Transport in Chosun 3* (*Automobile transport*). Pyeongyang: Industrial Press.
- Kim, Suyeon. 1992. *Great Changes in National Land Management Project*. Pyeongyang: The North Korean Academy of Social Science Press.
- The Korea Development Bank. 2000. *Industries in North Korea*. Seoul: Taeyang Press.
- The Korean Ministry of Unification. Weekly Data on North Korea. Various issues.
- The Korean Worker's Party Press. *Collection of Kim Il-Sung's Writings*. Various volumes.
- The North Korean Academy of Social Science. 1985. Dictionary of Economy.
- Park, Manhyup. 1988. *History of Transport in Chosun 2 (Railway Transportation)*, Pyongyang: Railway Press.
- Research Institute of Geographical Studies of the North Korean Academy of Social Science. *Compendium of Geography of North Korea*. Vol. 20: Transport Geography.
- The South Korean National Statistics Office. 1999. Comparison of Social and Economic Aspects of South and North Korea.
- Timonin, Alexander. 1996. "Forecast of Economic Cooperation among South Korea, North Korea, and Russia" in *Tongil-Kyongjae (Unified Economy)*. Volume 13. p. 119-125. Seoul: Hyundai Research Economic Institute.

\*\* In Japanese

The Japanese Association of Civil Engineering. 1995. A Study of Social Overhead Capital. Tokyo: the Economic Research Institute.

\*\*\* In English

LLP Limited. 1997. Lloyd's Ports of the World.

# **IV. The Agricultural Sector**

# Woon-Keun Kim

# 1. Characteristics of North Korea's Agricultural Structure

As North Korea maintains a socialist economy, the production and technological levels of its agriculture are low due to lack of investment that arose from the disproportionate emphasis on heavy industry following the introduction of a policy to develop the economy in tandem with the military." This excessive focus on heavy industries has produced long-term structural imbalances between heavy and light industries and between industry and agriculture, leading to negative growth in both light industry and agriculture in later years. Moreover, low material incentives for farmers brought about by the state monopoly of agricultural products and the cooperative ownership of farms led to a decrease in farming productivity and resulted in the severe food shortage of the mid-1990s, which was compounded by an inadequate supplies of agricultural input and mismanagement.

North Korea's agricultural structure can be seen in terms of its production structure and technological level. The total area of North Korea's farmland is about 1.8 million ha, some 15 percent of North Korea's total land area of this farmland, 1.4 million ha is used for crop cultivation and the rest is orchards and mulberry fields. About 170,000 ha of the orchards, mulberry fields and cornfields are terraced with 16-degree slopes, resulting in lower production levels. The average altitude of the North Korean farmland is relatively higher than that of South Korea, and the climate is somewhat unfavorable for crop production since 52 percent of land in North Korea is located at an altitude of more than 400 m and the average temperature is quite low. Recently, there have been frequent natural disasters, including floods, decreased temperatures and hailstorms. North Korea's average growing season is 170 days in Pyongyang and North Hwanghae province, 173 days in North Pyeongan province, 180 days in North Hamgyeong province and 196 days in Gangwon province.

On average, cooperative farms are made up of 300 households, covering an area of around 495 ha. There are 5-10 working groups in a co-operative farm, and each working group has 50-100 farmers. The working groups are formed three or four subgroups, consisting of 20-25 farmers. The recent execution of the so-called subgroup contract system is considered an early stage of the reform process for the North Korean agricultural sector. The system gives incentives to individual farmers in smaller subgroups by allowing them to take care of the surplus production. The subgroup contract system is a modified form of the subgroup management system of the past. Each subgroup of 20-25 farmers is further broken down into five-seven farmers. The reason behind reducing the size of the working unit in recent years was to improve efficiency and productivity in the agricultural unit.

The material incentives in the subgroup contract system are differ from the past in that the surplus production exceeding the target set by the government is given to the subgroups to use at their disposal. The 1996 production target, for example, was decided by calculating the mean of the average harvest for the previous three years (1993-1995) for each subgroup and the average harvest for the 10 years before 1993. This policy shift was needed to increase agricultural production through reinforcing the subgroup contract system and motivating farmers.

Nevertheless, the question is whether the subgroup contract system will be successful. At first glance, it looks like farm management authority is tranferring from state to individuals. However, in actuality it is only reducing the number of farmers in each working unit. The economic difficulties have continued, and there is limited supply of fertilizers and pesticides necessary for production. Such passive reform in the agricultural sector will only temporarily assuage problems for farmers, and it is doubtful whether it will be efficient in the long run. The operation of all co-operative farms is based on a self-supporting accounting system and yearly production plans are assigned a year ahead. There are many cases of false reporting to the authorities when annual production assignments were not fulfilled. It is said that the difference between the actual inventory at the production base and the inventory reported to the central government is substantial. Since the government uses the data they receive, regardless of its veracity, the statistics on agricultural production announced by North Korea seem twice the actual amount.

Meanwhile, North Korea's agricultural infrastructure is considerably outdated. Agricultural collectivization in North Korea began after the Korean War. Agriculture extended as the large-scale farming system based on the collectivization started. The irrigation rate is 100 percent for rice paddies and more than 70 percent for non-paddy fields. Most agricultural facilities were built in the 1960s. The construction of the 100 km-long irrigation system for water supply has been completed (a 40 km

waterway canal and a 60 km irrigation canal) and additional construction of a 60 km irrigation canal is being pursued. Since there are many mountainous areas, North Korea is trying to supply water through constructing some 800,000 artificial lakes, 1,700 reservoirs and 23,700 water pump stations. However, agricultural facilities such as drainage facilities built in the early 1960s are almost worn out after 30 years; moreover, it seems that all basic facilities of granaries in the west coast area were ruined by flood in the mid-1990s.

In addition, the development of 300,000 ha of reclaimed land that was pursued for farmland expansion reportedly resulted in only 60,000-70,000 ha of farmland. North Korea attempted to develop terraced fields on hills with a 30 degree slope as part of the New Land Development Movement. To resolve food shortages, farmers have long been secretly cultivating unauthorized farmland on hills called "new upland," but damaged forests soon caused erosion and many of there upland farms were lost to floods or landslides.

Although North Korea enjoyed some advantages from large-scale farming through the introduction of the collective farm system, large-scale farming in a socialist society has created relatively more negative side effects. Farming machinery appropriate for North Korea's geographical features is not being used and it is difficult to utilize the labor force. Therefore, in the busy farming season, students and soldiers are mobilized to help farming. Managers in co-operative farms generally have both experience and expertise in operating large farms.

In the case of farming resources, most farmlands in North Korea are either polluted or acidified due to excessive use of fertilizers and pesticides. The excessive fertilizers and pesticides polluted the soil and consequently agricultural productivity fell to extremely low levels. In the 1980s it was publicized that chemical fertilization totaled 2 tons per ha. However, this is doubtful when comparing North Korea's fertilizer usuage to the 434 kg of South Korea in 1995, the 354 kg of Japan in 1994, the 97 kg of the United States, the 74 kg of the Philippines and the 39 kg of Thailand. It is obvious that North Korea's fertilizer use is exaggerated.

The supply of fertilizers, pesticides and farming machines is not sufficient due to the falling rate of manufacturing operation with the declining economy. Although the operating rate of fertilizer manufacturers has increased recently, fertilizer production amounts to only 30 percent of the total demand. Moreover, the fertilizer available, including the fertilizer received in assistance from the international community, is given mostly to the west coast granaries and state-run farms near Pyongyang. The energy shortage is partially responsible for the limited supply of fertilizer. Although organic fertilizers can be an alternative for chemicals, little has been done to improve soil quality through organic fertilizers because of shortages in limestone and compost, in addition to deforestation in the 1990s and the discontinuation of animal husbandry. In some areas, intensive farming and frequent floods have lowered the soil fertility.

Although it was thought that the use of tractors was quite high until the 1980s, there has been a serious lack of small-scale farming machinery in the mountains. The energy crisis has dramatically reduced the use of farming machinery, causing most farming facilities and machinery to become obsolete.

Although North Korea's agricultural technology has been on a similar level to other developing countries, the *Juche* farming methods have hindered its effectiveness in farming. Due to its geographic position, North Korea has a short growing season for rice. Moreover, using the given rice sowing methods has negatively affected the maturity of rice while decreasing the rice production. To overcome such climatic disadvantages, North Korea has developed several methods of rice farming that enables the Northern part of the Korean peninsula to start rice seeding almost a month earlier than the Southern part to avoid harvest during the frost season. North Korea also tried to overcome such disadvantageous weather conditions through improving varieties of corn and other crops. Nonetheless, from the late 1980s, grain production has continued to decrease due to the shortage of material input and exhaustion and acidification of soil.

# 2. Grain Production in North Korea

North Korea's agricultural development came to an impasse in the late 1980s and the food situation has seriously worsened after 1993. In particular, famine claimed many lives in North Korea during the mid-1990s. This clearly shows that North Korea's food production capacity has come to its limit. After the Korean War, North Korea began increasing investment in the agricultural sector, while producing agricultural machinery and seeking for economy of scale through agricultural collectivization. Basic farming infrastructure such as irrigation system was largely built during the 1960s and arable lands were readjusted during the same period. However, agricultural investment needed to be made on a continuous basis and North Korea faced difficulties in mobilizing investment resources from the late 1980s.

Along with the maintenance of the collective farm system, the declining economic situations mainly caused food shortages in the 1990s. North Korea's economic recession meant suspension of material supplies, including fuel, basic fertilizers, pesticides, farming machinery and seeds, necessary for grain production. To make matters worse, frequent natural disasters including hailstorms, floods and droughts during the mid-1990s inflicted serious damages to grain production.

Since the inception of the socialist regime, resolving the food shortage has been on top of North Korea's national agenda. As the political slogan "Rice is Communism" illustrates, mitigating the food problem is for more than just the development of agriculture, but the key to the successful building of a socialist nation. Consequently, North Korea's agricultural policy has focused on increasing food production. When we look at North Korea's economic development plans for the past five decades, this becomes more obvious. Fifty years of annual agricultural policy-related documents show that North Korea has concentrated on increasing grain production. One of the first policies that the North Korean regime implemented to increase agricultural output was land reform in the late 1940s. At the beginning of its regime, North Korea had to deal with the economic dichotomy set during the Japanese occupation paired with the relatively underdeveloped agricultural sector in the Northern region (when compared with the South). As a way of motivating farmers, the North Korean government carried out land reform in march 1946, confiscating and redistributing all of the land. By redistributing land to land-poor farmers, landless tenants and farm laborers, the government hoped to boost agricultural production (H.J. Jeon 1994, 80).

After the Korean War (1950-53), North Korea focused on increasing arable land and improving soil quality through socialization (collectivization) of the agricultural sector. As farming land had previously been concentrated in the South, North Korea agriculture to ensure self-reliant food production and agricultural productivity. Thus, in the process of rehabilitating the basic agricultural infrastructure, North Korea built a large-scale irrigation system to change infertile soil into productive land and tried to obtain new arable land by reclaiming tidelands on the west coast and restoring plowed land damaged by road construction.1 Simultaneously, the government moved to improve seed quality and restore devastated farming land. What deserves notice was the fact that North Korea regarded the expansion of arable land as an important axis for food policy along with the development of agricultural technology to increase food supply. North Korea's policy related to increased food production was the Five Natural Rebuilding Projects to Achieve Ten Million Tons of Grain.<sup>2</sup> This project arose from the realization that the agricultural technological revolution and intensive farming of the Six-Year Plan (1971-1976) were not enough to meet food production goals in the early 1970s.

<sup>&</sup>lt;sup>1</sup> Kim Il-Sung. 1980. *Collection of Kim Il-Sung's Writings 8* (Pyongyang: Korean Workers' Party Press). pp. 30-31.

<sup>&</sup>lt;sup>2</sup> The principal targets of this project was as follow: First, to build a field irrigation system for 150,000 ha in the first year and 100,000-150,000 ha in the following year, up to 400,000 ha within three years. Second, to make 200,000 ha of terraced fields on land with more than 16-degree slope and irrigation to increase production. Third, to reorganize the boundaries around farming land, waterways and railways acquiring at least 99 h of land per county, which would add up to 99,000 ha nationwide. Fourth, to promote the tideland reclamation project as the most effective method to increase arable land. Fifth, to build banks along rivers and drainage system to reduce damages from flood.

Towards the end of the 1970s, North Korea pursued the modernization and industrialization of agriculture, along with scientific approaches to agriculture and concentration on specific crops. The government began to focus on the Juche farming method, best explained as the concept of selecting the right timing and right place for farming, and urged the application of the Juche farming method throughout agriculture. North Korea set out its Four Natural Rebuilding Projects in the early 1980s, which was a more specific and realistic version of the Five Natural Rebuilding Projects. This project was designed to acquire enough water for agricultural use along the west coast by building the Taecheon power plants (a total of 2.66 million kW) around the Daeryeong River in North Pyeongan Province, forming 330,000 hectare of reclaimed land and expanding arable land in the mountains with a slope of more than 15 degrees. By completing the construction of the Taecheon power plant in the late 1980s, North Korea construction of waterways to supply water to reclaimed land in the West coast and a circular irrigation system between different regions. Continuous expansions of farmland and improvements to the irrigation systems were made to increase agricultural production. Up until 1993, the use of machinery and chemical products in farming was promoted to achieve the goal of producing 15 million tons of grain, one of the Ten Goals of Building a Socialist Economy. Expanding of arable land achieved some success until the early 1990s. The building of the West Coast Floodgate as part of the Daedong River Development Plan is believed to have secured enough water for farming in the west coast area. However, the reclamation of 300,000 ha of farming land and development of 200,000 ha of new farming land ended up in failure.

The seriousness of food shortages deepened in the mid-1990s after the failure of the third Seven-Year Plan in 1993 and the management system was changed to the new subgroup management system, which was fashioned after the Chinese model.<sup>3</sup> Although North Korea claims that the new subgroup management system dramatically increased a unit's production of food, the actual effect is questionable (without increased supply of farming materials).

Although North Korea has made various attempts to increase total food production in the past, it failed to do so because of the lack of investment in the agricultural sector. Moreover, too much emphasis was put on increasing the food supply through terraced field development and the New Land Development. These attempts devastated large portions of the North Korean forests, resulted in frequent floods and droughts since 1993. These natural disasters consequently broke down the agricultural foundation that North Korea had developed over several decades.

<sup>&</sup>lt;sup>3</sup> Each subgroup consisted of five to eight members of one family and relatives, with lowered production goals and the right to dispose of surplus production.

The status of grain production in North Korea is now a focal point of the international community. According to North Korea's announcement, it ha 2 million ha of arable land. However, in actuality, it appears that there is only 1.8 million ha. Of the 1.8 million ha, the land used for food cultivation accounts for 1.41 million ha, rice paddies taking up 570,000-600,000 ha and 496,000 ha for corn-fields. Potato cultivation takes 188,000 ha; whereas barley and wheat, which are planted twice a year, take 93,000 ha and various other crops 62,000 ha.

North Korea's food problem only became serious at the end of the 1980s. At the time, the somewhat stable economic conditions allowed North Korea to trade agricultural products with foreign countries. Meanwhile, North Korea's trade pattern was not the purchase of food through foreign exchange, but rather the spot export of expensive rice, which in return imported corn and flour (at one-third of the international price in the form of compensation trade). In short, North Korea annually exported 200,000-300,000 tons of rice and imported 600,000-900,000 tons of corn and flour. Food imports continued to increase after a turning point in 1987 and, in the 1990s, imports (no longer exercised through barter-trade) increased drastically. This change was the result of the collapse of the socialist bloc and a drastic cut in China's food aid to North Korea after mid-1994.

When considering the figures above, it is very simple to track at what point North Korea's food shortage problem emerged. The food problem became serious in the early 1990s. Moreover, due to the inaccuracy of food-related statistics, some problems arose in organizing food aid from international communities to North Korea. Even staff at international organizations, including the World Food Program (WFP) and UN Department of Humanitarian Affairs did not have access to the actual data. Instead, they seem to rely upon the somewhat exaggerated figures that North Korea's food situation) could not be conducted in all regions and research was limited to the specific areas that the government wanted to show. This could be the main reason why accurate figures could not be obtained. Recently, the WFP selected North and South Hwanghae provinces and North and South Pyeongan provinces - North Korea' granaries - as sample areas to make closer estimates of the crop production status in North Korea.

North Korea's crop production is estimated at about 4-4.5 million tons annually prior to the end of the 1980s, average production has fallen continually from 1990. The WFP estimate of North Korea's crop production in 2000 was 2.92 million tons. This figure is somewhat higher than North Korea's worst food producing period of 1995-1997. It is also 0.92 million tons less than estimated crop production announced by the WFP in October 2002, which was 3.84 million tons. Such a drastic decrease in crop production in 2000 seems to have been caused by unexpected heavy rain and flooding during the harvest season, which resulted in serious

## <Table 4.1> Trends in North Korea's Grain Trade

(Unit: 1,000 tons)

		Exports			Net import		
	Rice	Corn	Total	Wheat/ Flour	Other Cereals	Total	
1965	43.5	-	43.5	129.7	100.5	230.2	186.7
1966	72.1	18.0	90.1	433.8	-	433.8	343.7
1967	125.4	6.3	131.7	524.2	-	524.2	392.5
1968	59.6	5.4	65.0	148.7	-	148.7	83.7
1969	96.2	17.4	113.6	225.7	-	225.7	112.1
1970	88.6	21.9	110.5	260.7	-	260.7	150.2
1971	103.1	9.3	112.4	276.0	-	276.0	163.6
1972	93.0	8.0	101.0	407.7	9.9	417.6	316.6
1973	111.0	119.0	230.0	1,488.7	9.3	1,498.0	1,268.0
1974	1,107.0	70.0	1,177.0	1,370.3	9.7	1,380.0	203.0
1975	132.0	15.0	147.0	299.0	-	299.0	152.0
1976	173.0	96.0	269.0	278.0	-	278.0	9.0
1977	280.0	300.0	580.0	500.0	-	500.0	-80
1978	500.0	200.0	700.0	405.6	-	405.6	-294.4
1979	450.0	200.0	650.0	525.6	-	525.6	-124.4
1980	300.0	-	300.0	510.0	-	510.0	210.0
1981	300.0	-	300.0	720.0	-	720.0	420.0
1982	300.0	-	300.0	585.0	-	585.0	285.0
1983	120.0	-	120.0	350.0	-	350.0	230.0
1984	80.0	-	80.0	200.0	-	200.0	120.0
1985	200.0	-	200.0	200.0	-	200.0	-
1986	200.0	-	200.0	270.0	-	270.0	70.0
1987	225.0	-	225.0	610.0	-	610.0	385.0
1988	200.0	-	200.0	630.0	270.3 <sup>1)</sup>	900.3	700.3
1989	90.0	-	90.0	350.0	431.0 <sup>2)</sup>	781.0	691.0
1990	43.0	-	43.0	370.0	534.0 <sup>3)</sup>	904.0	861.0
1991	11.0	-	11.0	950.0	332.04)	1,290.0	1,269.0
1992	-	-	-	0	-	830	830
1993	-	-	-	0	-	1,093	1,093
1994	-	-	-	0	-	490	490
1995	-	-	-	0	-	962	962
1996	-	-	-	0	-	1,050	1,050
1997	-	-	-	0	-	80-100	80-100
1998	-	-	-	0	-	1,054	1,054
1999	-	-	-	0	-	942	942
2000	-	-	-	0	-	670	670
2001	-	-	-	0	-	1,440	1,440
2002	-	-	-	0	-	919	919

Notes: 1) Corn

2) 130,000 tons of rice, 54,000 tons of barley and 296,000 tons of corn.

3) 270,000 tons of rice and 264,000 tons of corn.

4) 112,000 tons of rice and 220,000 tons of corn.

5) In the total of import, rice and corn make up the majority from 1995 and the annual import of 100,000-200,000 tons by North Korea is included. The rest is food aid from the international community.

Sources: UN FAO Yearbook 1960-2001, UN Commodity Trade Statistics (1976), Daily data (released by the Central Information Agency) and Maritime customs statistics of China (annual issues).

damage to the east coast regions of Gangwon province and Hamgyeong province

The crop production of 2002 (3.84 million tons) was a major increase from 1995 – most likely the result of the relatively warm winter climate compared to previous years. During the winter of 2002, there were average snowfalls and the temperature was moderate, thus creating favorable conditions. Nonetheless, the crop production estimates of the FAO/WFP special report in July 2001 were only an early outlook, so the final evaluation of crop production in October would be much lower since several typhoons and floods hit the country after July.

This poses the question: How much food does North Korea need? North Korea's population is almost half the size of South Korea, so if North Korea's economic status were similar to South Korea's, its crop consumption would amount to 10 million tons. When considering the fact that North Korea's current economic situation is equivalent to South Korea's economic status during the 1960s, food consumption in North Korea can be estimated at about 6-6.5 million tons. As the Table 4.2 shows, the difference in production and consumption (the amount of food shortage) is about 2 million tons annually. If the international food aid stops, food shortages are sure to increase.

The grain year of 2002/03 (from November 1, 2002 to the harvest period in October 2003) seems to map out the projection made by the WFP in July 2001, which was 3.6 billion tons. The best approximation for 2003 is expected to be about 3.8 million tons due to favorable weather. The food shortage in 2003 is expected to be around 2 million tons, excluding the annual international food aid of 1.08 million tons of crop. These figures are based on the assumption that North Koreas' daily food consumption per person is about 518g per year. North Korea's food consumption per person determined by FAO/WFP is 458g a year, which is much less than the above figure. When this figure is converted, the annual crop consumption per person is about 150-160kg. Then, the quantities to be consumed per person per year normally is 201-237 kg, which is less than South Korea's consumption of 207.3kg in 1975.

North Korea's current food shortage is a structural problem caused by shortcomings of the collective farm system, so unless it is resolved, the food situation will remain grim. Recently, North Korea tried cultivating double-crops and planting spring barley and spring wheat extensively to resolve the food shortage. Meanwhile, with changes in economic management systems in July 2002 combined with the announcement of the development plan for the Sinuiju Special Economic Zone, North Korea is expected to take reform measures in the agricultural sector in order to break from the food crisis. The initial agriculture reform will probably take place in specific regions. In other words, it will either partially apply the Chinese model of agricultural reform in remote areas of the mountains or be specifically designated to regions in North Korea. After some experimental periods, this may be extended

Year	Total	Total	Import	Shortage	Self-sufficient	
Tear	Consumption (A)	Production (B)	(C)	(A (B+C))	(B+C)/A	B/A
91/92	5,762	4,427	1,290	∆45	99.2	76.8
92/93	5,894	3,898	830	∆1,166	80.2	67.7
93/94	6,065	2,923	1,093	△2,049	66.2	48.2
94/95	6,156	3,768	490	△1,898	69.2	61.2
95/96	6,244	2,606	962	△2,656	57.3	41.9
96/97	6,061-6,226	2,447-2,817	1,132	△2,482	59.0	40.3
07/00	6,188	2,559	1,054	△2,575	58.4	41.4
97/98	(4,614)	(2,663)	-	(△897)	(80.6)	(57.7)
98/99	6,311	3,138	942	△2,231	64.6	49.7
	(4,823)	(3,783)	-	(∆98)	(97.9)	(78.4
00/00	6,569	3,406	670	△2,493	62.0	51.8
99/00	(4,751)	(3,420)	-	(_661)	(86.1)	(72.0)
00/01	6,290	3,000	1,440	△1,850	70.6	47.7
00/01	(4,785)	(2,920)	-	(△772)	(83.9)	(53.8
01/02	6,290	2,700	1,301	△2,289	63.6	42.9
	(4,957)	(3,656)	-	(-)	(-)	(73.8
02/02	6,132	3,000	1,084	△2,048	66.6	48.9
02/03	(4,921)	(3,837)	-	(-)	(-)	(78.0)

#### <Table 4.2> North Korea's Food Supply by Year

(Unit: 1,000 tons, %)

Notes: 1) Figures in parentheses are FAO/WFP estimates.

2) Although imports were only realized when North Korea had sufficient purchasing power based on economic growth, the reality is that most of North Korea's imports were rooted in food assistance from international communities.

Sources: 1) Kim, Woon-Keun. North Korea's Crop Production Estimation. Annual Data from Korea Rural Economic Institute.

## further throughout North Korea.

North Korea's agricultural reform measures will not succeed if the state-ownership of land and government intervention in farm management continue. Thus, in order to achieve the expected results, rearranging the ownership structure of the agricultural sector will become the primary objective of reform. Along with internal reform, North Korea needs to receive food aid and technical cooperation in rehabilitating its agricultural sector from South Korea, the United States, Japan, China and EU nations.

Since North Korea faces impediments to resolving the food and economic crisis on its own, various projects are currently being developed and launched by international organizations and NGOs (IFAD, UNDP and FAO) to recover North Korea's agricultural production. Although these projects are region-specific, they have yet to be successful. The problems with North Korea's agriculture, especially the food shortage, should be solved gradually under long-term plans. Inter-Korean cooperation in the agricultural sector is necessary in order to increase food production and efficiency.

# 3. The Agricultural Management System and Production Structure

In the agricultural sector, a County Cooperative Farm Management Committee and a Provincial Farm Management Committee in co-operation with the Central State Agricultural Committee manage each unit in each village cooperative. The National Planning Commission, in charge of nationwide agricultural planning, is the major authority unit that controls and manages agricultural activities throughout the country. The County Farm Management Committee provides farmers with professional guidance. It acts as a farm enterprise whose function is to control and operate all co-operative farms within each county and all state enterprises in the agricultural sector.

The Ministry of Agriculture directly controls Provincial Farm Accounting Committees, state-run farms and ranches and state enterprises in the agricultural sector. Each province and city/county has an agricultural committee that manages production plans and controls the management activities of collective farms, staterun farms and agricultural enterprises. Under the Provincial Farm Accounting Committee, there are 15-20 of County (gun) Farm Management Committees. The County Farm Management Committee was established in December 1961 according to Cabinet Resolution 157. Its original goal was to control the agricultural machinery factories and other agricultural facilities, which were owned and managed by the government, as a terminal part of the national agricultural organization. The Village (*ri/dong*) Committee acts as a systematic integrating organization between plans and machinery supplies, irrigation and seed supplies. Thus, the central and provincial superstructures are the supplier of the agricultural equipment, seeds and fertilizers that is necessary in farming to each farming unit. Each collective farm has a management committee, under which working groups are made into subgroups of five-eight farmers according to their specialty. North Korea regards this as a systematic approach to agriculture elevating the organic linkage between national ownership and collective ownership. Indeed, the County Farm Management Committee operates various workshops, assisting in the unitary planning projects of collective farms, technical training, labor administration, bookkeeping inspection, land reclamation and other construction works within the area.

After the establishment of the County Management Committee in 1961, the Provincial Farm Management Committee was formed in October 1962. It took activities that were previously managed by the Ministry of Agriculture. This approach seemed to recognize the growing importance of differences in farming. The change in the agricultural management rose as an alternative to overcome the shortcomings of the previous farming management due to lack of specialized knowledge the County People's Committee, which was in charge of agriculture until 1960. This change was represented by the *Chongsanri* method initiated by Kim Il-Sung in February 1960 in Chongsanri, Gangseo county.

Prior to the agricultural management system changed in 1960, North Korea had abolished *myun* (township) units and increased *ri* (village) units in late 1958. Cooperative farms were regrouped by *ri*. This was modeled after China's efforts to merge political and social sectors to promote the *hyang* (smallest) unit of production system. The integration of cooperative farms sought to create whole community-like organizations beyond economic dimensions. The first attribution is that a village committee's chairman would also be the head of a cooperative farm management committee, thus combining the administrative and productive elements. The second attribution is giving the comprehensive functions of production and consumption to co-operative farms by integrating all farmer organizations, such as consumer groups and credit unions within a cooperative farm. The third attribution is that cooperative farms provided education, cultural activities and welfare to communities and distribute food and agricultural supplies to each smaller unit and family. Therefore, reorganizing the management system at the county and provincial levels was a measure to increase the efficiency of collective farm management.

As Figure 4.1 shows, collective farms are comprised of working groups are further divided into subgroups. There are approximately 3,300 co-operative farms nationwide and an average 300 families cultivates about 500 ha of land. Moreover, there are five-10 working groups in a cooperative farm, and each working group has 50-100 farmers. The working groups used to have about three-four subgroups with 15-20 people in one subgroup. Recently, the number of farmers was reduced to five-eight. Each working group usually concentrates on cultivating one crop and working groups are classified into vegetable units, fruit tree units, crop units and industrial crop units according. Although one working group generally concentrates on one crop, occasionally some working groups grow two or more crops.

North Korea has classified farms into cooperative farms, state-run farms, and synthetic farms. Cooperative farms are run by using concerted labor and integrating the means of production. Cooperative farms are jointly owned and managed at the village level. However, the recent food shortages forced the government to come up with a breakthrough. Although the system of cooperative farms has been maintained, working groups are subdivided into smaller family and relative-oriented units in order to increase productivity. The recent shift of authority from the central government to the local governments is assumed to be a way of self-help because the government has come to its limits in food supply capability. On the other hand,

state-run farms are managed directly by the government and thus are relatively modern and specialized.

State-run farms are usually bigger than cooperative farms and have better equipment. The government owns them and they are run at the county level. Compared to cooperative farms, state-run farms have better supply of fertilizers, pesticides and farming machinery, which visibly results in higher productivity.

# 4. The Market System for Agricultural Products and the Distribution System

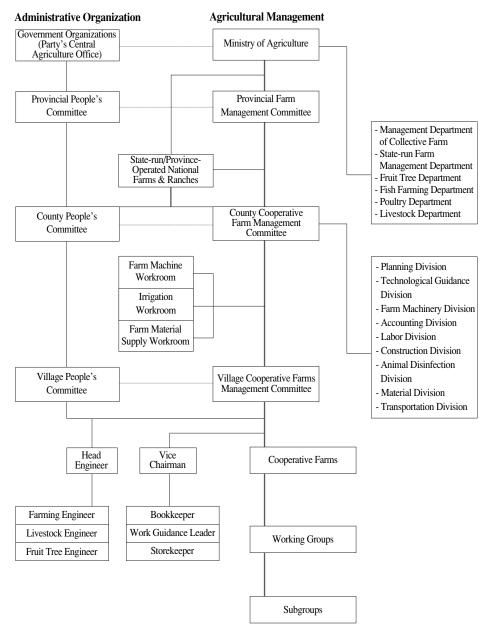
Up to this point, the paper has focussed on the management system controlling and operating the agricultural sector, agricultural management units and their different functions. How are the production, distribution and circulation of products managed under these different management units? The production goals is allocated to individual co-operative farms according to their size and type of crops. The production allocation of each farm used to be controlled by the central government, but recently unverified reports state that farms decide their own production and priorities.

With regard to agricultural production, individual farmers' performance is assessed and reported at the general working group meeting for the cooperative farm monthly and quarterly. The farm management committee adds the number of working days in one year and calculates the amount of product distribution. Production reports and statistics of settlement of work are submitted to the County Farm Management Committee and are reviewed closely by the members of the committee for approval.

The allocation of products for each farmer is the sum of total yield and cash earned, deducting costs, divided by the entire working days of all farmers. This is multiplied by the working days of each farm member. The deductions are costs of purchasing farming equipments, fuel, fertilizers, farm equipment lease, seeds, animal feed and social-cultural expenses. However, such allocation is a theoretical calculation and the real amount of allocation is believed to be much smaller. That is to say, any excess amount of production, other than the amount of daily necessary food, is sold to the government. In recent years, when the food deficit was exacerbated by the shortage of fertilizers, the allocated amounts have not met expectations. As the government has priority in purchasing products, the real amount of food allocated to farmers would be far less than they had the potential to receive.

North Korea argues that its distribution management system of agricultural products not only delivers agricultural products to consumers, but also diminishes the gap between urban and rural areas through trading agricultural equipments and agri-

## <Figure 4.1> North Korea's Agricultural Management System



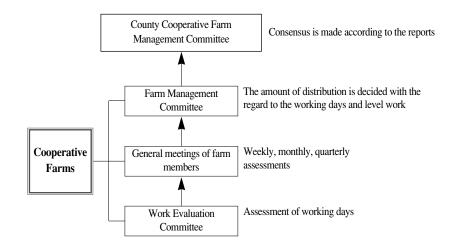
Source: National Unification Board (1986). Almanac of North Korea's Economy. p. 212, and Institute for Communist Bloc Studies (1971). Statistics of North Korea.

cultural products. It also has the political effect of connecting urban and rural dwellers in terms of ideology and culture, as private ownership has been completely abolished since August 1958 and every distributional function is controlled by the central authority

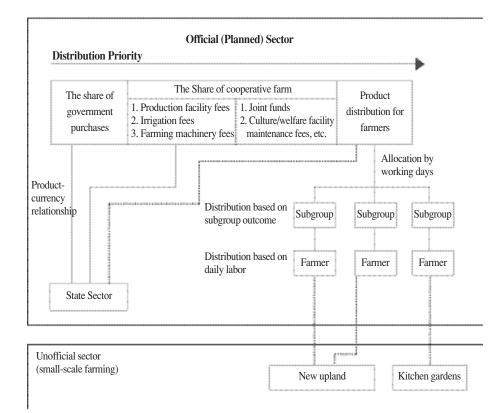
The commercial and distributory system separates the instructive and administrative functions and is organized under the principle of separating instruction and administration for wholesale and retail commerce. The central administration for wholesale commerce is aimed at ultimately directing the flow of products in the command of the state. As always, the National Planning Commission of the State Administration Council (the Cabinet) draws up all plans for the commercial and distribution sector, including the purchasing and administration of agricultural products.

Collective farms are in charge of all economic activities of farmers: production, distribution and consumption are executed under a single plan. The annual production goal is made one year in advance and if the quota has not been met, false reports are often made to the managing authority. There apears to be a significant difference between the amount of actual inventory and the amount reported to the central government.

The system of collective farm management has been changed from a single to dual system. The central planning authority determines the supply and demand of major crops, which are then executed passively by subordinate agencies at the county level or below. It means that the collective farm management committee



## <Figure 4.2> Product Distribution Procedures



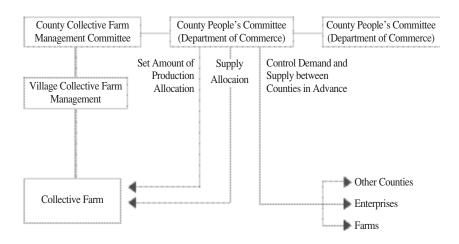
## <Figure 4.3> Agriculture Production and the Distribution Structure in North Korea

Source: Lee, Yon Ho (1996). South-North Korea Industrial Cooperation; New Challenges and Cooperative Measure. Presented in the Third Unification Economic Policy Seminar of October 1996.

Note: New upland is newly developed upland in hill or mountain area.

determines the supply and demand of major autumn crops in consultation with the Department of Commerce of the County People's Committee. Each collective farm determines product allocation after consulting with other collective farms in its county. The Department of Commerce checks the excess and deficiency of vegetables in nearby counties and deals with the excess and deficiency by controlling the demand and supply in advance at the planning stage.

Counties are supposed to meet their own demand of spring vegetables for condiments such as hot pepper, garlic and onions. The County People's Committee makes a supply contract with the Village Farm Management Committees after consulting with the County Farm Management Committee and collective farms executing the



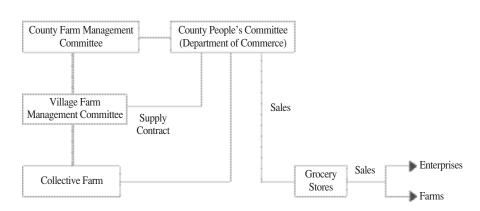
<Figure 4.4> The Production and Distribution Structure of Collective Farms

(Major Crops, Autumn Vegetables such as Radish and Chinese Cabbage)

contract. When the supply capacity of collective farms exceeds the demand of the County People's Committee, the surplus can be sold through the County People's Committee. The County People's Committee sells products from collective farms to grocery stores other counties and end-users such as enterprises and farms can buy products if they are short.

In the distribution system of agricultural products from collective farms, farmers can dispose of products other than major crops and autumn vegetables through farmers markets and grocery stores in each county. In particular, the surplus vegetables from kitchen gardens are mostly traded at farmers markets. The shortage of major crops such as rice and corn surfaced as a critical problem due to a decrease in production since the mid-1980s, ultimately the function of farmers market. As most arable land was used for corn cultivation, other crops and vegetables that were not deemed essential stood no chance of growing. Consequently, the absolute lack of subsidiary foods such as meats, vegetables and fruits further raised the demand for major crops.

Recently, North Korea's food supply situation has begun improving due to increases in food aid from the international community and fertilizer supply. Nevertheless, the food supply reaches only specific regions and certain classes, so small-sized cities and lower classes that actually need food are suffering the most from food shortages. In new economic measures taken in July 2002, the price read-justment and wage increase may prove to be more beneficial to farmers rather than non-farmers. This is because the government's purchasing price of agricultural



<Figure 4.6> The Production and Sales Structure of Collective Farms

(Condiments such as Hot Pepper and Garlic)

goods would increase by hundreds of times and farmers can sell products from their private garden at a relatively higher price. Such measures can stimulate agricultural production and more crops may be produced than before. Non-farmers may not be able to purchase food even if they can afford the price since farmers delay selling their goods so that they can receive higher prices at later dates. The importance of private economic activities is high for farmers now. Unless the state continues price controls and the distribution system, inflation will drastically accelerate. Although state functions have not been trenchant during the last decade due to the serious food shortages, the distribution function will be restored once the food crisis is somewhat resolved.

# References

\* In Korean

- Bang, Chan-Young. 1995. *The Democratic People's Republic of Korea at the Crossroads*. Seoul: Pakyoung Publications.
- Choi, Hak-Nam and Man-Soo Cheon. 1992. Survey of North Korea's Agricultural Economy. Seoul: Yeongil Publications.
- Choi, Soo-Young. 1996. *Study on North Korea's Agricultural Policy and Food Problem.* Seoul: Korea Institute for National Unification.
- Kim, Sung-Ho and Woon-Keun Kim. 1983. *Evaluation of North Korea's* Agricultural Productivity. Seoul: Korea Rural Economic Institute.
- Kim, Woon-Keun. 1984. "Estimation on North Korea's Agricultural Production." North Korea Gazette. Vol. 8.

- Korea National Statistical Office. Comparison of South and North Korea's Economic and Social Aspects. (Annual issues).
- Korea Rural Economic Institute. Estimation on Grain Production.
- Lee, Il-Young. 1994. *Agricultural Reform of China in the 1980s*. (Unpublished doctoral thesis at Seoul National University).
- The Social Science Press. 1988. *Historical Experience of Agricultural Problem Solution*. Pyongyang: The Social Science Press.

\*\* In English

- Eugene, C.I. and B. C.Koh. 1982. Journey to North Korea.
- FAO. 1992. Demand Prospects for Rice and Other Food grains in Selected Asian Countries. (M-66. 103037-5).

\_ Various years. *Agricultural Production Statistics*.

- FAO/WFP. 1988. "Crop and Food Supply Assessment Mission to the Democratic People's Republic of Korea." *Special Report*.
- Kim, Woon-Keun, Hyun-Ok Lee and D. A. Sumner. 1998. "Assessing the Food Situation in North Korea." *Economic Development and Cultural Change*. Vol. 46, No. 3.
- Lin, Justin Yifu. 1992. "Rural Reforms and Agricultural Growth in China." *American Economic Review*. No. 82: 34-51.
- McMillan, John, John Whalley and Lijin Zhu. 1989. "The Impact of China's Economic Reforms on Agricultural Productivity Growth." *Journal of Political Economy*. No. 97: 781-807.
- Nicholas, Eberstadt. 1990. "Population and Labor Force in North Korea: Trends and Implication." Paper presented at Trends and Prospect of North Korean Economy (International Conference) sponsored by the KDI and *The Korea Economic Daily*.

# V. Industrial Structure and Production

# Ihk-Pyo Hong

# 1. Characteristics of North Korea's Industrial Structure

## **A. Industrial Policy**

In 1985, North Korea had just about completed the socialization of production relations and started the so-called "socialist economic construction." The basic line of construction was to first develop heavy industries, then develop both light industries and agriculture, building a self-reliant national economy.

Following this doctrine, North Korea's socialist industrialization was defined as the planned development of strong heavy industries grounded on central ownership with mechanical industry at the core, building a modern material and technical foundation for socialism. The core tenet espoused by the government was: "to make a socialist nation that will establish an independent industrial system supplied by a solid raw material base and equipped with modern technology in various fields to entirely reconstruct the people's economy."

Socialist industrialization was to be realized through a number of steps. First, the government was to develop heavy industries, followed by the light industries and agriculture. Second, small and medium-sized enterprizes were to be promoted in conjunction with mass production. Third, the government was to resolve funding and human resources problems in industrialization. Finally, socialist industrialization was to be completed through foundation building, followed by full-scale realization and completion.

The implementation of these guidelines had a tremendous influence on the development of the economy. Developing the heavy industries and the the light industries and agriculture together made heavy industries the pivot of economic construction, closely followed by the light industries and agriculture. Thus, although the development of heavy industries was pursued to facilitate the light industries and agriculture, the high-speed growth strategy centering on heavy industries was unbalanced.

Second, advancing large-scale production and smaller-scale production concurrently could lead to a myriad of local industries. In North Korea, the development of local industries has had the following consequences. ¤ It uses all the possible productive reserves of local entities such as raw materials, facilities and labor force. ¤Ł It increases the production of consumer goods to satisfy local demand. ¤ØIt promotes the construction of heavy industries by developing the production of consumer goods with almost no additional investment from the government. ¤ŒIt guarantees balance between regions in productivity arrangement and creates advantageous conditions for transportation and defense strength. ¤°It enforces economic connection between industry and agriculture, and rapidly closing the gap between cities and rural areas. ¤ It demands equality for woman while leaving them free from heavy domestic work. However, these characteristics of industrialization impose limits on the development of the consumer goods sector in North Korea.

Third, for industrialization, it was essential to motivate the public to independently solve problems related to funding and technology in human resources. Various forms of popular involvement in technological revolutions such as the *Chollima* Movement (December 1956) and the Engineering Machine Expanding Movement (September 1959), increased production, and savings and labor mobilization all expanded in the focus areas. This revolutionary standpoint and the emphasis on ideological campaigns based on self-revival continued through the "Three Red Flag Mobilization Movement" and the "Speed Creation Movement" of the 1980s, even after industrialization. The success of such campaigns not only started to decline when industrial development surpassed a certain level, but also hindered the introduction of new technology and facilities.

After the Three-Year Plan (1954-56) to restore the industries to the pre-war standard had ended, North Korea promoted full-scale socialist industrialization. North Korea insists that its socialist industrialization was achieved in 14 years through the first Five-Year Plan (1957-60), the basic construction stage, and the first Seven-Year Plan (1961-70), or the overall realization and completion stage. The Three-Year Plan was intended to restore the industrial and agricultural production to pre-war levels and its basic policy was to develop heavy industries first and pursue the restoration of light industries. During this period, large-scale factories were restored and technology human resources were fostered, resulting in unprecedented high growth in the mining and manufacturing industries. The annual growth rate of the mining and manufacturing industries was 51 percent in 1954, 52 percent in 1955 and 27 percent in 1956, reaching an average annual growth rate of 43 percent. North Korea's ThreeYear Plan was executed with the help of supplies and technology assistance from the Soviet Union, China and Eastern European socialist countries. During this period, 81 percent of the investment for economic construction was put into the heavy industry sector.

The first Five-Year Plan was determined on the basis of socialism according to the result of the Three-Year Plan; its main aims were to feed, house and clothe people. Due to political tensions at home and abroad, the first Five-Year Plan was only implemented in March 1958. Although there were some setbacks in its early stages, it was officially announced that the aims of total industrial production was achieved in two and a half years and of the whole industry sector in four years. According to North Korea's announcement, the average annual growth rate of total industrial production during the period had reached 36.6 percent; an extremely high growth rate considering that at the end of 1950s, the average annual growth rate of total industrial production in Russia and Eastern European nations was at the 10percent level.

The first Seven-Year Plan started from 1961, based on the outcome of the Five-Year Plan. It set out to complete technological reconstruction and improve the standards of living through cultural revolution. The industrial sector was to aim for an independent industrial system and strengthen of the technological foundation to build an independent industrial system backed by high technology, and backed by an independent raw material base. This plan was completed in 1970. With one year left before completion, the North Korean Workers' Party Members Committee convened in 1966 to extend the Seven-Year Plan by three years to more thoroughly accomplish the parallel development of economic construction and defense construction.

During the 1960s, North Korea was faced with numerous problems, including low consumption due to stagnation in consumer goods production. In addition, the target average annual growth rate of total industrial production was 18 percent (but stopped at 12.8 percent. Nevertheless, North Korea claimed that it had realized socialist industrialization along with the completion of the Seven-Year Plan. According to North Korea, the ratio of industries in total industrial production rose to 74 percent in 1969 from 34 percent in 1956 and the contribution of industries to national income expanded from 25 percent to 65 percent.

In the Fifth Party Committee held in November 1970, North Korea officially proclaimed that in had achieved complete socialist industrialization and decided to launch the Six-Year Plan (1971-76). The basic aim for the Six-Year Plan was to "achieve industrialization, strengthen the material and technological foundation of socialism by taking the technology revolution to the next level and to workers from hard labor in all sectors of the people's economy." The most significant goals were, to achieve self-reliance in the internal structure of industries and raw materials,

pursue the half-automation or full automation of all sectors of the economy, promote agriculture and to promote full technological revolution.<sup>1</sup>

North Korea announced the completion of the Six-Year Plan a year and half before scheduled, in August 1975, having reached industrial production targets. Contrary to the official announcements, the Six-Year Plan was in fact suspended because the targets were not met in parts of the heavy industry sector such as steel, cement and basic construction. There had also been problems in transportation and North Korea's international balance of payments. The transportation problem was caused by a lack of investment in the social overhead capital (roads and harbors) that correspond to economic expansion. The international balance of payments problem arose when capital, technology and facility imports exceeded North Korea's export capacity in the process of executing the Six-Year Plan. Moreover, the gradual intensification of the labor shortage, the lack of energy resources such as coal and crude oil, and materials. Shortages due to the poor stale of the chemical industry hindered the smooth completion of the plan.

The North Korean economy was already showing cracks in the late 1970s that were not expected until after the 1980s. At that point, the economy needed structural adjustment. However, it seems that North Korea's economic policy, including the second Seven-Year Plan(which started in 1978), failed to meet the needs of such structural adjustment, and consequently North Korea was unable to escape from economic depression. An example of North Korea's economic policy line is the "Ten Goals of Socialist Economic Construction for the 1980s," proposed by Kim Il-Sung at the Sixth Party Committee in October 1980. They included ambitious plans such as annual production of 100 billion kWh of electricity, 120 million tons of coal and 15 million tons of steel. In this, they revealed North Korea's intention to keep the economic status quo rather than making adjustments.

This was fleshed out in the second Seven-Year Plan of 1978. The main goal of the plan was "to raise the standard of living by strengthening the basis of socialist economy through the *Juche* ideology, modernization and science." However, the failure of the plan had already started in the early 1980s. For instance, the annual release of data on the increase rate of the total industrial production was not made in 1981, 1983 and 1984. Moreover, production reports were not made through the departments responsible for the data, but was released without warning by the

<sup>&</sup>lt;sup>1</sup> The full technological revolution is the so-called Three Technological Revolution, or a technological revolution that needed to be exercised based on the socialist industrialization. The Three Technological Revolution aimed to decrease the gaps between the heavy industry and the light industry, the agricultural labor and the industrial labor, and to free women from domestic work. North Korea's Six-Year Plan and the Three Technological Revolution Theory reflect the outcome of socialist industrialization and also express the relative confidence of North Korea.

Central Statistical Office in February 1985. According to the announcement, the annual increase rate of the total industrial production recorded 12.2 percent, therefore the plan seems to have achieved its goals. However, the set production goals and the announced results were almost exactly the same—and much lower then past production.

After the completion of the second Seven-Year Plan, North Korea launched the third Seven-Year Plan in 1987 after a two-year adjustment period. The third Seven-Year Plan set out "to solidify the foundation of materials and technology for the complete victory of socialism by reinforcing the economy's *Juche* ideology: modernization and science." The major objective was to raise industrial production by an average 190 percent agricultural production also by more than 140 percent, gross social production by 180 percent, and national income by 170 percent. During this period, North Korea tried to slightly change economic policy to break from the economic depression that continued since the late 1970s.

The main task of the third Seven-Year Plan was "to rapidly develop science technology to enforce the technological reconstruction of the people's economy and increase productivity to achieve the Ten Prospective Goals of Socialist Economic Construction, by providing enough food, clothing and shelter to the people, raising the standards of living." Among the goals for this sector, science and technology were treated as a separate item and trade and foreign economy was added as a new item. The agriculture and light industry sector were incorporated into the food, clothing and shelter area. This entailed emphasis on the development of science technology and the expansion international trade in the third Seven-Year Plan. However, the third Seven-Year Plan started to stumble in its early stages due to the structural limitations of the North Korean economy. After 1990, the collapse of the socialist economic bloc made it impossible. North Korea announced that the third Seven-Year Plan had not been achieved due to the changes to the international situation and acute domestic problems at the 21st Plenary Meeting of the Sixth Session of the Party Committee, held in December 1993. In addition, the following few years were designated as a buffer period for socialist economic construction. During this period, the priority goal of economic policy was the development of agriculture, light industries and trade.

After the Kim Jung II regime was officially launched in September 1998, North Korea set economic policy as developing the heavy industries first and pursue parallel development of agriculture and light industries. This policy decision was based on the understanding that enhancing industrial operating capacity and restoring the industrial backbone was critical to the recovery of the North Korean economy. Therefore, during the recent few years, North Korea concentrated on independent recovery by investing in areas such as energy, rail and heavy chemicals.

## **B.** Current Industrial Structure

The North Korean economy started to improve in 1998, gradually showing signs of recovery. By improving agriculture and fisheries, mining, manufacturing and the construction sectors, North Korea's growth rate recorded 6.2 percent in 1999, the first positive growth rate since 1990; this positive growth continued for three consecutive years, with a growth rate of 3.7 percent in 2001.

During 2001, North Korea concentrated on economic recovery through the normalization of key industries, energy, railway transportation, metal and the heavy chemical industry, increasing the production of consumer goods and the fostering information technology industries. As a result of economic policy, the social overhead capital sector and production facilities were reinforced and, except for the government service business sector, the operating capacity rate of almost all industries increased. However, these improvements were only outcomes of an increase in the operating capacity of some factories, enabled by international support and the extensive growth of the construction sector using the idle labor force. Thus, it is difficult to say that the real economy had started to fully recover. In particular, the heavy industries, which take a large portion in the industrial base, have not completely escaped production stagnation. Further, North Korea has been unable to resolve food and energy shortages, depending mostly on international aid.

If we look at recent trends by industry, the growth in mining, electricity, gas and construction was relatively substantial, as foreign aid had concentrated on alleviating energy shortages and SOC expansion. The agriculture, forestry and fisheries industries continue to show comparatively satisfactory results after 1998, with extended enforcement of stock raising and crop rotation together with comparatively good weather conditions. Although drought and typhoon in 2000 damaged crops and produced negative growth, fair weather and the increase in foreign fertilizer support in 2001 led to a large increase in crop yields and fish cultivation of 6.8 percent year-on-year.

The manufacturing industry grew by 3.5 percent annually due to the normalization of production, including the modernization and expansion of production facilities. Production in light industries increased by 2.3 percent, mostly in food products and shoes. The heavy chemical industries increased by 4.1 percent due to improvements in industrial chemical products, steel, industrial machineries and nonmetallic mineral products. The electricity production increased by 4.0 percent, and gas and waterworks industries increased by 3.6 percent in overall production by raising thermal plant operation capacity and constructing new plants to resolve shortages in electricity, gas and water. The construction sector increased by 7.0 percent, as the construction of residential buildings increased sharply and the construction of public works, such as irrigation canals and electricity facilities, and nonresidential struc-

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Agriculture/	2.8	-2.7	-7.6	2.7	-10.5	1.0	-3.8	4.1	9.2	-1.9	6.8
forestry/fishery											
Mining/	-11.9	-15.0	-3.2	-4.2	-4.6	-9.6	-16.1	-3.9	9.9	2.2	3.9
manufacturing											
Mining	-6.8	-6.1	-7.2	-5.5	-2.3	-11.8	-13.9	-6.1	14.1	5.8	4.8
Manufacturing	-13.4	-17.8	-1.9	-3.8	-5.3	-8.9	-16.8	-3.1	8.5	0.9	3.5
Light Industry	-4.4	-7.3	5.0	-0.1	-4.0	-7.1	-12.5	-0.2	2.4	6.2	2.3
Heavy Industry	-15.8	-21.0	-4.2	-5.2	-5.9	-9.7	-18.8	-4.6	11.6	-1.5	4.1
Electricity/gas/	-4.5	-5.7	-8.7	4.2	0.1	-7.8	-9.5	-9.2	6.8	3.0	3.6
waterworks											
Construction	-3.4	-2.1	-9.7	-26.9	-3.2	-11.8	-9.9	-11.4	24.3	13.6	7.0
Service	2.5	0.8	1.2	2.2	1.5	0.8	1.3	-0.5	-1.9	1.2	-0.3

(Unit: %)

#### <Table 5.1> Growth Rate by Industrial Sector in North Korea

Source: The Bank of Korea. The Result of North Korea's GDP Estimation(Annual issues).

tures, including factories, farms and ranches, also expanded. On the other hand, while there was an increase in wholesales and retail sales (4.6 percent) and transportation (3.2 percent), restaurants and accommodation decreased (-5.8 percent) with the decrease in tourists, the government service sector decreased (-0.4 percent), the service sector fell by 0.3 percent annually.

The industrial structures of North and South Korea are compared to observe the characteristics of North Korea's industry structure. In North Korea, agriculture, forestry and fishery, mining, and government services take large portions of the gross domestic product, whereas manufacturing and other services have relatively smaller portions. This is true because the overall economic development level of North Korea is much lower than that of South, and in the manufacturing industry, the major reason can be found with the decline in productivity as facilities age<sup>2</sup> along with lack of electricity, energy and raw material.

Unlike in South Korea, the portion of government spending being directed to agriculture, forestry and fishery and manufacturing is growing with the passing of time, whereas manufacturing is continuously declining. Thus, industrial development and the advancement of the industrial structure are not realized properly. Recently, North Korea has been talcing massive steps toward resolving the energy crisis and expanding SOC, which allows for the steady increase in the relative portion of mining, electricity and construction industries. With 2000 as a base year, North Korea's industrial structure in general can be seen as similar to that of South

<sup>&</sup>lt;sup>2</sup> North Korea's industrial production facilities are mainly introduced from Russia, Eastern Europe, and Japan in the 1960s-1970s or manufactured in North Korea. Thus, they are generally aged and productivity is also very low.

(Unit: %)

	North	Korea	South	Korea
	1998	2000	2001	2001
Agriculture, forestry and	29.6	30.4	30.4	4.4
fishery				
Mining and manufacturing	25.6	25.4	26.0	30.3
Mining	6.6	7.7	8.0	0.3
Manufacturing	19.0	17.7	18.1	30.0
(Light Industry)	(6.4)	(6.5)	(6.7)	(7.0)
(Heavy Industry)	(12.6)	(11.2)	(11.4)	(23.0)
Electricity/Gas/Water	4.2	4.8	4.8	2.9
Construction	5.1	6.9	7.0	8.2
Service	35.6	32.5	31.8	54.1
(Government)	(25.3)	(22.6)	(22.2)	(10.4)
(Others)	(10.3)	(9.8)	(9.7)	(43.7)
Gross Domestic Product	100.0	100.0	100.0	100.0

## <Table 5.2> Industrial Structure of North Korea

Source: The Bank of Korea. The Result of North Korea's GDP Estimation. (yearly issues).

## Korea's in the late 1960s.

In North Korea, because of the policy priority given to heavy industries this industry took a larger portion than the light industry. In the early 1960s, the light industries were bigger than the heavy industries, but the heavy industries continued to grow by more than three times the rate of the light industries in 1990. This is because the North Korean regime put what limited investment funds it had first in the heavy industries, such as the munitions-related sector, according to the heavy industry-first principle(first develop the heavy industries and pursue parallel development of the light industries and agriculture). Therefore, development in the other sectors were relatively stagnant.

The scale of North Korea's manufacturing production was 3.35 trillion won in 2000, a very low level compared to South Korea's manufacturing production scale of 2.1 percent in the same year. The low performance is due to the lack of electricity, energy, raw materials and the aging of production facilities. The performance of key industries in 2000<sup>3</sup> is as follows. First, in the heavy industries, 6,600 cars, 1.086 million tons of steel, 4.6 million tons of cement, 539,000 tons of fertilizer, 214,000 G/T of shipbuilding and 2.5 million boxes of plate glass were produced. In the light industries, 29,000 tons of synthetic fiber, 100 million square meters of textiles 260,000 TV sets, and 50,000 refrigerators were made. Only fertilizer, plate glass and

<sup>&</sup>lt;sup>3</sup> The figures of shipbuilding, plate glass, textiles, TVs and refrigerators are from 1999.

cement industries have levels similar to those of South Korean counterparts, 14.5 percent, 12.7 percent and 9.0 percent respectively, while the rest remain below 3 percent.

It is estimated that due to the lack of electricity, energy and raw materials, deterioration of facilities and lack of machine parts, the operation rate of facilities in North Korea was at the 20-30 percent. In key industries, the operation rate of steel was 20.7 percent, automobile 22.1 percent, chemical fertilizer 21.9 percent, cement 34.1 percent, shipbuilding 17.8 percent and synthetic fiber 15.3 percent in 1999. To relieve the energy and raw material problems, North Korea has recently emphasized the repair of facilities and technological improvement for electricity, mining, the metal industry and railway transportation. Thus, the operation rate of some industries centering on iron and refining industries, thermal power generation and chemical industries are expected to increase up to 77 percent by February 2001.

North Korea recently started to improve the industrial structure through the IT industry and, at the same time, develop existing electricity, mining, metal industry and railway transportation by production automation and computerization. Since 2001, North Korea has emphasized enhancing national competitiveness through informatization in all sectors of the economy using such slogans as "the 21<sup>st</sup> Century = Era of Information Industry" and "High Science Technology = IT Industry." In particular through fostering the IT industry, North Korea is trying to achieve production automation in all industries and promote economic recovery, thus actively pro-

	North Korea	South Korea	North/South (%)
Automobiles (10,000 units)	0.66	311.4	0.2
Steel (10,000 tons)	108.6	4,310.7	2.5
Cement (10,000 tons)	460.0	5,125.5	9.0
Fertilizer (10,000 tons)	53.9	373.0	14.5
Shipbuilding (1,000 G/T) <sup>1)</sup>	214.0	9,481.0	2.3
Plate glass (1,000 boxes )1)	2,500.02)	19,668.0	12.7
Synthetic fiber (10,000 tons)	2.9	264.6	1.1
Textile (million m) <sup>1)</sup>	100.0	6,603.0	1.5
TV (1,000 sets)1)	260.0	12,998.0	2.0
Refrigerator (1,000 units)1)	50.0	4,599.0	1.1

<Table 5.3> Results of North Korea's Key Industries' Production (Year 2000)

Sources: The Bank of Korea, The Result of North Korea's GDP Estimation in 2000. May 2001. The National Statistical Office of South Korea. *The Comparison of South and North Korea's Economic and Social Aspects*. November 2000.

Notes: 1) 1999 results.

2) Based on production capacity.

moting all kinds of industries related to the IT industry. North Korea is also concentrating on the development of information technology, such as software development, comprehensive computerization, the expansion of the Internet between organizations and computer hardware production.

# 2. Production in Major Industrial Sectors

### A. Steel Industry

The steel industry not only supplies the essential groundwork material for a nation's economic development and industrial activities, but is also the mother industry of heavy industries closely related to the munitions industry. The steel industry is a capital-intensive, large-scale equipment industry that is energy-intensive and pollutive.<sup>4</sup>

Development of North Korea's steel industry was founded on abundant iron ore, anthracite and electricity, as well as refining and steel manufacturing facilities built during the Japanese occupation. During the postwar recovery period (1954-60), Kim Chaek Iron Mill and Cheongjin Steel Mill, along with Hwanghae Iron Mill (which produced 500,000 tons of pig iron and 300,000 tons of structural steel), were restored in accordance with the heavy industries-first policy. Investment in this sector was rapidly expanded during the first Seven-Year Plan (1961-70), which aimed at achieving socialist industrialization in order to advance both economic growth and national defense. During this period, facility expansion was promoted for the systemization of factories and balanced development. The April 13 Iron Mill, built in the late 1960s, supported manufacturing in connection with the Gangseon Steel Mill, which had no steel making facilities; the expansion project of Hwanghae Iron Mill was also completed. In this manner, an integrated iron mill was established by introducing new facilities and enlarging facilities in existing factories, securing 2 million tons of crude steel-making capacity annually (S.J. Hong 2000, 38-39).

On the basis of such quantitative growth, during the Six-Year Plan (1971-76), North Korea pursued modernization and qualitative development of the steel indus-

<sup>&</sup>lt;sup>4</sup> Recognizing the importance of the steel industry, North Korea is developing the steel sector under the slogans: "Steel is Communism" and "Steel is the rice of industry." The North Korean regime declared October 9, 1945(the day Kim Il-Sung visited Gangseon Steel Mill (now *Chollima* Steel Mill)) the 'Metal Labor Day,' illustrating how seriously the North Korean regime regards steel. Moreover, by appointing the steel industry as a leading sector along with electricity, coal, railroad, transportation and the metal industry, to boost the recovery of North Korea's stagnant economy, the North Korean government is emphasizing the reconstruction of this industry (The Korea Development Bank. 2000. *North Korea's Industry*, p. 11).

try, backed by Russian economic and technological support, and concentrated on the enhancement of autonomy of the steel industry through expanding supply capacity of high-quality steel. In this period, the Kim Chaek Iron Mill was expanded for the 'construction of a great metallurgy base'; iron manufacturing facilities equipped with a steel manufacturing plant producing 1 million tons annually and a hot rolling plant were thus built. Moreover, the annual production capacity of Musan mine, North Korea's largest iron mine, was increased to 5.5 million tons annually; the efficiency of the entire process from raw materials to product manufacturing was promoted by making the railroad from Musan to Kim Chaek Iron Mill electric.

During the second Seven-Year Plan (1978-84), steel production was targeted at 7.4-8 million tons, twice the original level. To that end, the existing iron and steel manufacturing facilities were reinforced and metallurgy facilities were expanded. Together with the expansion of the Kim Chaek Iron Mill, Chongjin Iron Mill and Seongjin Steel Mill, the Daedong River Iron Mill, producing 3 million tons, and September Iron Mill were newly built. Meanwhile, modern iron and steel manufacturing workshops and rolling workshops were built in Hwanghae Iron Mill to increase the production capacity of steel and hot-rolled steel. Further, automation, semi-automation, television-oriented development and remote control of production at Hwanghae Iron Mill were sought. For the very first time in North Korea, a cold rolling mill with an annual capacity of 400,000 tons was built at Kim Chaek Iron Mill.

During the period of the third Seven-Year Plan (1987-93), annual production of 10 million tons of steel was planned and production through science and automation was promoted to enhance productivity and diversify steel products, as well as to produce high-strength steel. In 1989, the second stage of the expansion of Kim Chaek Iron Mill was completed, enabling 2.4 million tons of steel production and 1.4 million tons of rolling capacity. In December 1989, the construction of October 9 Integrated Steel Factory that would produce 2 million tons of steel annually was instituted. In addition, efforts were made to improve the lagging steel production structure by raising the productivity of steel making and structural steel rolling, rather than the production of pig iron. Moreover, North Korea emphasized the diversification of steel types and improved steel quality. More notably, the Seven-Year Plan increased the production of alloy steel and special steel (high-speed steel and stainless steel); it also suggested an increase in second metal products and standard structural steel types.

However, the production basis and activity in North Korea's steel industry were greatly reduced by the lack of electricity, the supply shortage of raw materials and insufficient SOC after the mid-1980s. On December 8, 1993, the 21<sup>st</sup> Plenary Meeting of the sixth Party Central Committee admitted to the failure of the third Seven-Year Plan, but remained firm in promoting continuous development and

advancing the metal industry as the preceding sector for economic recovery. Recently, the construction and operation of small and medium-sized power plants around the nation, the extensive facility repair and maintenance of iron mills since 1998, the mobilization of inner reserve forces and steel collection have all contributed to resolving material shortages and raising productivity. Moreover, the rise in the operation rate of the Kim Chaek and Hwanghae Iron Mills owing to the support of 40 million tons of coking coal from China in 1999 have contributed to the overall recovery of the North Korean economy.<sup>5</sup>

The production capacity of North Korea's steel industry was ahead of South Korea's production capacity until the early 1970s, based on the North's abundant iron ore reserves. Yet, by the 1980s, the decrease of coking coal imports rapidly deteriorated operation capacity, as well as causing the serious shortages in materials, energy and transportation. Moreover, the production capacity was reaching its limit, much like other industrial sectors, because of aging production facilities, the lack of investment funds and the lagging introduction of advanced technology. This caused North Korea's steel production capacity to come to a standstill since the late 1980s.

Up until 1998, the Department of Metal Industry in the Ministry of Home Affairs managed North Korea's primary metal industry, but after the Cabinet reshuffle, management was transferred to the Department of Metal Machinery Industry, an integrated agency of the Department of Metal Industry and the Department of Machinery. The key steel manufacturers are Kim Chaek Iron Mill, Hwanghae Iron Mill,<sup>6</sup> Chollima Steel Mill, Seongjin Steel Mill and Cheongjin Steel Mill; combined, they account for more than 80 percent of the entire production capacity in North Korea. Kim Chaek Iron Mill is not only the largest ironworks adjacent to Musan Mine Union Corporation, but it is also considered an integrated metallurgy production base. In the beginning, it was a simple iron mill with only steel making facilities, yet with support from Russia in the mid-1970s, it developed into an integrated iron mill with steel making and rolling facilities. Now, this iron mill is a special

<sup>&</sup>lt;sup>5</sup> From 1999, Kim Chaek Iron Mill began operation with the Corex furnace, which can produce pig iron without using coking coal. Hwanghae Iron Mill operated a oxygen heat furnace, replacing coking coal with anthracite in manufacturing pig iron from May 1998. In the middle of the same year, Hwanghae Iron Mill made an oxidized oval coal workshop to produce oval coal (a mixture of anthracite and lignite) for melting cast iron. (S. J. Hong, op. cit., p. 40-41).

<sup>&</sup>lt;sup>6</sup> Hwanghae Iron Mill in Songnim of North Hwanghae province is the second-largest integrated ironworks in North Korea, which began from Gyeongipo Iron Mill built by Mitsubishi in 1914. The iron ore is supplied from mines in Eunyul, Songnim, Taetan, and Dukhyeon. Its adjacency to the Pyongyang Industrial District is a geographical advantage, with access to an excellent labor force and ready connection between the domestic and export market. In addition, its modern facilities, such as automation and remote control equipment, make Hwanghae Iron Mill a representative factory for rours by foreign envoys.

			(
Year	Iron	Steel	Rolled Steel
1965	1,470	2,128	1,590
1970	2,110	2,145	1,620
1975	3,181	2,645	1,787
1980	3,807	4,025	2,797
1985	5,346	4,469	3,602
1990	5,413	5,960	4,040
1995	5,413	5,980	4,040
1996	5,413	5,980	4,040
1997	5,413	5,980	4,040
1998	5,413	5,980	4,040
1999	5,413	6,002	4,040
2000	5,413	6,002	4,040

(Unit: 10,000 tons)

## <Table 5.4> Productivity of North Kora's Steel Industry

Source: Korea Iron and Steel Association.

## <Table 5.5> North Korea's Key Steel Manufacturers

	Production Capacity	Key Products
Kim Chaek Iron Mill	Pig iron: 2.4 million tons Iron: 2 million tons Rolled steel: 1.4 million tons	Pig iron, steel, rolled structural steel, middle plate, steel pipe, print plate, hot and cold steel plate, zinc steel plate
Hwanghae Iron Mill	Pig iron: 1.134 million tons Iron: 1.145 million tons Rolled steel: 0.60 million ton	Bar steel, steel wire rods, hot rolled steel sheet, cold rolled steel plate, middle and end plates, print steel plate
Chollima Steel Mill	Iron: 0.76 million tons Rolled steel: 0.55 million tons Common rolled steel, special alloy	Middle and end plates, steel wire rods, spring steel, carbon steel, high-speed tool steel, special alloy steel, stainless steel, steel pipe, welding rods, STL
Seongjin Steel Mill	Iron: 0.40 million tons Rolled steel:0. 41 million tons	Middle and end plates, bar steel, spring steel, alloy steel
Cheongjin Steel Mill	Steel: 0.60 million tons Iron: 1 million tons	Structural melted steel, high-speed steel, slab
April 13 Iron Mill	Steel: 0.40 million tons	Steel

Source: S. J. Hong (2000). p. 44.

enterprise that can produce a total sum of 6 million tons (2.4 million tons of pig iron, 2 million tons of steel and 1.4 million tons of rolled steel), mainly producing pig iron, steel, rolled steel, steel pipes, hot and cold steel plates and secondary metal products. There are small local steel manufacturers in Gaecheon, Sinuiju, Pyongyang, Haeju and Hamheung.

### **B.** Nonferrous Metal Industry

The nonferrous metal industry is a process industry that is capital-intensive and highly material-dependent. It is a high energy consuming industry, with energy costs accounting for the largest portion of manufacturing costs. Furthermore, this industry can be a basic material industry for various industries, including machinery, electricity, electronics and munitions. At the end of 2001, North Korea's nonferrous sector had a very important position regarding foreign currency earning, accounting for 9.3 percent of international trade.<sup>7</sup> However, the amount of production is showing a decrease due to the low operating capacity rate caused by lack of electricity supply, aging mining equipment and a shortage in manufacturing facilities.

The Department of Refining under the Mining Industry Agency of the Cabinet is responsible for North Korea's nonferrous metal industry, with three refineries in Nampo, Munpyeong and Heungnam, built under the Japanese during the occupation at the beginning of the 20<sup>th</sup> century, as the industry's main axis. The nonferrous metal industry policy, in chronological order, is as follows. During the late 1950s, the period of postwar recovery, Munpyeong and Heungnam Refineries of the East and Nampo and Haeju Refineries of the West, which had been destroyed during the Korean War, had been restored and operation resumed. During the first Seven-Year Plan (1961-67) in the 1960s, facility expansion was the main project; a nonferrous metal rolling factory was built at the Nampo Refinery, thus reaching the stage of producing finished goods (The Korea Development Bank 2000, 61).

During the 1970s and early 1980s, North Korea raised the production capacity of existing ironworks and concentrated on the construction of new ironworks. In the mid-1970s, during the Six-Year Plan (1971-76), a second sulfate workshop at the Munpyeong Refinery, a melting furnace at Nampo Refinery and two sulfate workshops at Haeju Refinery were built. During the second Seven-Year Plan (1978-84), the construction of Bukchang Aluminum Factory (annual production of 2 million

<sup>&</sup>lt;sup>7</sup> North Korea's purchasing power is low due to the serious shortage of foreign currency; moreover, there are no suitable goods for trade between South and North Korea. Under such circumstances, North Korea's abundant nonferrous mineral resources would be useful as a key medium for the expansion of the inter-Korean economic cooperation.

tons), which started with support from the former Soviet Union, was completed to meet the production goal of 1 million tons of nonferrous metal per year. The construction of a large-scale nonferrous metallurgy base in Dancheon district was also completed. During the third Seven-Year Plan (1987-93), the annual production goal of nonferrous metal was set at 1.7 million tons, followed by facility expansion. To that end, the major mines in Geomdeok-Dancheon area and Yanggang province were extensively expanded. In particular during this period, production of aluminum and alloys were targeted at 0.4 million ton by constructing a large-scale modern light metals production base for alumina and aluminum. Furthermore, to actively develop and use North Korea's natural resources, titanium and magnesium production bases were newly constructed (M.R. Hong 2001, 26-27).

However, such goals and plans were not achieved as expected. From the 1990s, the demise of the former Soviet Union put an end to technological support while the energy crisis and raw materials shortage hurt the facility operating capacity rate, hence halting the nonferrous metal industry.

Lead, zinc, copper and precious metals (such as nickel, molybdenum, gold and silver) hold an important position in North Korea's nonferrous metal production. Recently, North also began concentrating on rare metals production, including aluminum, tantalum, neobium and cerium. The third Seven-Year Plan planned production of 1.7 million tons of nonferrous metals and 0.4 million tons of aluminum. However, during the buffer period (1994-96) and even at present, no substantial

				(Onit: utousuid tons)
Year	Lead	Zinc	Copper	Aluminum
1985	47.5	265.0	92.8	20.0
1986	47.5	275.0	92.8	20.0
1987	77.5	275.0	90.4	20.0
1988	87.5	295.0	90.4	20.0
1989	87.5	295.0	90.4	20.0
1990	87.5	295.0	90.4	20.0
1991	87.5	295.0	90.4	20.0
1992	87.5	295.0	90.4	20.0
1993	87.5	295.0	90.4	20.0
1994	87.5	295.0	90.4	20.0
1995	87.5	295.0	90.4	20.0
1996	87.5	295.0	90.4	20.0
1997	87.5	295.0	90.4	20.0
1998	87.5	295.0	90.4	20.0
1999	87.5	295.0	90.4	20.0

<Table 5.6> North Korea's Nonferrous Metal Production Capacity

(Unit: thousand tons)

Source: Korea National Statistical Office

outcome has been seen. As of 1999, 88,000 tons of lead, 295,000 tons of zinc, 90,000 million tons of copper and 20,000 tons of aluminum were produced-this clearly shows that production stopped at 495,000 tons (the Korea Development Bank 2000, 65).

The reason for low nonferrous metal production is the stagnation in the production of nonferrous metal minerals, the decrease in coking coal imports due to the lack of foreign currency, the lack of power supply necessary for electrolysis and aging refining facilities. However, the most important reason has been the slow production of nonferrous metal minerals, which remains the primary material.

Nonferrous metal-related facilities currently in operation are the Munpyeong Refinery, Heungnam Refinery, Dancheon Refinery, September 12 Refinery and Bukchang Aluminum Factory in the east, and Nampo Refinery, Haeju Refinery, Busanli Alumina Factory and Pyongyang Colored Metal Factory in the west. Among these refineries, Nampo, Haeju, Heungnam and Munpyeong were built under the Japanese occupation and the rest were built after 1945. In terms of mineral production, refining and consumption, copper and lead are produced in the east; however they are refined and consumed mostly in the west. Meanwhile, about 80 percent of the production, refining and consumption of zinc are centered in the east.

Nampo Refinery, situated in Nampo harbor, is the largest refinery of nonferrous metals, producing various kinds such as gold, silver, copper and zinc. It is a special enterprise built on a 4.25 million  $m^2$  site, with a 0.25 million  $m^2$  large building.

	Copper	Lead	Zinc	Aluminum	Gold	Silver	Nickel	Tin	Antimony	Cadmium
Nampo	41.4		45		0.5	0.19				0.2
Munpyeong		35	110		0.6			0.12	0.1	0.45
Dancheong			100							
Heungnam	4.0	12.5			0.08		1.5			
Unhong	25.0									
Pyeongbuk	20.0				1.0	0.02				
Haeju October 13		30			0.01					
September 21		10	30		1.0					
No. 211			10		0.7					
Bukchang Aluminum				20						
Heungnam (2)					1.0					
Others					10.44					
Total	90.4	87.5	295	20	15.33	0.21	1.5	0.12	0.1	0.65

<Table 5.7> Nonferrous Metal Production Capacity by Factory and Product

(Unit: thousand tons, %)

Note: The figure for silver is the total sum of 10 refineries and 58 mines. Source: Korea National Statistical Office. Major production items and their annual refining capacity are 41,400 tons of copper, 45,000 tons of zinc and 500 tons of gold, and 70-80 percent of production is exported. Proper repair, maintenance and expansion have not been provided since the first stage of expansion in 1984. Although the computerization of production and management was promoted in the early 1980s, this too was not properly accomplished.

The largest nonferrous metal production base in the east coast area, Munpyeong Refinery in Gangwon province, along with Geomdeok and Gaeun mines, was appraised as producing satisfactory quality metals, since zinc concentrates from China and other countries are refined. However, mineral output from Geomdeok mine has decreased while power for electrolysis is insufficient these days, so the production of major colored metal products such as electric lead and electric zinc is extremely poor.

Heungnam Refinery of the Hamheung region is a first-class enterprise with 4,000 employees that has copper and zinc refining facilities and produces electricity, copper and lead. This refinery also produces electric nickel, titanium oxide, molybdenum and tungsten wire by using nickel ore, tungsten, cobalt and titanium ore from the east coast area. The copper ore is supplied from Mandeok and Sangnong mines in South Hamgyeong province.

### C. Electric Machinery Industry

The Department of Metal Machinery Industry under the Cabinet manages North Korea's electric machinery and the Committee of Electronic Automation Industry manages the electronics industry and automation parts factories. This committee was established in 1988 by expanding the existing General Automation Office with emphasis on the automated and robot-oriented rear production process. Jurisdiction over automation accessories was partly transferred to the committee from the Second Economic Committee of the munitions industry sector. Under the Committee of Electronic Automation Industry is the General Electronic Office, General Automation Industry Office and the Lighting Apparatus Union Enterprise.

Production started in the 1960s, when the basis of socialist industrialization was arranged through the postwar recovery of the electric machinery industry and the enforcement of the Five-Year Plan (1957-60). Since North Korea was promoting the heavy industries-first policy, it required many heavy electric machines, including the electric motor. In addition, it needed a massive number of electric machines for power plant construction and electric railroads, and these absolute demands acted as the main impetus for growth in heavy electric machinery. North Korea originally had some basis for the heavy electric machinery industry from the period of Japanese occupation where they were centered on the electric industry. Moreover, most of the factories of the same system were built before the 1960s; these factories

were capable of producing simple and small-scale basic products. In other words, North Korea was capable of producing simple rotary machines such as generators, electric motors and electronic instruments before the 1960s.

North Korea started to promote the mass production of electric machinery upon the first Seven-Year Plan (1961-70). In 1962, the Pyongyang Electric Wire Factory was built with support from Czechoslovakia, producing 20,000 tons per year. In 1963, an electric bulb workshop at Pyongyang Electric Bulb Factory was built. Moreover, the Alternative Electric Machine Factory was built as a large electric machine production base with a mass production system. Juweul Electric Factory and Pyongyang Electric Wire Factory were built to mass-produce insulators and electric wiring, respectively.

During the second Seven-Year Plan (1978-84), the existing Alternative Electric Machine Factory was converted into the Alternative Heavy Machinery Factory (later renamed as the Alternative Heavy Machinery Union Enterprise) and transformed into a large-scale production plant. Notably, this factory was expanded with the objective of concentrating on the production of heavy electric machines, producing 5-10 million kW hydroelectric and thermal power generators.

Meanwhile, North Korea was promoting the development of the industrialpurpose electric industry through the introduction of technology spawned from the former Soviet Union by signing a Compensation Joint Agreement in 1977. The context of the Agreement was that the former Soviet Union would build the Daedong River Electric Condenser Factory in Pyongyang and in return, North

Factory	Name	GradeProducts
Alternative Heavy Machinery	Special class	Large power generators, turbines, large transformers,
Union Enterprise	Special class	large electric motors
Juweul Electric Factory	First-class	Switchboards, arresters, transformers, electric motors, insulators
Pyongyang Electric Factory	First-class	Switchboards, high-pressure circuit breakers, transformers, electric motors
Hamheung Electric Tools Factory	Second-class	Switchboards, other electric goods
Pyongyang Electric Wire Factory	First-class	Cable wire, enamel wire, various wires
General Yongseong Machinery Office	Special	Hydroelectric and thermal turbines
General Bukjung Machinery Office	Special	Hydroelectric turbines, electric motors
Cheolsan Electric Factory	Third-class	Electric motors, transformers, small power generators
Bongung Electric Factory	Third-class	Electric motors, transformers, small power generators
Yonggang Electric Factory	Third-class	Electric motors, transformers, small power generators
Apnok River Electric Factory	Third-class	Electric motors, transformers, small power generators
Sariwon Electric Factory	Third-class	Transformers
Wonsan Electric Factory	Third-class	Transformers, electric motors
Kim Chaek Electric Factory	Third-class	Electric motors

<Table 5.8> North Korea's Main Electric Factories

Source: Hyundai Economic Research Institute (2000). p.116.

Korea would supply to the former Soviet Union 80 percent of automobile storage battery and enamel wire, as well as 60 percent of miniature electric motors produced at the factory. Completed in 1982, the factory had a production capacity of 1.27 million automobile storage batteries. After the 1980s, North Korea was producing large heavy electric machines by increasing equipment and facility investment, centering on the Alternative Heavy Machinery Union Enterprise. During this period, North Korea made products mostly with small and medium-sized electric generators; some common products such as small and medium-sized heavy electric machines and transformers that were mass-produced were also exported to the former Soviet Union and Eastern Europe.

### **D. Electronics Industry**

The development of North Korea's electronics industry began in the 1960s, but it fell behind other industries due to the closed nature of the economy under its self-reliant principle. North Korea started to build new factories related to the electronics industry in the 1960s. Following the construction of an assembly workshop within Nampo Communication Machine Factory in 1962, Pyongyang Communication Machine Factory produced 1 million sets of carrier telephones in 1967 and started to produce TV sets from 1969. Heuichun Electronic Machine Factory, which was built with China's support in 1964, started production in the 1970s, and Bakcheon Communication Machine Factory produced communication machines in 1969. In this manner, the electronics industry developed rapidly. Moreover, household electronic goods such as refrigerators, electric fans and electric irons were produced in 1961.

With this production basis, North Korea set up a mass production system for electronic products in the 1970s and planned to develope the automation sector, which was to act as the backbone of industrial modernization. North Korea emphasized the development of the electronics industry by laying out the basic policy direction of electronic parts and material production at the fifth Central Party Convention in 1970 for developing the electronics industry with its own resources.

During the Six-Year Plan (1971-76), North Korea attempted to introduce technology from the West. To increase the production of household electronic machines, North Korea obtained facilities that produced 50,000 units of refrigerators and washing machines from Japan in 1971 and started production in 1972. In 1980, by operating the Daedong River Television Set (black and white) Factory, with Romanian aid, North Korea came to produced 10 sets annually. In 1972, a signal tools branch factory was built in the Pyongyang Electric Factory (now renamed October 5 Automation Factory) and 60 automation machine branch factories and eight material factories were set up in different regions. However, after the mid-1970s, North Korea's electronics industry was no longer able to develop due to the after-effects of the economic recession and the technological slowdown caused by the closed policy based on the self-revival principle. All sectors of the electronics industry had stalled or deteriorated, including non-military electronic machines, industrial electronic machines, automation electronic machines, cable and wireless communication tools and electronic parts. In particular, the information sector, including computers and semiconductors, was more deteriorated.

North Korea has been emphasizing the development of electronics industry and

Section	Factories	Key Products
	Daedong River TV Assembly Factory	TV set assembly
	Cheongjin TV Set Factory	TV set assembly
	March 14 Factory	TV set assembly (TV branch factory of Nampo
		Communication Machine Factory)
	Haeju TV Assembly Factory	TV set assembly
	Wonsan TV Assembly Factory	TV set assembly
TV sets	Dancheon Veterans TV Assembly Factory	TV set assembly
	Sariwon TV Assembly Factory	TV set assembly
	Banryong Local Industrial Factory	TV set assembly, washing machines, electric rice cookers,
		electric irons
	Gaeseong TV Assembly Factory	TV set assembly
	Yonggang TV Assembly Factory	TV set assembly
	Pyongyang TV Assembly Factory	TV set assembly
	Pyongyang Electric Factory	Refrigerators, washing machines
	Dongnim Washing machine Factory	Electric washing machines
Refrigerator,	Hamheung Washing machine Factory	Electric washing machines
washing machine	Bukjung Freezer Factory	
	Pyongyang Aluminum	Freezers
	Product Factory	Washing machines
	Nampo Communication Machine	Radios, stereos, telephones
	Factory	
	Pyongyang Communication	Telephones
	Machine Factory	-
	Bakcheon Communication	Telephones
	Machine Factory	-
	Seoncheon Veterans	Telephones
	Communication Factory	
Telephone and	May 5 Communication Machine	Telephones
others	Factory	
	Ganggye First Communication	Telephones
	Machine Factory	
	Pyongyang Communication	Telephones
	Machine Factory	
	Cheongjin Electric Factory	Electric irons
	Banryong Local Industrial Factory	Electric irons, electric rice cookers
	Pyongyang Electric Factory	Electric rice cookers, electric irons
	Pyongyang Aluminum Factory	Electric rice cookers

<Table 5.9> North Korea's Key Electric Home Appliances

Source: Hyundai Economic Research Institute (2000). p. 117.

automation industry since the late 1980s under a policy of elevating its low level of high technology to that of developed countries. Therefore, factories were built to produce information machines such as computers, direct circuits and programs, as well as electronic measuring instruments. North Korea chose the agenda: "Enforcing the Technological Revolution" at the 16<sup>th</sup> anniversary of the 11<sup>th</sup> Party Central Committee Meeting (February 1986). In the two Three-Year Plans of science and technology development (July 1988-June 1991 and July 1991-June 1994), improvement of the electronics industry, development of the semiconductor industry and 80-percent localization of electronics parts were blueprinted.

The "2000 Science Technology Prospective Goal" aimed at the industrialization of 32-byte computers, development of Pentium-level computers and production of automation machines. Emphasis was placed on the software industry for the computerization of key economic sectors, and high interest was expressed toward the installation of a computer network led by the Chosun Computer Center.

Therefore, since the late 1980s, North Korea has been concentrating on expanding computer production facilities (along with computer production skills) and training professional human resources for software development and computer operation. With the support of the UNDP in 1987, a direct circuit trial factory was set up in the Electronics Engineering Lab under the Science Institute, and in 1989, with the help of the pro-Pyongyang Korean-Japanese residents of Japan, *Chochongryun*, the Chosun Computer Center, was established as a comprehensive computer application organization. However, despite support from the international society, North Korea's electronics industry and high-tech industry still is at an elementary level because of the lack of professional skills and human resources, insufficient production facilities and restricted acquisition of technology in accordance with the Wassenaar Arrangement.

### **E. Textile Industry**

North Korea's textile industry is managed by the General Textile Manufacture Union Office, Eunha General Trade Union Office and the Chosun General Silk Union Enterprise – all under the Department of Light Industries. However, the Clothing Management Bureau of local administration organizations controls smallscale garment factories and textile factories.

Despite the collapse of light industries during the Korean War and the heavy industries-first policy (focused on the munitions industry), the textile industry in North Korea not only takes a large portion among the light industries, but is also more developed than other light industrial sectors. In fact, in 2001, the textile sector amounted to 12.6 percent of total international trade. Due to its success as a model for processing trade, the textile industry is leading the economic recovery by attract-

ing foreign capital. North Korea values the textile industry highly as a target for foreign capital; according to the list of desirable businesses for foreign joint venture submitted to UNIDO in 1990, out of a total of 83 cases worth \$1.53 billion, the textile sector had seven cases amounting to \$300 million or 19.2 percent.

In light of sustaining the regime, North Korea's light industries have fallen far behind the heavy industries, including the munitions industry, in the name of socialist industrialization. The light industry had to be self-sufficient and survive in austerity, thus all light industry sectors (including daily necessities) had no choice but to rally behind the heavy industries. The policy for fostering light industries faced other obstacles including the lack of capital and technology retardation. Consequently, modernization of light industry factories and technological improvement failed, becoming the centre of a vicious circle that hindered the improvement of product quality and establishment of a mass production system.

The 1950s was the period of postwar recovery and establishing production bases for the textile industry in North Korea. Facilities were improved in the 1960s and during the 1970s/early 1980s, North Korea concentrated on expanding and modernizing production capacity. After adopting the Equity Joint Venture Law in 1984, the North Korean government focused on cooperating with foreign enterprises and attracting foreign currency. It started to show interest in the reconstruction of textile industry from the 1980s, as it did with other light industry sectors. At the sixth Party Meeting in October 1980, improving the overall quality of life was set as one of the most important principles among party activities. Numerous subjects related to clothing, food and shelter were included in the 10 goals for the 1980s.

The second Seven-Year Plan (1978-84) set the goal of increasing textile production by 170 percent. At the sixth session of the eighth Party Central Committee Meeting in November 1983, the clothing problem was pointed out as the most urgent task to be resolved in the socialist economic construction, together with the food problem and the necessity of fostering the textile industry. Subsequently, 1984 saw the August 3 People's Consumer Goods Production Movement, led by Kim Il-Sung. With the adoption of the Equity Joint Venture Law, North Korea attempted to introduce foreign capital and technology, which resulted in many joint ventures in the apparel sector.

The modernization of textile mills, modernization of production process and equipments of local factories, and reinforcement of international cooperation based on the Equity Joint Venture Law were main goals of the third Seven-Year Plan (1987-93). Large-scale chemical industrial facilities such as Suncheon Vinylon Factory were built, but due to technological problems and the lack of investment sources, no further investment and expansion of production facilities were made. In particular during this period, stimulation of local industries received more attention; recently, the number of local factories making export products for textile and cloth-

ing processing production has been on the rise.

At the 21<sup>st</sup> Plenary Meeting of the Sixth Session of the Party's Central Committee in December 1993, new economic strategies promoting agriculture, light industries and trade were laid out and twin development of both light industries (the textile industry and heavy industries) were also pursued. Throughout the buffer period (1994-96), goals were set on increasing textile production by more than 120 percent through improving the technological management of textile equipment, introducing speedy and modern facilities, and the timely supply of textile and knitting equipment parts. However, as of 1999, textiles was far from the target, having decreased to about half of 1994's production.

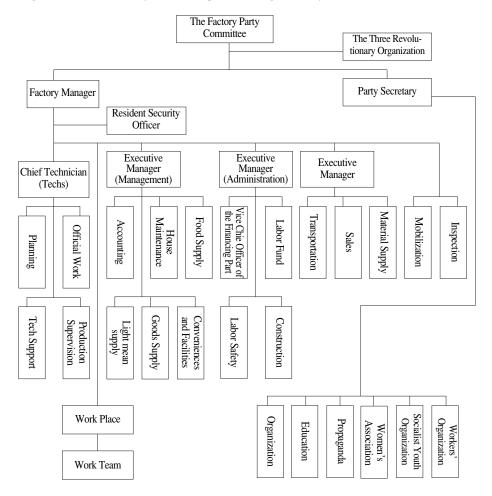
North Korea had to deal with a chronic lack of natural textiles including raw cotton, silk, wool and linen, caused by the deterioration of quality and the lack of production due to climatic limitations and narrow seeding areas. In North Korea, sheep are raised in Hamgyeong province, Yanggang province and Jagang province. Unfortunately, the absolute quantity of wool is insufficient due to the limiting conditions for sheep breeding. Furthermore, the lack of foreign currency has impeded wool imports; cotton and wool products are gradually declining and being replaced by chemical yarns such as rayon yarn and wool-cotton mixed yarn.

North Korea has been supporting chemical fibers to supplement the lack of natural fiber supply. It has also pursued self-sufficiency in fiber sources by independently producing viscose rayon and polyvinyl alcoholic (PVA) vinylon in the 1950s, acrylic fiber in the 1970s and mobilon in the 1980s. More than 80 percent of fiber production is chemical fibers; among chemical fibers, staple fiber and PVA vinylon hold the largest portions. This can be differentiated from South Korean products,

Туре		Production capacity	Туре
	Rayon staple	5.0	Cheongjin Chemical Fiber (3), Sinuiju Chemical Fiber (2)
Rayon pulp	fiber	5.0	Cheongjin Chemical Piber (5), Sinufju Chemical Piber (2)
group	Rayon yarn	0.5	Cheongjin Chemical Fiber (0.5)
	Total	5.5	
0.111	Vinylon	10.0	February 8 Vinylon (5), Suncheon Vinylon (5)
Carbide group	Mobilon	1.0	Hamheung Mobilon (1)
Stoup	Total	11.0	
Petro-chemical group	Acrylic fiber	1.0	Namheung Youth Chemical (1)
Oth	ners	0.2	
Тс	otal	17.7	

<Table 5.10> Chemical Fiber Production Capacity and Key Factories

Source: The Korea Development Bank.



<Figure 5.1> The Factory and Enterprise Management System

which consist mostly of polyester, nylon and acrylic fiber produced separately for clothing and industrial use. North Korea prides itself over vinylon, calling it "*Juche fiber*." It began full production expansion upon building the February 8 Vinylon Factory (formerly the February 8 Vinylon Union Enterprise) in Hamheung City in 1961. Furthermore, after completing the first-stage construction of Suncheon Vinylon Union Enterprise in October 1989, vinylon became the leading material of North Korea's textile industry.

Nevertheless, the annual production capacity of chemical fibers has been static at 177,000 tons since 1990-just 5.8 percent of South Korea's 3.03 million tons. Cheongjin and Sinuiju Chemical Fiber Factories can produce in total 50,000 tons of

rayon staple fiber; the February 8 Vinylon Factory and Suncheon Vinylon Union Enterprise together produce 100,000 tons of vinylon.

# 3. The Industrial Management System

North Korea's industrial management system has changed and improved concurrently with socialist economic development and the changing political situation. North Korea's early industrial management system was a management-exclusive responsibility system based on centralized administration management through the nationalization of key industries. This system was efficient in the early stages of socialism when the industrial production capacity was low and management's ability was insufficient, but as the economy developed and the economic scale grew larger, such systems became inappropriate for unified and well-planned management. North Korea criticized the original system as bureaucratic and individualistic and switched to a collective management system, making the workers the main body for production and management.

Consequently, the "Alternative Work System" suggested by Kim Il-Sung through field guidance at the Alternative Electric Machine Factory was adopted as a new business management system.<sup>8</sup> The Alternative Work System differed from the previous system in that it was a collective management system with the Factory Party Committee as the supreme guidance body and enabled the organization and mobilization of the masses by joining the business management system and the party's political guidance system. However, the centralized management system was instead enforced in the Alternative Work System based on mass participation. This was because science and unified planning in management operation were emphasized according to the unification and planning specification policy of 1965.

After introducing the Alternative Work System, North Korea continued to reinforce the industrial management system; in July 1985, it fully introduced a union enterprise organization format. The union enterprise organization format is the core production organization of North Korea's industry, which can be defined as a huge

<sup>&</sup>lt;sup>8</sup> The Alternative Work System was first a collective guidance system with the Factory Party Committee as the supreme body. Unlike the previous system, the Party's guidance was enforced in industrial management. Second, it was a unified and integrated production guiding system, merging the production guidance from managers and technical guidance from technicians that had been run separately into a single guiding system. Finally, it was to construct a centralized material supply system and a home front supply system (Kim II-Sung, "About Further Development on the Alternative Work System" (refer to a speech made at Alternative Electrical Machine Factory Party Committee Meeting on November 9, 1962)).

enterprise group in the form of vertical integration. Vertical integration is a structure in which factories and enterprises making products have subsidiary raw material factories or enterprises. When we look at the industrial guiding management system under the union enterprise scheme, the national economic organization (the National Planning Committee various committees and ministries) entrust considerable authority to union enterprises and in return directly manage only a few union enterprises. The Party Committee of union enterprises has equal authority to city and local Party Committees and managed various projects for subsidiary factories and enterprises. Thus, union enterprises had the authority to make overall plans for themselves as well as subsidiary factories and enterprises, setting production plans and carrying out enterprise management projects (material management, facility management, labor management, financial management).<sup>9</sup> In other words, the union enterprise is a unit of planning, production, and execution, which directly plans and produces under the guidance of the central planning organization.

However, North Korea started to change the union enterprise system to break from the continuing economic crisis and normalize industrial production from the 1990s. It is known that as of the end of January 2000, North Korea has been promoting structural adjustment by reorganizing 44 union enterprises, integrated factories, enterprises and general union offices into unit factories. From the First Supreme People's Assembly of the 10<sup>th</sup> session (September 5, 1998) to the end of January 2000, titles such as "union," "integrated" and "general union office" were removed from 44 enterprise groups; instead, unit enterprise names included words such as "factory," "power plant," "coal mine" and "management office" are being used.<sup>10</sup>

The dissolution of the union enterprise system was caused by structural problems such as the bureaucracy of enterprise organization, the National Economic

<sup>&</sup>lt;sup>9</sup> The reasons for the establishment of the union enterprise system can be summarized as the following: 1) To raise the efficiency of economic management expanded in the 1970s; 2) To effectively accomplish the Alternative Work System through the union enterprise party committee; 3) To reduce production cost by building a self-completing production structure that covers raw materials to finished products within the union enterprises; 4) To practice a dual self-supporting accounting system (operating the entire union enterprise by the self-supporting accounting system, while operating factories and enterprises by a separate self-supporting accounting system); 5) To promote technological development through enlarging enterprises (S. S. Park. 2000. *North Korea's Turning Point*. the Bank Of Korea. pp. 30-31).

<sup>&</sup>lt;sup>10</sup> The Ministry of Unification, "The Reorganization Trend of North Korea's Industrial Organization," a press release material, February 10, 2000. Union enterprise is a name given to a large-scale enterprise group; enterprise groups of smaller scales were called integrated enterprises or integrated factories. Integrated factory was usually applied to power plants, coalmines, and railway vehicle production factories that did not reach the standard of a union enterprise. As for the mechanic industrial sector, such as automobile and tractor manufacturers and the electric and electronics sector, integrated factory was usually applied. The term 'general union office' was often used for the forestry sector.

Organization's weakened control over the union enterprises, the confusion in the production performance reporting system, the weakening competitiveness of the union enterprises, the weakening dual self-supporting accounting system and unsatisfactory technological development. Therefore, the abolishment of the union enterprise system was expected to show short-term effectiveness such as reduced middle management authority, expansion of the direct effects of the National Economic Unit on the economic unit and enforcement of separate self-supporting accounting systems for factories and enterprises. North Korea further enforced the centralized planning system, which was quite relaxed through the transfer of authority of union enterprises to the Cabinet. This forms a contrast to China and Vietnam, which addressed decentralization as a key to enterprise revolution. The decentralization means transferring the centralized authority to local governments and enterprises. The fact that the People's Economic Planning Law, legislated in April 1999, also stressed the preparation, execution and totaling of plans reflected that it was a legal expression for the North Korean government to reinforce the centralized enterprise management system by revising the planning system (KDI 2000, 8-9).

However, in order to gain efficiency through changes such as the dissolution of union enterprises, changes to the enterprise business management system have to be made. Since enterprises are now under the management of senior administrative organizations such as the Cabinet or the provincial people's committees, the autonomy of enterprise business management is allowed in extremely limited areas. In other words, the enterprise is the basic unit of industrial production, but its role is to execute standardized production activities or to achieve the amount of production ordered by the planning authorities. In North Korea, the bodies that make decisions on matters that the enterprises regard as important under the market economic system, such as research and development, production planning, equipment investment planning, product sales and distribution, human resources (employment and promotion), material purchases and payment, are not made by enterprises but by the state administrative organization. Therefore the enterprises do not want to be responsible for profits or losses, leading to deteriorated profitability and low efficiency.

In addition, the enterprises basically focus on political ideological stimulation under the government's priority-over-political issues principle. Thus, rather than inspiring the workers' enthusiasm through materialistic incentives as in the case of China and Vietnam, the North Korean government tried to attain a similar effect through socialist movements such as the *Chollima* Movement and Red Flag Ideology. However, such efforts were met with limitations, as in other socialist countries, and became one of the major reasons for the low productivity.

The North Korean government has, in part, acknowledged the autonomy of enterprises through reinforcing the self-supporting accounting system and attempts to reduce various enterprise inefficiencies, but without substantial result.<sup>11</sup> The self-

supporting accounting system in North Korea organizes production activities by receiving necessary goods and funds from the government. Furthermore, it is a system that naturally production costs with profits, as well as saving goods and raising productivity by guaranteeing factories a certain level of profitability. However, this operates only within the limit of forced plans from senior management and given production factors. Thus, the extent that the factories can conduct business activities independently is extremely limited. In addition, the autonomy of North Korea's self-supporting accounting system is quite limited when compared to that of the former Eastern European socialist nations (Ministry of Unification 2000, 266).

Recently, North Korea has been emphasizing actual benefits in economic management and showing some signs of change through the 1998 Amendment of the Constitution. In particular, by regulating the self-supporting accounting system and the right usage of economic entities such as cost, price and profit (Article 33 in the amended Constitution), the responsibilities of managers and head technicians at factories and enterprises further have been strengthened. In addition, there is a tendency to include the planning index of the central authorities that reflects the preliminary numbers of production at each factory and enterprise as much as possible. This can be viewed as a positive change with respect to profit generation and autonomous management. However, the senior administrative organization has the basic operating authority, and internally, as long as the structure in which the party committee of factories and enterprises is leading, it would be difficult to raise the efficiency of management and production.

Since North Korea is also aware of these problems, it has been showing some signs of change in management recently. Since July 1, 2002, North Korea has carried out such measures as a dramatic increase in price and wage, reform of the price fixing system, change in the rationing system, decentralization in national planning, expansion of autonomy in factory/enterprise management, creation of a distribution market of production means, expansion in differentiation of distribution based on socialist distribution principle and reform of the social security system. These reform measures lead to two contrasting conclusions. One conclusion is that

<sup>&</sup>lt;sup>11</sup> North Korea's self-supporting accounting system started in September 1973 with adoption of the Regulations on the Self-supporting Accounting System of State-owned Enterprises in the Plenary Meeting of the Party Central Committee. In May 1984, by the command of Kim Jung-II, the Regulations and Rules on the Self-supporting Accounting System of State-owned Enterprises were revised. In August of the same year, the system was expanded and enforced with the establishment of enterprise management regulations. North Korea has been reducing the scale of government support by practicing a dual self-supporting accounting system regarding the union enterprises and a semi self-supporting accounting system regarding the union enterprises (Y. G. Yoo. 1998, p. 23).

the changes are a signal that North Korea is moving toward becoming a market economy. Another conclusion is that they are supplementary measures within the framework of planned economy. North Korea has called it an "economic adjustment policy" to establish a powerful and prosperous nation. This economic reform was made to further strengthen socialism and the planned economic system to enhance the quality of life.

Among the reform measures, improvement and change of economic management were also included, and the most remarkable point is the raise in management autonomy at enterprises. The raise in management autonomy would benefit the workers while overcoming some of the fundamental problems in North Korea (such as the lack of supply). The increase in management autonomy means the enforcement of management responsibility for each enterprise. Factories and enterprises that were wholly dependent on the government would now be responsible for the entire production process and results, from supplying materials to making profits through sales.

In October 2001, Kim Jung-II proposed a basic framework of change in management through economic management guidelines. First, the National Planning Committee would decide the strategic index as in the past, but the rest would be decided by each enterprise; the local economic sector changed the details of the planning framework so as to fit into the actual situation. Second, the price fixing decision was decentralized so that each factory could decide the price of local industrial products such as consumer goods under the supervision of the senior manager. Third, the socialist commodities trade market was allowed to use some of the products as trade resources.<sup>12</sup>

A recent article of the *Chosun Shinbo* reported, "with regard to the reform of enterprise management strategy, the reforming process has been made in the direction of further raising the performance of subordinate units, including resolving the lack of raw materials and resources for the desirable practice of self-supporting accounting system."<sup>13</sup> This seems to show the effort to make profits by stimulating production through the self-distribution of necessary materials and increased production, raising the workers' enthusiasm by dividing the profits in the form of wages based on workload.

<sup>&</sup>lt;sup>12</sup> Kim Jung-II. "About reform and reinforcement of socialist economic management" (October 2001). Cited in *The Joongang Daily* (August 2, 2002).

<sup>&</sup>lt;sup>13</sup> See Chosun Shinbo. July 26, 2002.

# References

\* In Korean

- Choi, Shin-lim and Lee Suk-ki. 1998. North Korea's Industrial Management and Enterprise Management. Seoul: Korea Institute for Industrial Economics and Trade.
- Hong, Mi-Ree. 2002. "North Korea's Industry: Nonferrous Metal Industry." *The Unified Economy*. Seoul: Hyundai Economic Research Institute. (May-June Issue).
- Hong, Soon-jik. 2000. "North Korea's Industry: Steel Industry." *The Unified Economy*. Seoul: Hyundai Economic Research Institute.
- Hyundai Economic Research Institute. 2000. North Korea: Trade and Investment Guide.
- Juche Research Center in the North Korea Academy of Social Science. 1985. *Dictionary of Economy* 1-2. Pyongyang: the North Korean Academy of Social Science.
- Kim, Il-Sung. 1970. *About the Socialist Economic Management* 3. Pyongyang: the Korean Labor Party Press.
- Kim, Tae-II. 1993. *The Operation System of North Korea's State-owned Enterprises*. Seoul: Korea Institute for National Unification.
- Ko, Seung-Hyo. 1989. *Introduction to the Modern North Korean Economy*. Daedong Publication.
- Lee, Ki-Song. 2001. "North Korea's Industry: Textile Industry." *The Unified Economy*. Seoul: Hyundai Research Institute. (March-April Issue)
- Lee, Sang-Jik, Sin-lim Choi and Suk-ki Lee. 1996. North Korea's Enterprise Management. Seoul: Korea Institute for Industrial Economics and Trade.
- Lee, Suk-ki. 1998. North Korea's Local Industrial Situation and Development *Prospect.* Seoul: Korea Institute for Industrial Economics and Trade.
- National Statistical Office of South Korea. 2000. Comparison of South and North Korea's Economic and Social Aspects.
- Park, Suk-Sam. 2000. *The Turning Point of North Korea's Economy*. The Bank of Korea.
- Park, Jung-Dong. 2000. *The Study on North Korea's Economy Development Strategy*. Seoul: KDI.
- The Ministry of Unification. 2000. "The Reform Trend of North Korea's Industrial Organization."
- The Bank of Korea. The Result of North Korea's GDP Estimation. (various issues)
- The Korea Development Bank. 2000. The Industry of North Korea.
- The North Korean Economy Forum. 1999. *The Study on South and North Korea's Economic Integration*. Seoul: Oreum Publication.

Yoo, Young-Gu. 1998. "The Study on the Direction of North Korea's Economic Management Reform." *The Unified Economy.* Seoul: Hyundai Economic Research Institute. (December Issue)

# **VI. The Defense Industry**

Chul-Whan Kim

# 1. Characteristics of North Korea's Defense Industry

### A. Economic Policies and the Defense Industry

North Korea's economic policy has been based on building a socialist economy by focusing on heavy industry and a self-reliant development strategy. North Korea's economic system is a planned economic system along soviet lines. Although most East European countries modified their system, North Korea still has the most traditional Soviet-socialist system.

At the core of North Korean economic policy is building an independent national economy. These policies were realized by declaring the basic objective of the economy has to remove the legacy of Japanese occupation and utilize the means of production to promote the independent development of the national economy. The land reform and nationalization of major industries were executed following this objective. Economic self-reliance was soon considered a necessary condition for political, diplomatic and military independence, while the self-reliance-oriented economic objective was enforced with the establishment of *Juche* ideology in the latter half of 1960s. In those processes, priority was set on development of heavy industry (T.W. Lee, ed, 1990, 46-48).

North Korea's development strategies are closely related with self-reliance and the *Juche* ideology. Generally, *Juche* ideology from an economic perspective is independence aimed at establishing a self-reliant economic system. But North Korean industrial policy focusing on the heavy industry caused a lack of efficient supplementation from light industry production and the contraction of foreign trade, which led to the paralyzing of industrial activities. Another objective of North Korean economic policy has been to promote the strength of the armed forces. Pyongyang prioritizes heavy industry as a measure to realize the objective. North Korea adopted a strategy of parallel development in the economy and national defense in December 1962. Moreover, as the ideological conflicts in the communist sphere and the border disputes between the Soviet Union and China intensified, Kim Il-Sung advocated national self-defense and emphasized further reinforcement of military power. Since then, North Korea has been maintaining strategy to promote military force, even at the cost of delaying economic development.

### **B.** The Concept of Defense in North Korea

When examining North Korea's defense industry, it should be noted that the economic policies of North Korea were characterized by arms building from the inception of the regime. A consistent concept has been the concentration on heavy industry to strengthen the socialist economy and build national capability to rejoin with South Korea under socialist terms. According to *Dictionary of the Economy* (1985) published by the Juche Research Center in North Korea, the defense industry is defined as "an industrial sector that produces military goods" that is required to fortify national defense power. It includes body of necessary goods including weapons, ammunition and military uniforms. Moreover, the defense manufacturing industry is divided into two sectors: a sector that produces weapons and technical equipment for combat, including guns, cannons, ammunition, tanks, warships and military aircraft; and sector to produce military necessities such as military uniform, shoes, outfits and food (Juche Research Center 1985, 225).

North Korea has emphasized developing a modern defense industry because of the basic direction of reinforcing national defense under socialism is the establishment of self-defensive national power. In addition, North Korea strongly advocates that a self-reliant and modern defense industry is necessary for the realization of *Juche* in national defense. Kim II-Sung and Kim Jung-II have both emphasized that a "self-reliant and modern national defense industry can be developed effectively on the basis of self-reliant/modern heavy and light industries."<sup>1</sup> When North Korea talks on unification, it is commonly assumed that the core of North Korean policy in regards to the defense industry is to assist and develop self-reliance by creating a self-reliant defense industry.

<sup>&</sup>lt;sup>1</sup> See Dictionary of the Economy (1985). p. 225.

# C. The Organization and Management System of North Korea's Defense Industry

### 1) The National Defense Commission

The defense industry in North Korea is called "the second economy" and is managed by a tripartite system of the Workers' Party, the Cabinet and the military under the National Defense Commission. The supreme guidance institution for the defense industry was formerly the Military Committee in the Party's Central Committee. However, with the revision of the North Korean Constitution in 1998, the National Defense Commission, a highly recognized institution of the Central People's Committee, came forward as the supreme military guidance institution that commanded the armed forces and national Defense Commission commands and controls all the armed forces and guides all national defense affairs (K.T. Im 2000, 66).

2) The Military Committee and Defense Industry Department in the Korean Workers Party's Central Committee

For the North Korean defense industry, the workers' Party has played the role of decision-maker (Y.T. Jeong 1995, 97). North Korea also emphasizes the importance of the Military Committee in the party's Central Committee for policy related to defense. The regulations of the Korean Workers party prescribes that "the Military Committee in the party Central Committee determines the execution measures of the party military policy and guides the direction of the defense industry development by fortifying all the armed force including the North Korean People's Army.<sup>2</sup>" However, it is assumed that the role of the party's Military Committee became less important after North Korea established the National Defense Commission as its military guidance institution in 1998. Nonetheless, it has been prescribed that the secretary of the Military Committee in the Worker's Party guides the direction of military industries and the order of the party through the Defense industry Department — a professional organization under the umbrella of the Workers' Party Secretariat.

3) The Munitions Planning Department in the National Planning Committee

Following the principle that defense industry production should be given eco-

<sup>&</sup>lt;sup>2</sup> See Section 3 of Article 27 in the Korean Workers' Party Regulations.

nomic priority economy, the Munitions Planning Department in the National Planning Committee actualize a munitions production index. The Munitions Planning Department, which has some 150 members of staff, practically belongs to the Military Committee in the Party Central Committee. The Munitions Planning Department, including such sub-departments as the Office of Production Planning, the Office of Supply Planning, the Office of Labor Planning and the Office of Financial Planning, examines and mediates proposed plans from each military production institution, draws up plans and submits them to the Military Committee in the Party's Central Committee. When the Munitions Planning Department reports to the Party's Military Committee, the Military Committee notifies the appropriate economic sectors through the process of final ratification.

### 4) The Second Economic Committee

North Korea established the Second Economic Committee in the early 1970s to manage the production of military goods. The Second Economic Committee independently directs forward planning, production, supply and financial works, thus taking precedence over the general economy. The committee expanded the production of military goods by establishing munitions production facilities at *Ilyongbungongjang* (Daily Branch Factory) and *Ilyongjikgongjang* (Daily Directfactory). It managed not only production organizations under the Second Economic Committee became affiliated with the National Defense Commission in 1993 after the National Defense Commission was established with the revision of the constitution in 1992.

The Second Economic Committee independently overseeing production activities, is the head organization for the defense industry in North Korea. The Second Economic Committee, under direct control of the National Defense Commission, manages the planning, production, distribution and external trade of all military goods in North Korea. The Second Economic Committee, located in Kangdong district of Pyongyang, has eight general departments and incorporates the Second Science Institute and the General Department of External Economy, which is in charge of foreign exchange earning (Y.J. Jeong 1997, 88-91). The committee directly controls about 130 munitions factories and about 60 facilities for weapon repair/parts production. It conceals the characteristics and types of produced weapons by using serial numbers and false labelling. In addition, the committee has about 100 factories for civilian goods that can transfer to the production of military goods during a security emergency. All large and medium-sized North Korean factories have the facilities and organizations that can produce military goods (K.T. Im 2000, 73).

### 5) The Ministry of People's Armed Forces

Focusing on the production of necessary goods in the military sector for the preservation and the repair of broken weapons, the Ministry of the People's Armed Forces joins the Second Economic Committee in the production of weapons. The departments under the Ministry of People's Armed Forces include the Equipments Management Office, the Transportation Management Office, the Inspection in the Department of General Staff Officer the General Department in the Rear and the 15<sup>th</sup> Department (the General Department of Technology) under the influence of the Department of General Staff Officer. In addition, Maebong Trade Company under the Department of the General Staff Officer is responsible for the import and export of missile parts; it is the only trading company under the Ministry of People's Armed Forces that has a branch office abroad.

The Equipment Management Office concentrates on the repair of equipment, tools and materials while operating the Sunchon Tank Engine Factory to produce parts for heavy weapons. The Transportation Management Office produces military trucks and rotary press machines as well as their parts and operates the Regenerated Automobile Factory, the 316 Automobile Factory and the 919 Automobile Parts Factory. The Inspection Department of the General Staff Officer takes charge of the inspection and distribution of weapons and military goods according to the given guidelines. To supply uniforms, shoes, medicines and combat food, the ministry operates many factories, including the 107 Factory in Sunchon for the production of parachutes, the 115 Factory in Sinuiju for the production of military clothes, the 111 Factory in Sakchu for the production of military shoes, the Mirim Factory for the production of special forces combat food and the Nanam Pharmaceutical Factory for the production of military medicine (K.T. Im 2000, 69-70).

### 6) General Enterprise Munitions Factories under the Cabinet

North Korea set up branch factories (or workplaces) at general enterprises under the Cabinet to produce military goods following orders from the Second economic Committee. Those factories, the Daily Branch Factories, produce weapons and equipment or cooperatively produce related parts. These factories, extended to the people's economy, are producing tens of thousands of goods for military use, and the military goods factories receive the parts and assemble the final products.

The control and pressure from the Party Military Committee and the Second Economic Committee on the munitions system in the civilian sector is severe because the production of entire military goods will be delayed if cooperative goods, or parts, are delayed. The production target for cooperative goods for military use is set by the Party's Central Military Committee. The Department of Daily Production

Guidance in the Second Economic Committee directs the production process of munitions factories and many other organizations (H. Won 2000). The Daily Branch Factories do not take sole charge of producing military goods—the personnel in charge of an enterprise are responsible for the outcome of military goods production because the factories are under the Cabinet. Therefore, each manager of the factory aims achieve the planned quantity of production for the Daily Branch Factory in spite of the generation of failure to produce for civilian demand. The factories in the civilian sector, if the electricity and raw materials are supplied, focuses on the civilian economic plan after accomplishing the production plan for military use first. Daily Branch Factories are organized extensively, from the key industries to the small factories and enterprises engaging in military goods and therefore, the production of goods necessary for the civilian economic sector has been a great failure.

# **D.** The Position of the Defense Industry in the North Korean Economy

North Korea's armed forces are considered crucial to accomplishing the socialist revolution and forming the economic foundation of the security sector for the preservation of the regime. Thus, the armed forces in North Korea have an independent manufacturing system of munitions and act as a major player in the economy. In this regard, the analysis on the effect of the North Korean economic crisis on military force and the meaning of the economic crisis for the defense industry as a whole is important in understanding the current situation and the future of the defense industry. It is assumed that one of the most important causes of aggrevation to the economic crisis of North Korea was the policy of defense industry-first, following heavy industrialization. The failure of the heavy industry policy led to the paralysis of other economic sectors and consequently, to the excessive growth of the defense industry.

In addition, North Korea has encouraged the development of the defense industry by asserting that "the development of defense industry completely coincides with the interests of all society and people" under the socialist system. Kim Il-Sung, in an address at the Korean Workers' Party Representatives Conference in 1966, directed the people to "build up necessary goods by fortifying important areas for military strategy and developing the defense industry and be ready in peacetime to continue the production in wartime by rapidly shifting the economy to the wartime system."<sup>3</sup>

North Korea further promoted the defense industry as follows: the establishment

<sup>&</sup>lt;sup>3</sup> See The Korea Central Intelligence Agency (1979). p. 263.

of a self-reliance system for military tools and materials; the deliberation of research and development policy about military tools and materials; the strategic arrangement of the defense industry facilities; the promotion making undergroundfortress of the defense industry facilities; the establishment of transition system in wartime; and the reservation of strategic goods (Y. K. Kim 1990, 66). The production of the North Korean defense industry shares 30 percent of total national production, and the production amount of the defense industry enterprises surpasses the production amount of civilian enterprises. The fact that the significant rate of the defense industry is very high in the North Korean economy is found, when thinking about the case of the Soviet Union that the weight of the defense industry records 8 percent out of total national production (Trivenko 1992, 116). This means that North Korea has driven the defense industry as part of heavy industry upbringing, and consequently, it is assumed that the defense industry of North Korea itself is a core foundation of North Korean heavy industry and has been currently utilized as a major tool to earn foreign exchange, that is to say, the defense industry of North Korea shares more than 50 percent of North Korean economy, but acts as a large burden on the North Korean economy contrast to the principle of the market economy by being operated and managed inefficiently and unproductively, and it is expected that this would be big barrier throughout not only the defense industry of the unified Korea in the case of the integration between the two Koreas, but also all the economy (S.K. Lee 1999, 22-26).

# 2. North Korea's Defense Industry and Its Development Process

North Korea constantly reinforced its military capabilities while driving the First Seven-Year Plan (1961-70), the Six Year Plan (1971-76), the Second Seven-Year Plan (1978-84) and the Third Seven-Year Plan (1987-93) under the national strategy of parallel development of the economy and the national defense sector. When dividing the process of armaments reinforcement in North Korea into the 1960s and 1970s, the armaments reinforcement in 1960s is assumed to have taken a positive position while the armaments reinforcement after 1970 is specified to shifted from a defensive to offensive position (C.W. Kim 1993, 243-246). North Korea not only continued armaments reinforcement from an offensive position in 1980s and 1990s, but also fortified its offensive position more than ever before.

Kim Il-Sung's report, "The Current Situation and Our Party's Work," at the Korean Workers' Party Representatives Conference in October 1966 mostly addresses policies regarding the defense industry, including the production of combat and combat technology equipment and the production of general military goods (Chosun Central News Agency 1967, 116).

Based on Kim II-Sung's instructions and other data, the objectives of North Korea's defense industry can be put in the following order: First, the establishment of a self-reliant system for military tools and materials; Second, the consideration of R&D policy for military tools and materials; Third, the strategic disposition of the defense industry facilities; Fourth, the promotion of making underground fortresses for defense industry facilities; Fifth, the establishment of a transition system for wartime; and Sixth, the reservation of strategic goods. The North Korean policies on defense industry promoted according to those basic policies are summarized as the enlargement of facilities for the defense industry, the extension of existing facilities, the increase in military goods, a break from external dependency on munitions material and equipment, the increase of strategic tool reserves and materials, and the consideration of wartime production countermeasures at major industrial facilities.

The major defense policies of recent years exercised by North Korea are: First, the development of advanced equipments and electronic equipment; Second, the development of weapons fit the North Korean topography; Third, production for the use of guerilla war and invasion of South Korea; Fourth, the production of chemical and biological weapons; and Fifth, the development of missiles and nuclear weapons (Y.K. Kim 1990, 66).

North Korea has invested intensively in heavy industries according to the law of extension and reproduction under the tenet of "constructing a socialist economy." Furthermore, the imbalance between industries has intensified as a result of severe factors: heavy investment in the defense industry to reinforce armaments under the policy of advancing national defense and the economy side by side. Moreover, the light industry, especially consumer goods, is extremely underdeveloped and the development imbalance among industries caused the chronicle depression of infrastructures such as energy and transportation.

Consequently, the North Korean defense industry policy obtained its anticipated objective for the promotion of the defense industry, the construction of military force and the enlargement of its potential power, but it has not fulfilled the economic development theory of socialism: "The development of heavy industry improves light industry, agriculture and living standards" (C.W. Kim 1993, 260).

### A. The Development Process of the North Korean Defense Industry

The North Korean defense industry has grown due to the preferential policy of the armaments-oriented heavy industry since the inception of the socialist regime. The development process of the North Korean defense industry has been classified into five stages: the preparation period (1945-1950); the foundation period of the 1950s; the expansion period in the 1960s; the enlargement and self-reliance period in the 1970s; and the advanced defense industry after the 1980s.

### 1) The Preparation Period (1945-1950)

North Korea's defense industry, from the inception of the socialist regime(1945) to the Korean War(1950), restored about 30 ordnance factories, including the army ordnance depot in Pyongyang and chemical factory in Hungnam, while starting production of small arms and ammo using Soviet parts, raw materials and technical aids. North Korea started to promote the defense industry during the nationalization process of major industries in 1946, thereby nationalizing "the companies directly producing weapons, clothes for the military, war outfits, communication materials, transportation equipment for the military and other military goods." This move was based on the Article 3 in the "Written Decision on Countermeasures Showing the Creativity of Individuals for Industrial and Commercial Activities with Guaranteed Individual Income Rights" implemented in 1946.

By restoring a small number of weapon manufacturing factories, including the Japanese-made army ordnance depot in Pyongyang and the chemical factory in Hungnam, North Korea partly met the requirements of basic military demand (small arms and ammunition). Indeed, North Korea was supported by the Soviet technology and material aid. To increase military goods, at a North Korean military parade on February 8, 1948, Kim II Sung stated that "workers produce and supply sufficient good weapons, uniforms and necessary goods to the military in proper time, and the farmers should secure food for the military.<sup>4</sup>" The munitions production in early years was adequate for basic military demand. During the Two Year Plan (1949-1950), North Korea not only reinforced preparations for an invasion of South Korea by concentrating on restoring national enterprise for the production of armaments, but also started small-scale production of weapons and goods to meet military needs.

Even though it is known that the North Korean regime, before starting the War, sent technicians to the Soviet Union with the mission to complete short-term(one to six months) technical training courses offered at munitions industries, partly participating in the production of weapons necessary for the invasion of South Korea. North Korea itself was only producing 7.62mm submachine guns. In addition, it is assumed that the military power of North Korea during wartime largely increased with support from socialist countries such as the Soviet Union and China.

#### 2) The Foundation of the Defense Industry (the 1950s)

During the Korean War, a UN research team examined various defense industry facilities that North Korea had owned before the participation of Chinese military. It

was reported that North Korea itself was only able to produce 7.62/mm PPSh41 submachine guns. The necessary materials for the production of other munitions items were supplied by the Soviet Union and China. According to a U.S. army report written in 1955, "North Korea concentrated on making 7.62mm machine guns due to the relatively small scale of the defense industry and the lack of the professional human and natural resources. That North Korea was able to produce weapons successfully in that area means that North Korea might succeed in producing the weapons of foot soldiers later. Hereafter in a few years, it is judged that North Korea will be able to establish the defense industry independently, and especially the production of small weapons and supply of small scale of the military goods will take the totally independent line" (Jacobs 1989, 19-25).

North Korea positioned the machinery manufacturing industry at the core of heavy industry and started to build on its foundation while focusing on the rehabilitation of the defense industry during the postwar restoration plan (1954-56). The armaments-oriented heavy industry policy (81 percent of total investment during the Three Year Plan went to heavy industry) continued through to the First Five-Year Plan (1957-1961), and North Korea generated a foundation for the defense industry by constructing 19 factories for weapons. Kim Il-Sung emphasized that "heavy industry is a basis of economic development. Without the development of heavy industry, there is no development of agriculture and North Korea cannot equip all the parts of the economy with contemporary technology. In particular, heavy industry is a material foundation of national politics and economic independence, and without that, there is no national economy, nor reinforcement for national defense" (The Economic institute in the North Korean Academy of Social Science 1970, 555-556). Following these guidelines, North Korea generated a foundation for the defense industry by pursuing armaments-oriented industrialization rather than economic growth, and it is assumed that the target proposed in that process was the construction of an industrialized country with strong defense power.

The weapons produced in the 1950s in North Korea used technology and material assistance from the Soviet Union. North Korea increased the number of product items through license contracts with the Soviet Union in the second half of 1950s, including rifles, anti-tank weapons, recoilless guns and trucks. The 1958 license contract, which lasted until March 1967, considerably helped prepare the foundation of the defense industry in North Korea. In addition, North Korea established *Nodongjeokwidai* (the Armed Labor) in January 1959 to supplement the military strength lost with the withdrawal of the Chinese Army in 1958, fuelling the construction of a independent military force.

<sup>&</sup>lt;sup>4</sup> See Kim, Il-Sung (1964). p. 81.

### 3) The Expansion Period of the Defense Industry (the 1960s)

The South Korean government concluded a Mutual Defense Treaty with the U.S. government in November 1954 and took specific measures to solidify post-war security policy. Changes that reinforced an anti-communist stance against North Korea accompanied the South Korean military coup on May 16, 1961. With changed international circumstance, North Korea concluded the "Treaty on Friendly Cooperation and Mutual Aid" in July 1961 with the Soviet Union and China. With this treaty, North Korea enlarged the introduction of new weapon systems from the Soviet Union and China while extending the foundation of the defense industry with the support of production technology.

The Soviet Union yielded under U.S. pressure during the CubanAffair in October 1960 and started pursuing a more positive policy toward the U.S., causing ideological conflicts with China. In December 1961, Kim Il-Sung visited the Daean Electric Factory at Kangsogun in Pyongnam Province. He proposed a development policy for wartime transition and started to pursue a military line in order to pursue war independently, as North Korea was not able to depend completely on the Soviet Union and China. Thus, the armaments-oriented heavy industry policy came to the fore. While developing the "Four Military Line" policy during the Cuba Crisis in 1962, North Korea adopted the policy of promoting economic development and national defense construction at the Fifth Members' Conference in the Fourth Session of the Party Central Committee in December 1962. Moreover, the country largely emphasized the distribution of natural resources in order to reform the First Seven Year Plan (1961-1970) and amplify armaments. North Korea allotted 75 percent of investment in industrial sector to heavy industries; in reality, it invested more resources in the expansion of the defense industry than planned after the publication of the policy on advance economy and national defense.

While producing Simonov rifles developed in the Soviet Union, North Korea made 7.62mm RPD light machine guns (62 type and 64 type) with the Soviet technical support in 1962 and produced 14.5mm KPV heavy machine guns by imitation. In addition, anti-tank 40mm RPG-2 grenade launchers supported by China and the Soviet Union met internal demand and 82mm B-10 recoilless rifles, modeled after the Soviet Union's rifle, was equipped from 1963. While replacing old trench mortars with the production of 82mm and 120mm mortars with Soviet technical support, North Korea actively promoted plans for a larger caliber, independently produce 14.5mm anti-aircraft machine guns, and soon producing rocket guns thata were imitations of 107mm rocket guns made in China (The Institute of Far Eastern Problems 1974, 89-101). North Korea developed a weapon system that was suitable for regiment class army operations in the first half of the 1960s and produced a weapon system that was independently capable of dividing operations in the second

half of the 1960s.

North Korean weapon production in the 1960s was focused on quantitative production mainly for the development and production of conventional basic weapons and armaments in full-kit. North Korea produced weapons along the lines of weapons from the Soviet Union and China, centering on rifles, light machine guns, heavy machine guns, recoilless rifles and rocket guns. Therefore, although North Korea could not produce contemporary automatic weapons during this period, it had established a foundation for the production of conventional weapons. During this period, North Korea also set up the Hamhung branch of the National Defense and Science Institute, completed the 2.8 Vinylon factory in Hamhung, and facilities for chemical weapons in Hungnam, Sinuiju, Chongjin, Aoji and Kanggye. It started mass production of conventional chemical weapons such as gas that affected skin, nerves and the respiratory system. On the other hand, North Korea started the research and development of nuclear power for the development of nuclear weapons while introducing a nuclear reactor for testing, using the graphite speed reduction method from the former Soviet Union in 1965.

### 4) The Self-reliance Period (1970s)

The defense industry in North Korea expanded more with the reinforcement of the production base for large scale equipment, plant facilities and automatic factor through the establishment of the Department of Manufacturing Industry for Vessel Machinery in December 1972. According to the Institute of Far East Problems (1974), at the fifth party meeting in November 1970 (before the First Six-Year Plan), Kim Il-Sung emphasized that "North Korea has to guarantee and produce an contemporary weapons and technology and science equipments for combat in order to improve the technical equipments and equip all the people with arms... by expanding the current munitions manufacturing industries, constructing new munitions factory more, and producing more types of the military goods." The defense industry in North Korea moved from the imitation phase to independent development phase by completing the system for weapon production, with the exception of aircrafts and missiles. It was important period for North Korea to concentrate on the expansion of exports and the augmentation of industrial facilities by introducing loans from the West. However, North Korea invested vast amounts of capital in the non-economic sector to expand and construct the defense industry, diverting foreign debt from economic development.

While continuously promoting the quantitative increase and modernization of the defense industry in 1970s, North Korea concentrated on the development and production of an independent weapon system to ensure in to independent tactical ability. North Korea produced 107mm and 102mm guns, 122mm and 152mm

artillery pieces and five types of 122-180mm class self-propelled guns that were imitations of Chinese and Soviet guns. North Korea did not have independent design ability for moving equipment such as tanks and armored cars, but produced its first imitations of the Chinese T-59 tank, M-1973 armored car and K-61 amphibious armored car in 1973. Furthermore, it started to produce T-62 tanks with the technical support of the Soviet Union from the middle of 1978.

North Korea saw rapid development in the case of naval vessels. During this period, North Korea accumulated technology through the mass construction of war vessels. It also constructed many types of high-speed boats in the imitation of a Soviet KOMAR-class guided-missile boat. In addition, it built 1500-ton light destroyer and 1400-ton submarines with technical support from China. Meanwhile, North Korea develped the skills needed to maintain guided missile weapons introduced in 1960s. The country started to produce guided missiles in an imitation of the AT-1 Soviet anti-tank missiles in the middle of 1970s. In addition, North Korea produced AT-3 in the end of 1970s, introduced the parts for SA-2 with the production of the portable anti-aircraft guided missile SA-7. Not only producing some of these missiles in assembly, North Korea saw MIG-19 (license) test production.

### 5) The Advancement Period (1980s-90s)

The 1980s was a decade of advancement in which North Korea started to show an interest in the development and production of advanced weaponry, focusing on the qualitative improvement of the North Korean weapons system. North Korea also produced many types of guided missile weapons and aircraft through assembly. Moreover, the country achieved rapid development, especially for missile production, concentrating on missile production and the development of nuclear weapons. It is also known that North Korea started to attract foreign exchange earnings through weapon exports, having satisfied most of its domestic demand for weapons. However, the result of weapon introduction was limited by the secondary effect of foreign exchange shortages due to economic difficulties in the 1990s. Indeed, the weapons imported by North Korea in this period were no more than SA-16 Gimlet Igla 1 portable surface-to-air missiles (licensed from Soviet Union in 1989 and produced from 1992) and MIG-21 Fishbed (34 aircrafts) imported from Kazakhstan in 1999.

The object in science and technology exchange with foreign countries for the development of advanced technological weaponry after the 1980s was the conclusion of a treaty for the joint development of missiles between North Korea and Egypt in 1984. This missile, the Ta'lr al-Sabah (Morning Bird), is a modification of the SA-2. In addition, Iran supplied financial support for the development of North Korean Scud Missiles. North Korea, pressured by the rapidly changing international

circumstance in the 1990s, emphasized the necessity of fortifying national defense power. North Korea asserted that, "we have to prepare to fully protect the revolutionary gains from the invasion of the enemies because the enemies threaten us with force while consolidating economic sanctions and ideological and cultural aggression to destroy our nation's socialism." For this, North Korea not only called upon the military and munitions sector, but also called the public to step forward. According to the guiding policy, North Korea suggested expanding investment in the defense industry even considering the country's economic difficulties that resulted from the most of its loss of fellow socialist markets.<sup>5</sup> As a result of the qualitative improvement of its weapons system and the production of precision weapons, came to have a total 134 weapon factories (17 gunnery factories, 35 ammunition factories, five tank and armored car factories, eight chemical weapon factories, five shipyards, nine aircraft factories, three guided weapon factories, five communication equipment factories and other 47 factories).

It is known that in the middle of the 1980s, North Korea adopted the Soviet Union's Scud B type missiles and succeeded in producing them based on AT-3 Anti-Tank Missile production and the SA-7 Surface-to-Air Guided Missile assembly skills. North Korea constructed missile production facilities such as Mankyongdae Yakiyon Machinery Factory in Yongseong of Pyongyang, Pyongyang Pig Factory and Factory 301 in Taekwan of Pyongpuk Province. It started to produce 50 surfaceto-surface missiles annually from 1986. After then, it was announced that North Korea had launched a Nodong I missile will arange of 1,300 km, stationing it for a real operation in 1993. It was tested using the transformed Taepodong Missile conveyance body in August 1998. Even though it was not confirmed whether the missile had entered satellite orbit or not, it is clearly evident that North Korea has the ability to develop medium and long-range missiles when considering the fact that the missile actualized all functions like engine combustion, rocket separation and guidance. In addition, North Korea is currently developing the Taepodong I missile (estimated to have a maximum range of 2,000-2,500 km) and Taepodong II (estimated to have a range of 6,700 km). North Korea, having an independent missile production system, has sold 250 completed products, especially Scud Missiles, to Iran, Syria and United Arab Emirates from 1987.

It is assumed that the self-reliance rate for firearms is 100 percent and North Korea is able to produce tanks such as armored car, T-62 Tanks and T-72 Tanks with more than 90 percent domestic technology and materials, with the exception of special armor and precision instruments. In the case of warships, North Korea has constructed hydrofoils and air-floating boat as special ships after building a light

<sup>&</sup>lt;sup>5</sup> See The Korean Workers Party (1996). p.284.

destroyer (S.G. Park 1990, 32). North Korea has also assembled and produced MI-2 Helicopters and YAK-18 Training Airplanes.

The first attempt at developing a nuclear weapon in North Korea started when a technology trainer was dispatched to the Soviet Union in 1956. It is also known that North Korea introduced a nuclear reactor for test purposes from the former Soviet Union and educated nuclear-related professionals after creating a large scale nuclear complex in Yongbyon, PyongPuk Province in 1960s. North Korea succeeded in expanding the output of electricity from the nuclear reactor by concentrating on the refining of fuel and transformation and processing technology in the 1970s. North Korea started the construction of a 5-megawatt class reactor for test purposes in 1980, a 200-megawatt class nuclear power plant in Taechon in 1986 and a large-scale of reprocessing facility in Yongbyon. Starting with the operation of Uranium processing and transition facilities concentrating on nuclear power utilization and

Stage	Period	Economic Plans	The Major Objectives of the Defense industry				
The Preparation	1040 . 50	Two-Year Plan	- The nationalization of the industry				
Period	1949 ; \$0	I wo-I cai Fian	- The preparation for invasion to South Korea				
			- The postwar recovery				
	1954; 56	Three-Year Plan	- The establishment of foundation for heavy industry				
The Foundation	1934   20		(machinery industry)				
Period			- The growth rate of manufacturing industry: 41.7%				
	1057.61	Five-Year Plan	- The establishment of foundation for the production				
	1957 <sub>i</sub> 161	Five-Teal Fian	small arms and ammo				
The Expansion	1961:67	The First Seven-Year	- The establishment of mass production for				
Period		Plan	conventional basic firearms				
1 chou		1 1411	- The growth rate of manufacturing industry: $19.1\%$				
The Self-reliance	1971; 75	SixYear Plan	- The establishment of foundation for the independent				
Period	19/1 3/3	Six i cai i iaii	development of independent weapons				
	1978; 84	The Second Seven-Year	- The independent development of highly precise				
	19/0   204	Plan	weapon				
			- The development of science and technological such				
The Advance-		The Third Seven-Year	as the expansion of infrastructure and automation of				
ment Period	1987 ; <i>9</i> 3	Plan	production				
ment i criod		1 1001	- The development of light industry and reinforcement				
			of external cooperation				
	1994;>		- Development of Taepodong missile and nuclear				
	1994;>		weapon				

<Table 6.1> North Korea's Defense Industry and Economic Development Plan

the completion of the nuclear development system, North Korea completed a series of nuclear fuel cycles in the 1990s. However, it is uncertain whether North Korea has nuclear weapons or not, when considering that the development of the triggering device and conveyance body require highly precise technology. North Korea has the capability of producing an early level of nuclear weapon system if its Plutonium extraction abilities are taken into consideration.

In order to examine the position occupied by the defense industry in the North Korean economic structure, it is necessary to examine the scale and characteristic North Korean weapon imports and exports. As stated before, the defense industry in North Korea was promoted as a strategic export industry in the 1980s.

As mentioned earlier, the defense industry in North Korea, compared with other industrial sectors, has been promoted with the strategic target shown in Table 6.1. In addition, the defense industry has been promoted the major escape route from the severe economic difficulties while protecting the present regime

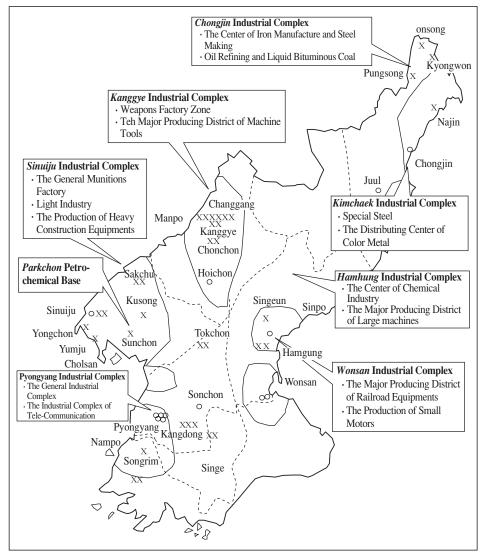
#### **B.** The Status of North Korea's Defense Industry

#### 1) The Location of the North Korean Defense Production

North Koreas defense industry has been influenced by the location of armaments producers. The location of producers in the defense industry was based on military tactics and strategy rather than production costs. Consequently, a group of affiliated weapons factories was concentrated in the same area as arms factories. A good example is the Kanggye Industrial complex which house producers from the defense industry alongside major tool manufacturers. Kanggye is located in an administrative district of Changgang province, a mountainous zone in the center of North Korea. Factories producing AK-47 Automatic Rifles and ammunition were constructed in this area, a group of affiliated factories for weapons, including the Hoichon Machine Tool Factory, the February 16<sup>th</sup> Factory, the Kanggye Tractor Factory, the Aprokgang Tire Factory and the September Textile Factory, is mostly constructed underground in order to guarantee wartime production. The Kanggye Textile Factory (50,000 m<sup>2</sup>) was built underground in 1987.

The location of munitions factories in North Korea is given in Figure 6.1. Most of the weapon production factories are located in the Kanggye Industrial complex, while general munitions factories are concentrated in the Sinuiju Industrial Complex. Other producers the defense industry are distributed in other industrial areas—it is assumed that this selected distribution is in anticipation of wartime demand. When observing industrial facilities for defense industries, Pyongyang Industrial Area, Pakchon Industrial Area, Sinuiju Industrial Area and Kanggye Industrial Area belong to the Western economic sphere. The Chongjin Industrial Complex, Kimchaek Industrial Area, Hamhung Industrial Area and Wonsan Industrial Area are located in the Eastern economic sphere.





Source: North Korea Institute (1983). p. 175.

# 2) The Production Capability of the Military Goods (Conventional Weapons) in North Korea

It is estimated that the defense industry in North Korea has reached a level found in industrialized countries, even though North Korea has a few weak points. This is because the strong centralized economic management and the technical support from the former Soviet Union promoted the North Korea defense industry. The defense industry has expanded to an advanced level due to the development of export-oriented weapons and the active export policy for weapons, even though the North Korean economy has been in a very difficult economic situation in general.

It is estimated that, as shown in Table 6.2, there are about 180 munitions factories in North Korea, including 44 specialized factories and 136 parts factories. Indeed, in the late 1960s, North Korea designated 114 general factories with a large number of employees as wartime transition factories. Thus, it is estimated that, in total, there are more than 300 munitions factories in North Korea. There are about 100 factories for civilian goods that can transfer production between munitions products. It is also known that all the medium-sized and large factories in North Korea practically have facilities capable of producing military goods.

These munitions factories are the core of North Korean economy. The Second Economy Committee under the National Defense Commission manages the planning, production and distribution of all munitions products as well as external trade. The committee is composed of seven departments in the machinery industry including the Support Department, the General Department, the First Department in charge of conventional small firearms and ammunition; the Second Department for

Division	Total	Specialized Factories	Repair/Parts Factory
Gun and cannon factories	43	8	35
Armored vehicle factories	12	2	10
Shipyards	12	2	10
Aircraft factories	9	2	7
Guided weapon factories	8	5	3
Ammo factories	55	19	36
Electronic communication factories	14	6	8
Biochemical factories	16	0	16
Other munitions factories	11	0	11
Total	180	44	136

<Table 6.2> The Number of North Korean Munitions Factories

Source: Yu, Kil-Jae (2000). p.247.

tank and armored car; the Third Department for the development and production of cannons, anti-air guns, self-propelled guns and multi-warhead rocket launchers; the Fourth Department for missiles; the Fifth Department for nuclear and bio-chemical weapons; the Sixth Departments for navy-oriented products, including warship and submarines and the Seventh Departments for communication equipments and air-craft. The committee is managed by Byong-Ho Jeon (the party secretary, the ninth most powerful person in North Korean bureaucracy), Young-Rim Choi (Vice Prime Minister, 18<sup>th</sup> place) and Cheol-Man Kim (a member of the National Defense Commission, 16<sup>th</sup> place). As shown from the positions of the people in charge, the committee is not only closely related with the party and army, but also has strong political power and influence.

After Kim II-Sung emphasized the necessity of promoting the defense industry at the Second Workers Party General Meeting in 1966, the Second Economy Committee was established as the Department of Second Machinery Industry under the influence of the National Administrative Committee and reorganized as the Second Economy Committee in 1971. The Ministry of People's Armed Forces, which produces military goods that center on the production of necessary goods and the repair of weapon for the army, harmonizes with the function of the Second Economy Committee.

The munitions factories are mostly constructed underground in order to minimize wartime damage. These factories are also given false names, usually numbers (for example, No.1 Factory). In addition to these factories, North Korea has a system in place to produce military goods immediately by designating 110 general factories as transition factories in wartime. However, the munitions factories in North Korea follows the production system of the former Soviet Union and were mostly constructed before 1990s. In addition, because of the current economic difficulties, North Korea cannot expand new facilities. The maintenance and repair of facilities and buildings, despite the economic difficulties during 1990s, has continued. North Korea has the potential to recover the cooperation system with Russia to repair its aging facilities and equipment and to normalize the defense production system.

In terms of munitions production ability, North Korea produced training airplanes and helicopters by assembly until 1980s. Moreover, it assembled and produced two MIG-29 aircrafts with Soviet technology, in addition to AN-2 aircraft. However, it is known that North Korea can no longer produce MIG-29 due to the cessation of parts supply from Russia. North Korea produces guided weapons by assembly, including surface-to-surface, surface-to-air, surface-to-vessel and vesselto-vessel guided missiles. In addition, it is estimated that the annual production capability is over 1200 missiles, as shown in Table 6.3.

	Туре	Capacity
	Small firearms	218,000
	Anti-tank firearms	2,040
	Anti-air firearms	900
	Trench mortars	1,530
Ground	Field gun/self-propelled guns	680
equipment	Radiant guns	882
	Tanks	220
	Armored cars	200
	Amphibious vehicles	125
	Ammunition	87,000
	Submarines	4
	Automous underwater vehicles	8
	Submarine chasers	4
	Destroyers	1
	Guided missile boats	4
Naval equipment	Torpedo boats	24
	Mine sweepers	2
	Fire support boats	16
	Landing ship tanks	3
	Air folated boats	18
	Patrol boats	11
	YAK-18 training planes	12
Aircraft	AN-2 transport planes	15
Aliciali	MI-2 Helicopters	20
_	MIG-29 fighters	-
	AT-3/4 anti-tank guided missiles	1,000
	Scud-B/C missiles	100
Guided weapons	SA-2/7/1surface-to-air guided missiles	100
	SILKWORM guided missiles	-
	STYX guided missiles	-

#### <Table 6.3> The Annual Conventional Weapons Production Capacity

Source: Yu, Kil-Jae (2000). pp. 248-249.

#### 3) The Current Development Status of Strategic Weapons

#### **Guided Missiles**

Although the development of North Korean missiles officially began with the license grants for anti-tank missiles and AT-3 Saggars from the former Soviet Union in 1975, Bermurdez Jr (1994) argued that North Korea commenced with the introduction of Soviet surface-to-air missiles and SA-2a Guidelines from 1962 to 1963.<sup>6</sup> North Korea also had independent production capability for HY-1 missiles from reverse engineering China's Styx missile during Sino conflict.

The practical development of ballistic missiles started in 1976, when North Korea participated in the development of China's DF-61 missile (600 km range and warhead weighing 1000 kg). In addition, North Korea produced a missile in the imitation of Soviet Union's Scud-B missile. According to Burmudes and Carus, North Korea concluded the Treaty on the Joint-Development of Ballistic Missiles with Egypt in 1980 and received two Scud-B Missiles and a few moving missile-launching ramp cars the next year. In 1984, North Korea independently produced an improved model of Scud-A Missile through reverse-engineering. Egypt started independent research on the development of ballistic rockets by employing many technicians from West Germany and East Germany in 1960s and received a grant for Scud-B Missiles from the Soviet Union in the early 1970s. As mentioned above, Egypt concluded the Treaty on the Joint-Development of Ta'lr al-Sabah (Morning Bird), an improved model with SA-2b guideline, with North Korea in 1984. North Korea succeeded in test firing the improved Scud-B Missile in 1985, which increased on the range of Scud-A Missiles (about 40 km) by 15 percent. North Korea secured strategic advantage with the development of the improved Scud-B Missile by including half of South Korea in its range.

Iran showed considerable interest in the improved North Korea Scud-B missile. During its war with Iraq (1980), the Iranian Prime Minister and the Minister of Defense visited Pyongyang. It is assumed that the main purpose of visit in Pyongyang was to preview the development of North Korean missiles. From March to June in 1985, Iran concluded the Treaty on Development of Ballistic Missile in 1985 while promising mutual cooperation in missile technology and the mass purchase of the improved Scud-B Missile.

With financial support from Iran, North Korea entered full-scale production from 1986 and exported 100 missiles (worth US\$ 500 million) to Iran from July 1987 to February 1988. Iran used the improved Scud-B Missiles in the second war with Iraq from February 1988 to April, but it was relatively inferior to Iraq's Al-Hussein (with a range of 600 km). After then, North Korea made an effort to enlarge the range of its Scud-B. It used the simple method to extend the range by reducing the weight of the warhead (985 kg to 700 kg) and increasing the volume of fuel. The improved missile, a Scud-C Missile (with a range of 500 km) was in June 1990. Iran provided not only funds, but also the information an other missiles such as Iraq's Al-Hussein. Furthermore, China provided the rocket engine and the technology of missile guide.

In 1990, North Korea successfully tested the improved Scud-C Missile and concluded a new missile treaty with Iran. The major content of the treaty was Iran's pur-

<sup>&</sup>lt;sup>6</sup> Cited in Baeck, Hwan-Ki (1996). p. 91.

chase of the Scud-C and launching pad. North Korea supported the transition of Iran's maintenance facilities to a Scud-C assembly facility and future production facilities. It appears that North Korea, according to the same treaty, exported total 170 missiles (with 10 launching pads) up until 1995, including 60 improved Scud-C missiles. Iran renamed the same missile as Shehab-2 and executed test firing in May 1991.

In April 1991, North Korea concluded a treaty on the supply of Scud-C Missiles with Syria. Syria used to depend on the ballistic missiles supplied by the former Soviet Union. However, the Soviet Union discontinued the supply of missiles owing to Syria's balance of payment (\$11 billion) to the Soviet Union in the late 1980s. In 1988, Syria sought to purchase missiles from China, but China was not in a condition to support Syria publicly since the United States put pressure on the export of missiles in 1989. Under the circumstances, syria became interested in North Korean missiles. It is analyzed that the funds from Iran and technological support from China became the basis of the North Korean missile exports to Syria. Supplying 50 Scud-C Missiles and four launching pads in 1991, North Korea helped to construct Scud-C missile manufacturing facilities in Syria from 1991 to 1993. North Korea exported a total 150 missiles and 12 launching pads to Syria until 1995.

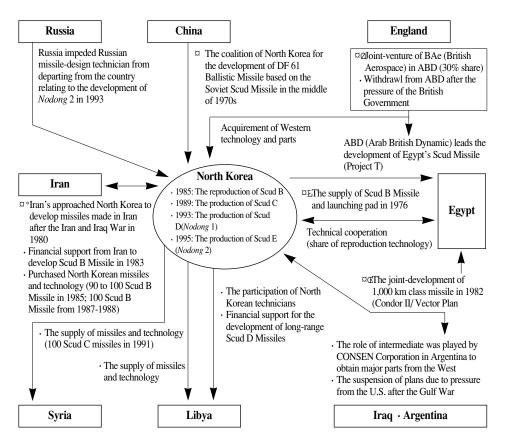
The development and export of North Korean missiles did not stop there. North Korea succeeded in test firing Nodong 1 (or Scud-D), covering a range of 1300 km in May 1993. In addition North Korea tried to construct a three-phase rocket, the Taepodong Missile (Nodong II or the Scud-E Missile). In August 1998, North Korea launched a small satellite. Although North Korea reportedly failed to put the satellite into orbit, it had already acquired the capability of missile development covering a range of 2,000 km. It is estimated that North Korea has the ability to develop Taepodong 2 (covering 6,000 km), which is able to reach the mainland of the United States.

It was reported that based on the development of the Nodong Missile, North Korea supplied missiles and technology related to several countries, including Libya, Sudan, Pakistan and Vietnam, at the same as the continuous cooperation for the development of missiles in Iran. Figure 6.2 illustrates the international connection surrounding the development of ballistic missiles in North Korea.

Iran succeeded in test firing the Shahab-3 (covering a range of 1,300 km) in July 1998, and the U.S. government estimates that the missile was developed with the supply of materials and technology from North Korea. Moreover, it is reported that North Korea was related to the development process of Pakistan's Ghauri Missile (with a range of 1,500 km), which was successfully test fired in April 1998. It is also known that North Korea sold a new type of Scud-D Missile covering a range of 700 km to Syria and Libya and has entered into trade negotiations with Egypt.

North Korea's continuous missile development program is based on an anti-

#### <Figure 6.2> International Connection for the Development of Ballistic Missiles in North Korea



Source: The Institute of Foreign Affairs and National Security (1993). Joseph S. Bermudez's testimony on the China and North Korea's ballistic missile proliferation at the U.S. House of Representatives.

South Korea military strategy and economic practicalities. It is judged that the financial support and technological cooperation from several countries in the Middle East that required long-range missiles became catalyst for missile development in North Korea. North Korea was able to accelerate the development of ballistic missiles as follows. First, North Korea can reduce the investment burden of conventional weapons (especially in military aviation) by improving tactical and strategic aggression through the development of ballistic missiles. Second, North Korea was able to gain large economic profits by exporting end products, parts, technology and production facilities. North Korea was able to accelerate missile development by reinvesting capital while earning foreign exchange by exporting missiles to several Middle East countries including Iran.

#### **Bio-Chemical Weapons**

It is known that bio-chemical weapons in North Korea have reached a high level, with successful germiculture tests and medical experimentation on living person. North Korea reportedly has six types of chemical weapons (nerve, hermetic, emetic, suffocative and bulla agents) and epidemic agents (cholera, plague, anthrax and epidemic hemorrhagic fever). In addition, North Korea has eight production facilities (Aoji, Cheongjin, Manpo, Sinuiju, Sinhung, Anju, Hamhun, and Sunchon), four research institutions and six store facilities, with an estimated annual production of up to 5,000 tons. To put this into perspective, just 4.5 kg of nerve gas and Sarin gas can kill 1,000 people in four minutes. It is assumed that those bio-chemical weapons can be loaded in Scud Missiles and medium/long-range gun. Thus it is evaluated that North Korea's bio-chemical warfare capabilities are third in the world after the United States and Russia.

Nonetheless, North Korean bio-chemical weapons are managed separate from the general defense industry. It is extremely difficult to estimate an exact volume of production because the volume and the location of production and storage is treated as top secret. Table 6.4 shows the development of bio-chemical weapons and facilities related in North Korea.

Division	Facility Names	Target			
	Chongsuri chemical factory	Lachrymatory, asphyxiaton			
	Anju chemical factory	Blood			
	Sunchon nitrolime fertilizer factory	Blisters, blood, lachrymatory, asphyxiaton			
Facilities confirmed	Manpo, Chagangdo chemical factory	Blister, blood, asphyxiaton			
(8 places)	Undok, Hambuk chemical factory	Blood, emesis			
	Cheongjin synthetic fiber factory	Lachrymatory			
	Hamhung synthetic fiber factory	Lachrymatory			
	Hungnam fertilizer factory	Lachrymatory, asphyxiaton			
	Chagangdo chemical factory	Blister, blood, asphyxiaton			
Facilities estimated (3 places)	Wolsu (Chongsu) chemical factory	Lachrymatory, asphyxiaton			
(o praces)	Youngan, Hwoasong chemical factory	Asphyxiaton, nervous system			

#### <Table 6.4> The Development of Bio-Chemical Weapons

Nuclear Weapons

Even though nuclear weapons are not used in war, they are the most effective military method of deterring an enemy through threat. The possession of nuclear weapons from an economic perspective means a cheap and effective way of increasing military force. That is to say, nuclear military power is cheap, relative to conventional military force. In the United States, when the Reagan Administration (1981-1988) executed large-scale investment in nuclear military power, strategic nuclear military power took no more than 10 percent of the total national defense budget. In addition, because nuclear armaments are relatively cheap, even third world countries like North Korea can possess nuclear armaments. As a weapons system, nuclear capability was chosen by North Korea as an alternative for national defense and diplomacy reasons. In addition, the export of nuclear technology largely contributed to foreign currency earnings, as Iraq and Iran provided direct economic support for the development of nuclear and missiles. North Korea concentrated on developing nuclear weapons at an early stage for three purposes: the epoch-making reinforcement of military power, the acquisition of economic interests; and the guarantee of international influence. It is known that North Korea has good quality uranium mines that have reserves of about 4 million tons, and in the 1960s, North Korea introduced a Soviet research reactor after establishing a large scale of nuclear complex in Yongbyon. In 1965, it started to accumulate technology related with the introduction of a IRT-2000 Critical Reactor, cyclotron, X-ray examination equipment and cobalt examination facilities.

North Korea succeeded in increasing the output of the reactor for research purposes, using its own technology by concentrating on the research of fuel refining conversion-processing in 1970s. Indeed, the country started to construct 5mW class research reactor and the Second Nuclear Reactor in 1980. North Korea started to operate uranium refinery and conversion facilities by focusing on the utilization of

Item	Constituent Materials	Preserving materials in North Korea			
Nuclear fuel	UNat, LEU	UNat			
Materials for nuclear warheads	WG Pu-239 (90% ↑), HEU-235 (90% ↑)	WG Pu-239 (94% <sup>†</sup> ), HEU-235 (90% <sup>†</sup> )			
Reflector	UNat, DU (U-238), Th-232	UNat			
Moderator	Be-9, B-10, HP Graphite	HP Graphite			
Explosive	High speed explosives high pressure explosives	HMX, RDX, PETN			
Neutron	Po-210, Ra-226, Cf-252, Am-244	Po-210, Ra-226, Pu+Be			
Trigger devices	Internal explosion devices	PBX, HE Lens, EED/EBW			

<Table 6.5> Status of Material Preservation for Nuclear Activities in North Korea

Source: Sin, Seong-Taeck (2000). "The Current Situation of North Korean Nuclear Development and the Direction of Our Country's Confrontation."

nuclear power and the completion of the system in 1980s. In addition, North Korea started to construct a 200 mW class nuclear power plant in Taechon in 1989, constructed large-scale reprocessing facilities in Yongbyon and executed tests on highexplosive.

In addition, North Korea reached a high-level of securing ability for the constituent materials for nuclear weapons. The major raw materials needed to make nuclear weapons are highly enriched Uranium, Plutonium, Beryllium and high explosives. It is judged that the nuclear possession ability of North Korea reached high-levels because North Korea has achieved several stages of planning, manufacturing and operating speed reduction using graphite (necessary for the production of Plutonium). Table 6.5 illustrates the current status of material preservation for nuclear manufacturing in North Korea.

## 3. Problems in North Korea's Defense Industry

#### A. Problems with North Korea's Expansion of Its Defense Industry

North Korea's industrial policy is based on the development of heavy industry with the aim of promoting the defense industry. The problems caused by such a policy are as follows. First, the defense manufacturing industry and heavy industry became awkwardly large, causing imbalances in the industrial structure. The share of heavy industry in total industrial production gradually increased from 40 percent in 1963 to 70 percent in 1990.

Second, focussing on the heavy industry caused the agricultural and light industry to be underdeveloped agriculture and light industry. The resulting emphasis on enlarging the production of goods after 1970 brought about serious disequilibrium in the industrial structure, and the production sector for consumer goods fell far behind. This is considered a major cause of the economic depression in North Korea (Y.T. Jeong 1995, 92-93).

Third, in a military economy that puts emphasis on the production of short-term and visible military goods to strengthen its military power, investment in infrastructure to reinforce the potential power of the overall economy is relatively less important owing to large costs ands long term retrieval. In addition, investment in the construction, maintenance and repair of infrastructure is ignored in military strategy because infrastructure such as roads and harbors open the possibility to be militarily utilized by the enemy. Moreover, under the viewpoint that the principle of selfreliance economic development in North Korea is the maximization of total efficiency in society rather than economic efficiency, it is assumed that North Korea curtailed the demand for infrastructure such as roads by placing production facilities close to resource and consumption areas and pursuing the generalized development of regional economies with the security of raw material, production and consuming in the region (Y.D. Sin 2000, 435).

Fourth, with little foreign trade, the defense industry in North Korea became an important source of foreign exchange. As in Russia, the munitions industries would rather not privatize.

Fifth, the defense industry in North Korea is strictly isolated. This phenomenon has largely hindered the spread of advanced technology from the defense industry to other sectors. North Korea focused only on general technology aspects of science; human resources in highly sophisticated sciences, pure theory and advanced sciences were not cultivated. The quality of products in heavy chemical industries, except for some area of weapons development, is low, making them less competitive in the international market (S.H. Choi 2001, 11-12).

#### B. The Future Direction of the North Korean Defense Industry

North Korea seems likely to continue weapons development to achieve military, political and economic gains through a "brinkmanship strategy" against the West. In spite of severe economic difficulties in 1990s, North Korea increased its military power and focused on the reinforcement of the nonsymmetrical strategic weapons such as conventional weapons, biochemical weapons, nuclear and missiles. The priority of resource allocation, which is not related to economic principles, is evident in Kim Jung-II's words: "Even though the economic condition is bad and becoming a burden, we must solidify the national defense force in any cost.<sup>77</sup>" Kim Jung-II's stance toward the military sector is also found in his discussions with the South Korean media. How much Kim Jung-II stresses the importance of military authority and military power for the security of the system is found in his comments: "My power comes from military power... if we want to be friendly with foreign countries, military force is required. The power for foreign relationships comes from military power, and my power comes from military power. Even though having a good relationship with other countries is important, we should have military power.<sup>78</sup>

According to Kim Jung-II, many national goods and resources are allocated to the military and the defense industry.<sup>9</sup> In addition, according to the 1988 White

<sup>&</sup>lt;sup>7</sup> See Pyongyang Broadcasting (July 3, 1997) and cited in *Home and Foreign Communication* 1089 (December 25, 1997).

<sup>&</sup>lt;sup>8</sup> See *Joongang Ilbo* (August 14, 2000).

<sup>&</sup>lt;sup>9</sup> The medical aid group from France, Medicines Sans Fontieres, decided to withdraw from North Korea, criticizing that relief goods sent to North Korea, including food, were allocated to the military, the munitions factories, and the factories for export first of all. See *Chosun Ilbo* (October 2, 1998).

Paper on National Defense, it is found that the North Korean military increased its quasi-military to about 900,000 troops, adding about 13,000 troops to the regular armed forces and invested 24.25 percent of GNP in the military (The Ministry of National Defense 1998, 34-37). It is also said that the second economic sector related to the defense industry in the Party Central Military Committee after 1998 was transferred to the National Defense Commission (K.S. Kim 2001, 38). While Kim Jung-II himself, as the supreme commander of the People's Army and the chairman of the National Defense Commission, operates control and command of the military and munitions sector, he emphasizes that North Korea has to produce and supply the necessary materials and facilitate the defense industry prior to the construction of the whole economy. As a result, national policy priority is still directed to investment in the defense industry.

According to studies done by the International Institute for Strategic Studies, the North Korean military force had a total 1.082 million soldiers, and reserves, which can be militarized in a security emergency, is maintained at 4.7 million (as of 1999). Thus, the scale of the armed force reaches about 30 percent of the total population of North Korea (about 21.5 million). When compared to the German troop mobilized during the Second World War, which was about 13.8 percent of the total population, the scale of North Korean military force is unprecedented. This also shows that the vast resources, capital and labor that should be invested in economic recovery are not used properly in North Korea. As long as the military oriented policy of North Korea stays, the inefficiency of the economy will only intensify.

The North Korean military purchased weapons worth \$105.63 million from seven countries, including Russia and Kazakhstan, from 1995-2000. The weapons include 40 MIG-29 fighters, which are known as the best fighters in the ex communist sphere. In addition, North Korea introduced five MI-8 helicopters and 40 MIG-21 fighters from Russia and Kazakhstan, respectively, totaling \$12 million in 1999 and has expanded the import scale for weapons every year (Y.J. Jeong 1999, 56). Those weapons were adopted when North Korea's food and energy shortages had reached their peak, showing that North Korea had concentrated all of its resources on expanding its military power.

In particular, it is known that North Korea's armed forces focused on the improvement of combat capability after the West Sea battle in June 1999. Even after the Summit Meeting between North and South Korea, by more than doubling the scale of training in 1999 (focusing on mechanized troops), infiltration training, the highest level of army training in the last 10 years, was exercised.<sup>10</sup> In spite of the severe economic difficulties, the basic reason Kim Jung-II puts emphasis on military

<sup>&</sup>lt;sup>10</sup> See Chosun Ilbo (October 10, 2000).

power and the development of conventional and asymmetrical strategic weapons is that a strong military force and weapon is considered the best measure for securing the regime in a "hostile international environment."

However, it is expected that North Korea will focus on one area in the future, such as weapons of mass destruction, to attain export competitiveness and versatility as negotiation tools with the West. Finally, it is widely suspected that North Korea will secretly accelerate the development of bio-chemical weapons since bio-chemical weapons are cheap, easy to develop and can cause more fear in hostile countries.

## Reference

\* In Korean

- Baeck, Hwan-Ki. 1996. "The Present Condition and Prospect of North Korean Military Industry." *National Defense*. (June 1996 Volume).
- Choi, Seok- Hwan. 2001. *The Studies on the Prospect of the North Korean Defense Industry and the Direction of the South-North Korean Exchange and Cooperation.* (M A Thesis of the Korea National Defense University).
- *Chosun Ilbo*. 1998. "North Korea Relief Good Run Out to the Military and Military Authorities." (October 2).
- Hwang, Jin-Hoon. 2001. "The Role of the External Trade and Issues in North Korean Economy." Seoul: Korea Development Bank.
- Im, Kang-Taek. 2000. *The Analysis on Effectiveness that North Korean Defense Industry Policy Influences upon Economy*. Seoul: The Institute of Unification.
- Jacobs, G. March 1989. "North Korea's Arms Industry Development and Progress" Asia Defense Journal: p 19-25.
- Jeong, Sang-Hoon et al. 1990. *The Development Process of the North Korean Economy*. Seoul: The Institute of Far East Asia, Kyongnam University.
- Jeong, Young-Tae. 1995. "The Defense Industry in North Korea and the Prospect of the Conversion to Private Demand." *The Unified Economy*. Seoul: Hyundai Economic Research Institute.
- Jeong, Yu-Jin. 1997. "The Reason of the Armaments Enlargement in North Korea during Post-Cold War." *The Research and Studies on North Korea*. Vol. 1, No.1.
- \_\_\_\_\_. 1999. "The Situation and Management of North Korean Military Industry." *Research and Studies on North Korea*. Vol. 3, No.1.
- Kim, Chul Whan. 2000. "Comment on the Department of North Korean Party Defense Manufacturing Industry." *National Unification*. (March).
  - \_\_\_\_. 1990. The Studies on the Current Situation of the External Cooperation in North Korea's Science and Technology Sector. Seoul: The Korea Institute for

National Unification.

- \_\_\_\_\_. 1990. The Science and Technology Level in North Korea. *Sindonga*. Seoul: Dong-A Ilbo.
- \_\_\_\_\_. 1993. "The Real Condition of North Korean Defense Industry and the Possibility of Transition to Civilian Demand Industry." A Collection of Thesis on North Korea and Unification Studies in 1993 (IV): the North Korean Military Sector. Seoul: The Ministry of Unification.
- . 2001. The Studies on the Plan for Efficiency of Science and Technology and Human Resource Exchange. Seoul: Science & Technology Policy Institute.
- Kim, Gun-Sik. 2001. "The Basis of North Korean Socialist and the Possibility of Change." *The Collection of Security Studies Thesis*. Seoul: The Korea National Defense University.
- Kim, Young-Kyu. 1990. "North Korean Defense industry and Weapon System." Seoul: The Institute for Far East Asia.
- Lee, Sang-Kyun. 1999. "The Diagnosis of Profitability on North Korean Defense Industry and the Application Scheme in the Period of South and North Korean Integration." *The Research Report on the National Defense Policy*.
- Lee, Tae-Wook. 1990. North Korean Economy. Seoul: Ulyumunhwasa.
- Park, Jeong-Dong. 2000. "The Examination about North Korean Economic Development Strategy." *KDI Review*. Seoul: Korea Development Institute.
- Park, Seong-Geun. 1990. "Armaments-Oriented Industrialization policy of North Korea." *National Defense Science and Technology*.
- Park, Sam-Seok. 2001. The Analysis of Game Theory on the Possibility of North Korean Economic Reform. Seoul: Bank of Korea.
- Sin, Seong-Taeck. 2000. "The Current Situation of North Korean Nuclear Development and the Direction of Our Country's Confrontation." *Strategy Study*. No. 29.
- Sin, Sung-Cheol. 1989. *The Economic Cooperation, and the Basic Direction of Cooperative Promotion between South and North Korea.* Seoul: The Ministry of Unification.
- Sin, Yong-Do. 2000. "The Studies on the North Korean Military and Economy." Neighboring Countries of Korean Peninsula and Security Policy in North Korea in 2000s. Seoul: The Korea National Defense University
- The Chosun Central News Agency. 1967. 1966-1967 Yearbook. Pyongyang: The Chosun Central News Agency.
- The Economic Institute in the North Korean Academy of Social Science. 1970. *Economic dictionary II*. Pyongyang: The North Korean Academy of Social Science.

The Institute of Far East Affairs. 1974. North Korea Collection.

The Institute of Foreign Affairs and National Security. 1993. "The Development of

North Korean Ballistic Missile and the Japan's Conception on TMD." *The Analysis on Major International Problems*. Seoul: The Institute of Foreign Affairs and National Security.

- The Korean Workers' Party. 1964. "About the Establishment of North Korean People's Army." *Kim, Il-Sung Collection*. Vol. II. Pyongyang: The Korean Workers Party Press.
- The Ministry of National Defense. 1998. *The White Paper on the National Defense*. Seoul: The Ministry of National Defense.
- The Ministry of Unification. 1989. *The Military Force and Military Strategy of North Korea*. Seoul: The Training Institute for Unification in the Ministry of Unification.
- Trivenko, Marina. 1992. "North Korean Industry." *The Current Situation and Prospect of North Korean Economy*. Seoul: The North Korean Economy Institute, Korea Economic Newspaper.
- Won, Hee. May 2000. "The Structural Characteristics of North Korean People's Economy." *National Unification*.
- Yu, Kil-Jae. 2000. "The Interests Studies on the Economic Opening Policy of North Korea People's Army." *The Collection of Scientific Treatise on Security*. Seoul: The Institute of Security Issues, The Korea National Defense University.

## **VII. The Energy Sector and Energy Policy**

Myeong Nam Kim

## 1. North Korea's Energy Policy: Self-Reliance and Developing Alternative Energy Sources

North Korea's energy policy is based on economic self-reliance. Instead of securing necessary energy sources through international trade, North Korea has attempted to utilize domestic natural resources at the maximum level in order to achieve energy self-reliance. To do this, the regime set a policy priority of increasing the use of domestic natural resources while pursuing an industrialization policy based on the development of abundant coal reserves (O.Y. Jeong 2000). At the same time, the regime vigorously invested in building hydroelectric power plants to utilize abundant water resources. As a result, North Korea's energy supply mainly relies on coal, accompanied by hydroelectric power generation.

Although North Korea has been importing petroleum and coking coal, which are not available domestically, it sought ways to control consumption and replace them with domestic energy sources. The consumption of petroleum is strictly restricted, so North Korea's petroleum consumption is the lowest of industrialized countries and is concentrated in the transportation sector. A fixed amount of import of petroleum or coking coal for industrial use comes from China and Russia. Most energy facilities were built during the Japanese occupation (1910-1945) and the 1950s-1960s with assistance from China and the Soviet Union. Ultimately, the North Korean energy policy appeared to follow the principle of self-reliance, but in fact, largely depended on China and the Soviet Union.

North Korea prioritized energy independence over energy effectiveness and economic efficiency. Such an energy policy worked well with the utilization of abundant coal until the end of 1970s. However, for a coal-oriented industrial structure,

Ideology	Category	Primary Measures
		- Invest on hydroelectric generation
	En anor: Dro du ati an	- Invest on mining industry
	Energy Production	- Maximize production of natural resources
Calf Cufficience		- Explore petroleum, develop atomic energy
Self-Sufficiency	Energy Consumption	- Maximize use of coal and waterpower
(Improvement of Energy		- Minimize consumption of imported energy
Self-supply)		- Expand use of alternative energy sources
		- Economize energy consumption
	Tashnalagiaal Improvement	- Develop technology to utilize domestic resources
	Technological Improvement	- Develop recycled and alternative energy

Source: Woo-Jin Jeong. 2001. Study on Advancement into the North Korean Energy Market.

poor coal production seriously hurts factory operation and power generation afterwards (O.Y. Jeong 2000).

In terms of energy self-reliance, North Korea's energy policy reaped considerable achievement, with imported energy rating only 5-10 percent of total energy. On the other hand, the energy policy insisting on exclusive self-sufficiency lowered the overall industrial efficiency of North Korea.

Development of alternative energy sources was another issue on North Korea's energy policy. In addition to fossil fuels, such as coal and petroleum, the regime has concentrated on developing power sources from agricultural by-products and natural resources, promoting power plants that use wind, tides, cogeneration and methane.

## 2. Energy Supply and Demand

#### A. Status of Energy Resources

North Korea's main source of energy is coal. Although the quality of coal reserves differs by region, the total anthracite reserve is 11.74 billion tons and bituminous coal is 3 billion tons (The Association of Korean Journalists 2000). It is estimated that based on the current trend of consumption, these reserves will last for 10 -100 years.

There are no crude oil wells in operation currently in North Korea. North Korea is known to have offshore oil fields, but the economic value of buried oil is has not been verified. Some foreign countries are conducting investigations into North Korea's coastal continental shelf, and it is thought that North Korea has hydrocarbon reserves in the West Sea, an extension of the Bohai Coast of China.

Taurus Petroleum of Sweden and Soco International PLC of Great Britain hold oil exploration concessions for the west coast of North Korea. From the oilfield seismic surveys by Taurus Petroleum, a spot on the West Coast was discovered as an oil-bearing geological zone. Similarly, North Korea's national oil company and South Korea's Hyundai held discussions on forming a consortium for joint exploration of the zone. Australia's Beach Petroleum has a license for exploring one block of the east coast and Japan's Petrex Co. Ltd. has a concession for the bay of the west coast.<sup>1</sup>

The yearly average precipitation of North Korea is about 1,000 mm, which is slightly less than that of South Korea (1,274 mm). The amount of natural water resource is 118.5 billion m<sup>3</sup> a year (126.7 billion m<sup>3</sup> for South Korea), but only 50 percent of this, or 59.1 billion m<sup>3</sup>, is available for use (D.G. Koh 1999). North Korea's available hydropower resource is estimated to be 10 million kW. The amount of waterpower in the basin of a river that can be used is 32 kW per m<sup>2</sup>. Since this is relatively abundant compared to the world average (28 kW per m<sup>2</sup>), North Korea has a geographical advantage for hydroelectric power generation (The Association of Korean Journalists 2000).

North Korea uses other resources such as tides and wind as potential regenerative resources. The amount of North Korea's potential tidal power is 4,700 kW, but a plan for tidal power development was canceled. When looking at the Korean peninsula's geomorphological location and the pattern of winds, North Korea has high wind power potential. An attempt was made for small-scale wind power generation, but the location of the facility is not known. However, isolated coastal islands and places bordering with China are known to have favorable wind power resources.

#### **B. Energy Supply**

The energy supply structure of North Korea is divided into 70 percent coal, 16 percent electric power, 10 percent oil and 4 percent others, showing a high dependence on coal. Thus, the main cause of North Korea's energy shortage is the constant decrease in coal production. North Korea has developed an energy-producing system based on its abundant coal reserves. The fuel and raw materials in almost every industry and sources for thermal power generation is coal. By contrast, as the North Korean economy has been faltering, deterioration of coal mining equipments, overly dug coalmines, lack of new facilities and weakened material supply led to the decrease in coal production from the mid-1980s. Coal production shrank by 11.6 percent (from 37.5 million tons in 1985 to 33.15 million tons) in the 1990s. After the

<sup>&</sup>lt;sup>1</sup> EIA (Energy Information Administration, U.S. Government). 2002. Country Report --North Korea.

Division	Unit	1990	1991	1993	1995	1997	1998	1999	2000
Energy Supply	TOE (thousand)	23,946	21,920	19,013	17,280	14,746	14,030	14,955	15,687
-Coal	%	69.2	70.7	71.3	68.6	69.9	66.3	70.2	71.7
-Petroleum	%	10.5	8.6	7.2	6.4	6.8	10.0	5.9	7.1
-Water Power	%	15.6	17.1	17.5	20.5	18.0	18.2	18.7	16.2
-Others	%	4.7	3.6	4.1	4.5	5.3	5.5	5.2	5
Supply Per Capita	TOE (thousand)	11.9	10.7	9.0	8.0	6.8	6.4	6.8	7.1
Coal Production	Ton (thousand)	33,150	31,000	27,100	23,700	20,600	18,600	21,000	22,500
Crude Oil Import	Ton (thousand)	2,520	1,890	1,360	1,100	506	504	317	390
Energy Consumption	TOE (thousand)	23,940	21,92	19,010	17,280	14,740	14,030	14,950	-
-Coal	%	69.2	70.7	71.3	68.6	69.9	66.3	70.2	-
-Petroleum	%	10.5	8.6	7.2	6.4	6.8	10.0	5.9	-
-Water Power	%	15.6	17.1	17.5	20.5	6.4	18.2	18.7	-
-Others	%	4.7	3.6	4.1	4.5	20.5	5.3	5.2	-
Consumption Per Capita	TOE	1.18	1.07	0.90	0.80	0.68	0.64	0.67	-

<Table 7.2> Changes in North Korea's Energy Supply and Consumption

Source: The National Statistical Office of South Korea (2002).

	Unit	1990	1991	1993	1995	1997	1998	1999	2000
Energy Supply	TOE (thousand)	93,192	103,619	126,879	150,437	186,380	165,932	181,363	192,887
Supply Per Capita	TOE (thousand)	21.7	23.9	28.7	33.4	39.3	35.8	38.9	41.0
Total Consumption South / North	Times	3.9	4.7	6.7	8.7	12.2	11.8	12.1	12.3
Supply Per Capita South / North	Times	1.8	2.2	3.2	4.2	5.8	5.6	5.7	5.8

Source: The National Statistical Office of South Korea (2002).

#### <Table 7.4> North and South Korean Generating Capacity

						_	(Un	it: Thou	sand kV	V, billio	n kWh)
		1965	1975	1985	1990	1992	1994	1996	1998	1999	2000
Consoity of	South Korea	769	4,720	16,137	21,021	24,120	28,750	35,715	43,406	46,980	49,100
Capacity of Generation	North Korea	2,385	4,530	5,915	7,142	7,142	7,237	7,387	7,387	7,390	-
Generation	South/North (Times)	0.32	1.04	2.71	2.94	3.38	3.97	4.83	5.88	6.36	-
	South Korea	3.3	19.8	58	107.7	131	165	205.5	215.3	239.3	266.4
	- Hydroelectric Power	0.7	1.7	3.7	6.4	4.9	4.1	5.2	6.1	6.1	5.6
Amount of	- Thermal Power	2.5	18.2	37.6	48.4	69.6	102.2	126.4	119.5	130.2	151.8
Generation	North Korea	13.2	18.3	25.1	27.7	24.7	23.1	21.3	17.0	18.6	19.4
	- Hydroelectric Power	0.7	9.8	12.3	15.6	14.2	13.8	12.5	10.2	10.3	10.2
	- Thermal Power	2.5	9.5	12.8	12.1	10.5	9.3	8.8	6.8	8.3	9.2

Source: The Ministry of Unification, 2002.

socialist bloc collapsed, coal production has declined further by 32.1 percent compared to the 1990s, amounting to 22.5 million tons in 2000.

North Korea's energy supply has worsened from 1989; in 2000, it deteriorated to 15.687 million TOE, which is less than the 18.095 million TOE of the 1970s.<sup>2</sup> Electric power generation decreased during the period from 1990 to 2000, since production of coal (70 percent of the country's energy supply) and the supply of oil dropped by some 50 percent.

North Korea's electric power production is steadily decreasing. Although the ratio of hydroelectric power generation and thermal power generation is 6:4, most thermal power plants run on coal. Hence, as coal production decreased, thermal power plants could not operate properly. In addition, the massive use of low-heat coal is decreasing the efficiency of thermal power plants. The amount of power generation in 2000 was 19.4 billion kWh, a reduction of 34 percent compared to 1989, and is only 25 percent of the actual generation capacity. The capacity of generating facilities remains at 7.4 million kW, which is around 17 percent of South Korea's.

## 3. North Korea's Energy Policy Problems

#### A. Causes

The fundamental causes of North Korea's energy shortage lie in the rapid decrease of aid-type crude oil supply and its closed economy. The supply sector failed to cope adequately with changes in the energy supply environment because of the self-reliance policy, which relies on coal and hydropower. In addition, natural disasters further accelerated the energy crisis.

#### 1) High Energy-Consuming Economic Structure

Although the serious energy crisis in North Korea has its root in the insufficient power generation, a demand factor, the energy-intensive economic structure typical of North Korea, cannot be dismissed.

North Korea's energy-intensive economic structure was first established during the Japanese occupation (1910-1945). Since Korea has cheap and abundant electric power, Japan set up many energy-intensive industries, including the chemical and metal industry in North Korea. After independence in 1945, abundant electricity and

 $<sup>^{2}</sup>$  TOE (Ton of Oil Equivalent) is used for caloric comparison of oil with other fuel, converting 1kg of crude oil = 10,000 kcal. 1 TOE is 107 kcal.

self-rehabilitation strategies (particularly the self-supply of energy) were combined to form an energy-intensive structure typical of North Korea. North Korea has produced a lot of fertilizer, with the most produced fertilizer being ammonium sulfate fertilizer, made by electrolysis, which consumes a massive amount of electricity. In addition, iron ore fines were used to cope with the iron shortage. To make iron ore fines, iron ore is crushed and mixed with coal dust to be burned in a revolving furnace. The iron ore fines are put into an electric furnace to be processed, which consumes energy heavily. North Korea also produces vinylon with their independent technology, which is made from carbide. Carbide can be produced with coal, limestone and electricity, but requires a lot of electricity (M.S. Yang 2002).

North Korea repressed the use of petroleum for transportation on account of its goal of self-rehabilitation, but this intensified dependency on electricity. City buses are electric and freight transportation is more dependent on trains than trucks that run on oil. However, to increase the capacity of transportation by train, large locomotives were needed, which meant large diesel trains or electric trains were necessary. North Korea chose electric trains to avoid the use of petroleum. Thus, North Korea became more dependent on electricity.

However, as energy-intensive industry in North Korea is largely dependent on domestic energy sources, it is at the mercy of shortage of electricity. Except for the plants in Rajin that were closed several years ago due to the lack of oil, all power plants run on coal and most manufacturers use coal for fuel. The shortage of coal led to the shortage of electricity, severely damaging industry as a whole.

#### 2) Outdated Equipment and Power Transmission Systems

North Korea began restoration of the energy sector after the Korean War. Power plants destroyed during the war were reconstructed and new plants were built during the late 1950s and the 1960s with financial/technical support from the former Soviet Union. In the early 1970s, the electricity supply was made stable by the construction of new plants and the restoration of existing plants. Due to the quantitative growth of the economy and the increasing usage of electricity from the end of 1970s, however, supply could not keep up with demand. Although power plants were built and the electricity system was repaired in the 1970s, excessive encouragement of energy production in the 1980s became a problem. Operation overload at power plants accelerated the deterioration of the power transmission and transformation system, thus creating frequent breakdowns.

In the 1980s, the supply of coal and hydropower sources was relatively reduced but the demand for electricity was high. In the case of the Bukchang thermal power plant, operation overload (110-120 percent output) continued for a long time. In the mid-1980s, the electricity system of North Korea ran into problems. The normal

	Causes	Key circumstances				
Structural Problems of energy industry and	Unbalanced distribution of resources in the energy sector	<ul> <li>Excessive investment on capital-intensive hydroelectric power plants</li> <li>Inefficiency of investment</li> <li>Difficulties of alternative energy development with limited financial sources and technology</li> <li>Energy-consuming economic structure</li> </ul>				
economy Inefficient cycle of energy use	<ul> <li>Low productivity of industries due to inefficiency of energy sector</li> <li>Decreased investment funds due to low productivity of industries</li> </ul>					
Changes in foreign relationship		<ul> <li>End of barter trade and supply of cheap coal and petroleum</li> <li>Decreased supply of energy equipment and technology</li> <li>Rise in cost of energy supply</li> </ul>				
Natural disasters		<ul> <li>Damage of plants and system due to flood in 1995 and 1996</li> <li>Soil inflow into hydroelectric dams and flooding of coal mines</li> <li>Decrease in the quantity of dam storage by drought in 1997</li> </ul>				

<Table 7.5> Causes of North Korean Energy Shortages

Source: Jeong, Woo-Jin (2001).

voltage of electricity supplied to private homes was 220V, but it became highly unstable, showing large fluctuations ranging between 150-280V. The frequency was set at 60 Hz but had fallen to 54-57 Hz (S.C. kim 2001). As such, North Korea's electric supply system was worn out, and the deterioration of quality of electricity as well as frequent breakdowns became chronic. Most hydroelectric power plants were built either in the colonial period or during the 1950s-1960s by the economic cooperative project with the former Soviet Union, so the efficiency of power generation was low. A recent report states that due to abnormal weather, the level of water reserve of the dam dropped, and most hydroelectric power plants (as much as 85 percent) stopped operating due to floods in 1995 and 1996. An accurate investigation is difficult, but currently normal production of electricity is difficult due to outdated hydroelectric power plants. Moreover, reckless destruction of forests made the mountains treeless. As a result, gravel and soil that were washed down to rivers at heavy rains settled to the bottom, dropping the storage capacity of the dam.

#### 3) Outmoded Electric Power Transmission and Supply Lines

North Korea laid all electric power transmission and supply lines under the ground. For underground wires, expensive special covered wires or special pipes should be used. After some time, the wires, covers and pipes need to be replaced,

<sup>3</sup> Jeong, Woo-Jin. 1999. Electricity and Energy Sector, "Analysis of the Possibility of SOC Cooperation with North Korea." *Unified Economy* 58. Hyundai Economic Research Institute.

but North Korea is not doing this. North Korea is thus losing a tremendous amount of electricity; once electricity leakages start, they spread rapidly. It is estimated that the rate of electricity leakage in North Korea is at least 16 percent to 50 percent.<sup>3</sup>

#### **B.** Problems with Energy Sources

Coal: The production of coal has been decreased because of such problems as overly dug mines, primitive mining methods, worn-out equipment and lack of investment in new mine development. For these reasons, the quality of coal fell and productivity (expecially worker incentives) ebbed. The heavy rains in 1995 and 1996 delayed the restoration of mines and food shortages decreased the miners' ability to dig.

Crude oil: The drastic decrease in crude oil import aggravated the energy shortage. The cause of this aggravation was due to policy changes in Russia and China, the two main trading partners of North Korea. For example, before 1990, North Korea was able to import crude oil from China at a favorable price of US\$60 per ton, which was approximately half of the world market price. However, the end of the Cold War led to a diplomatic shift from political alliance to market economy system, and in 1990, the former Soviet Union and China began to demand payment at world market prices.

In 1993, the price of crude oil increased by 2-3 times compared to that in 1990, and in 1993, imports of crude oil from Russia and Iran stopped. In 1995, the export of crude oil from China to North Korea was at the price of \$128 per ton. This price is higher than the world export unit price of \$119 and South Korea's import price of \$121, which illustrates that the favorable pricing relationship between North Korea and China had come to an end (W.J. Jeong 1999).

The quantity of crude oil import in 1990 was 2.52 million tons, but as imports from the former Soviet Union drastically decreased and finally discontinued, this quantity decreased by as much as 84.5 percent, amounting to a mere 0.39 million tons in 2000. Recently, North Korea has only imported from China.

## 4. North Korea's Energy Sector Reform and Future Tasks

#### A. North Korea's Attempt to Solve the Energy Shortage

In order to solve the energy shortage problem it faces today, North Korea has been considering various solutions, including increasing coal production and using of low quality coal, diversifying energy resources such as hydropower and solar energy, constructing small and medium-sized 100-1,000 kW power plants and repairing of deteriorated equipment. Due to North Korea's severe economic crisis, stemming from the lack of foreign currency, financial difficulties and shortages of raw materials, North Korea's modernization projects such as the construction of new power plants and the installation of facilities is seemingly impossible. Since 1998, North Korea has listed overcoming its energy problem as the top policy priority. North Korea is carrying forward a scheme to construct small and medium-sized hydroelectric or wind power plants and plants using waterfalls, aiming at allowing each region to supply its electricity by using local resources through the development of substitute fuels such as soot and rice bran as well as technical advancement. It is focusing on constructing small and medium-sized power plants that require minimum manpower, investment and time for construction.

#### 1) Technological Improvement

Technological improvement projects in North Korea involve the furnishing of factories and companies with modern technical facilities. In other words, it means installing and innovating deteriorated equipment and modernizing the manufacturing process. North Korea is determined to revitalize its economy by boosting factory operation capacity (which is at below 30 percent) thus promoting the normalization of industries. In order to grow as an economically sound country, North Korea chose to take important primary actions in 2001 in the electricity and energy fields, concentrating on financial support for those fields. The technological improvement projects in the electricity and energy fields include the construction of small and medium-sized hydroelectric power plants and large-scale modification and modernization of existing thermal power plants.

In 2001, North Korea selected the coal industry, along with electricity, metalwork and railway industries, as one of the most important sectors for building the socialist economy. In the coal industry field, North Korea expressed a line of policies, increasing the number of miners by supporting excavation and pit construction, adopting advanced methods in coal mining and developing new mining sites. By this policy, North Korea expressed its will to increase coal production.

The technological improvement plan was carried out for the Suncheon Area Coalmine Union Enterprise, and Kim Jong-II directed workers on-site at the Ranam Mining Machinery Union Enterprise in 2001. In the Gaecheon area, new coalfields were excavated to obtain 5 million tons of coal.

For the first half of 2001, eight companies, including Suncheon Area Coalmine Union Enterprise and Bukchang Area Coalmine Union Enterprise, attained their planned target. However, only seven coalmines, including Bakcheon, Taecheon and Gwaksan, that were not union enterprises managed to meet the annual target. Dispatching workers from the electric coal industry directly to coalmines to encourage coal production, using Kim Jong-II's example at Ranam (under the slogan "The Beacon of Ranam"), also indicates that North Korea may not have succeeded in meeting its goal. Nevertheless, several explorations made at National Resources Development Investigation Sites such as South Hamgyeong Province and North Pyeongan Province, and the December 5 Youth Mine, Yeonpung Mine and Sijung Mine, which belong to mine union enterprises, accomplished the annual target. In terms of exploration sector and nonferrous metal sector, the annual target was met to a certain degree.

#### 2) Power Plant Construction

North Korea regards the energy sector as critical to economic resuscitation, concentrating investment on construction of dams and power plants. In 2001, construction of the dam for the Heecheon power plant (100,000 kW), the Eorangcheon power plant (73,000 kW) and the April 5 power plant was completed. Construction is now being focussed on capacity extension at the Fifth (50,000 kW) and Second Unit (from 25,000 kW to 50,000 kW) Taecheon hydroelectric power plants and construction of the Third (32,000 kW) and Fourth Unit (32,000 kW).<sup>4</sup>

#### Construction of Small and Medium-sized Power Plants

Recently, North Korea has actively promoted the construction of small and medium-sized power plants to overcome the electric power shortage problem caused by the inactivity of large-scale plants. Approximately 5,000 plants were built in 1998, 1,000 in 1999, 130 in 2000 and 80 in 2001. The smaller plants place electric generators in valleys, rivers or even canals to create head difference, which is the power source of these plants. The generated electricity is distributed to local public facilities and homes for lighting. In rural districts and reclaimed land, small power generators using methane extracted from cornstalks and manure for fuel are built in large numbers.

The construction of smaller power plants seems to have contributed to alleviating the power shortage problem at collective farms and remote villages in the mountains to some extent. However, these plants were constructed without fully considering the regional topography, so service water runs short in the freezing season or the dry season, hindering electricity generation. In addition, since the plants were designed

<sup>&</sup>lt;sup>4</sup> The construction of Taecheon hydroelectric power plant began in 1982. The plant is set southwest of Jagang province and is a 'basin boundary power plant,' which generates power by sending water from the reservoir of Wiwon River and Chungman River through a water tunnel to the upper stream of Daeryeong River. The total power generation capacity is 746,000 kW and plant construction equivalent of producing 432,000 kW is complete.

and constructed by non-professionals in counties or smaller administrative units, they tend to break down often and cause plant operation to be highly ineffective. Thus, the electric power shortage cannot fundamentally be solved by the operation of these plants.

#### Status of the Construction of Small and Medium-sized Power Plants in 2001

In 2001, North Korea changed its policy to constructing large-scale power plants instead of the typical small and medium-sized power plants. This change of plans originated from the fact that smaller power plants are sensitive to seasonal changes such as the freezing season or the dry season and are not effective. There are estimated to be about 370 small and medium-sized plants under construction in 2001 or to be built, 80 of which are completed (producing 18,000 kW of power in total). The number of plants to be constructed has greatly decreased when compared with the average target level of previous years (500 plants per year) and the number of completed construction projects of the previous years, but the average capacity of each plant has somewhat increased (Y.K. Kwon 2001).

The increase in larger power plants indicates that the conventional small and medium-sized plants do not contribute much to mitigating the power shortage problem, since their power generation capacity is too small. In the case of Jagang province, approximately 400 power plants with a total generation capacity of 56,000 kW (average power generation capacity per plant of 140 kW) were constructed since 1998, but 65 plants with a total capacity of 30,000 kW (average capacity of 460 kW) were under construction in year 2001. In North Hwanghae province, there are 152 plants with a total capacity of 15,638 kW (average capacity per plant of 103 kW), but plans to construct 123 plants additionally with a total capacity of 111,752 kW (average capacity per plant of 908 kW) are underway. North Korea constructed medium-sized

(Unit: kW)

Year	Number	Total generation capacity	Average capacity per plant
Until 1996	185	90,000	486
1997	300	60,000	200
1998	5,000	36,000	7
1999	1,000	80,000	80
2000	130	26,000	200
2001	80	18,400	230
Total	6,695	310,400	46

Source: Ministry of Unification (2002).

plants in tiers to prevent random building and to promote systematic construction.

North Korea finished building 33 plants in tiers on Seongcheon River in South Hamgyeong Province in August 2001 through the construction of a large-scale waterway (40 km), which was extended to other regions; plants in tiers were built on Sudong River, Namdae River (South Hamgyeong Province) and Biryu River (South Pyeongan Province). In particular, it is estimated that North Korea maximizes the water resources of small rivers through plants in tiers while considering comprehensive measures to utilize water through controlling water quantities.

Regionally, 71.3 percent of the plants under construction or to be built are located in North Hwanghae Province South Hamgyeong Province and Jagang Province, as well as 65.8 percent of the completed plants.

Therefore, in 2001, North Korea turned to a practical plan to build power plants, which enabled realistic solution of power shortage; constructing larger size plants and supplying electricity stably even during the dry season.

#### Small and Medium-sized Power Plant Construction Project in 2002

In 2002, North Korea is expected to build larger plants systematically, promoting the automation of power generation processes by computerization, which would lead to stable supply of electricity. Although the size of power plants is enlarged, most of them are still small-scale plants with a capacity of less than 1,000 kW; since only 20 percent are operational, small power plants are not expected to play an effective role in resolving the electricity crisis. On August 17, 2002, North Korea announced that it is pursuing the construction of small and medium-sized power plants in South Hamgyeong Province.<sup>5</sup> According to the collected data, South Hamgyeong Province is producing electricity from 290 power plants. Jeongpyeong county has recently completed the construction of the Sixth Unit Geumjin River Youth Plant capable of several thousand kW, and eight more plants are to be built along the lower Geumjin River. Iwon county, Heocheon County and Dancheon City are promoting the construction of medium-sized power plants, while South Hamgyeong Province plans to build 80 more plants in one or two years.

South Hamgyeong Province has finished building 33 medium-sized plants in tiers on the 40-km waterway at Seongcheon River last August and has completed construction of the relatively large-scale Sixth Unit Geumjin River Youth Plant this year, which became a model for other regions. The North Korean government is encouraging other regions to construct medium-sized plants to increase the generation of electricity necessary for stimulating the local industry by showcasing the achievement of South Hangyeong Province.

<sup>&</sup>lt;sup>5</sup> Weekly Trend of North Korea No. 605, August 26, 2002. Seoul: The Ministry of Unification.

Province	Under Construction/ Planned	Completed	Province	Under Construction/ Planned	Completed
North Hwanghae	123 (32.7%)	8 (10.5%)	South Pyeongan	16 (4.3%)	4 (5.3%)
South Hamgyeong	80 (21.3%)	24 (31.6%)	North Pyeongan	20 (5.3%)	10 (13.2%)
Jagang	65 (17.3%)	18 (23.7%)	Gangwon	10 (2.7%)	5 (6.6%)
North Hamgyeong	40 (10.6%)	3 (3.9%)	Others	5 (1.3%)	3 (3.9%)
Yanggang	17 (4.5%)	1 (1.3%)	Total	376 (100%)	76 (100%)

(Unit: number)

#### <Table 7.7> Status of Medium-Sized Plant Construction by Province in 2001

Source: The Ministry of Unification, 2002.

#### Limitations of Medium-Sized Plant Construction

The construction of medium-sized plants started in December 1979, as decided at the 19th Plenary Meeting of the 5th Party Central Committee, and accelerated through the late 1980s. However, most of the completed medium-sized plants do not operate well due to neglected facility repair and maintenance. The operation capacity rate is below 30 percent not only during the dry season, but also during winter on account of reckless deforestation. In addition, even though the construction of medium-sized plants has been completed according to the plan, the unit average generation capacity is only 46 kW (H.S. Cho 2002). This could suffice to supply electricity for household use, such as lighting and heating, but was not enough for industrial use.

### 3) Computerized Electric Power Generation

The 32nd Seongcheon River power plant (900 kW level) located in South Hamgyeong Province was automatized for the computerization of power generation. Some 70 major thermal and hydroelectric power plants in North Korea are computerized, and computerized control equipment has been installed at the Ganggye Youth power plant, Taecheon power plant and Cheongcheon River thermal power plant. Automation and computerization would ensure stable voltage (220 kv) and

Sector	Target Plants and Union Enterprises	Contents	
	Ganggye Youth Plant, Taecheon Plant, Cheongcheon	Introduction of computerized	
Electricity and Energy	River Thermal Power Plant; Bukchang, Deokcheon,	control equipment, replacement or	
Electricity and Energy	Gujang Region Coal Mine Union Enterprise, Musan	reinforcement of production	
	Allied Mine Union Enterprise	equipment	

Source: Y. Y. Kim (2002).

<table 7.9=""> I</table>	Examples of Energy	Sector Technology	Improvement in 2001

Month	Results
	Promotion of technological renovation at March 17 power plant (Democratic Chosun, January 6)
January	North Hwanghae Province, Eunpa County, new construction of Eunpa power plant (Central TV, January 11)
	Computerization at Sungcheon Region Mine Union Enterprise (Democracy Chosun 2.3)
	Computerization at Pyongyang thermal power plant (Central TV, February 18)
February	Introduction of computerized control equipment at the Songseonjeon Construction Union Enterprise (Central
	Broadcast, February 19)
	Promotion of computerized operation at West Coast Floodgate (Pyongyang Broadcast, February 20)
	Construction of medium-sized plants in Eunpa Lake, Eunpa County (Central Broadcast, March 4)
	Beginning of construction at Hwacheon Unje?? (Central Broadcast, March 14)
March	Operation of 1st and 2nd Unit April 5 Plants (March 15) (Central Broadcast, Central TV, March 16)
	Progress of groundbreaking ceremony of Hongbong power plant in Geumjin River, South Hamgyeong Province
	(Central Broadcast, March 15)
	Promotion of medium-sized plants in Manpo City, Hwapyeong, Jincheon, Seonggan, Gopung counties in
April	Jagang Province (Central Broadcast, April 20)
	Operation of Dongsin 1st, Hyeongjegol, Chupo plants (April 24) (Central Broadcast, April 26)
Mari	Modernization of electricity supply at major power plants (Central Broadcast, May 4)
May	Promotion of computerization at Wiwon plant (Central Broadcast, May 20)
Juna	Increase in power generation by 6.82 million kWh year-over-year at Bukchang thermal power plant (Central
June	Broadcast, June 25)
	Beginning of operation of the third turbine power plant at Pyongyang Thermal Power Plant (Central Broadcast,
July	July 10)
July	Near completion of power plants in tiers on Seongcheon River in South Hamgyeong Province (Pyongyang
	Broadcast, July 24)
August	Operation of Yongam 1st Gunmin Plant (Central TV, August 7)
September	Renovation of Pyongyang Thermal Power Plant (Youth Military Committee??, September 27)
	Completion of the 1st Unit Chilseong Plant in Holdong, North Hwanghae Province (Central Broadcast, Octobe
	9)
	Completion of Okran Plant in North Hwanghae Province (Central Broadcast, October 9)
	Construction of power plants in tiers on Namdae River in South Hamgyong Province (Central Broadcast,
October	October 7)
October	Construction of large-scale conveyor belt of December 5 Youth Mine (Central Broadcast, October 9)
	Completion of Youth power plant of Suan County, North Hwanghae Province (Central Broadcast, October 18)
	Construction of Seungho Region Power Plant in the lower Nam River in Pyongyang (Pyongyang Broadcast,
	October 28)
	Operation of Hoichang Plant (October 26) (Central Broadcast, October 27, Central TV, October 28)
	Development of energy-saving technology by Sariwon City Factory (Central Broadcast, November 5)
	Completion of first-stage construction of Samgyo River Youth Plant in Pihyeon County, North Pyeongan
November	Province (Central Broadcast, November 6)
November	Construction of Sangwongunmin Power Plant on Nam River in Sangwon County, Pyongyang (Central TV,
	November 21)
	Construction of Geumjin River Power Plant (Central TV, November 24)
December	Construction of medium-sized plant on Botong River (Central TV, December 9)
December	Operation of 1st and 2nd Unit Gopung Plants (Central Broadcast, December 12)

Source: Y.Y. Kim (2002). "North Korea's Strategy of Technology Renovation and Prospect of Development." Tongil-Kyongjae (The Unified Economy). No. 79. frequency (60 Hz), reinforcing the capacity of each plant and allowing prompt response to accidents.

As of December 2001, 12 out of 46 technological development projects concerned the electricity and energy sectors. North Korea promoted the projects by prioritizing energy, metal and machinery sectors, as well as the light industries, which are related to exports and everyday life. However, as the key to success is advanced technology and foreign capital, the free circulation of information and fundamental changes in the economic structure should precede.

#### **B.** Energy Cooperation with South Korea

North Korea's energy crisis was caused not only by structural problems such as the lack of new power plants and outdated system, but also by political factors closely related to national economic management. Therefore, a detailed investigation of the electricity system based on substantial data should precede the resolution of the energy crisis. The North Korean government, in turn, should make concrete plans for the renovation of the electricity system.

As the Kim Dae-jung government's "sunshine policy" regarding North Korea improved inter-Korean relations, North Korea officially requested support in the form of 2 million kW of electricity in December 2000 via transmission and asked for the immediate supply of 500,000 kW of electricity when at the inter-Korean ministerial talks. The current capacity of the power generation system of South Korea is about 49.1 million kW, which is enough to meet North Korea's need. However, it is not a matter of capacity but of financial and technical issues. The electricity support should serve to develop inter-Korean relations and act as a catalyst for interchanges between North and South Korea.

According to the parliamentary report under the title of "For the Clear Progress of Inter-Korean Cooperation" by Young-Geun Ahn, a member of the National Assembly, in October 2000, the South Korea government reviewed the following 11 scenarios amounting to 6.5 trillion Korean won in total.

#### 1) Support for Coal Stockpile and Idle Mining Equipment

First, the most effective way of saving cost in the short run is to support government-reserved coal in South Korea. Currently, the Bukchang Thermal Power Plant and Pyongyang Thermal Power Plant, two of the largest thermal power plants in North Korea, find it difficult to produce electricity not only because of the deterioration of facilities, but also due to the shortage of fuel (anthracite). If South Korea supplies 10 million tons of coal over 10 years, it is estimated that power output will increase by 1.8 billion kWh, annually. As the coal in South Korea has better thermal

Plans	Volume	Expected Cost	Period	Expected Effect (Annual)
Anthracite supply	12million tons (400,000 tons per year)	42 billion won (South Korean)	Without delay	1.05 billion kWh
Heavy oil supply	750,000 tons (250,000 tons per year)	112.5 billion won	Without delay	1.05 billion kWh
Urgent repair of generating facilities	Thermal/hydro-electric power plants, 200,000 kW	8 billion won	Without delay	500 million kWh
Repair of outworn power plant	Thermal/hydro-electric power plants, 200,000 kW	40 billion won	27 months	500 million kWh
Movement of idle plants	Eight 4,000 kW-level diesel generators	14 billion won	1 year	170 million kWh
Urgent construction of small capacity power plants	Three 40,000 kW-level internal combustion generators	130 billion won	22 months	6.3 billion kWh
Large capacity heating power plant	Two 200,000 kW-level generators	400 billion won (heavy oil power plant) 700 billion won (anthracite plant)	60 months	2.1 billion kWh
Reinforcement of timeworn power-transmission line equipment	Urgent enhancement of equipments	200 billion won	34 months	Supply capacity increase, Decrease loss in transmission
Extension of South Korea's power- transmission line	154 kV transmission line: 200,000 kW 22.9 kV supply line: 10,000 kW	40 billion won 4 billion won	6 months	1.1 billion kWh
Extension of long-distance ultrahigh-voltage transmission line	345 kV transmission line 1 million kW	280 billion won	49 months	5 billion kWh
Construction of South and North Korea's Electricity System Linkage	Facility enhancement in North Korea	5.2 trillion won	10 years	Unification of electricity system

Source: Young-Geun Ahn. "For the clear progress of the inter-Korean cooperation." October 27, 2001, parliamentary report.

value and quality than North Korean coal used for power generation, the efficiency of electricity would also improve.

The coal supply to North Korea is relatively easy because the South Korean government has abundant coal reserves that can be sent to North Korea, the coal has already been paid for, thus no additional cost is needed, and the coal reserves have no market within South Korea, so depending on the outcome of negotiations, coal can be supplied at an affordable cost for North Korea.

Jeong (2001), states that the domestic purchase cost of coal in South Korea was

about 100,000 won per ton as of 1999, so the total purchase cost of 2 million tons is about 200 billion won. However, this is a sunk cost, so he suggested that instead of providing coal, North and South Korea can work on linking their railways to reduce transportation costs, or by making other political tradeoffs that can create invaluable external effects. Furthermore, South Korea has plenty of idle mining equipment due to the decrease in coal demand, therefore North Korea could make use of this equipment to increase coal production.

#### 2) Electricity Transmission

What North Korea wants as electricity aid is the construction of transmission sites. At the fourth ministerial talks held in Pyongyang in December 2000, North Korea asked for help in building a transmission tower between the Yangju substation in South Korea and the Namcheonri substation in Hwanghae Province. However, this method comes with many technological difficulties. First, the electric power system in North Korea has deteriorated, the quality of electricity is weak and the transmission facilities are poor. Moreover, little is known of the technological features or the load conditions of the electric power system connected to the Namchon-ri substation in Hwanghae Province. Although South Korea preferred to choose a method of providing electricity aid after reviewing the alternating electricity status of the two Koreas, the talks concluded without resolution and no progress has since been made (S.C. Kim 2001).

To protect North Korea's poor electricity transmission before installing power cables that connect the two Koreas, high-voltage direct current transmission technology must be imported or the region using electricity supplied from South Korea should be separated from North Korea's electric power system to avoid damage from transmission of North Korea's low-quality electricity.

#### 3) Construction of New Power Plants

Building new power plants first requires selecting a site and guaranteeing fuel supply. In the case of hydroelectric plants, there are no sites in North Korea that are valid for renovation into a new hydroelectric plant with an output of over 500,000 kW. If there were to be such a site, it would only be in the Mount Baekdu area, Yanggang Province, where the construction of an 800,000 kW level power plant that runs on head difference created by changing the course of dam reservoir had been planned. Nevertheless, this is not a suitable area for a North-South Korean joint venture due to geographical characteristics and military factors. As for new power plants, natural gas power plant construction can be considered. A natural gas power plant is fit for short-term construction and costs less than power plants running on

other fuels. For instance, the Gaeseong Industrial Complex expects demand for natural gas with economic value to be created by 2010. Gas pipes have been laid as far as Ilsan, so if the gas pipes could be connected from Ilsan to the Gaeseong Industrial Complex or to areas close to the Demilitarization Zone, a long-term power supply to North Korea can be realized. Cooperation through the construction of long-term power generating facilities is possible. For South Korea, the acquisition of sites for building power generating facilities and other facilities is an issue, whereas for North Korea, fuel supply and acquisition of capital and technology for the construction of power generating facilities need to be resolved. North Korea could provide land for power supply facility construction and South Korea could provide technology and capital for construction, operation and fuel supply.

#### 4) Repair of Power Plants in North Korea

Electricity aid through the maintenance and repair of North Korea's existing power plants are highly feasible and effective in the short run. The biggest thermal power plants of North Korea at present, Bukchang thermal power plant and Pyongyang thermal power plant, began construction in the 1960s and were completed in the 1970s-1980s. These power plants take the lion's share of electric power supply in North Korea, but have outdated facilities. Power generation can be increased by maintenance and repair of the existing power plants. According to documents and reports on the problems of power generating facilities in North Korea, most hydroelectric power plants were built during the Japanese occupation and are suffering from decrepit facilities. Thermal power plants also have difficulty in procuring new parts for equipments due to economic difficulties. In addition, powers generating facilities and parts that came mostly from the former Soviet Union and Eastern Europe are no longer easily obtainable due to the fall of the socialist bloc, (S.C. Kim 2001).

The project of renovating North Korea's power generating facilities must proceed considering the increase of North Korea's electric power supply, North and South Korea's electricity-related exchange and the co-construction of power plants, plus the expectations for future cooperation joint ventures between the two Koreas.

The renovation of North Korea's electric power plants would expand North Korea's electricity industry, creating a foundation for intermediate and long-term cooperation between the two Koreas in the energy sector. In this context, the government support for the involved corporations is required in the long run rather than immediate profits from investment.

#### 5) The Support for Light-Water Reactor Projects

When North Korea's light water reactor project, currently run by the Korea Energy Development Organization (KEDO), is completed within the next decade, energy shortages will be somewhat assuaged. However, this project has been facing some barriers due to financial support, technology transfer, technological problems stemming from the connection of electric power systems and political problems with the United States, South Korea and Japan. North Korea's nuclear energy development started quite early, from the mid-1950s. This development program has laid its groundwork mainly on science and technology from the former Soviet Union and China and received aid from these countries. North Korea has been interested in nuclear power development as a means to overcome its energy shortage problem. North Korea signed the Nuclear Power Research Agreement (1956) and Agreement on Economic and Technological Cooperation (1985) with the former Soviet Union, and from 1986 it has been operating the nuclear test reactor at its No.1 Yeongbyeon power plant (5,000 kW).

North Korea's nuclear program has been a great threat to the regional security because it could produce nuclear fission atoms to be used in making nuclear weapons. North Korea has been expressing its plan to change graphite-moderated gas-cooled nuclear reactors to light water reactors since 1992 (S.H. Jeon 1995). The light water reactor has more difficulty than the graphite-moderated reactor (based on the technology of the former Soviet Union) in producing plutonium for making nuclear weapons. The light water reactor was developed by western developed countries, including the United States.

North Korea withdrew from the Nuclear Non-Proliferation Treaty of 1993 and refused nuclear inspections of the International Atomic Energy Agency. The No. 2 Yeongbyeon (50,000 kW) and Taechon (200,000 kW) nuclear power plants were built, but they stopped operating after the 1994 U.S.-North Korea Agreed Framework. North Korea and the United States agreed to maintain North Korea's nuclear freeze as is and cooperate in discarding used nuclear fuel through the Geneva Agreement on October 21, 1994. Instead, the United States would be responsible for the light water reactor project and provide North Korea with 500,000 metric tons of heavy oil and two units of 1,000 MWe-level light water reactor-type nuclear power plants for value through KEDO led by South Korea, the United States and Japan. According to the agreement, North Korea would receive heavy oil, and most of imported petroleum would be crude oil to be refined in North Korea.

The KEDO was established in March 1995. As of April 2002, the executive committee has consisted of South Korea, the United States, Japan and the European Union, including general members of Argentina, Canada, Indonesia, Australia, New Zealand, Chile, Poland, the Czech Republic and Uzbekistan.

The total cost of the project was estimated at \$4.6 billion, but with additional costs, it is expected to amount to \$6 billion (Yoon 1997). The KEDO executive committee members are expected to share the financial burden, but South Korea is actually paying for 70 percent of the total cost (\$3.32 billion). Japan has contributed roughly \$1 billion (116.5 billion yen) and the United States will make up the remainder. A big barrier to this project is the default payment problem. GE is supposed to supply the electric generator, but when the default problem was left unresolved, it withdrew from the project. In January 2001, the Japanese consortium led by Hitachi and Toshiba agreed to supply the electric generator.

As the main contract came into effect, the construction expense has been paid from February 2002; out of the construction cost of \$978.58 million until August 2002, South Korea paid for about \$685.01 million. The operation cost of KEDO is annually divided among the members of the execution committee in accordance with the KEDO establishment agreement. Since 1995, the United States had paid \$316.81 million, South Korea \$29.18 million, Japan \$47.24 million and the European Union \$99.81 million for the management of KEDO and heavy oil.<sup>6</sup>

In August 1997, the construction for site preparation for the light water reactors began and the effectuation of the turnkey contract between KEDO and Korea Electric Power Corporation in February 2002 promoted the launching of the main construction. As of July 2002, 22.94 percent of the general process was complete. The basic excavation of the main building had begun and 50 percent was completed for Reactor No. 1 (56 percent for Reactor No. 2).

As of the end of July 2002, the leveling of the construction site had been completed and the infrastructure construction was in its wrap-up stage.<sup>7</sup> The nuclear power plant model offered to North Korea is the standard South Korean model (Wuljin Nos. 3 and 4). North Korea signed a completed product guarantee contract with KEPCO for the 1999 light water reactor construction, which then set off the early process. However, this project has been delayed a few times and the completion deadline has been drawn back to 2008 at the earliest from the initial target of

#### <Table 7.11> Share of Construction Cost by Country (February-August 2002)

(Units: US\$1,000)

Korea	Japan	EU	Total
685,007	276,777	16,797	978,581

Source: Ministry of Unification. Weekly North Korea Report. No. 605

<sup>&</sup>lt;sup>6</sup> Current Situation of the Light Water Reactor Project, August 2002. Seoul: Ministry of Unification. <sup>7</sup> Ibid.

2003. In August 2002, the power plant construction has got into stride when the concrete casting work began for the first time.

The energy to be provided to North Korea, which amounts to nearly 2 million kW, will help relieve the serious energy shortage and, in the long run, it is expected to have a positive impact on inter-Korean cooperation, but it is not expected to resolve North Korea's current serious energy shortage since the completion of the construction has been postponed from 2003 to 2008.

North Korea has been continuously urging the United States to compensate the loss of electricity due to the delayed construction of light water reactor facilities, soon after the recent ceremony of concrete casting (August 7), through editorials in *Sisanonpyong* (August 17 Central Broadcasting), *Rodongshinmum* (August 18, Pyongyang Broadcasting) and *Central Press* (August 19, Central Press). All the editorials argued that North Korea has been diligently following the agreement to freeze all nuclear development, while the United States has not kept the deadline of light water reactor construction, which was supposed to be finished by 2003, resulting in serious loss of energy. Providing energy to North Korea through KEDO has significance in that it has increased the possibility of North Korea's cooperation with other countries on energy issues in the future.

For the future energy cooperation, the following can be sought: Cooperation in technology transfer, the involvement of the private sector in investment and technology transfer, cooperation on environmental issues and cooperation between legal, education and research institutions regarding the energy sector.

# 5. Prospects for the Energy Sector

All the industries in North Korea are closely related to North Korea's future diplomatic and political strategies. Recently, North Korea seems to have prioritized relieving the energy deficit, food shortages and overall economic crisis by pursuing the construction of the Gaeseong Industrial Complex through the inter-Korean Economic Cooperation Promotion Committee and by obtaining foreign aid through resuming the diplomatic relations with Japan.

Construction of the Gaeseong Industrial Complex to readjust North Korea's energy supply system would be a good test of whether the inter-Korean economic cooperation would move beyond tourism and the transfer processed products to investment in the manufacturing sector. The construction of energy infrastructure would be the first step for the realization of the Gaeseong Industrial Complex.

By building the Gaeseong Industrial Complex, North Korea would be able to create the energy infrastructure in the region; the technology acquired through this experience can be utilized to settle energy crisis in the future. If North Korea receives economic aid from Japan, it will probably spend the resources on building the energy infrastructure before all other things.

# A. The Construction of the Gaeseong Industrial Complex

The development of the Gaeseong Industrial Complex seems to be on a solid footing after the second South-North Economic Cooperation Promotion Committee (August 27-30, 2002) reached an agreement on major economic cooperation projects such as the connection of railways and roads and the construction of the Gaeseong Industrial Complex. Both Koreas hold working-level talks in October and agreed to complete the first phase of development of the Gaeseong Industrial Complex by 2003.<sup>8</sup>

The Gaeseong Industrial Complex would be built on a 2,640 ha area in total in Pyeonghwa, Panmun county, Gaeseong, with 330 ha in the first stage, 660 ha in the second stage and 1650 ha in the third stage, costing 200 billion won. Moreover, new towns amounting to 3,960 ha are to be created around the complex.

The electricity for the Gaeseong Industrial Complex could be provided by the Korea Electric Power Corporation (South Korea's public energy company) by connecting a 25 km-long power transmission line from Munsan in South Korea. The cost required for the electricity sector of the Gaeseong Industrial Complex is estimated to be nearly 25 billion won out of 200 billion won of the total budget for the first stage, and 33 billion won out of 1 trillion won of the total budget for the second stage.<sup>9</sup> However, supply of natural gas to North Korea is not certain for the time being. According to an evaluation of the adequacy of supplying natural gas to the Gaeseong Industrial Complex by experts, the demand for 150,000 tons of natural gas would only arise in 2010. Building a 30 inch gas pipe of 44 km (South Korea 32 km, North Korea 12 km) and three supply management offices along Route No. 1 linking Paju-Munsan-Unification Bridge-Jangdan/Gaesong would require 58 billion won. However, demand of 150,000 tons, which is the minimum profitable demand, would be made only in 2010, so the construction of LNG (liquefied natural gas) power plants would be realized around the same time.<sup>10</sup>

<sup>8</sup> Current situation of Policy toward North Korea, January 2003. Seoul : Ministry of Unification

<sup>&</sup>lt;sup>9</sup> The Gaeseong Industrial Complex Development Plan, September 2002. Seoul: Ministry of Construction and Transportation.

<sup>&</sup>lt;sup>10</sup> The Gas Industry News, August 18, 2001.

### **B. Japan-North Korea Ministerial Level Talks**

Japan's Prime Minister Junichiro Koizumi met Kim Jong-II on September 17 in 2002. North Korea aimed to gain economic benefits through a better relationship with Japan. North Korea suffered from a deficit of basic supplies since last year due to frozen relationship with countries that provide aid. Last July, North Korea stopped wage increases, price increases and rationing in part. Resuming the relationship with Japan may be North Korea's attempt to overcome the four crises (food, energy, foreign currency, necessities) arising from its economic position. However, restraining price and wage increase may trigger a sudden inflation. North Korea is said to expect at least \$5-10 billion in the form of compensation from resuming diplomatic ties. Considering that North Korea's trade with foreign countries including South Korea amounted to \$2.7 billion and its GDP was \$15.7 billion in 2001, this compensation is an enormous amount of money to North Korea. Using this compensation money to build infrastructure and production facilities will do wonders for enhancing the productivity of North Korea. In order to secure production and supply capacity, the energy shortage has to be dealt with foremost; thus, investment in production facilities would be used for efficient energy production before all things. Energy normalization has to come first in order to stabilize the economy and increase production.

# **C. Other Prospects**

For electricity aid, North Korea has contacted not only South Korea but also Western countries, as some Western companies have showed interest. From 2000, North Korea has allowed Sweden's ABB to open a branch office in Pyongyang and is proceeding with a contract for small-scale power plant construction. In 2001, Australia's economic mission visited North Korea and discussed possible energy cooperation. In April 2001, representatives from Siemens of Germany in South Korea went to North Korea, and it is believed that North Korea has asked for investment in power generating facilities. Nevertheless, Western companies are still weighing the options due to uncertainty in investment.

North Korea has come up with a strategy to focus on recovering the production of coal and electricity first, which would then have a positive domino effect on other industries. This is because North Korea sees the stabilization of the energy sector as the key to recuperate industrial productivity.

In 2002, North Korea would build larger small-scale power plants and automatized electricity production processes through computerization in order to produce more stable electricity. However, despite the increased number of power plants, the size of the plants is still small, with a capacity of 1000 kW or below, and small and medium-sized power plants that are operational comprise only 20 percent of the total plants built. Moreover, the widespread austerity and the goal-oriented movement to increase coal production without considering efficiency are temporary remedies and not solutions to the fundamental problems. Moreover, development of light-water reactor by KEDO needs quite a long time. Building the energy infrastructure through the construction of the Gaeseong Industrial Complex is not a solution to the nationwide energy crisis except for in the immediate area. Therefore, in order to solve the energy crisis, North Korea has to abandon the notion of selfreliance and move to the direction of actively accepting modern foreign technology and capital to diversify energy sources and make efficient use of energy. In conclusion, the stable acquisition of energy, establishment of an effective and balanced energy supply system and the diversification of energy sources are critical for North Korea to solve its energy shortage.

### References

\* In Korean

- Ahn, Young-Geun. 2000. "South-North Korea Cooperation on the Energy Issues Should Be Transparent."
- Anderianov, Vladimir. 2002. "Economic and Military Aspects of North Korea's Nuclear Plans." Tongil-kyongjae (The Unified Economy) 23. Seoul: Hyundai Economic Research Institute.
- Cho, Hyun-Sik. 2002. "The North Korean Economy." Tongil-kyongjae 79. Seoul: Hyundai Economic Research Institute.
- Gwon, Young-Kyoung. 2001. *The Current Status and Prospects of North Korea's Economy*. Seoul: Ministry of Unification.
- Jeon, Sung-Hoon. 1995. "The Problems and the Government's Strategy in Supporting North Korea's Light Water Reactors." Tongil-kyongjae 8. Seoul: Hyundai Economic Research Institute.
- Jeong, Oh-Young. 2000. "North Korea's Industry (IV): Energy Industry," Tongilkyongjae 71. Seoul: Hyundai Economic Research Institute.
- Jeong, Woo-Jin. 2001. *Study on Advancement into the North Korean Energy Market*. Seoul: Korea Energy Economics Institute.
- Kim, Seung-Chul. 2001. "Looking for Rational Means for Supporting North Korea with Energy Supply." Tongil-kyongjae 77. Seoul: Hyundai Research Institute.
- Kim, Young-Yoon. 2002. "2002 North Korea's Strategy of Technology Renovation and Prospect of Development." Tongil-kyongjae 79. Seoul: Hyundai Economic Research Institute.
- Koh, Deok-Gu. 1999. "The Diagnosis of the Possibility of North Korea's Major

SOC Cooperation." Tongil-kyongjae 58. Seoul: Hyundai Economic Research Institute.

- The Association of Korean Journalists. 2000. Annual Report on the North Korean Economy 2000-2001.
- The Ministry of Construction and Transportation. 2002. *The Gaeseong Industrial Complex Development Plan.*
- The Ministry of Unification. 2002. The Current Status of Light Water Reactor Project in North Korea.

\_. 2002. Weekly North Korea Report 605.

- Yang, Mun-Soo. 2002. "North Korea's Energy-Intensive Economic Structure." Weekly Economy. Vol, 656. Seoul: LG Economic Research Institute.
- Yoon, Deok-Min. 1997. "The Light Water Reactor Project." Tongil-kyongjae 36. Seoul: Hyundai Economic Research Institute.

\*\* In English

Energy Information Administration. 2001. *Country Report: North Korea*. Washington DC: EIA

# VIII. The Information and Communications Technology Sector

# Jong-Woon Lee

This chapter discusses the current status of the communications infrastructure and development trajectory of the information and communications technology (hereafter ICT) industry in North Korea. There is a growing interest in this topic in the field of North Korean studies since the ICT sector, in general, plays a critical role in stimulating a nation's economic growth and creating an efficient infrastructure. However, research on the subject is still limited and, therefore, there is little information about North Korea's ICT environment such as the degree of ICT utilization, the operation system of telecommunications, the current conditions of physical infrastructure and the development level of the hardware and software industries. Consequently, it is necessary to examine the current status of North Korea's ICT sector, which can also help to evaluate the country's industrial situation and economic problems. This chapter also endeavors to determine the structural problems of North Korea's ICT industry and offers some policy recommendations on how North Korea can create conditions conducive to ICT development.

# 1. The Communications Infrastructure

With respect to the task of gathering data for this section, it should be noted that there are some difficulties in conducting an in-depth study on the current status of North Korea's communications infrastructure. Most scholarly works on North Korean ICT lack official documentary sources since the North Korean government has not released detailed figures on its telecommunications network. Under these circumstances, this article uses estimates of the North Korean telecom infrastructure provided by researchers and institutions outside North Korea, including the ITU (International Telecommunication Union). This paper also pays careful attention to the available literature: articles in the North Korean press and accounts by South Korean journalists and scientists.

A literature review suggests that the current status of communications infrastructure in North Korea is far behind that of other developing countries and, among Asian countries, North Korea ranks almost at the bottom in terms of capital investment and technological capabilities. In particular, because of the deteriorating economic situation since the late 1980s, the level of investment in North Korea's telecom infrastructure has been very low and consequently its facilities have been rapidly outdated. Despite several ambitious projects to modernize its telecommunication network implemented in the midst of the economic difficulties of the last decade, there have been no significant improvements. Several factors, such as the regime's unwillingness to make fundamental reforms in the communications sector, shortage of capital and lack of institutional arrangement, have been obstacles to the modernization of North Korea's telecom infrastructure. To provide an overview of the current status of North Korea's communications infrastructure, this section explores the state of the country's domestic communication network and international telecom services as well as its Internet access and computer networks.

# A. Domestic Communications Network

Like other former socialist states, North Korea's telecommunications network has been developed mainly for administrative purposes, emphasizing the function of *jihuitongshin* (network for administrative orders) and *sanuptongshin* (liaison among major industrial bases), rather than civilian/commercial uses. Therefore, the horizon-tal telecom network among households is very limited in North Korea and the quality of telecom services for the general public is low. In contrast to the restrictions on the civilian use of the telecom network, the North Korean regime has placed a high priority on the establishment and expansion of "industrial telephone lines (*sanupjeonwha*)" installed in state-owned factories and enterprises, collective farms and governmental organizations/agencies (Y.S. Kim 2001, 32-33).

According to *Asia-Pacific Telecommunication Indicators 2000* published by the ITU, the number of telephone lines in North Korea reached about 1.1 million as of the early 1990s. In addition, telephone lines per 100 inhabitants, which is often used as an index to evaluate the scope of the civilian use of telecom services, is estimated to be 4.64. Presently, North Korea's tele-density rate is still at the level of the early 1990s, a level just slightly higher than such lower-income countries as Mongolia (3.95 lines), the Philippines (3.88 lines) and Sri Lanka (3.64 lines). Other studies on North Korea's infrastructure show that individuals own only about 10 percent of the one million telephone lines; most telephones are installed in government agencies, collective farms and state-owned enterprises. Thus, people's main access to telecom-

munications is through public phones, which are installed on the main streets as well as in post offices and local public offices. Moreover, it is said that telephone directory is never circulated among the general public and the telephone numbers of government organs are kept secret.

North Korea's telecommunications network has been built in accordance with the regime's principle of infrastructure construction and management, which takes into account several major factors such as administrative districts, industrial linkages, security/military importance and geographical/locational conditions. The telecommunications network is structured as a centralized system of vertical linkages connecting Pyongyang with *do* (provinces), *si* (cities) and *gun* (counties), and *eup* (towns)/*ri* (villages). The defining characteristic of this vertical network is that telephone lines are not linked directly from one region to another, but connected to each region through Pyongyang following the order of *do*–*si* and *gun*–*eup* and *ri*.

Along with the telecom network based on the system of vertical linkages, North Korea maintains a special industrial network system that directly links relevant industrial bases and government agencies. In organizing each industrial telecom enclave, a major consideration is the degree of industrial connection in terms of the production process; that is, even though factories are located in geographically and/or administratively different areas, they can belong to the same telecom network if they are closely linked in terms of production. It is reported that about 400 industrial networks are currently operating in North Korea.<sup>1</sup>

Information regarding the wired network installation in North Korea is extremely limited. The only available information is that the North Korean authorities have laid wired telecommunication lines near highways and local roads for efficient construction, as 80 percent of North Korea's entire land consists of mountainous areas that are on average 440 meters in altitude. Hence, it is estimated that North Korea's wired network is similar to its road system.

Although the automation of telecom services is currently in progress, North Korea's toll call system has been operated through a manual switching system in most regions. The automated exchange system based on the E-10A system produced in Alcatel's joint venture factories in China was established in Pyongyang in the mid-1990s (S.U. Nam 2002, 124). The North Korean authorities announced in 1997 that the manual switching systems were replaced with automated exchange systems in Pyongyang and 70 other cities/counties. Assuming that their placement continued throughout the late 1990s, the automated exchange system would be installed in about 100 cities and counties. However, as investment priority is given

<sup>&</sup>lt;sup>1</sup> The information on North Korea's telecom network shown here is drawn from the works of S.J. No and J.B. Park (2000, 12), C. H. Yoon and Y. S. Lee (2001, 190) and Y.S. Kim (2001, 38).

to urban areas, it is likely that about 2,200 telephone branch stations at the *eup* and *ri* level are still using the manual switching system.

Along with the automation of the telephone system, expansion of fiber-optic cable lines and digital communication services has been given relative priority by the North Korean regime since the early 1990s. In August 1990, North Korea reached an agreement with UNDP on obtaining assistance for the installation of fiber-optical cable between Pyongyang and other major cities. Based on this agreement, North Korea built the Pyongyang Fiber Optic Cable Factory in April 1992. Indeed, with UNDP assistance, the country established its first fiber-optical cable network by installing 480 lines of PCM (Purse Code Modulation) and six automatic exchange stations from Pyongyang to Hamhung (300 km) in September 1995. According to an article in the Rodong Sinmun (Workers' Newspaper) in 1998, an optical-fiber backbone network was successfully completed in February 1998 between Pyongyang and Sinuiju, and among most cities and counties in North Pyeongan Province via Sinuiju. The North Korean regime also announced through its main daily organ (Minju Choson) in March 2000 that the second stage of its telecom modernization project in North Pyeongan province was successfully completed, connecting all the major areas in the province with fiber-optic cable lines. Recently, it was reported that a fiber-optic cable network has been installed in areas near Pyongyang such as Nampo.

In the case of the Rajin-Sonbong area, the government, as a part of a project to improve the telecom infrastructure in the special economic zone, installed fiber-optical cable lines in 1995. As well, a joint venture telecom company (NEAT&T) established 95-km fiber-optic cable network between Hunchun in the Northern Chinese province of Gilin and the Rajin-Sonbong area, which eventually be linked to Pyongyang via Chongjin and Hamhung. Hence, the telecommunication lines between Pyongyang and the Rajin-Sonbong area were upgraded with fiber-optic cable. In sum, the North Korean regions equipped with fiber-optic cable services include Pyongyang-Hamhung, Pyongyang-Sinuiju, Hamhung-Rajin-Sonbong area, and cities/counties around Pyongyang and North Pyeongan Province.

As for the current status of North Korea's wireless communications sector, it is reported that radio pagers and mobile phone services are available for administrative and business purposes only in the Rajin-Sonbong Economic and Trade Zone and Mt. Geumgang Tour Zone (Y.I. Kong 2001, 49). Although a recent article in a North Korean newspaper stated that a pilot mobile phone service had been launched in the Pyongyang area, this report has not yet been verified. Moreover, the regime's attempt to expand the country's wireless communications network by inducing foreign investment during the last decade seems to have ended in failure.

The wireless communications project in the Rajin-Sonbong area started in 1997 with the establishment of the Northeast Asia Telephone and Telecommunications

Company (NEAT&T), a joint venture between Loxley Pacific Co., Ltd. of Thailand (70 percent of equity) and the Korea Post and Telecommunications Corporation (30 percent of equity). In exchange for monopoly rights to telecom business in the special economic zone for 27 years, NEAT&T signed a contract with the North Korean authorities agreeing to make an initial investment of US\$28 million to modernize telecom services (and telecom infrastructure) in the area. However, as the attempt to attract foreign investment projects to the Rajin-Sonbong Zone have been met with very disappointing results, the company's announced plans for capital investment have not been implemented fully reportedly, the project has so far only resulted in the establishment of 1,200 mobile communications lines and 1,500 radio pager lines. The North Korean Ministry of Post and Communications also entered an agreement with Lancelot Holdings Ltd. of Hong Kong in August 1998 to promote a mobile communications service in Pyongyang and Nampo. However, so far, the project has not shown any progress (KITA 2001, 17; Y.S. Kim 2001, 43). In this context, the wireless communications industry is clearly the least developed telecommunications sector in North Korea. More seriously, prospects for the expansion of mobile communications services in North Korea are not good; as the country has suffered from a prolonged economic recession, it remains unlikely that it will be able to channel large amounts of capital into upgrading its telecommunications infrastructure in the near future.

# **B. International Communications Network**

North Korea has a relatively well-functioning telecommunications network with Russia and China, its Cold-War allies for five decades. Several fixed-line networks connecting Pyongyang-Beijing, Pyongyang-Moscow and Chungjin-Vladivostok have been maintained. As for Western countries, North Korea is using a microwave network to connect with Hong Kong and Singapore, as well as a satellite network to link Pyongyang with Western countries. In November 1990, North Korea and Japan signed a bilateral agreement on "provisions of direct satellite communication lines and international circuit" in order to improve the quality of telecommunications service. Consequently, three telephone lines, 10 telex lines and one telegram line, along with 24 microwave lines, are open between the two countries (S.U. Nam 2002, 125; C. H. Yoon and Y. S. Lee 2001, 190). As of 2002, North Korea seems to be operating direct telecommunication links with about 10 foreign countries and its international phone service to most regions is possible through the use of relay network systems in the aforementioned countries.

Another notable point regarding North Korea's international telecom networks is that AT&T has been providing North Korea with a direct telephone service connecting to the United States since April 1995. The direct telecommunications link between these two hostile nations via AT&T is the by-product of the so-called Agreed Framework of October 1994 in Geneva. The Clinton Administration began to partially ease its economic sanctions against North Korea in January 1995 as part of the agreement. Since the agreement allowed for interaction related to telecommunications with the "rogue states," the Clinton Administration permitted the operation of telecom services with North Korea. As a procedural step, the U.S. State Department requested the Federal Communications Commission (FCC) to allow the establishment of a direct telecommunications link with North Korea in February 1995. A month later, the FCC approved the request. AT&T was selected as the provider of telecom services between the two countries and, after receiving "special temporary authority" from the U.S. government, AT&T started to provide communications services in April 1995. Consequently, direct-dial calls can be made from the United States to Pyongyang and operator-handled phone calls are possible in all regions of both countries.

With respect to satellite networks, North Korea has maintained 22 FDM lines and 10 SCPC lines linking it with former socialist-bloc countries since becoming a member of Intersputnik (International Organization of Space Communications) in 1984. As well, when an earth station for INTELSAT satellites over the Indian Ocean was established in Pyongyang with French technical assistance in 1986, satellite communication and television transmission with Western countries became possible (C. H. Yoon and Y. S. Lee 2001, 190). In 1989, North Korea set up an international communications center in Pyongyang in order to improve both domestic and satellite services. Indeed, the country completed the construction of an earth station for meteorological satellites, with the support of UNDP, in August 1990 and became capable of receiving meteorological messages from geostationary satellites and orbiting satellites. A direct telecommunications network with Japan was also created through INTELSAT satellites in November 1990. Recently, North Korea joined the International Telecommunications Satellite Organization (ITSO, formerly known as INTELSAT) as its 145<sup>th</sup> member state.<sup>2</sup>

Considering the improved intra-Korean economic relations after the June 2000 summit meeting, it is perhaps surprising that the telecommunications network between the two Koreas is very limited. The North Korean regime has been reluctant to expand telecommunications links with its Southern counterpart for security and political reasons. Consequently, there are only 56 communication lines between North and South Korea. Of them, 29 lines are direct connections and the remaining

<sup>&</sup>lt;sup>2</sup> Lee Hyung-chul, acting Ambassador of the North Korean Permanent Mission to the United Nations, visited the headquarters of the ITSO in Washington D.C. to sign a treaty on May 24, 2001. North Korea owns a 0.05% share of the ITSO (KITA 2001, 19).

lines are indirect links through the relay networks of other countries.

The direct lines are mainly used for government-level talks,<sup>3</sup> while the indirect network via other countries are used to provide telecom services to South Korean organizations involved in economic cooperation projects in the North. The indirect telecommunications network includes 16 lines for the construction of KEDO's lightwater reactor, eight lines for the Mt. Geumgang tour project (Hyundai Group) and three lines for the construction of Pyongyang Stadium. The operating services for these indirect lines are provided by such South Korean enterprises as Korea Telecom and Onse Telecom.

Telecommunication services for the KEDO light-water reactor project began when Korea Telecom installed communication facilities in Sinpo, South Hamgyeong province in August 1997. The indirect network connecting North and South Korea covers the Geumho district of Sinpo-Pyongyang-INTELSAT satellite-Tokyo International Telegraph and Telephone Center-Korea Telecom's international gateway center-Korea Electric Power Corporation (KEPCO) in Seoul. In February 2001, Korea Telecom installed computer facilities and digital equipment at the lightwater reactor construction site to digitalize telecommunications services.

The inter-Korean telecom network for the Mt. Geumgang tour project was set up indirectly through Japan. This telecommunications service has great significance as the first project of North-South cooperation in the field of telecommunications and its operating body consisted of a South Korean consortium (Hyundai Electronic, Korea Telecom and Onse Telecom) and a North Korean group. The communication route covers Jangjeon harbor of the Mt. Geumgang area-Onjeong-Wonsan-Pyongyang-INTELSAT satellite-Japan IDC-South Korea. Recently, Onse Telecom announced that it has expanded investment in order to provide mobile telephone services in the Mt. Geumgang Tour Zone and nearby areas by installing a wired and wireless combined switching system of 4,000 lines (Y.S. Kim 2001, 57-58; the Korean Ministry of Unification 2002, 75).

<sup>&</sup>lt;sup>3</sup> There are two fixed-lines between the Red Cross, 18 lines for ministerial-level talks, one line for economic talks, one line for the South-North Coordinating Committee (SNCC) and four hotlines between the Joint Security Area of the DMZ. Indeed, based on navigation control agreements in 1997 and 1998, three direct lines were installed between flight control centers in Daegu and Pyongyang. Among them, one line is connected via AsiaSat II.

Туре	Purposes	Section	Number of Lines	Date of Installation
	Red Cross talks	Seoul-Pyongyang	2	September 22, 1971
	SNCC talks	Seoul-Pyongyang	1	July 4, 1972
	Ministerial-level talks	Seoul-Pyongyang	18	August 26, 1972
	Economic talks	Seoul-Pyongyang	1	December 21, 1984
Direct Connec- tion	Hot-lines between	Liaison Offices of Red Cross talks	2	September 22, 1971
	the JSA of the DMZ	Liaison Offices	2	May 18, 1992
	Flight Control	Daegu-Pyongyang control centers (through Panmunjom)	2 November 19, 1997	
	Communications	Daegu-Pyongyang control center (via AsiaSat II)	1	February 17, 1998
	Total			
	Supporting KEDO light water reactor project	KEPCO -KT- International gate office- optical	8	August 4, 1997
		fiber cable b/t Korea and Japan-Japan KDD-	2	July 26, 2000
		Intelsat satellite-Pyongyang-Sinpo	6	May 23, 2001
Indirect	Supporting the Mt.	South Korea-Japan IDC-Intelsat-satellite-	6	November 17, 1998
Connec- tion	Geumgang Tour Project	Pyongyang-Wonsan-Onjeong-Jangjeon	2	May 18, 1999
	Supporting for construction of Pyongyang Indoor Stadium	South Korea-Japan IDC-Intelsat satellite- Pyongyang	3	November 21, 2000
	Total		27	

#### <Table 8.1> Inter-Korean Telecommunication Connections

Source: The Korean Ministry of Unification (2002). 2002 Unification White Paper. p. 75.

# **C. The Internet and Computer Network**

Despite such a strong trend toward an "IT-driven global economy," the North Korean regime still heavily controls public access to the Internet. The regime sees information and knowledge flows through the Internet as a potential threat to the political foundations of its socialist regime. In addition to the regime's restrictions on Internet access, a poor telecommunications infrastructure largely contributes to the backwardness of Internet services in North Korea.<sup>4</sup>

<sup>&</sup>lt;sup>4</sup> North Korea's Internet access is made by fiber-optical cable connecting Pyongyang and Dandong of China. However, only specially approved government officials in the Ministry of Foreign Affairs and the Ministry of Trade and IT professionals can use it. As well, international organizations that have a branch office in North Korea such as the UNDP and foreign delegations in Pyongyang are able to use the e-mail services after obtaining permission from the authorities.

A good illustration of the current status of North Korea's Internet use is the lack of websites registered under "kp," the national North Korean domain as assigned by ICANN (Internet Corporation for Assigned Names and Numbers). North Korea only allows government-affiliated organs that carry political propaganda to operate Internet servers in either China or Japan. Among the seven official websites that North Korea currently operates are the websites of the Korean Central News Agency, which was created in Tokyo in January 1997, and Chosun Info Bank, which was opened in Shenyang, Northern China in October 1999.

However, while the North Korean regime still tries to prevent the general public from gaining access to inflows of external information through the Internet, it also seems aware of the positive aspects of the computer network system. According to articles in the North Korean press, a nationwide Intranet system linking computers and users within North Korea is being operated at a limited level. The most famous internal network system is the *Gwangmyeong* information service, which was developed by the Central Institute for Science and Telecommunications under the umbrella of the Academy of Science and Technology. It is reported that the *Gwangmyeong* system is linked to more than 1,300 organizations nationwide, including the following: central and local government agencies, educational institutes such as Kimilsung University, research institutions, public libraries and state-owned enterprises. Although the *Gwangmyeong* system was originally developed as an online database of scientific/technological information, the system is widely used for Web searches and e-mail services. Recently, the system is reportedly being used to provide information services for international trade and other commercial activities.

Consequently, e-mail service within North Korea is available and searching for data and information through the computer network is also reportedly possible to some level. Government organizations, which have been approved to create home-pages and connect to the internal computer network, include the Ministry of Trade, the Ministry of Post and Communications, the Academy of Science and Technology, the National Institute for Agriculture and the Central Institute for Science and Telecommunications. Indeed, education and research institutes, such as Kimilsung University, the *Inmin* (People's) Educational Center and the Pyongyang Information Center, as well as trading companies including the Chosun Comprehensive Export/Import Company and the Chosun Pyeongwon Trade Company are some of the organizations that have created homepages (The Korea IT Industry Promotion Agency 2002, 38).

Although North Korea's Internet use has been minimal because of the heavy control over information flows and underdeveloped digital system, North Korea's internal computer network shows that the country is capable of utilizing Internet technologies. North Korean computer experts are now reportedly working on building a firewall system between the Internet and the internal network system, to control external information entering into North Korea. In the process of conducting research for the firewall system, North Korea opened a Web site called Silibank (www.silibank.com) in Shenyang, China to facilitate an e-mail service between Pyongyang and the outside world.<sup>5</sup> Silibank is a cyber post office that mediates the exchange of e-mails at 30 minute intervals by using two servers installed in Shenyang. Therefore, although the regime still controls the inflow of external information, it will likely gradually permit the use of the Internet once the study on the firewall is completed.

# 2. The ICT Industry

During the last decade, many countries in the developing world such as China, Malaysia and India have devoted a large amount of economic resources to building a competitive ICT industry at the national level. However, North Korea is still at an initial stage in terms of its ICT development and will have to cope with various challenges in the process of ICT development. As demonstrated in the previous section, North Korea's telecommunications infrastructure is far behind that of other countries in the developing world. Nonetheless, there is a consensus among North Korea observers that the government has recently shown a keen interest in the development of the software industry and significant steps have been made towards promoting software production. It is generally believed that the software sector is technologically much ahead of the computer hardware and communications equipment sectors. In this connection, this section examines the current status of North Korea's ICT industry, which can be broadly divided into the software sector and the hardware/communication equipment sector, examining the different levels of development.

# A. Software Sector

#### 1) Steps towards Development of the Software Industry

Considering North Korea's serious economic strife during the 1990s and its technological isolation from the international market, it is perhaps surprising that North

<sup>&</sup>lt;sup>5</sup> Although it is a significant event that Silibank offers e-mail service to foreign users, all e-mail messages are monitored by the authorities and the number of eligible users is extremely limited. For details, refer to Korea Development Institute, "Recent Conditions of North Korea's Internet Service," *KDI Review of the North Korean Economy* (March 29, 2002).

Korea has made some progress in the software industry in the midst of its economic hardship. Although North Korea lags behind in terms of the technological level of software development, it can be argued that the country has made considerable steps towards build a software industry. North Korea's recent achievements in the software sector are largely attributed to the regime's emphasis on the role of science/technology in economic development and favorable institutional arrangements for fostering human resources.

North Korea's strong emphasis on the development of science and technology related to the ICT industry appeared in two periods under different policy focuses. The first period was in the 1980s when the regime pursued the automation (and computerization) of production systems in industrial units in order to increase productivity. North Korea soon underwent rapid industrialization throughout the 1960s and 1970s. As a consequence of achieving a certain level of industrial progress, the country was destined to enter a new phase of industrial development in the following period. Technological improvement might have become a necessary condition for enhancing production efficiency and for maintaining economic growth because the heavy industries, the most important sector of the North Korean economy, are capital- and technology-intensive.

It has been observed that even North Korea was aggressively involved in trade with Western countries during the 1970s in order to obtain new technologies and industrial facilities unavailable domestically or within socialist-bloc countries. In order to upgrade its existing production system through the introduction of new technology and to "automate and computerize" its industrial sector, the North Korean regime attempted to increase investment in the microelectronics industry and telecommunications sector. By focusing on the development of these industries, North Korea reportedly succeeded in acquiring some important technologies in electronics engineering, including IC (integrated circuit) production systems, and the industrialization of microcomputer production by the late 1970s. In the early 1980s, the country completed the construction of a computer assembly plant with technological assistance from the Soviet Union and built a pilot plant for IC production in the National Institute for Electronics Engineering in Pyongyang. In particularly, Kim Il-sung's one-month trip to the Soviet Union and the Eastern Europe in June 1984 seems to have boosted the country's focus on the ICT industry (S. I. Bae 2001, 63-64; S.U. Nam 2002, 47). During his visits to the East European states, President Kim witnessed the rapid technological progress in the fields of electronics, transportation and telecommunications. North Korea signed dozens of agreements on technological cooperation with East European countries during the mid-1980s, increasing the number of scientists and engineers studying applied sciences abroad.

Respectively, the modernization and development of technology in the ICT sector was given a high priority when the government implemented the Third Seven

Year Plan (1987-1993). With the regime's increased emphasis on strengthening its technological foundations in the ICT sector, the Chosun Computer College was established in 1985 to foster ICT professionals. With the objective of increasing its institutional capabilities in computer-program development, the North Korean government also founded the Pyongyang Information Center in 1986 and the Chosun Computer Center in 1990 respectively. In addition, program developers, computer scientists and students around the country have participated in the government-sponsored National Programming Competition every year since 1990. However, faced with serious economic hardship in the beginning of the 1990s, the country's attempts to promote the ICT sector came to a halt.

The second phase of North Korea's national IT promotion campaign came in the late 1990s. After achieving a considerable degree of political stability, the Kim Jongil regime shifted its economic policy towards a more pragmatic program with the aim of resolving the adverse effects from the severe economic difficulties of the mid-1990s. Bestowing great political and economic significance to the development of information technology, the regime adopted "the policy placing great importance on scientific technology" as a strategy for economic rehabilitation and proclaimed 1999 as "the year of science and technology." Moreover, in the 2000 New Year joint editorial of North Korea's major newspapers, science and technology was highlighted as one of the three major pillars for building gangsungdaeguk (a powerful nation), together with socialist ideology and military arms. In the following year, the joint editorials reaffirmed the importance of science and technology and focused on the topic of fostering of the IT industry(S. I. Bae 2001, 63-64). With North Korea continuously stressing the promotion of the IT industry since the late 1990s, state mobilization to develop the high-tech industries apparently emerged as the country's new development strategy for economic revival. This is clearly evident in the regime's two major political slogans, sinsagoron (new way of thinking) and danbeondoyaron (in-a-single-leapfrog doctrine).<sup>6</sup> Although these slogans largely reflect the regime's determination to maintain its socialist system through economic recovery, the central idea underlying the two phrases is that North Korea will be able to leapfrog ahead through the development process through the promotion of technology and the IT industry.

As a result, the North Korean regime placed a priority on the software sector since the computer hardware sector requires massive investments and a long pay-off

<sup>&</sup>lt;sup>6</sup> For the detailed information on North Korea's IT promotion campaign since the late 1990s, see Bae, Seong-in (2001), "North Korea's Policy Shift Toward the IT Industry and Inter-Korean Cooperation" and Nam, Sung-ug (2002), The Strategy of IT Industry Development and Building of Strong State in North Korea.

period. Facing the task of building a software sector in the midst of economic decline, the regime put greater efforts into cultivating high-quality IT professionals, revising the curriculum of its entire education system from elementary schools to graduate institutions in the late 1990s in order to institutionalize computer education. Computer classes have been compulsory in middle and high schools since 1998. Special computer-programming classes for talented students were also established in the Mankyondae Student Palace, Kumsung First High School and various middle and high schools across the country.

At the university level, computer science colleges and research institutes specializing in information technologies have been established since the late 1990s; for example, computer science colleges were opened at Kimilsung University (1999) and Kimchaek University of Technology (2001). Moreover, Pyongyang Computer College expanded its research facilities and faculty, while changing its name to Pyongyang College of Computer Technology. Major universities such as Kimilsung University and Kimchaek University of Technology also increased the research activities of their engineering institutions in order to strengthen networks with the software sector.<sup>7</sup> Along with the computer education within universities, North Korea's major IT institutes, including the Chosun Computer Center and the Pyongyang Information Center, have produced university graduates, highly trained in computer programming.

In accordance with the government's emphasis on training IT professionals and fostering the software industry, public interest in computers is currently increasing. For instance, articles and reports on the importance of computer science and on using personal computers are found almost daily in North Korea's major media. The country also held various IT exhibitions, nationwide program development contests and seminars on the process of "informatization," all of which encourage the promotion of the software sector.<sup>8</sup>

With respect to international cooperation in the IT sector, North Korea has shown a keen interest in obtaining advanced technologies from international organizations and overseas IT institutions. In 1993, for example, the Science and

<sup>&</sup>lt;sup>7</sup> Other than Kimilsung University and Kimchaek University of Technology, the North Korean authority has given priority to computer science and IT-related engineering areas at about 20 major universities, which are under direct control of the Higher Level Education Agency under the Ministry of Education.

<sup>&</sup>lt;sup>8</sup> In an effort to support the software sector, the North Korean government established the Ministry of Electronics Industry exclusively responsible for IT development in November 1999. Moreover, the fourth session of the 10th Supreme People's Assembly held in April 2001 surprisingly adopted the Copyright Law, which could be viewed as a sign of the regime's intention to lay legislative ground for introducing/developing advanced technology in the software sector (S.I. Bae 2001, 64-66).

Technology Committee of the North Korean government entered an agreement on technology cooperation with the International Institute for Software Technology (UNU/IIST), an affiliate institution of the United Nations University located in Macao. Based on this agreement, a series of software education programs designed by UNU/IIST were held in Pyongyang in 1993, 1994 and 1998.<sup>9</sup> The Pyongyang Information Center also received financial/technical assistance from the Osaka Information Center (OIC) of the Osaka Information and Computer Science College, an educational institute of *Chochongnyon* (the pro-North Korean association of Korean residents in Japan), since the early 1990s. Instructors of the OIC regularly visited Pyongyang to teach short-term courses on software engineering and computer er network systems. Moreover, the North Korean government provided a few IT specialists and students with the opportunity to study at the OIC, as well as UNU/IIST and other IT institutions abroad.

Thanks to the government's continuous emphasis on cultivating IT professionals, more than 100,000 individuals have received IT-related education since the mid-1980s and North Korea at present has about 1,000 computer programming technicians who are highly skilled even by international standards (Seo 2001, 202; Kim 2000, 120). More importantly, although the university curriculum on IT knowledge and skills still needs much improvement, North Korea's universities and research institutes produce more than 10,000 fresh graduates from IT training courses annually.

### 2) Trend of Software Development

With government support in fostering software professionals, some areas of North Korea's software sector have progressed considerably in spite of the economic difficulties and overall industrial slump. The literature dealing with the North Korean IT industry indicates that most researchers feel that a few of the computer programs developed in North Korea reach an advanced level and some of them may even be competitive in the world market if properly commercialized through, for instance, better packaging design.<sup>10</sup> The areas in which North Korea shows particu-

<sup>9</sup> UNU/IIST (1994), and UNU/IIST, Annual Report 1993.

<sup>&</sup>lt;sup>10</sup> On April 20, 2002, "The 1st Chosun Computer Software Exhibition" was held in Beijing. It was the first exhibition in the IT sector for international marketing of North Korea's software programs. It provided us with an opportunity to see North Korea's level of technology in software development. There were various software products such as characters and speech recognition systems, fingerprint recognition systems, mechanical translation programs, 3D-CAD, medical software and multimedia contents related to health, culture, tourism and games, all of which had been developed by North Korea's IT institutions including the Chosun Computer Center and the Pyongyang Information Center. Some South

lar achievements include character and number recognition, security control systems, language translation and processing systems, computer-aided design (CAD) and medical knowledge/information systems based on oriental medicine. In particular, North Korean technology has reached international levels in the areas of speech and fingerprint recognition programs. Along with these areas, North Korea has shown great technology progress in computer games, multimedia applications, and computer simulation and animation.

One of North Korea's best-known computer programs is *Eunbaduk*, which ranked in first place at the Computer Baduk Game World Competition for the two consecutive years of 1998 and 1999. *Geumbitmal* (Golden Horse), a computer program classifying and diagnosing human physical conditions, also won a gold medal at the Geneva International Invention Exhibition in 1994. According to accounts by South Korean IT professionals, such North Korean software programs *as Changdeok* (Korean language word processor), *Damjing* (Korean-Japanese translation program) and *Sanak* (3D-CAD program) are not too far behind the technological levels in the South. In addition, North Korea's level of software development could be judged by the recent production of a multi-language image processing program, *Sindong 2002*. This language program purportedly includes a modification function of scanned characters and can translate five languages: Korean, English, Japanese, Chinese and Russian.

In regards to North Korea's strength in such areas as language processing, computer translation, recognition systems, encryption technology and oriental medical information systems, it is said that the country's particular political/military situation and international relations have directed the development path of its software sector in a different direction from the global trend. Although, there is no doubt that its pursuit of a self-reliance policy based on *Juche* ideology has acted as a hindrance to technological progress in general, North Korea's attempt to achieve a self-reliant economy played a role, to a certain extent, in shaping the indigenous development of the various fields of the software industry.

For instance, computer security systems, in which North Korea has shown acompetitive advantage in recent years, were originally developed for military purposes, not for civilian use. North Korean IT specialists have utilized encryption technology, which is widely used in the military communications system, to produce commercial software products related to network protection and intelligence control programs. It is also likely that character, voice and fingerprint verification programs

Korean observers evaluated North Korea's softwaretechnology as highly advanced, especially in the area of speech and fingerprint recognition (see The Electronic Times, April 22, 20002, and the Joongang Daily, April 23, 2002).

have also been used in the military sector in tandem with encryption technology. The Chosun Computer Center is well known for producing computer program packages that are embedded in verification systems, such as fingerprint-recognition depositories, writing verification programs and door lock verification systems.

The Chosun Computer Center also made vigorous efforts to apply recognition technology to oriental medicine, for use in various medical diagnosis systems. Although somewhat behind in the field of Western medicine, North Korea is quite advanced in the science of oriental medicine since the regime has greatly supported the development of its own system of oriental medicine during the last five decades. A good illustration of this fact is that oriental medicine is taught in conjunction with Western medicine in medical schools and at dozens of professional institutes across the country such as the National Institute for Oriental Medical Science. Based on its scientific foundations in oriental medicine. North Korea commercialized several software programs classifying and diagnosing human physical conditions. For example, Geumbitmal (Golden House), a program that garnered the first place in the 1994 Geneva International Invention Exhibition, is reportedly used in hospitals to diagnose and treat patients. Koryochimgu (Koryo Acupuncture) is another wellknown program based on oriental medicine that has treatment/education functions. Recently, North Korea introduced an oriental medical service program, which can analyze a patient's symptoms based on a database of traditional Korean medicine (sasanguihag). The program can also prescribe medicine for the diagnosed illnesses.

Given the achievements in the fine arts, which have been continuously promoted by the regime for propaganda purposes, there is good commercial and export potential for North Korea in the computer game and animation field. In fact, several animation companies in North Korea have been actively involved in the production of animated films on orders from such European countriesas France, Italy and Spain. Several game programs, including the well-known *Eunpaduk*, are exported to Japan and South Korea and have received a favorable response in the games market.<sup>11</sup>

<sup>&</sup>lt;sup>11</sup> The import of North Korean software programs to South Korea is continuously increasing as some South Korean IT companies have begun to recognize that a few North Korean programs are technologically competitive. Samsung Electronics and Hanaro Telecom, Inc. bought such game programs as *baduk* and oriental chess and Junwon Corporation imported *Geumbitmal*, a program created by the Chosun Computer Center. South Korean companies are also seeking to import some North Korea's programs to embed in relatively higher technology such as oriental medical information systems, various recognition technology, and animation and language processing programs. Samsung Electronics founded the Samsung-Chosun Computer Software Joint Development Center in Beijing with ten dispatched North Korean IT professionals. There are several projects going on in five different areas such as document summary program, Chinese character recognition system for cellular phones, cellular phone games and applied technology. As well, Hanaro Telecom presented a 3D animation "Lazy Dingga," the first South-North joint production by Hanaro and Samcheonri Company of North Korea.

Although the North Korean game programs need some improvements in such areas as refining image composition, the technical level of North Korea's computergraphics and 3D image processing seems to be quite high.<sup>12</sup>

As for multi-lingual processing technology, North Korea shows particular strength in the computer translation of Chinese and Russian. During the Cold War, North Korea depended extensively on the former Soviet Union and China for security and economic resources in the form of capital, market access and technology. Given this historical basis, it is not surprising that there are many North Korean scientists familiar with Russian and/or Chinese who could contribute to the development of multi-lingual processing software.

In summary, the analysis of the current status of North Korea's software sector reveals that, although North Korea is generally at an early developmental stage in this sector, it has made considerable progress during the last decade in certain specially targeted fields. More importantly, if managed properly, the software sector can continue to grow; the regime is continuing its special policy emphasis on developing the IT industry and is expressing interest in international cooperation programs in the IT field. At present, although North Korea still falls shorts in the programming skills demanded in the international market, it is clear that the country has taken its first steps in exporting software programs, ranging from computer games to oriental medical information systems, to foreign markets.

### 3) Major Software Development Institutions

The members of North Korea's pool of software experts (scientists and engineers) generally hold employment by state-sponsored research institutions, government agencies and universities. Thus, it is clear that state-funded research institutions have played a major role in promoting the software industry. The key institutions specializing in software development include the Chosun Computer Center, Pyongyang Information Center, Comprehensive Program Research Institute under the North Korean Academy of Science and Silver Star (Eunbyul) Computer Center.

Hanaro was in charge of character development, scriptwriting, work validation and technology training for North Korean professionals whereas North Korea was responsible for the graphic work of 3D animation production. See J.J. Seo (2001). P. 205 and *The Electronic News*. April 26, 2002.

<sup>&</sup>lt;sup>12</sup> In order to promote exports of software products, North Korea needs to improve its commercialization skills in such areas as design and packaging of products. As well, North Korea should put more effort into enhancing international exchange for standardization of software products so as to facilitate technical interoperability of the North Korean software. Increased international cooperation in the IT sector will strengthen institutional capabilities to keep pace with global technology trends and enable quick responses to international market demands.

Dozens of North Korean universities such as Kimchaek University of Technology, Pyongyang College of Computer Technology and Pyongsung Science College have departments or institutes, designated to create and refine software products. The current status of these research institutions is as follows.

The Chosun Computer Center is frequently cited as the nucleus of North Korea's information technology research, software development and training/education for computer programming. Reportedly among the Center's 800 IT professionals, about 550 researchers are currently working on software development and more than 100 researchers are engaged in the applied IT sectors. These software professionals work in such IT-related research divisions as the Applied Software Development Center and the Multimedia Program Development Center (C. G. Lee and K. S. Kim 2001, 84). The Chosun Computer Center also has its own branch offices in the provincial capitals and also manages advanced professional courses at Kimchaek University of Technology.

The Chosun Computer Center has been focusing on developing such software programs in areas such as recognition/verification systems; medical information systems based on oriental medicine, office automation and traffic coordination systems (e.g., air traffic control systems and marine traffic command systems). The Center, in particular, strives to mobilize its institutional capabilities toward the expansion of office automation and computer networks in industries, while distributing relevant software programs, including network operation and management, database systems and statistical automation programs, to enterprises and government organs. Moreover, a trading company, *Shihunghesa*, was established under the umbrella of the center in order to promote the export of its software products and activate technological cooperation with foreign countries. Recently, after merging with the Silver Star (*Eunbyul*) Computer Center, this center has reportedly improved its R&D abilities in the field of computer games and multimedia programs.

The Pyongyang Information Center is also taking a leading role in supporting the development of North Korea's software industry. About 150 staff members are engaged in developing software programs and training IT professionals. Among the 60 software products that the institute has created for enterprise and factory management, a word processing program called *Changduk* is the best known and most widely used in various industrial fields (KIPA 2002, 51-53). The Pyongyang Information Center also distinguishes itself in electronic publishing programs with its *Inshik* and *Damjing* programs, which are capable of mechanically translating between Korean and Japanese, English and Chinese. Recently, this institute is seeking to specialize in CAD (computer-aided design) software, while producing *Sanak*, a series of 3D architectural design supporting programs. In an effort to obtain new software technology, the center has attempted to build partnerships with foreign research institutions. With support from the Osaka Information Center in Japan, the

Pyongyang Information Center established the O&P Training Center in 1996. The center is also actively involving in technological cooperation with South Korean enterprises and universities. A good example is the establishment of the Hana Program Center, the first IT joint venture company in which the Pyongyang Information Center takes the role of providing software specialists adept at creating new software products. The institute reached an agreement on educational exchange with the Pohang University of Science and Technology in May 2001. In addition to the Chosun Computer Center and the Pyongyang Information Center, there are several well-known institutions, including the Comprehensive Program Research Institute of the North Korean Academy of Science, all of which aim at improving practical research on software development and in training IT professionals.

# **B.** Computer Hardware and Communication Equipment Sectors

Contrary to the current experience of other developing countries, there appears to be little focus on the computer hardware and communications equipment industry in North Korea due to the economic difficulties since the late 1980s. Along with the heavy industries-first policy, North Korea's persistent pursuit of self-reliant industrialization brought about a serious shortage of advanced technology and foreign capital, which not only impeded the modernization of the telecommunications infrastructure but also prevented the sustained development of the hardware and communications equipment industry.

North Korea showed some technological progress during the period when computers were first introduced. With technical assistance from the Soviet Union and other East European countries, North Korea succeeded in building the technological foundations for the production of first-generation digital computers by the early 1970s when only a handful of industrialized countries were able to do so (S. U. Nam 2002, 148; KIPA 2001, 66). Furthermore, the country took decisive steps to establish its own industrial base for the domestic production of communications equipment such as magnetic switches, telephone sets, amplifiers, rubber-insulating cable lines and dielectric rubber cable lines. However, like its other industrial spheres, North Korea's computer hardware (more precisely, microelectronics) and communications equipment sectors underwent a technological slowdown and declining growth from the mid-1970s. Several internal factors have often been cited as the causes for the decline: inefficient resource allocation linked to the emphasis placed on self-reliance and heavy-industrialization, overall deterioration of the electronics industry and poor telecommunications infrastructure. Lack of foreign investment and international regulations led by U.S. economic sanctions and the COCOM (Coordinating Committee for Export Control to Communist Areas) agreement were other factors that limited the import of advanced foreign technology and damaged the efficiency of the communications sectors.

Under the circumstances, North Korea's current computer production capabilities lag far behind those of other developing countries. North Korea reportedly began producing 16-bit PCs in the early 1990s with the establishment of the Pyongyang Computer Assembling Plant. Currently, North Korea is manufacturing IBM-compatible Pentium-level PCs by assembling imported core components and its annual production ability is estimated to about 100,000 units.<sup>13</sup> According to the North Korean press, the Pyongyang Electronic Product Development Company under the Ministry of Electronics Industry recently completed the construction of assembly lines for manufacturing Pentium-level PCs and computer peripherals. However, several South Korean journalists and scientists who have visited North Korea have reported that the production of PCs in North Korea is still in its infancy stage and imported Pentium-level PCs and peripheral equipment from China or Hong Kong could be found at various IT institutions, government agencies, universities and enterprises.<sup>14</sup>

According to relevant literature, the underdevelopment of North Korea's hardware sector is largely attributed to the lower level of the country's semiconductor technology. In an effort to support the production of personal computers, the government established a pilot IC (integrated circuit) plant at the National Institute for Electronic Engineering Research in 1987 with technical assistance from UNDP. Subsequently, North Korea has built the Pyongyang IC Plant, the Haeju Semiconductor Plant and Dancheon-Yongyae Army Semiconductor Plant since 1989 in order to produce IC chips and computer components. At present, several institutions, including the Semiconductor Research Institute of Kimchaek University of Technology and the National Institute for Electronic Engineering Research, are working to industrialize 64M-DRAM (dynamic random access memory) chips. However, due to the shortage of qualified professionals and outdated research facilities, North Korea has not shown any tangible accomplishments in upgrading its semiconductor industry. Indeed, the country has met with very disappointing results in its attempts to attract foreign partners from Japan and other Western countries to obtain badly needed advanced technologies.

Although the communications equipment industry in North Korea has been developing for several decades, its technological level in comparison with the international standards is low with the exception of the military field. As shown in Table 8.2, there are about 20 major communications equipment companies, includ-

<sup>&</sup>lt;sup>13</sup> Chosun Sinbo. March 17, 2003.

<sup>&</sup>lt;sup>14</sup> For details on North Korea's production technology for computer hardware, see J.J. Seo (2001). p. 208, S.I. Bae (2001). p. 302, KIPA (2001). p. 115 and S.U. Nam (2002), 44-50.

# VIII. The Information and Communications Technology Sector | 209

ing the Pyongyang Communications Equipment Plant and the Pakcheon Communications Goods Plant. These companies have been primarily engaged in the production of wired and/or wireless equipment and telecommunications components such as telephone sets, automatic switching systems and pager signaling equipment. Most of these companies also manufacture telecommunications equipment for mili-

Classification	Name of Manufacturer	Major products	
Electronics equipment	Nampo Communication Machinery Plant	Radio, wired broadcasting system, telephone sets, switching system, fish detector, broadcasting transformer and television sets, etc.	
	October 5th Automation Plant	IC (integrated circuit) and automatic thermostatic controller, etc	
	Pyongyang Communication Machinery Plant	Telephone sets, automatic switching system, telephone line, switchboard	
	Pakcheon Communication Machinery Plant	Telephone sets	
Wired	Soncheon-Yongyae Army	Switching system, pager signaling apparatus, telephone,	
communication	Communication Equipment Plant	switchboard components and sound magnifier	
equipment	May 7 <sup>th</sup> Communication Machinery Plant	Switching system, telephone sets and sound magnifier	
	The Ganggye I Communication Machinery Plant	Switching system, telephone	
	Pyongyang Communication	Carrier telephone, measuring instrument and printed circuit	
	Machinery Repair Plant	board	
	Anju Communication	Medium wave transmitter, SSB transmitter, TV abort system,	
	Machinery Plant	wireless/wired communications equipment	
Wireless communication equipment	Pyongyang-Yongyae Army Communication Machinery Repair Plant	Communications equipment, insulation resistance measuring set, sound amplifier	
	Pyongyang Wireless Machinery Repair Plant	Marine wireless communications sets and TV	
	Sunggan Communication Machinery Repair Plant	Military communications equipments and telephone	
	Pyongyang IC Plant	Electronic products, IC and semiconductor elements	
	Pyongsung Semiconductor Plant	Intelligence equipment, S/W development	
	Pyongyang Computer	Circuit board production facilities, computer and mini-	
IT equipment	Assembling Plant	calculator and various electronic equipments	
	Chosun Computer Center	Intelligence equipment and S/W development	
	Pyongyang Information Center	S/W development, etc	
	IC PilotPlant under the Institute for Electronic Engineering Research	IC research and development, education of professionals, etc	

# < Table 8.2 > Major ICT Equipment Producers in North Korea

Source: KITA (2001). The Current Status of North Korea's IT Industry and Plans for Activating Inter-Korean Cooperation.

tary use.<sup>15</sup> However, the North Korean communications equipment industry does not seem to be significantly engaged in R&D activities because of the shortage of capital investment. Thus, the country is apparently largely dependent on China and former socialist states for important parts for communication equipment and sophisticated technologies. Even though no quantitative analysis on North Korea's level of technological development is available in the literature, it is widely estimated that in the communications equipment industry the country is at a similar level of development as South Korea in the late 1980's (Y.H. Kim 2000, 120).

# **3.** Problems in the ICT industry

As observed in the previous sections, North Korea's ICT industry consists of a relatively developed software sector and underdeveloped hardware sector/poor infrastructure. Needless to say, more investment into telecommunications infrastructure and the computer hardware sector is necessary for a balanced development of the ICT industry and economic rehabilitation. The ICT industry itself plays a critical role in stimulating economic growth and has a high potential of having a diffusion effect on relevant industries. Unfortunately, North Korea's ICT industry is far behind other developing countries in terms of capital investment and technological innovation. More seriously, with the severe economic recession since the late 1980s, North Korea is not in a position to utilize domestic capital and technologies for the modernization of its ICT infrastructure. Hence, it seems essential to discuss the obstacles of North Korea's ICT development and future tasks for improving the ICT sector.

First, although North Korea is currently stressing the importance of developing the IT industry and related technologies, the major problem of the country's continuing economic hardships have blocked possibility of progress in the ICT industry. The ICT sector is an industry requiring massive capital investment in the initial stage and a long pay-off period. Considering these characteristics, it seems unrealistic to expect North Korea, a country that has experienced a decade-long economic decline, to modernize its ICT industry, without any outside assistance.

The current poor status of North Korea's infrastructure is best illustrated by the

<sup>&</sup>lt;sup>15</sup> As stated above, North Korea's technological advancement in the computer hardware and communications equipment sector, in general, is behind other nations. However, the country has seemingly achieved a relatively high level of technological development in satellite communication and missile control systems, both of which are advanced for military use. For instance, almost all the components of North Korea's first satellite Gwangmyeongseong I, which was launched in August 1998, were reportedly made with domestic technology. As well, North Korea has domestically achieved production technology for air traffic control systems, automatic navigating systems and large-scale antenna for space communication.

computer distribution rate of less than 1 percent and the tele-density rate of only five lines per 100 inhabitants (Y.H. Kim 2000). More seriously, the related industries are not likely to be normalized in the near future since a large proportion of existing ICT facilities have already become obsolete due to lack of proper investment and management. It is likely that North Korea's ICT infrastructure is actually far less productive and efficient than shown in the statistical data announced by the North Korean authorities. Although the North Korean economy has shown some signs of recovery since 1999, many hindrances still remain. Considering North Korea's economic capability at the present time, upgrading its existing ICT infrastructure seems unfeasible without international assistance.

Faced with the obstacles caused by the rapid economic decline, the North Korean regime since the mid-1990s has focused on promoting the software industry by training specialists in computer programming. However, it is clear that the software industry will face its own limits unless it is accompanied by balanced progress in ICT infrastructure and the computer hardware industry. Without an increase in computer diffusion and modernization of the ICT infrastructure, the recent growth of the software industry cannot be sustained in the long run and therefore will have a smaller contributing effect on the economic rehabilitation.

Second, the heavy control of the North Korean regime over information and knowledge flows has been considered as another obstacle to the long-term development of the ICT sector. Even though the authorities seem aware of the role of ICT in economic development, they still maintain monopoly control over information flows in order to sustain the socialist political system. Indeed, although North Korea has placed a high priority on fostering a younger generation of scientists and engineers in the software sector, the level of computer education for the general public seems very low, forming a striking contrast to the fact that the quality of some software programs have reached international standards. As one of the few survivors of the former socialist bloc, the North Korean regime, without a doubt, feels threatened by its inability to control the many changes in society resulting from the "information-ization" process. Thus, it can be said that, with its recognition of the importance of the ICT industry, North Korea will pursue the informationization process within a controllable range.

One prime example of North Korea's ambivalent attitude toward the development of information technology can be found in its stance towards the Internet. While it shows a willingness to take advantage of the economic gains brought about by information technology, it continues to impose tight restrictions on Internet access, fearingthe political/social consequences of freeing up information flows. The fact that internal computer networks linking various state-owned enterprises, educational institutions and government organs have been created since the late 1990s clearly illustrates the regime's intention to use networks of computers for economic development. Nonetheless, the North Korean regime continues to operate firewalls to block the general public from accessing websites it finds objectionable. With the strict control over Internet access, obvious limitations stand in the way of ICT development in North Korea.

The regime's attempt to shield North Korean society from information networks at the global level undoubtedly limits the positive effects that the ICT sector can have on the national economy. Although North Korea has enjoyed considerable progress in several areas of the software industry in recent years, the country will fall behind unless it acts quickly to keep pace with global technology trends and establish policies that support international technological cooperation. Therefore, it is imperative for North Korea to relieve restrictions on information and knowledge exchange, while facilitating the use of the Internet.

Third, adhering to the principle of self-reliance, North Korea has been less enthusiastic about the international movement to standardize the use of technology terms and measures. Consequently, North Korea's scientific measures and terminology are very different from those of Western countries. In this connection, the difference in the measuring and operating systems of North Korea's ICT is considered one of the major impediments to attracting foreign investment in the ICT field. Respectively, its exclusive set of technology standards causes the low technical interoperability of North Korea's IT products, and is also detrimental to its exports of IT products, including computer programs.

North Korea has joined international organizations related to technology standardization such as the ITU (International Telecommunication Union) and ISO (International Organization for Standardization). The Ministry of Post and Communications has participated in the ITU and the Technology Standardization Committee attends ISO meetings as North Korea's representative government organ. However, the country's activities in these international organizations are insignificant and, more seriously, it is even reluctant to disclose its national statistics related to telecommunications infrastructure. In addition, since international standardization activities at the present are largely led by the private sector, the absence of a private sector in North Korea's ICT industry aggravates its exclusion from international technology standardization.

Ultimately, North Korea clearly should put greater efforts into adopting international standards in the ICT industry. Technology standardization in accordance with global trends, together with more foreign investment and reform of the state-controlled IT industry, can contribute to upgrading the quality of North Korea's IT products as well as promoting sales in the highly competitive world market. Institutional endeavors are needed to effectively adjust the national technology standards by finding and bridging the gaps with the international standards.

Fourth, international sanctions against the shipment of strategic materials to

North Korea, including the Wassenaar Agreement, which is also applicable to ICT equipment and technology, are considered a major obstacle to the development of the country's ICT industry.<sup>16</sup> The Wassenaar Agreement was drawn up in April 1996 to replace COCOM, whose main object was to bar the export of strategic materials from Western countries to the socialist bloc. Initiated by the United States, 33 Western countries have participated in the agreement, which imposes strict restrictions on exports to four "terrorism-sponsoring nations" (North Korea, Iran, Iraq and Libya).

Under the Wassenaar Agreement, all member states are prohibited from not only shipping military materials but also from exporting dual-use goods and technologies to North Korea. Dual-use goods are defined as strategic materials that can be used for both military and civilian purposes. In order to prevent civilian technology from being diverted for military use, such strategic materials as computers, communications equipment, semiconductors, laser sensors, technology-intensive electronics, navigation apparatus and satellite communication systems are subject to the ban on the export of dual-use goods to North Korea. Since the products of the ICT sector largely belong to this category, North Korea has faced difficulties in importing ITrelated advanced technologies and telecommunications equipment from Western countries. The import of 486-level computers or Pentium-level computers from Western countries is virtually impossible under the Wassenaar Agreement.

Indeed, although technology transfers from foreign ICT firms are imperative for the modernization of North Korea's ICT infrastructure, many types of ICT equipment such as digital telephone switching facilities and optical transmission systems are designated as dual-use goods/technologies and cannot be exported to North Korea. For instance, North Korea cannot obtain CDMA (Code Division Multiple Access) wireless communications products and services even though the regime has recently revealed a keen interest in adopting this technology to expand mobile phone services.<sup>17</sup> This is because U.S. based QUALCOMM Incorporated owns patents that are essential to all CDMA wireless telecommunications standards and foreign telecommunications service companies adopting the CDMA system are subject to the regulations on technology transfers to North Korea.

Taking these facts into consideration, modifications need to be made when regu-

<sup>&</sup>lt;sup>16</sup> For a useful discussion on the impact of international regulations on North Korea's ICT industry, see the following references; Kim, Yeonchul (2001). "Reforming the System of the Wassenaar Agreement and Export Control System on Strategic Materials." in *Inter-Korean Economic Cooperation Guideline* (Seoul: Samsung Economic Research Institute). Bae, Seong-In (2001). "North Korea's Policy Shift toward the IT Industry and Inter-Korean Cooperation" in *East Asian Review*. Vol.13, No.4.

<sup>&</sup>lt;sup>17</sup> The North Korean authorities have expressed interest in having foreign telecommunications companies invest in North Korea. In response, some South Korean companies have negotiated with North

lating ICT-related exports to North Korea. Imports of advanced-level computers and other communications equipment are indispensable to the modernization of North Korea's ICT sector. In fact, many ICT technologies and equipment designated as dual-use goods under the Wassenaar Agreement, including Pentium-level PCs and the CDMA wireless communications products, are popularly used in most developing counties and are no longer considered strategic materials anymore. Moreover, given the fact that Pentium-level PCs and most computer peripherals made in China and Russia are already available in North Korea (S. I. Bae 2001, 72), applying the Wassenaar Agreement to ICT goods in a simple and rigid fashion seems unreasonable.

As for inter-Korean cooperation in the ICT field, the Wassenaar Agreement – particularly the ban on ICT-related exports to North Korea - has produced adverse consequences. For example, Hyundai Electronics, a South Korean ICT manufacturer, made a failed attempt to ship computer assembly facilities to North Korea in 1999. Although Hyundai Electronics had signed contracts amounting to \$1.5 million with a North Korean counterpart, it could not obtain government permission to export 486-level computers to North Korea because of the South Korean government's strict interpretation of the Wassenaar Agreement (S.I. Bae 2001, 74). In this vein, the improvement of inter-Korean ICT cooperation is largely dependent on modifications to international regulations related to the shipment of ICT facilities and equipment to North Korea. Western countries need to view technology transfer to North Korea as an act of helping a developing country to overcome economic hardships and rehabilitating industrial infrastructure, rather than leaking core strategic technologies and material to a "rogue state." Although the regulations of the Wassenaar Agreement on technology transactions related to nuclear and missile development should be maintained, it is necessary to review the dual-use goods category more specifically and to ease the restrictions on the shipment of ICT products to North Korea.

Finally, North Korea should improve its relations with South Korea and other Western countries in order to attract more foreign direct investment and expand technology cooperation with the international community. In particular, North Korea needs to put more effort into reducing the military tensions on the Korean peninsula

Korean officials about promoting telecommunication services in Pyongyang. For example, North Korea's telecom authorities held the first meeting with South Korean counterparts including officials from the Ministry of Information and Communication, Korea Telecom, SK Telecom and Samsung Electronics. In this meeting, North Korea expressed a high interest in promoting CDMA mobile phone services, which South Korea was first in the world to commercialize. (Refer to Yonhap News. June 10, 2002).

and improving its relationship with the United States and Japan. It is clear that the escalation of military tensions with neighboring countries not only jeopardizes intra-Korean political relations, but also harms economic cooperation with South Korea including cooperation in the ICT sector. For instance, the second inter-Korean working level communications talks scheduled for July 2002 in Beijing were cancelled because of a naval clash in the West Sea. As a consequence, South Korean telecommunications companies such as Korea Telecom and SK Telecom, which were actively seeking to enter the North Korean market, had reportedly revised their investment plans. Since the promotion of the ICT industry requires massive capital investment in the initial stage and a long pay-off period, unstable inter-Korean relations and the unpredictable foreign policies of North Korea will deter foreign ICT investors. Thus, North Korea should make a greater effort to build a peace system on the peninsula and carry out bold economic reform measures, which can assure foreign investors of the country's willingness to change.

# References

\* In Korean

- Bae, Seong-In. 2001. "North Korea's Information and Communications Industry and Inter-Korean Cooperation in the Information Age." *Unification Policy Research*. Vol. 10, No. 1;293-332.
- Kim Dae-Jung Peace Foundation. 2000. *Preparations for Making an Integrated Information and Communications Environment on the Korean Peninsula.*
- Kim Dae-Jung Peace Foundation. 2001. North Korea's Communications Infrastructure and South Korea's Strategies for Investing in the Communications Sector: Focusing on Telecommunications Network and the Internet.
- Kim, Kyu-Ryoon. 1998. A Study on Inter-Korean Exchange and Cooperation in the Communications Field. Seoul: Korea Institute for National Unification.
- Kim, Sang-Taek and Young-Il Kong. 1999. A Study on Exchange, Cooperation, and Integration in the ICT Sector. Seoul: Korea Information Society Development Institute.
- Kim, Yeonchul. 2001. "Reforming the System of the Wassenaar Agreement and Export Control System on Strategic Materials." Kim, Yeonchul ed. Inter-Korean Economic Cooperation Guideline. Seoul: Samsung Economic Research Institute.
- Kim, Young-Se. 2001. *Cooperation Measures of ICT Policies in Preparation of Korean Reunification*. Seoul: Korea Institute for International Economic Policy.

- Kim, You-Hyang. 2000. "North Korea's Development of the Information and Communications Field and Informationalization," North Korea's Actualities (II). Seoul: The Korean Ministry of Unification, 105-145.
- Kong, Young-II. 2001. "Prospects on Inter-Korean Exchange and Cooperation in the Information and Communication Technology Industry." *Tongil-Kyongjae (The Unified Economy)*. January Issue. Seoul: Hyundai Economic Research Institute.
- Korea International Trade Association (KITA). 2001. The Current Status of North Korea's IT Industry and Plans for Activating Inter-Korean Cooperation.
- Korea IT Industry Promotion Agency. 2002. The Current Status of North Korea's IT Industry and Measures for Inter-Korean Exchange and Cooperation.
- Lee, Choon-Geun and Kye-Soo Kim. 2001. *The National R&D System and S&T Human Resources Training System in North Korea*. Seoul: Science and Technology Policy Institute.
- Lee, Jong-Woon. 2002. "The Current Status of North Korea's IT Industry and Prospects for Inter-Korean IT Cooperation." *KIEP Global Economic Review*. Vol. 5, No.5.
- Nam, Sung-Uk. 2002. The Strategy of IT Industry Development and Building of Strong State in North Korea. Seoul: Hanul Publications.
- No, Seung-June and Jong-Bong Park. 2000. "The Current Status and Policy of North Korea's Information and Communications Sector." *The Internet and North Korea*. Seoul: The Institute for East Asian Studies.
- Seo, Jae-Jin. 2001. North Korea's Movement from Food Crisis to the Development of IT Industry. Seoul: Center for Future Human Resource Studies.
- You, Seung-Hun. 2002. Research on the Current Status of Inter-Korean Information and Communications Cooperation and Future Tasks. Seoul: The Korean Ministry of Unification.

\*\* In English

- Bae, Seong-In. 2001. "North Korea's Policy Shift toward the IT Industry and Inter-Korean Cooperation." *East Asian Review.* Vol. 13, No. 4; 59-78.
- International Telecommunication Union. 1999. *Challenges to the Network: Internet for Development*. Geneva: ITU
  - \_\_\_\_. 2000. Asia-Pacific Telecommunication Indicators 2000. Geneva: ITU
  - \_\_\_\_. 2002. World Telecommunication Development. Geneva: ITU
- Pohjola, M. ed. 2001. *Information Technology and Economic Development*. Cambridge: Oxford University Press.
- Yoon, Chang-Ho and Young Soo Lee. 2001. "Transformation of the Telecommunication Infrastructure in North Korea." Yoon, Chang-Ho and Lawrence J. Lau eds. *North Korea in Transition*. Chetenham : Edward Elgar.

VIII. The Information and Communications Technology Sector | 217

Yue, Chia Siow and Jamus Jerome Lim eds. 2002. *Information Technology in Asia : New Development Paradigms*. Singapore : Institute of Southeast Asian Studies.

# Part III

# Economic Management System and Mechanism

# **IX. National Economic Management System**

### Yungbong Kim

## 1. Characteristics of North Korea's Economic System

The economic system of North Korea is defined as a centrally planned socialist command system that demonstrates three major characteristics; first, only collective and state ownership is permitted. Ownership here is social ownership of productive means that are solely ascribed to the state or community, not to individuals. Second, in the decision-making mechanism, central government plays the principal role of resource allocation. The central government is involved in most economic issues regarding production, distribution and allocation. Enterprises only function following the scheme established by the central government. Third, the coordinating mechanism is delivered under the central organs' guidance, coordinating the different interests of each economic unit. In addition, the central government provides incentives and redistributies output, replacing the function of the market in resource allocation.

This economic structure is the legacy of the Stalinist socialist regime. However, although the suzerain states under this system – such as the Soviet Union and East European states – had gone through the transitional to market economies, North Korea still remains a state that strictly adheres to the system of command socialist economy.

Recently, economic activities have been increasing in the form of private ownership in black markets and special economic zones in North Korea. Moreover, the decade-long food crisis led North Korea to introduce pragmatic economic policies. In July 2002, North Korea increased product prices and wages by about one hundred times while reforming the operation of the rationing and foreign exchange systems. Although there is no solid evidence yet of fundamental change, the recent policy changes hint that the economic system of North Korea is on the verge of structural changes that would influence the nature of the socialist system.

#### A. Social Ownership System

North Korea maintains a complete form of social ownership. After independence from Japanese occupation, the North Korean Provisional People's Committee was established. In March 1946, the North Korean Provisional People's Committee promulgated an act on land reform and undertook reform based on the principle of confiscation and distribution, focusing on agriculture. The production basis was gradually overtaken by the state, and by 1958, they had completed full socialization. In commerce and industry, the committee promulgated a law on nationalization in August 1946 and nationalized key industries such as factories, mines, railroads, communication and banks. By August 1958, remaining private commerce and industry had been completely socialized.

Recently, North Korea adjusted its ownership structure through the amendment of the constitution in 1998, leading to the emergence of private ownership and production shown in farmers' market and free trade zone lately. But this is not a fundamental change that would influence the North Korean economic system. The ownership structure of provides the basis for ideology, structure and operation of the national economy. The ownership form of productive assets decides application, decision-making methods, coordination mechanisms and distribution while providing motivation and tarkets for economic activities. For instance, in systems where private assets are allowed, economic participants that determine consumption, investment, employment and manufacturing are dispersed thoroughly in society. Market participants decide the scope of activities that produce individual benefits and the market that coordinates such activites are automatically formed. On the other hand, in North Korea the government possesses and administers the means of production in a society where only state ownership is allowed. There is neither incentive nor power for economic participants to make decisions, rendering the market function useless. Economic activities are instructed and controlled by the central government's objectives and demands. Depending on the degree of contribution toward production decided on by the central government, social production resources are employed and products are distributed.

Understanding North Korean ownership system is the key in analyzing characteristics of North Korean economic system. North Korea prescribes the social ownership concept in constitution and specifically states its system and objective. "The production means in North Korea is owned by both the state and cooperative community" (Article 20). This is further classified by state ownership (Article 21) and cooperative community ownership (Article 22). State ownership belongs to the people and all natural resources, railroads, aviation, transportation, communication machineries, major plants, enterprises, harbors and banks can be ascribed only to the state. There are no limitations on subjects of state ownership, which is to be "preferentially protected and raised" by the state by allocating it a leading role in economic development. Second, cooperative community ownership is the collective ownership of laborers within a community. Such properties as land, agricultural equipment, ships, small and medium-sized plants, and enterprises are included in the cooperative community ownership and come under the state's protection.

The classification of the people's ownership and cooperative community ownership shows the difference between the decision-making process and the distribution process with regard to production by differentiating the operational responsibility of the means of production. The people's ownership implies that property rights belong to the state. Moreover, cooperative ownership limits ownership to respective communities, with output and compensation also classified accordingly.

Social ownership is the initial stage of the ownership structure that allows distribution followed by production contribution, developing toward communist society. The final stage of the ownership structure needs to be complete people's ownership. North Korea has established social ownership with the people's ownership as the final objective by developing cooperative ownership. This is clearly stated in the Article 23 of the 1998 Constitution.<sup>1</sup> Even in the revised Constitution, North Korea maintains the objective of converting cooperative group ownership into national ownership, reflecting the will to move forward to complete communism.

The private ownership allowed in North Korea is prescribed in the Constitution. It is clearly stated that "private ownership is for citizens' personal and consumption purposes... formed by socialistic distribution and the state's and the society's additional benefits. Products from the personal side jobs such as kitchen gardens and the other incomes from the legitimate management activities also belong to private ownership. The state protects private ownership and guarantees the right to." It was rather an acceptance of resulting production than an acceptance of the ownership of the means of production. In addition, the "other incomes from the legitimate management activities belong to the personally possessed ownership" was included in the amendment of the Constitution in 1998.

Thus, in the North Korean Constitution, none of its parts seems to change the

<sup>&</sup>lt;sup>1</sup> To enhance the consciousness and techno-cultural level of cooperative ownership for farmers, the state combines the two ownerships systematically. By reforming the guidance and management of the collective accounting system, the state developed a socialistic cooperative accounting system. Then, of the cooperative groups' own volition, cooperative ownership is converted into national ownership.

essence of the regime. Only in Article 37 of the Constitution are North Korean institutions, companies and organizations encouraged to joint venture management in special economic areas with foreign firms or individuals, allowing cooperation with foreign enterprises special areas. North Korean civilians are effectively excluded from private ownership, the foundation of autonomous decision-making and economic activities.

#### **B.** Planning and Commanding Organization

North Korea functions as a centrally controlled economic system. The North Korean government says that its economy is "centralized and runs by unified command line."<sup>2</sup> It was prescribed as a "socialistic economy that develops deliberately and balanced under the unified state plan" and "an economy that is uniformly guided and managed."<sup>3</sup> "The unified state plan" refers to the fact that the North Korean economy is a planned economy where the central planning authority determines the production, consumption and distribution of materials. "The centralized instruction and management" means that economic coordination – the mechanism that activates, allocates and coordinates economic units – is centrally controlled. It is difficult to determine the scope of the planning mechanism and its operation in North Korea. This is because North Korean authorities do not announce detailed data and statistics regarding their national economic plans. Therefore, the plans are inferred from existing data on North Korean government organizations, production facilities and the experiences of other socialist countries

The central plan on the resource allocation mechanism in the former Soviet Union was the "material balance plan." The principles of the plan are "targets in kind" and "physical allocation," with the central plan presumably performed under the command economy system. Therefore, the role of price is missing in planning and accounting. Price is introduced only for the purpose of converting physical units into standard units. In reality, artificially balancing supply and demand by establishing a production function, inputting figures from related industries and distributing production to related industries is almost impossible. Therefore, in the case of the Soviet Union, when the central authorities set up the physical plans for 5,000 products, it delegated to lower level institutions to manage the plans for other products (Bornstein 1989, 311).

It was emphasized in North Korea that the state planning committee plans, executes and supervises the economic plan and the lower organizations such as

<sup>2</sup> Juche Research Center. 1985. Dictionary of Economy, p. 319.

<sup>3</sup> Ibid, pp. 324-325.

provinces, cities, districts and factories must follow the unified planning system. North Korea's well-known "*Juche* economic construction theory" requires every economic unit to work according to ideology of the party and the head of state. The state planning committee plans and supervises the party's policies in every economic area. Therefore, even though it is unknown how the central planning authority restricts the production units of production plan, at least it is known that the will of the authority for central control is strong.

Article 34 of the North Korean Constitution states that "the people's economy of North is a planned economy... The state guarantees the rapid production growth and balanced development of the people's economy through a unified and detailed plan." Principles related to uniformity and attention to detail have been emphasized since 1965. Uniformity refers to the centralization of the decision-making system; North Korea has been emphasizing centralized decision-making by placing local planning committees and the planning departments within factories and companies under the state planning committee. The planned figures sent by each committee and planning department are gathered in state planning committee for economic control and coordination. North Korea intended to prevent subjectivism and self-centeredness of organizations or localities by adopting the unified planning approach.

The circumspection of North Korea's planning implies achieving consistency of supply and demand at production units by coordinating the plans of industries and companies. The accuracy and precise reflection of the real world determines the efficiency of the plan. North Korea claims that it does not allow even naturally caused errors by synchronizing not only key industries, but also minor management activities.

The circumspection process of North Korean economy plan has four stages. The first stage is framing preliminary figures. At this stage, the product units of lower level submit their objectives and requests to their superiors. They are transferred through the district planning committee and committees of cabinet and province to the state planning committee.

Then, at the second stage, the party central committee converts the preliminary figures into control figures. These control figures possess legal force as they are orders from the government that provide direction, scale and balance for economic development at the planning stage, going on to become commands that receive the party's ratification as a standard of plan framing. At this stage, total industry output and key industrial production size, agricultural production size, transportation size, the size of product distribution, various consumption goods production related indices and basic construction investment size are all given.

At the third stage, the state planning committee directs the ratified control figures to lower level organizations. Based on the controlled figures, the corresponding planning departments prepare drafts and report to the higher levels. The state planning committee uses this draft to outline its final plans. The fourth stage is the process of comprehensive examining of the submitted drafts at the cabinet meeting with the party's central committee and make a final decision through the Supreme People's Assembly.

These processes are adopted from the Soviet system. Since it is also part of the resource allocation and conflict-resolving institution, the planning system itself also needs to prepare the perfect system and processes to fulfill the Juche ideology. Nonetheless, this cannot be verified by North Korea's political propaganda and the slogans used therein. The existence of sophisticated technology for efficient planning, coordination and negotiation is also unknown.

In case of the Soviet Union, GOSPLAN (the state planning committee) converted political objectives that reflected the preference of their political leader into thousands of controlled figures to be sent to lower production units through federal ministries. These controlled figures were converted into specific production objectives through various systematic stages and were delivered to the almost 50,000 manufacturing companies that existed in the Soviet Union. These manufacturing companies receive the "production norm" that provides the required input factors needed to meet production objectives. Thus, the most important element of planning is the determination of the production norm. It decides the required amount of production factors and materials. It is a natural tendency for manufacturing companies to pursue eased conditions while the planning authority tightens the plan.

In conclusion, the plan is made through the process of economic foundation and political negotiation. Each company sets achievable production objectives and input requirements regarding their own production conditions. The objectives are submitted to the state planning committee. Next, the state planning committee examines and adjusts the data to start planning physical balance. Then the controlled figure is given, and conflicts and adjustments occur between the organizer and production managers during the process. Plans made in this manner have the potential to become unrealistic. Both the companies and the planning authority present trumped up figures for negotiation and political mechanisms can overcome the economic foundation.

The plans are made legally binding after the final decision at the cabinet meeting. This was called Techpromfinplan (technical-industrial-financial plan) in the Soviet Union because it was developed through combining the three elements to find of a much-needed production norm. In other words, the technical production function and capital supply plan are based on the production plan. Due to the complexity of this planning process and the need for an elaborate plan, the new plan is usually decided three to four months into the fiscal year. During this period, each production system operates under the plan from the previous period.

North Korea's was not an accurate system. It failed to manage physical balance

through incorporating systemic, economic and technical considerations in the coordinating process. It is true that although the party's command is only rooted in influence, the economic plan or the production command structure was somewhat pluralized and voluntarily managed. For example the state planning committee is the main driver in charge of the establishment and performance of the general economic plan. This reflects the policies of the North Korean Workers' Party and the Munitions Industry Department, which shares enormous economic resources with the Second Economy Committee. It can be inferred that this committee directly belongs to National Defense Committee – North Korea's supreme authoritarian body – and is in a preferential position in the state planning committee than is held by the Cabinet in regards to resource distribution.

Therefore, North Korea relied on artificial handling rather than on a system to manage the economy. This means that the North Korean economy still has not even completed the requisites of a planned system and relies heavily on traditional feudal mechanism. The North Korean economy managements system, therefore, lacks stability and predictability while the arbitrary decision-making and bureaucracy of leadership is prevalent.

Over the last decade, North Korea experienced serious financial difficulties; the supply capability of planning economy is now almost paralyzed. Consequently, the expansion of "the second economy," the unplanned part of the economy, is gaining ground. Recent data from the Bank of Korea suggests that North Korea's total annual household consumption from the private economic sector is about 610 million dollars, or 3.6 percent of North Korea's GDP (S.S. Park 2002). However, it is hard to find evidence of the liberalization in the North Korean economy. Even though the activation of North Korea's private sector was importans, the characteristics of North Korean's command economy system are greater than any socialistic system of the past.

### 2. Operation and Management of the North Korean Economic System

Just as market principles are related to the capitalist economic system, every fundamental operation principle that manages the socialist system follows the "command principle," artificially managed by the bureaucracy. In other words, the leaders or the party decide economic operation principles and convert them into commands through administrative organizations. The general operation principles of the North Korean economy are decided by the ownership system and the coordinating mechanism of this system. In addition the popular "*Juche* idealistic leading system" further emphasizes the role of the leader and the party as the core of the economy. North Korea's entire economy consists of one huge bureaucratic pyramid and every important decision is formed at the top. Therefore, politics and economy cannot be separated in the management of this system. Futhermore, performance is completed under the party's guidance and control. The North Korean state's economy guidance and management objectives are summarized as follow.<sup>4</sup>

#### A. Principles of Economy Management

North Korea presents four economic management principles that are prescribed as guiding principles for all activity in the management of the economy (The Juche Research Center 1985, 709). The first principle emphasizes the party's political achievement and ideological stimulus. This means that the state and party ideological authority overrides economic authority. All "economic system activities" based on planned activities, technical guidance, equipment management, material guarantee and the cooperative production system. are guided and managed according to party policies. These activities can only be accomplished smoothly if the people and works are combined. Therefore, North Korea emphasizes the priority of party politics more than anything else. Political stimuli overshadow, physical incentives for economic activities. That means that North Koreans are given moral incentives based on public value rather than material incentive such as those within a capitalist system. The continuous expansion of socialist propaganda campaigns derives from this principle.

Second is the combined principle of collective leadership and singular command—the combination of the principle of the party committee having collective leadership and the administration having one overall commander. The party committee plays the role of collectively discussing and deciding whether the direction and means of the relevant system's economy is successfully driving each economic unit while guiding and controlling performance. Another role includes playing the collective leader for every laborer performing economy management operation and production tasks according to the party system's work and ideological education work. The administrative commander issues directions, or more specifically, he is directly responsible for the results. Having one person in command means that he chooses the direction and means of economic activity.

Thus, the principle of combining collective leadership and unique command means the removal of differences in opinions within the decision-making system for enterprises and the performance system. North Korea emphasizes the need for the

<sup>&</sup>lt;sup>4</sup> The following analysis are based on Kwon, Yeong-kyeong (2000) and the Hyundai Economy Research Institution (2002).

complete accomplishment of a "line of multitudes." Although North Korea's slogan has some unclear points, it refers to strengthening single command by transforming a multitude of opinions into one under the party committee's guidance. Moreover, it removes the possibility of differing opinions in administrative command. In other words, the many producers move constantly under the command of the administration, with the party providing guidance and the commend of the one leader.

The third principle is of unifying and specifying the economic plan. A unified plan maintains the consistency of the politically centralized planning process. A specified plan is for maintaining consistency between economic units. North Korea emphasizes that the unification and specification of the plan is the only principle guaranteeing the balanced development of the people's economy. The main purpose of this unification to eliminate hindrances that may arise from "institution oriented" and "locality oriented"interests.

The fourth principle is of independent accounting. The socialist independent accounting system means that companies and factories autonomously manage production and expenditures to enhance productivity.

In the socialist independent accounting system, the objective of allowing decentralized decision making at the lower levels in to reduce inefficiency and rigidity that fundamentally exists in the politically centralized planning system. Basically, this process matches the aforementioned principle with the previous principle of unification and specification of the plan. Special industry and enterprise management methods are adopted in North Korea to create harmony and solve problems under the central administrative system. However, the range of autonomy in North Korea's independent accounting is more limited than those in other socialistic countries due to the extremely unified nature of North Korean ideology and coordination.

Under the command economy system, supervision is needed to check the performance of the enterprise's economic activities (under the command of the state plan). The organization that is in charge of this is is central bank, which supervises how much command of plan the enterprises hold by observing the income and expenditure of an enterprise's capital. The fundamental objective of the North Korean independent accounting system seems to be to observe their accomplishments through monitoring the accounts of unit plants and enterprises. Russia calls this "control by ruble" (Bornstein 1989, 309) while North Korea calls this "control by won."

#### **B.** Enterprise Management System

North Korea organizes the system for enterprise management according to the economy management principle presented above. The Daean Work System paired with the Yonhap enterprise system and the independent accounting system are the major players influencing North Korea's enterprise management.

#### 1) Chongsanri Method

The "Chongsanri method" is generally known as the fundamental principle of North Korean economic system. The Chongsanri mentality and Chongsanri method arise from Kim II-sungs field trip at Chongsanri of Kangso County in 1960. North Korea claims that this is scientifically systemized guiding ideology and methodology for the communization of the masses is based on *Juche* ideology and the revolutionary line of multitudes.

The Chongsanri method's key mandates are: <sup>III</sup> Upper machinery helps lower machinery and higher people helps lower people to accomplish the party's line and policy: <sup>III</sup>EAlways try to find a solution to a problem in consideration of local situations <sup>III</sup>ØDemonstrate individual laborer passion and creativeness by promoting political activity in every situation <sup>III</sup>@Connect "general leadership" with "individual leadership" to solve a problem <sup>III</sup> °Solve every problem by concentrating capacity on the core of activity <sup>III</sup> Plan every activity and promote energetically (The Juche Research Center 1985, 499). This Chongsanri method is considered a norm of North Korean economy system and the key performance indicator used by managers. Moreover, this has also become a vital criterion for the North Korean industry management method and the Daean Work System.

#### 2) The Daean Work System

North Korea's industrial management system was based on the so-called single manager system until the 1950s and changed to the Daean Work System in 1961 at the start of the Seven-Year Plan. Under the single manager system, an enterprise managers were able to make arbitrary decisions and handle every matterof management with responsibility. This was valid when expansion of industry productivity was the main objective under the initial stage of the socialization of industry. Yet, in light of new issues like arbitrary leaders of bureaucracy, the institution-centered principle took precedence when relations between production factories and enterprises were considered important for economic development. Therefore, emphasizing the original characteristics of the socialist system and identifying a new industry management system to promote collective knowledge and creativeness with laborers' broad and full participation resulted in the Daean Work System. North Korea emphasized the Daean Work Systemas the basic form of industrial management, which was embodied by the Chongsnari mentality and Chongsanri method (The Juche Research Center 1985, 821).

Basically, the Daean Work System entails granting appropriate authority and responsibility to the head of each organization (The Juche Research Center 1985, 533-536). First, it acts as a collective directing system that manages production

activity under collective leadership and responsibility of the Factory Party Committee. party executives, administrative executives, managers, chief engineers, technicians and laborers (core party member of production) participate in the Factory Party Committee. The main purpose is to harmonize the party's political leadership system, the administration's production and technical guidance system with the party's guidance to promote industrial industry management and operation.

Second, planning, production and technical guidance is provided centrally under a focused production guidance system and guidance from the chief engineer. For the general plant work force, the unification of the planning division, production guidance division, technical division and factory management power division form a unique guidance system. On the other hand, over-all factory management-related activities such as material supply, administration and economic activities are performed uniformly under the managers' guidance. There force, the chief engineer is given the position of plant manager and a responsible person is given the role manager's role as a responsible person representing the plant.

Third, the Daean Work System entails politically centralized material supply and rear supply system. The former supplies material from upper machinery to lower machinery by systematically guiding production from top to bottom. The latter is enterprise responsible for living necessities. They guarantee the material supply by managing a material supplying division, sales division and transportation division under the assistant duty manager for the unitary material supplying system. For the rear supply system, they appoint a plant rear supply assistant manager as chairman of the committee to guarantee synthetic demand from labor.

#### 3) The Yonhap Company System

In order to meet the new production connection introduced by the Daean Work System, the Yonhap Company System was been implemented. The Yonhap (unionized) company structure was partially implemented in 1973 and expanded to all industrial areas in July of 1985. Yonhap companies are a planning, production and execution units under the direction of the central planning institution. It takes charge of some leadership duties from political committees and takes material and technical responsibility for subordinate factories by commanding material supply. In other words, the Yonhap Company is a vertical enterprise integration system that controls all subordinate supplying materials and parts. In a pyramid production structure. North Korea argues that the Yonhap Company System has the merits and characteristics to realize the Daean Work System. First, it is viewed that the party leadership industry can be strengthened. The parties organization at the upper levels demonstrates strong control over subordinate party organs by wielding power over industrial production direction, determined by the Yonhap company committee. Second, under the Yonhap Company System, the "democratic" centralized system can be strengthened for industrial management. The large enterprises handling the products important to the economy are directly controlled by the state. This leads to politically centralized leadership while subordinate units are independently controlled and managed by Yonhap companies under a national plan.

Third, The Yonhap System promotes socialist cooperative production, as Yonhap companies overcome organization-centered and region-centered sentiment while actualizing detailed plans and demands. North Korea's Yonhap companies have many objectives and forms. Stressing industrial connection, the unionization is organized by enterprises and factories that are closely related to production. One example is the connection of steel companies with resource suppliers and factories in the same one specific region of industry together with the business and factories of the complementary industry in that particular region. This method is common in the mining industry. The final step is bringing together enterprises and factories according to specialties nationwide. This is similar to the structure of a general machinery company that is the union of factories specializing in machinery, tools, bearings and grinding.

In terms of size and structure, unionized companies are called by several names: unionized company, joint company, general company, management agency and general agency. Regardless of the name, all unionized companies were formed in order to transfer the decision-making process of planning, production and execution from the state to production unit.

#### 4) Independent Accounting System

As seen above, North Korea concentrated on enhancing the business achievements of enterprises through the repetition of dispersion and the centralization of decision-making. Part of the dispersion and centralization is the independent accounting system. It is known that all factories and enterprises in North Korea are nominally using the independent accounting system. Since the early 1970s, all industrial fields from agriculture to nonproductive fields, including all state-owned enterprises and provincial factories, adopted and maintained this system.

North Korea's independent accounting system is broken down into the full independent accounting system, the half independent accounting system and the dual independent accounting system according to the levels of implementation. In the full independent accounting system, each state-owned enterprise has bank credit use and an independent balance sheet. Moreover, there is a degree of leniency in buying and selling commodities. In the evaluation of business performances, the currency index is used instead of quantitative index. Furthermore, regarding the usage of profits, the government deducts national business profits. The remainders of profits are then used to enhance business management and improve the living standards of the employees. Thus, this system aims to motivate business activities by giving businesses autonomy and material incentives.

The half independent accounting system is a form of the independent accounting system that is applied to units and cannot be implemented with the independent accounting system. The dual independent accounting system is a form in which businesses come under the influence of unionized company, general agencies and managing agencies. North Korea has put special importance in the implementation of the independent accounting system. Article 33 of 1998 Constitution prescribes that "in managing the economy, the government implements the independent accounting system to meet the demands of the Daean Work System and can appropriately use cost, price and profitability. On the other hand, in the People's Economic Planning Law enacted in 1998, it emphasizes that in the planned management of the economy, dispersions and liberalizations of any kind are prohibited and the politically centralized leadership principles of the government will be adhered to, as in the past.<sup>5</sup> However, this contradicts the aforementioned article (Constitution), which explains the expansion of autonomy in enterprise management.

Therefore, the independent accounting system cannot be interpreted directly as it aims to delegate decision-making authority. Rather, through the independent accounting system, the central government's means of control of industrial units are more specified and clear. The central authority stipulates that the wages, capital, incentives and funds of industrial units are accurately recorded. Moreover, the management and use of fixed assets are institutionalized, while the supervision and control of the performance of financial duties are stricter. In addition, the execution of state plans should be more strictly supervised and controlled on a monthly and quarterly basis.

For the implementation of an independent accounting system, the central authorities presume that enterprises will follow the party policies and state plans unconditionally. The application of North Korea's independent accounting system has, at least until now, supplemented the shortcomings of the existing supervision system to achieve political centralization.

#### C. Methods for Operating the Economic System

The economic management principle and system mentioned above provides the North Korean people with a framework for economic activities. Under these condi-

<sup>&</sup>lt;sup>5</sup> Rodong Sinmun. April 9, 1999.

tions, the North Korean government provides incentives for economic activities. Incentives are the factors that motivate labor to under take economic activities. In capitalist societies, possession of private property by individuals is accepted and since those individuals have remunerative power, the source of the motivation is also dispersed. However, in a society where productive property is centralized the government bears the responsibility of providing motivation because it monopolizes remunerative power. In the extreme form of socialism (i.e. North Korea), a different motivation induction method is sought in replacement of individual incentives such as materialistic stimulation.

Coercive power, the method of controlling another person by use of physical and/or institutional forces, is identical to the command structure. However, coercive measures induce only minimal participation from the labor because the only incentive is fear of the consequences of insubordination. Therefore, through various campaigns, education and the awarding of medal, North Korea establishes moral standards by inducing a "common good" or "sublime purpose" for the people.

North Korea has been very successful in using such methods. The creation of various slogans and symbols, economic instigation congregations and labor competing movements have been the most important elements of North Korea's economic management. Moreover, this coincides with the North Korean emphasis on ideological and normative aspects of the system. North Korea's competitive labor movements can be seen as the regime's primary method of boosting the productivity of labor. The labor competing campaigns attempted to surpass given production quotas. Furthermore, individuals, working teams, working groups, occupational groups, factories, enterprises and cooperative farming areas retain the momentum for these activities.

Ever since the beginning of the competition movement, the *Gungook Sasang Chongdongwon Undong* (Mobilization Movement for Ideology Foundation), socialist labor competition movements were strong until recent years. The *Jeungsan Dolgyukdae Undong* (the Production Boosting Troopers' Movement) started during the Korean War and soon led to the  $3_i \land Jeungsan Undong$  (March 1<sup>st</sup> Production Boosting Movement), the  $5_i \land Jeungsan Undong$  (May 1<sup>st</sup> Production Boosting Movement) and the *Sangshi Jeungsan Dolgyukdae* (Regular Production Boosting Troopers' Movement). Respectively, similar movements include the *Bokgu Dolgyukdau Undong* (Restoration Troopers' Movement) and the *Minchung Soonhwe Wooseunggi Jengchwi Undong* (Youth Pennant Obtaining Movement). In order to encourage the strengthening of labor and ideology, the famous *Chunlima Undong* (Thousand Mile Movement) started after the General Meeting of the Party Central Committee in December 1959. This movement was a foremost tool of the North Korean Workers' Party and was furtuer materialized in March 1959 with the *Chunlima Jagupban Undong* (Thousand Mile Working Detail Movement). In late 1975, a new form of labor competition movement started under the name of the Three Revolutions Red Flag Obtaining Movement. This movement aimed at eliminating differences between hard and easy labor, agricultural and industrial labor, and freeing women from household duties through the technological revolution. However, it eventually became a mobilization movement for the development of the materialistic and technological foundation of socialism. From that point in time, labor competition movements were not confined to the limits of work detail groups such as the *Chunlima Jagupban Undong* (Thousand Mile Horse Working Movement). Instead they were expanded with the intention of paving the way for larger units such as factories, enterprises and cooperative farming areas.

By the 1980s, the phrase "speed race" was added to the original Chunlima Undong (Thousand Mile Movement) and the materialized form for this was the 1980's Speed Creation Movement, which was spearheaded by Kim Jung II. In addition, the 8; 3 Inmin Sobipoom Sengsan Undong (August 3rd Consumable Items Production of the People Movement) was implemented to solve the problem of extreme shortages of consumer products. It was named the "August 3rd Movement" to mark the visit of Kim Jung II to the Light Industry Products Exhibition in Pyungyang on August 3, 1984. As a type of a movement to increase production of consumer products, the main objectives of the August 3rd Consumable Items Production of the People Movement were to expand and organize domestic working details within factories and enterprises. Furthermore, it aimed to produce daily necessities through recycling idle material and waste, thereby somewhat mitigating shortages. The North Korean government induced this kind of labor competition by picking excellent performance groups and endowing the title of the  $8_i \beta$  Inmin Sobipoom Sengsan Mobumgun (August 3rd Consumable Items Production of the People Exemplary Group).

In the 1990s, as North Korean economy encountered shortages of supplies, the central government deployed the Jung Choon Shil Movement to increase the independency of the districts. This movement started when Kim Il-Sung met Jung Choon Shil, the administrator of the commerce of management office at Junchun district in Jakang Province. Kim Jung-Il designated her as a role model for independence and had the entire country follow her example. This soon caused competitiveness in all service areas. The Jung Choon Shil Movement developed into a major public movement after the Jung Choon Shil Movement Forerunner Rally in 1994. In recent years, the movement has accentuated the autonomy of districts to solve their regional problems related with distribution of raw materials, production and foreign trade. The Jung Choon Shil Movement is also being used as the main method of solving shortages in raw materials and daily necessities.

After the food crisis in the mid-1990s, the ability to grasp the people of North Korea's central government dropped greatly and the organized labor competition

movement lost momentum. During the late 1990s, the North Korean government had delayed presenting a mid/long-term economic plan. It is safe to say that the time for North Korea to modify its management system in order to catch up with the changing environment has come. Now, North Korea is realizing that conventional and traditional socialist labor competition movements are ineffective incentives for the populace.

# 3. Problems with North Korea's Economic Management System

The North Korean economy has virtually been at a standstill for the last three decades and has encountered extreme shortages of material during the last decade. This is the result of the national management method that North Korea had chosen. The problems associated with the North Korean-style socialist command system can be solved by North Korea itself, since the administration know the situation better than anyone else. However, the North Korean government continues to propagandize the superiority of the socialist structure under the leadership of its leader because the North Korean style of socialism does not permit exposure to alternatives. In addition, North Korea remainsthe most closed nation in the world. Management problems that the North Korean economy faces today can only be solved from repeated amendments to their laws and organization structure.

#### A. Social Property Ownership

The source of economic problems in socialist nations, including North Korea, ultimately spawn from the ownership system. Socialist systems have to sacrifice the social economic function that allows private ownership in order to achieve the ideal of "equality."

First, private ownership disperses the decision-making structure and diversifies the objective structure of the society by diffusing wealth and power within the system. The dispersed decision-making structure is the essential composition factor of the market economy. The malfunction of the socialist structure would result in the diversity of the North Korean society, expanding the overall welfare of the citizens and the scale of the economy by diversifying general demand and the economic production sector. Moreover, the system becomes the foundation of essential factors from the modern economy such as new technologies, designs and know-how. However, the North Korean structure as it is provides no basis for such opportunity.

Second, the private property system is the most effective method in terms of protecting the production resources of a society. The custodial functions of social production resources are possible because of the principle that the owner best manages the property. All socialist countries need to accept that production resources managed by the public are not being used and are instead wasted.

Third, people have incentives to produce to increase their personal property under the market system. Under the socialist structure, such efforts are coerced by the state and substituted as an accomplishment for society or the leader, leaving a deficit in technological development.

#### **B.** Centralized Decision-Making in Economic Management

Even among socialistic countries, North Korea's *Juche* system has been known to concentrate economic decision-making authority and responsibility to the party and the political leader. As long as North Korean government suppresses the decision-making authority of individuals, the development of a knowledge economy and individual capability in economic units will remain unfeasible.

The North Korean style of centralization causes drops in the efficiency of information acquisition and processing, while increasing the danger of information distortion. It postpones the administration of tasks by extending the decision-making process. In a centralized system, information passes through the multi-level reporting process and is subjected to partial modification. Furthermore, it takes a considerable amount of time before the final decision-maker receives it. By the time the report reaches the final decision maker, the information is either totally different from the original or is obsolete. Economic organizations require speed, accuracy, expandability and adaptation to drastic changes in the world economy, and North Korea's centralized system leaves no room for such development.

Before the early 1960s, the North Korean economy saw significant economic growth and advancement. However, after that period, it experienced continuous downfall. The economic structure, in its initial phase, had shown results superior in comparison to the dispersed market system because the politically centralized system was able to enforce rapid mobilization and the distribution of human and material resources. But as the economy grew to a sophisticated and complex level, the system could not make rational and impulsive decisions suitable for all production units, which were different in ability and preference. The structure itself causes moral hazards and economic participants lack incentives and responsibility.

The North Korean government has attempted to solve these problems regarding system management through the Daean Work System and the independent accounting system. However, with the changes introduced through the 2002 July 1st Economic Adjustment Measures and the Sinuiju special economic zone, the dormant problems and issues that the centralized system possess will be clearly and much more seriously exposed.

#### C. Lack of Material Incentive System

Among many incentives, materialistic inducement, including a monetary compensation system, is the most effective stimulant. However, because this causes economic activity to create personal gain and the unbalanced distribution of income, such economic stimulation was deemed immoral by North Korea. In addition, if the capitalistic property framework that approves and guarantees productive personal property is not provided, the monetary compensation system would not work effectively.

Control over the public is an essential tenet in a command socialist system that relies on planning as its main resource distribution framework. Coercion is a negative inducement because production is the result of the desire to escape punishment rather than to receive rewards. Using coercion results in a lack of motivation and negligent responsibility toward production. Therefore, coercion is an inappropriate measure to induce production in a modern economic system that demands high creativity and functional standards.

Considering these problems, North Korea introduced *Juche* as their basic ideology for national governance and anticipated an increase in worker motivation, relying among the on political and moral stimulation. In other words, their intention was to enforce the weaknesses of compulsive control through normative control that used moral and ideological methods. In order to do this, all socialist nations, including North Korea, established official values between the majority and the minority, while inducing people to participate voluntarily in education, awareness, propaganda and symbolism. Although this system management allowed temporary enforcement of compulsive control and materialistic stimulation, it caused more side effects and malfunctions later.

In order to maintain a closed system that facilitates control by regulation an enormous amount of resources are needed. Collective labor and social movements require strong supreme authority. The system must maintain a single ideology and all citizens must be educated to have the values of one system. To prevent objection or separation, all citizens must be subjects of constant observation; large amounts of capital for leading, monitoring, inspection, management and punishment are needed. Such levels of control are usually only possible in religious groups, small-scale communities and Confucius feudalistic society and is out of place in the management of modern society. North Korea exercizes control over national organizations by using methodes that resemble tuose employed in a personality out. It is now becoming more difficult to provide funds to maintain the system.

Next, the sacrifice of economic rationality and efficiency also become problematic. Normative control, as with compulsive control, is so straightforward and unsophisticated that it is impossible to measure performance and effort. All situations are handled in black and white and compromise and trade-off such as balance of expenses and results cannot be interposed. The absolute mobilization system is deployed to promote politically and ideologically set objectives: and cannot actually promote careful planning, economic calculations and rational management.

In such a structure, measuring politics and mobilization is the essential achievement index. A researcher who has observed Mao said that "his way of calculation is different from that of a planner. His interest lies not in the compensation for the invested resources but in the number of people he can influence and change" (Jones 1971, 54). In the North Korean system, it is obvious that the people who mobilize and manage large numbers of people will be given more power than experts, planners and managers. Such a stimulus method is irrational and the regime ends up paying a price, especially in the modern economy.

#### **D.** Exercise of the Economic Plans

A fundamental problem in the planned system is to what extent the state's economic plans can replace market price. The core of the economic plan is to determine the "production norm that can be set up only with the production function and the assumption of technical level." However, dynamic technology changes and converting whole production processes into numerical values will be both unreal and irrational.

Economic planning requires an enormous amount of work; there cannot be a production norm that reflects exact reality and production enterprises do not have the manpower to recognize the received norm. In the Soviet Union, the document to draw up a Ural factory's one-year program was 17,000 pages long. An eminent mathematician and cyberneticist, Victor M. Glushkov, best describes this problem, stating "it would take the whole adult population of Soviet Union until 1980 to finish planning" (Levine 1967).

According to the experience of the former Soviet Union, the most difficult part in the material balance plan is balancing production materials and the requirement of tens of thousands of enterprises. Some production enterprises' production functions and technical levels were adjusted for the overall balance. There were always problems in the program's execution process. In such cases, only sectors that were chosen as national priorities such as military and heavy industries are guaranteed supplies. As a result, buffer sectors that consume all the deficiencies of the plan are needed. The only sector to play this role is the consumer products sector. The consumer production industry in North Korea's centrally planned system would only get worse, regardless of propaganda.

Plans set up as result of arbitrary adjustments and political negotiation are sent down to the enterprises. This results in producers following plans and directives from outside their industry. Furthermore, the fact that the person who issues orders and the person responsible are different could lead to unintended economic activities. Since there could be a conflict of interest between the planner and the producer, the producer can take advantage of the gap between authority and production. Experts on Soviet's planning system give several examples about the failure of the achievement index: as there is no punishment for bricks broken in unloading, useless bricks are supplied; transportation companies wander around just to fulfill ton-miles goal; shoe factories only produce small shoes; there are no reasons to consider consumer preference and ladies' dresses are piled in warehouses (Loucks and Whitney 1973, 294).

The most serious problem with the production norm structure is that it prevents technological innovation. Development of new technology changes the strictly constructed flow of input elements of an enterprise and always bears the risk of failure. The risk of investing in a technology that has a low possibility of success is compensated by huge profits in a capitalistic system. Yet, in this structure, failed investment only increases the next year's production goal would be higher. Moreover, the principle of fixing the production function directly contradicts with the development of technology in that it requires a new arrangement of elements everyday.

The second fundamental problem is the absence of flexibility in resource distribution organization. Resource distribution is imperfect from the beginning and cannot be carried out completely, so the imbalance in supply and demand exists just as in a market economy. However, since the plan is corrected yearly, the derangement cannot be corrected at all. In this system, all industries depend on the plan and derangement in one industry can result in the failure of supply and demand of materials for every industry. As shown in the Soviet Union system, this is the reason for the phenomenon of existing materials not finding their usage, while products that are needed are not in supply.

In the market economy, where the invisible hand corrects differents in supply and demand through the derangement-correction mechanism, correction of the program in the order-oriented structure must go through the strict centralized decision settlement process. One adjustment means that all the related supply and demand programs need to be altered, and the complicated political adjustment process must be repeated. Although adjustments are strictly limited, they are ultimately unavoidable and production enterprises receive adjusted goals and orders. However, this causes derangement in the production of other enterprises and results in inferior production. The enterprises start to complain and eventually become irresponsible.

The third problem is the chronic shortages and the problem of the seller's market caused by the objective-based production structure. In an objective-based production structure such North Koreas, the suppliers have no difficulty in handling products, but they find it hard to get the necessary goods. The suppliers control the economy and the poor quality consumer goods result in complaints. In capital goods, the low quality transfers the inefficiency through its linkage to the entire economy. This problem in the socialist structure is called "economics of shortage" (Kornai 1980). Long queues, forced savings, postponement of purchases and the forced substitution of other goods are all results of the shortage of goods. Consumer demands are not satisfied and they have to spend money on what is available.

Since the consumers have no choice but to buy what the manufacturers produce, there is no reason to improve the quality of goods. The shortage in materials delays production, and the irregular supply of materials results in inferior quality of the goods. The work efficiency is also diminished. Hoarding becomes a necessity as delivery scheduling is uncertain, so a vicious circle starts where one shortage creates other shortages.

On the other hand, companies in this structure gain bargaining power due to the shortage in materials. In addition, they become unconcerned about the quality, technology and productivity since they do not worry about consumers. In the commanded structure, although it is the duty of the central authorities to control such shortages, the rigidity of the plan makes it hard for timely adjustments. On the contrary, the shortage justifies the distribution intervention program while reinforcing the role of the government and its officials.

#### E. Recent Trends

The power of the central government in North Korea seems to have weakened greatly since the economic crisis of 1990s. The planning system started to shake at its roots because the planning organizations failed to fulfill their functions as a supplier due to the shortages in food, energy and raw materials. Farmers' markets (*jang-madang*) have flourished as the North Korean government was unable to supply enough food and daily necessities. The role of the non-planned sector in national provision structure is expected to become more important.

During the first session of the 10<sup>th</sup> Supreme People's Assembly in September 1998, amendments to the Constitution were passed. Autonomy, profit making and the opening of economic activities were included in the new Constitution. However, fundamental changes in the planning system and possession were not found. In the second session (April 1999), the central government passed a new economic program, declaring that it will seize command in building the framework of the unified economy program. Under pressure to reform its structure and open the economy, the leaders of North Korea had previceusly decided to strengthen its structure by preventing the growth of non-planned sections. However, recently, compared to the past standards, North Korean government underwent a certain level of

reform. According to an article published in the *Chosun Shinbo* in July 2002, the North Korean government raised the prices of daily necessities, making the prices closer to those found on the black market. On June 1, 2002, the price for rice ration increased from 8 *chon* to 44 won, 550 times higher than the previous price (100 chon equals one won). At the same time, North Korea adjusted the foreign exchange rate from 2.2 won to 230 won per U.S. dollar. Wages for farmers, scientists, clerical and productive labor was increased by 10~20 times. In particular, the wages of hardship labor occupations increased to 6000 won, three times higher than minimum wage of manufacturing labor workers.

The North Korean government acknowledged the market function and relied on supply and demand for price setting, breaking away from the planned system. Once the North Korean government starts to rely on currency and wages, the importance of the planning/command framework will decrease and the economy will operate under market mechanisms.

Beginning in July 2002, several rationing systems will be abolished and, ultimately, all occupations will gradually become wage based. North Korea plans to implement a discriminative system for wages. In addition adopting the Family Contract System of China, North Korea plans to introduce a Family Farming System to differentiate the production units of farming, decreasing the cost of national procurement and expanding self-distribution ratios.

The North Korean government has not made official announcements about these measures, so it is difficult to verify at this point. However, if these measures are of serious concern for North Korea, it has already started on the road to decentralization, market orientation and privatization. Recently, North Korea designated Sinuiju as a Special Economic Zone, introducing exceptional measures for administration. In the early 1990s, North Korea established the Rajin-Sonbong Free Economic and Trade Area, demonstrating a "selective opening" policy. The recent measures of creating an autonomously administration region (like Hong Kong) in North Korea should be considered revolutionary in terms of determination toward economic opening and system reform. For the North Korean regime, the measures taken between 1998-99 and 2002 are quite contradictory. If these recent changes are to remain in the long term, the economic management systems of the past will be replaced by the new system.

### Reference

\* In Korean

Chosun Ilbo. "Jump over Hong Kong's capitalist experiment." September 24, 2002. [http://nk.joins.com]

- Hyundai Economic Research Institute. 2000. Guide to North Korea's Commerce and Investment. Seoul: 21st Century Books.
- Juche Research Center in the North Korea Academy of Social Science. 1985. *Dictionary of Economy*. Vol 1-2. Pyongyang: The North Korean Academy of Social Science.
- Korean Businessman's Association, Northeast Asia Team. 2002. *Implication of North Korea's Recent Policy Changes and Future Tasks*. Seoul: Korean Businessman's Association.
- Park, Seok-sam. 2002. *Research on North Korea's Economy; Economic Capacity, Currency Circulation and Privately-held Foreign Currency Estimation.* Seoul: The Bank of Korea.
- Research Institute for Korean Reunification. 1996. *Problems of North Korea's Economic Policy and Reform Prospects*. Seoul: Research Institute for Korean Reunification.

\*\* In English

- Joint Economic Committee of the United States. 1971. *People's Republic of China:* An Economic Assessments. Washington D.C.: Government Printing Office.
- Jones, E. F. 1971. "Cultural Revolution: In Search of a Maoist Model." Joint Economic Committee of the United States ed. *People's Republic of China: An Economic Assessment*. Washington D.C.: Government Printing Office.

Kornai, Janos. 1980. Economics of Shortage. Amsterdam: North Holland.

- Lenin, V. I. 1935. "The State and Revolution." E. Burns ed. *Handbook of Marxism*. New York: Random House
- Levine, H. S. 1967. "Economics." G. Fisher ed. *Science and Ideology in Soviet Society.* New York: Atherton.
- Loucks, N. L. and W.G. Whitney. 1973. *Comparative Economic Systems*. New York: Harper and Row.

# X. Enterprise Management System

### Myoung-Chul Cho

## 1. Characteristics of North Korea's Enterprise Management

The characteristics of enterprise management in North Korea are based on its socialistic economic ideology, the concept of property and the administrative system.<sup>1</sup> In North Korean economic management, communist and capitalist factors are mixed. The former comes from the character of North Korea's orientation to the communist system and the latter comes from being in a transition stage where in North Korea is embracing capitalist aspects.

Thus, there are two perspectives analyzing socialist economic management in the North Korea. The first is the communist character of economic management. In economic management, the communist characters are divided into three parts: political leadership has highest priority; the economy is managed and administered under the unified direction of the state; and the public realizes economic management.

In North Korea, the basic method for economic management is to realize the leadership of the Worker's Party.<sup>2</sup> North Korea argues that the leadership of the party is the 'lifeline' and the source to enhance the superiority of the socialistic economic system. The reasons are as follows: First, the role of the party is to make the public unite socially and politically with high-level creativity. Second, the political leader-

<sup>&</sup>lt;sup>1</sup> North Korea's enterprisemanagement is different from capitalist countries since the socialistic business administration reflects the communist character of the society and it has its own originality different from the capitalistic business management based on the individualism. (see *The Economic Management Theory of Juche*. 1992, p. 18)

<sup>&</sup>lt;sup>2</sup> "In the socialistic economic management, the political leadership is the fundamental background." (*The Economic Management Theory of Juche*. 1992, p. 18)

ship of the party directs policy and manages administration to correspond with the needs and benefits of public labor in economic organs and business places.<sup>3</sup> Third, the leadership of the party is indispensable need to achieve and to firmly maintain the revolutionary principle in the economic management.<sup>4</sup>

Another characteristic of North Korea's economic management is the planned management of economy under unified control.<sup>5</sup> North Korean authority operates under a number of tenets. First, since the basic need of a socialistic economic management is to develop the economy rapidly, the planned administration and management under the national unified control need only can realize this basic need. Second, every economic section and unit is working toward the same goal and is connected in society, which is the owner of the means of the production. Thus, objective need is given to connect every unit and section of the economy.

It is key to note that North Korea claims that the superiority of the socialist economic management depends on the administration of either unified control or the state. Therein, economic management in the socialist system is founded on the tenet of mass participation. This is because the owners of productive allowances are expected demand mass participation in economic management.<sup>6</sup> This can only can be completed when it is united with the national unified leadership.<sup>7</sup>

The transitional aspect of the socialistic economic management in North Korea is expressed by the way North Koreans uses transitive economic law to manage the economy. North Korean society is not fully socialist, rather it is a transitional society with relative originality in that self-financing is put into force. The final distribution

<sup>&</sup>lt;sup>3</sup> The line of the party and its policy are to enlighten the goals, direction, strategies, tactics, detailed assignments and methods for economic development and public sovereignty. In addition, it is considered that the party's line and policy can only be accomplished through the political direction of the party. The party suggests the direction and mission for struggle and practical methods to the economic organs and business units through political supervision to accomplich economic policy.

<sup>&</sup>lt;sup>4</sup> In economic management, independent and public labor has to follow party ideologies to meet the needs of the economy. Socialism basically entails excluding individualism and actualizes the complete independence of the public as a whole based on collectivism. Socialist economic management can be realized and reinforced through the political leadership, and is particularity distinguished from the capitalistic economic management, therefore it has enormous superiority and vitality.

<sup>&</sup>lt;sup>5</sup> "The economy is managed intentionally under the unified control of the nation in the socialistic economic management." (*The Economic Management Theory of Juche*. 1992, p. 21)

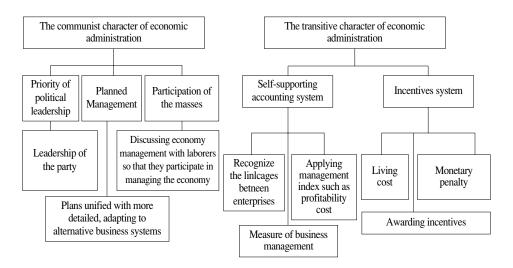
<sup>&</sup>lt;sup>6</sup> The economy is, in theory, managed by the people themselves as the owners who run businesses Therefore, the socialist economic management should respect the opinion of the productive public and protect their profits, also, they should solve problems through creativity. Problems that might occur in economic management can be solved when the leaders of national economic organs and companies protect profits and work faithfully for them with believing the power of public and come together with public wisdoms and strengths.

<sup>&</sup>lt;sup>7</sup> The participation of the masses is expected to motivate labor under the central authority, bringing a certain level of planning autonomy for independent goals and creativity in economic management.

does not follow the "more work, more demand" concept of the market. Rather, distribution is made to production to stimulate labor's material interests. Moreover, North Korea uses commodity monatary relations and value law in economic management. In North Korean economic management theory, economic law reflects the transitive character of the socialist society based on collective originality.

The independent accounting system and the wage system are representative systems of North Korean economic management. The independent accounting system is intended to heighten labor morale, and using material, capital and labor efficiently and effectively. It uses management performance indices such as cost, price and returns so as to manage factories. The incentives system was intended to cultivate team spirit, in that an individual can benefit benefits through group labor. In North Korea, labor is prescribed under the principle "No work, No food." The distribution of labor by quality and quantity was put in place to prevent free riders and encourage group labor activities. Thus, the North Korean government uses individual material incentives such as giving living expenses and bonuses.

North Korea emphasizes the use of economic law and category, but it is also wary of over-emphasising the transitional nature of its socialist economic management. This is indicated by the point of view: "If the transitional character is overemphasized, the socialistic economy deteriorate into the capitalistic economy." If material interests are heightened, social and collective profits will be neglected, causing society to focus on individual gains and return to a capitalist market.



#### <Figure 10.1> The Characteristics of North Korea's Socialist Economic Management

### 2. Changes to North Korea's Enterprise Management System

#### A. Single Manager System (1945-61)

North Korea's economic policy after independence can be summarized as the socialist reconstruction of the means of production and heavy industrialization-oriented policy. North Korea began socialist reconstruction of the means of production by promulgating the "Law on Nationalization of Industry, Transportation, Communications and Banks etc." Consequently, over 90 percent of industry, that is, 1,034 major companies and factories, were nationalized. The portion of nationalized industries in industrial output was 72.4 percent in 1946. By 1958, the means of production in the North were completely socialized. The socialization of industry provided the foundation of the centralized economic management system.

During the industrial nationalization process in 1946, the Factory Management Committee administrated the management of state-owned enterprises. The Factory Management Committee was organized to maintain production at factories and mines in view of the social disorder after the liberalization from Japanese forces in 1945. This temporary form of management organization changed work sites with to self-protection and self-governance.

In December 1946, the Factory Management Committee was changed to the Soviet-style "single manager system" where one manager takes full charge. Under the top manager, there are vice managers, chief engineers, the second chief engineers and supervisors to manage enterprises. Nonetheless, the authority and responsibility for the business administration is only vested in the top manager.<sup>8</sup> However, it does not mean that the single manager system at that time was autonomous. The Ministry of Industry appointed the managers of the state-owned enterprises and the managers were under the guidance of the party organization. Indeed, the labor associations were under the guidance of the factory party organs.

North Korea developed the system of "complete responsibility to guarantee the quality and quantity in economic plans from the top to the bottom" through ministry-department-company and the single-manager system. The party always takes a leading role in the official administration system of ministry-department-enterprises. Therefore, the party takes a position of leadership in every decision-making facet of

<sup>&</sup>lt;sup>8</sup> Kim Il-sung compared the role of the manager with the military regimental commander: "The manager of the business unit should take the role like the military regimental commander. He is responsible for the important national matters. Of course, the manager should administrate the factory in cooperation with the governmental organizations and the social organizations, but you have to remember the final responsibility for the result of production is on you."

socialist society. The Korean Worker's Party influences economic management though several channels: First, the Cabinet is responsible for the Supreme People's Assembly. However, in reality, the party, especially the central committee of the party, was responsible. Basic economic policies and plans were approved and announced by the central committee of the party and the Supreme People's Assembly then gave their approval.

Second, the party influences production management through its own organizations. Along with organizing the primary party committee in each ministry, the party initiates the party committee at provincial and city levels under the direct control of the government to control party committees in counties and at important industrial organs. In addition, the provincial party committee controls and directs the primary committee and the party cells in smaller cities.

Third, the Cabinet and party members overlap. The heads of ministries are also the members of the Supreme Committee in the party. In addition, managers and key figures in enterprise are mostly the members of the party. Kim Il-sung himself was the head of Cabinet as well as the party. This shows that North Korea's companies have been under the overlapping control of the Party and the Cabinet.

Therefore, the influence of the party in the enterprise management ranged from the center of the party organization to the lowest level of the factory organization. However, in the early North Korean economic management, the "guidance" of the party was not clearly put forward and national organizations acted as official channels. Although the role of the party was to lead, it also suggested basic policies and took charge of the political and ideological guidance. The practical responsibility for the economic management was on the hierachy of ministry-department-company.

In the Central Committee of Workers' Party in June 1958 and in the expanded committee of executive members in August 1959, North Korea decided to reform the industry management system to establish a local industry management system. Accordingly, the seven central ministries related to industry were reduced to the following in 1959: the Ministry of Metal Industry, Ministry of Machinery Industry, Ministry of Mining Industry (closed in 1959), Ministry of Energy, Ministry of Chemical Industry and the Ministry of Light Industry. In 1960, the Ministry of Metal Industry and the Ministry of Machines were consolidated, as Heavy Industry Committee and the Ministry of Light Industry became the Light Industry Committee. Provincial Economic Committees were established in 1960 to instruct the small and medium-sized light industries. Further, in 1961, the Local Economic Committees under the Local People's Committees were set up to take charge of overseeing local companies. The changes to the economic management system combined with the Chunrima Movement facilitated the First Five-Year Economic Plan, developing the light industry and local industry.

# B. Party Based Enterprise Management System: the Daean Work System (1961~1973)

In 1960s, the North Korea retained the public mobilizing method while simultaneously raising production technology. Although North Korea had achieved its goals for production through the Chunrima Movement, the quality of production was still poor. Hence, in August 1960, the Party Central Committee suggested " a technological revolution" to solve quality deficiencies nationally.

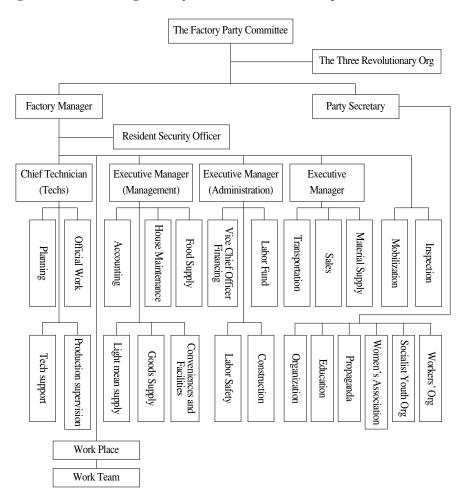
The characteristics of the industrial management at that time were the decentralization of national administrative controls and the rapid expansion of the party as the supervisor of enterprise. Although the number of ministries in charge of industry was reduced since the end of 1950s, the constitution of the committee within the Cabinet was enlarged. For instance, the science and technology committee and the light industry committee were newly established in the third cabinet, reorganized in October 1962. The differences between the ministries and the committees are as follows: The ministry gives direct instructions to companies, so the organization based in the ministry is highly centralized designated. On the other hand, since the committee mediates and instructs, larger part of decisions is to the lower levels of the organization.

An important change in this period was the creation of a new enterprise management system, the Daean Work System, which still is the foundation of the North Korean enterprise management system. Kim Il-Sung initiated the Daean Work System in December 1961 at the Daean Electrical Machine Factory. The Daean Work System included three important elements.

First, the leading organization in enterprise management is the Factor Party Committee and factory administration is carried out by the group as a whole. In the single manager system, one manager manages the company, but in the Daean Work System, the enterprises are managed as group by the Factory Party Committee, the prime instruction organization that takes responsibility for production results. Under the chief engineer, two vice chief engineers are assigned to assist and take charge of overseeing production, technology and public labor. In the productive instruction section and technology section, chief of staff who helps the working post should be assigned. Each department manages its own business, such as planning and allocating. This system expands the role of technical professionals in the process of production. Under the chairman of the Factor Party Committee, there are several posts from the committee and labor party organizations as shown in Figure 10.2

The second feature of the Daean Work System is the centralized materials supplying system. Materials needed for production are supplied by headquarters; the previous material supply system was not the responsibility of ministries or management departments. Each individual company received materials through single contracts based on the manual publicized by ministry and department. The Daean Work System unified the supply of materials; higher organizations take responsibility for arranging production and instruction on the supply of materials to the field centrally. To support this system, the government established a department to handle materials and purchased the necessary materials instead of the company themselves.

The third feature of the Daean system is the unified rear supply system. Companies handle essential daily products for the residents of a district. Rear managers and vice rear managers are part of the administration committee that organizer the labor environment. The chairs of accounting are the managers of rear factories,



<Figure 10.2> The Management System of State-owned Enterprises

the highest officials take the vice-chairman position, and the committee members are the managers of synthetic stores, tofu factories, hospitals, and so on. Such measures were aimed at controlling and directing human resources.

# C. The Expanded Role of Companies: Yonhap Company System (1973~1984)

In the early 1970s, the North Korean yonhap management system was characterized as expanding the autonomy of companies and strengthening the role of government over the party. The Yonhap Company System emerged as the center of enterprise management. The Yonhap Company is a clustered network of raw material companies and the companies that use these materials. The goal of the system was not only improving the efficiency of the production process, but also changing the relationship between companies and the central government. North Korea simplified the enterprise management system by delegating authority to the Yonhap Companies that had been under the Cabinet in the past.

The North Korean Cabinet was reduced in the 1970s, and the fifth Cabinet in 1972 reduced industry-related ministries. Consolidations were made with the Heavy

Machinery Industry	Lakwon, Daeahn, Lyongsung, June 4th company		
Mining and	Seochun, Lyanggangdo, Hwangnam, Haesan		
manufacturing	Moosan, Kangdong district, Kangseo district, Soonchun district, Ahnju district, Chunnae		
Industries	district, Duckchun district, Pyugbuk district		
Iron manufacturing	Kimchaek, Nampo, Sungjin, Chunrima, Chungjin, Hwanghae, Nampo Shipbuilding,		
and shipbuilding	Hambuk Shipbuilding, Kangsun Iro manufacturing		
industires			
Construction	Kinchaek cements, Soonchun cements, 2.8 cements union, Chunnaeri cements		
Industries			
<b>Electricity Industries</b>	Bukchang, Chungjin		
Other Industries	2.8 binalon, Soonchun, Heungnam, Namheung, Sariwon, Cungjin, Shinuiju		

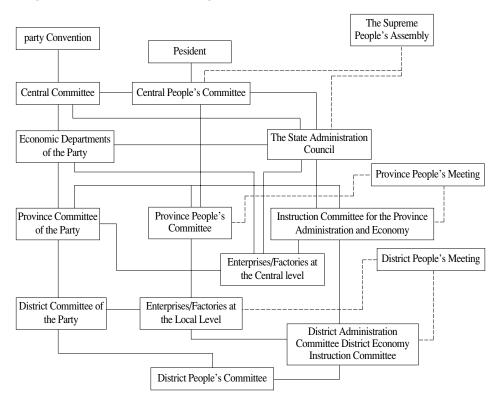
<table 10.1=""></table>	<ul> <li>Examples</li> </ul>	of the Yo	nhap Company
-------------------------	------------------------------	-----------	--------------

#### <Table 10.2> Example Enterprises under the Yonhap Company

Names of the Yonhap	Affiliated Companies/Factories of the Yonhap Company	
Companies		
Hungnam Fertilizer	Hungnam Fertilizer, Manduk Mining, Donbang Mining, Dongam Mining, Gowon Mining	
2.8 Binalon	2. 8 Binalon, Manpoong Mining, Woongok Mining, Budaesan Mining	
Shinuiju Textile	Sinuiju Chemical, Sinuiju Pulp, Apgang Chemical, Donglim Chemical	
Chungjin Textie	Chungjin Chemical, Gilju Pulp, Hwasung Mining, Sanghwa Mining, Hwasung Chemical,	
	Giljoo Textile	

Industry Committee being formed from the Ministry of Metalwork Industry and Ministry of Electronics and Coal, and the Ministry of Light Industry was formed from Ministry of Textile and Papers, and the Ministry of Food and Consumer Goods. Such downsizing occurred in other areas such as agriculture, transportation, communication, construction and commerce to reduce the size of fifth Cabinet to one-third of the fourth Cabinet.

The sixth Cabinet (1977-1982) introduced the Extraction Industry Committee and National Science and Technology Committee while terminating the Ministry of Chemical Industry and Ministry of Construction. The Metal Industry Committee was reorganized into the Metal and Machine Industry Committee. During the seventh Cabinet (1982-1986), the number of North Korean economic ministries increased again. While the Metal Industries Committee was removed, several other organizations were brought into being, including the Science Center, Ministry of Resource Development, Ministry of Nuclear Industry, Constructions Industry Committee and Machines Industry Committee. In the early 1980s, the government



<Figure 10.3> The Economic Management of North Korea

reshuffling reflected the changes in the economic and industrial environment rather than an enlargement of the authority of the central government. The fact that most of the ministries in the central government are related to economic functions shows that the government rather than the party plays a more critical role in economic policies. In the 1980s, while the science and energy-related departments increased in the central government, authority was also delegated to local government. Figure 10.2 shows the enterprise management system of North Korea.

#### D. The Restructuring of the Yonhap Company System (1985~2002)

The Yonhap Company System was restructured in 1999. The Yonhap Company was a cluster of organizations along the materials supply chain and factories that worked in cooperation. It was first introduced in 1973 for the extraction industry and was expanded from 1985 to core industries, local industries and agricultural companies. However, from the later half of 1999 and the first half of 2000, about 40 Yonhap Companies were reorganized into general factory units. For example, HungNam Fertilizer, the symbol of North Korea's chemical industry, Kimchaek Steel, the symbol of North Korea's metal industry, and the Daean heavy machinery unit were reorganized into a general factory unit. The change in the management system also appeared in collective factories and collective enterprise units. The representative examples were the Moosan Mine Yonhap Company, the Seungli Collective Automobile Factory and the Pyongyang Collective Textile Manufacture Factory, which were renamed the Moosan Mine, Seungli Automobile Factory and Pyongyang Textile Manufacturing Factory, respectively. The Sungjin Steel Yonhap Company, Booryung Steel Yonhap Company and Sangwon Cement Yonhap Company are working as Yonhap Company System.<sup>9</sup>

Occupying a significant position in North Korea's industries, the Yonhap Companies went through internal reorganization after 1985. As the reorganization included most North Korean representative factories and business units (ranging from forestry to metal, machinery, electric, electronic, chemical, building materials and light industry), it showed radical changes in the economic management system of North Korea. With these changes, no unions were left in key industries such as the power generation and transportation industries. However, as the term "Yonhap Company" has disappeared from North Korean press and news, it is conjectured that the system has been abolished.

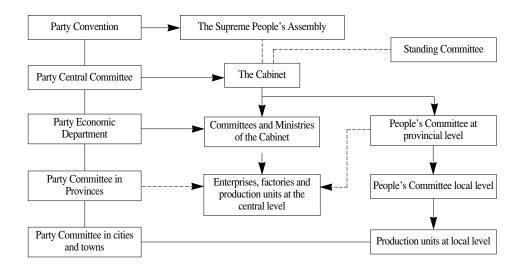
The background of North Korea's reorganization of the Yonhap Company

<sup>&</sup>lt;sup>9</sup> Kim, Kwang In (2002). "Restructuring of North Korean Yonhap Companies." *The Unified Economy* (March 2000), pp. 101.

System was economic difficulty and the decline of the operation rate in every industries. In the 1990s, the size of the North Korean economy was significantly reduced, making Yonhap Company System inefficient. Its emphasis on a systemic approach caused it to be loosely and inefficiently managed. Due to the loss of financial support, food shortages, energy shortages and obsolete facilities, the survival of the Yonhap Company System was difficult. Thus, the key funcions of the Yonhap Company System—cooperation between affiliated factories, business units and materials suppliers—were not working. Unreliable affiliated individual business units caused a vicious circle where in the troubled companies directly affected other companies in the union, causing problems in other companies.

The disbanding of the Yonhap Company may have been an alternative to boost centralized control and economic management in the launching of the parliament government in 1998. When enlarging the Yonhap Company System to a full-scale in 1985, North Korea delegated central authority and functions to the Yonahp Company System. It allowed unionized companies to autonomously control supply and demand while operating funds, facility and labor. The level of independence of unionized companies was much higher than that of regular companies in North Korea. In addition, North Korea adopted the independent accounting system (in fact, a double independent accounting system) that applies to both individual companies and unionized companies.

The decentralization of enterprise management might have helped to reduce inef-



#### <Figure 10.4> North Korea's Industrial Management System

ficiency in normal situation. However, with the widespread factory shut downs of North Korea, the unionized system was not adequate. North Korean authorities wanted to reintegrate industrial productivity through the centrally managed system by shifting authority from the unionized companies to the central government. The fact that about 40 unionized companies that were targeted for reorganization—coal

Sections	Before the reorganization	After
	Pyongyang Thermal Power Yonhap Company	Pyongyang Thermoelectric Power Plant
	Bukchang Thermal Power Yonhap Company	Bukchang Thermoelectric Power Plant
Electric-power	Sunchon Thermal Power Yonhap Company	Sunchon Thermoelectric Power Plant
industry	Chungjin Thermal Power Yonhap Company	Chungjin Thermal Power Plant
	March 17th Water Power Yonhap Company	March 17th Power Plant
	Taecheon Water Power Yonhap Company	Taecheon Water Power Plant
	Daedong River Power Yonhap Company	Daedong River Power Plant
	Chunrima Steel Yonhap Company	Chunrima Steel Factory
	Hwanghae Steel Yonhap Company	Hwanghae Steel Factory
	Kimchaek Steel Yonhap Company	Kimchaek Steel Factory
	Daean Heavy Machinery Yonhap Company	Daean Heavy Machinery factory
Metal, machinery, electronics	Nakwon Machinery Yonhap Company	Nakwon Machinery Factory
	Nampo Refinery Collective Yonhap Company	Nampo Refining Factory
	Hoecheon Machine Tool Collective Factory	Hoecheon Machine Tool Factory
	Kimjongtae Electric Locomotive Collective Factory	Kimjongtae Electric Locomotive Factory
	Seungli Automobile Collective Factory	Seungli Automobile Factory
	June 4th Automobile Collective Factory	June 4th Automobile actory
	Kumsung Tractor Collective Factory	Kumsung Tractor Factory
	Nanam Mine Machinery Yonhap Company	Nanam Mine Machinery Company
	Oct 5th Automobile Collective Factory	Oct 5th Automobile Factory
	June 5th Electric Products Collective Factory	June 5th Electric Products Factory
	Yongsung Machinery United Headquaters	Yongsung Machinery Company
	2, 8 Vinalron Yonhap Company	2, 8 Vinalron Factory
Chemical.	Heungnam Fertilizer Yonhap Company	Heungnam Fertilizer Factory
building materials industry	Namheung Youth Chemical Yonhap Company	Namheung Youth Chemical
	Sunch'on Cement Factory	Sunch'on Cement Plant
	Dancheon Magnesia Collective Factory	Dancheon Magnesia Factory
	Nampo Glass Yonhap Company	Nampo Glass Factory
Light industry	Pyongyang Collective Synthesis Spinning Plant	Pyongyang Spinning Plant
	Pyongyang Textile Factory	Deokcheon Mine
	Deokcheon Collective Mine	Gangdong Mine
	Gangdong Collective Mine	Deukchang Mine
Mining Industry	Deukchang Collective Mine	Sinchang Mine
Mining industry	Sinchang Collective Coal Mine	Geomdeok Mine
	Geomdeok Mine Yonhap Company	Munsan Mine
	Munsan Mine Yonhap Company	Sangnong Mine
	Sangnong Mine Yonhap Company	

<Table 10.3> The Reorganization Status of the Yonhap Companies

Source: Kim, Kwang In (2000), "Restructuring of North Korean Yonhap Companies." *The Unified Economy* (March 2000). pp. 105.

picking, electricity, metal, machinery, transportation—were major industries for the economy implies that North Korea intended to revive its economy.

The reorganization of unionized companies was also under taken to enhance productivity by separating essential or viable companies from the union system. This means the disintegration of coordinating planning, execution and production.

## 3. Enterprise Decision-Making Processes and Their Characteristics

The centrally controlled management system for North Korean enterprises can be separated into the party controlled system, which emphasizes political and policy instruction and control, and the government-controlled system, which emphasizes administrative instruction and management.

The characteristics of party policy control are, first, setting economic objectives and suggesting management directions of the companies. Economic planning in North Korea is drafted by the party and sent down to production sites at enterprises. Long and short-term plans and indicators are subject to approval by the party and sent to enterprises as tasks. In the process of approving plans, the party assesses the plan before the government, and approval of the party is directly related to the approval of the government, showing the party dominated control in economic management.

In addition, the responsibility for economic activities is held by the party. In North Korea, all workers are members of the party. Thus, responsibility-related economic management is subject to the party instead of the government. In all North Korean enterprises, they annual plan sent by the party is reviewed by the Factory Party Committee and sent back to the party before being given directly to workers (rather than the enterprises).

The party sets the daily tasks for managers, party secretaries, engineers and submanagers. Punishments for underperformance are given in the form of cautions, warnings, severe warnings and evictions. Warnings and severe warnings restrict promotions and access to political benefits if not excused. Eviction from the party is same as being fired from an enterprise. Punishments are decided on within the Party Central Committee.

Sophisticated economic management functions in the party manage business activities. In the Central Committee, there are specialized functions for the heavy industry, light industry, machines industry, plan and budgeting departments. There is a party committee in the Cabinet, unionized companies and most work places. There is also a party cell committee in work teams that transmit decisions and directions to ensure uniformity. The workers from the party's central committee always stay at the political committee of the provincial level and the workers from the provincial party brances stay in the supervising committee of provincial administration. Every single industrial activity is reported to the related department in the party's central committee through the chief management committee. In sum, the management activities of the enterprises are fully controlled by the central committee. The government's administrative controls have the following characteristics. First, companies are given the party's decision and detailed execution plans. Government administrations, according to the objectives and direction from the party, sets company objectives and coordinate companies for production. These processes are part of the planning process.

Second, the government administration develops indicators for evaluation and evaluates companies, providing rules and norms to maintain the socialistic management system. Labor standards, living cost and incentives are organized by the administration, as well as company profits and their usage, facility criteria, materials usage criteria and management.

Third, the government administration controls the supply of materials and labor allocation. Materials distribution to companies is overseen by materials supply committee, and supply companies and labor allocation is conducted by labor administrations under the central government and local governments. Marketing activities are conducted by the central government. It indicates that companies are focused on internal management related to production while the central government takes responsibility for external activities.

Since the means of production are socialized in North Korea, the management activities of the companies have limited autonomy compared to capitalisti companies. Under capitalism, a companys' autonomy is based on individual assets. Limited autonomy entails the individual management and production activities with a regular supply of equipment, materials and funds by government, recovering the expenses with revenue and doing profitable economic activity. Some socialist business units belong to society but have management autonomy and operate as individual companies.

The relative autonomy in the management of North Korean enterprise units is shown in that even though they are actually included as state companies, companies manage and use resources received by society to run their own organization.

Unlike capitalist management systems that center on business manager, socialist management systems center on political committees. Such a system differentiates North Korean companies from other countries in the following ways.

First, the system centers on producer supervision by the factory party committee rather than on management group. The party committee reflects these in the organization and operation of the factory management. The members of the party committee consist of the leaders of each department in the factory—managers, the secretary of the party, chief engineer, executive manager and production team leaders, secre-

tary of the party, chief of operations and labor. Important management issues, including planning, are drafted by members of the party committee to be discussed by the committee. This system was effective for preventing the side effects of the one-manager system of the past, but it resulted in preventing creativity, independence and timeliness in management decisions.

The second aspect is the unified and concentrated production guidance system directly guided by the factory council, led by chief engineer. By combining technology and production, production was stabilized and technology expanded. It increased the function and specialization of the planning department, the production department and technology department, the official work department. At the same time, it established coordination between departments through factory councils, a distinctive feature of the system.

Third, it established the central specialized system of materials supply. This differs from a capitalist materials supply system where materials are obtained from markets; the socialist system relies on central material supplies according to predetermined programs, and supplies are provided to work sites. While the factory council conducts relatively autonomous functions, the materials supply department is directly connected to the central government. However, the materials supply department also conducts the role of coordinating materials, giving it the dual characteristics of both dependency and independency. Dependent supply under the government's specialized system of guidance, control and supply, relatively independent storage control and sales and management of the products under the determination of the government together build the system that differs from that of market-based economy system.

Fourth, the companies are absolutely responsible for their employee's living needs. This duty is execited by a distinctive organization called the rear supply system. The rear supply system, which manages facilities providing food, housing and bathhouses, is operated by the accounting department, the secondary finance section, the department of food and catering, facilities management, housing departments and building management under the rear manager's guidance.

This distinctive system differs from welfare projects in capitalist companies in its objectives and scope. Basically, the main purpose work, compensation and consumption. These distinctive features come from the centralized government. The enterprise management results are evaluated using government calculations and standards instead of their own production activities. Production cost calculations, materials cost calculations, wholesale cost calculations, consumption standards, living expenses standards, facility utilization cost standards, labor hour standards, labor items consumption standards, business unit management regulations and so on are all established and observed by the central government.

## XI. Social Security System and Social Services

## Sam-Sik Lee

# 1. Characteristics of North Korea's Social Security System

## A. The Concept and Scope of the Social Security System

Social welfare can be defined in both narrow and broad forms. The former explains social welfare as relief work or social work policies. From a similar perspective, social welfare scholars of the United States explain social welfare in a complementary way. That is, social welfare is carried out as a function of support to people who do not participate in economic activities, such as the old or physically handicapped (M.D. Kim 1982, 12). There is also an effort to explain social welfare in a narrow sense. This is to understand it in a structure of enforcement to support relief-protection-prevention-recovery for individuals or groups, or "the socially weak," "the vulnerable class" and "social failures," to make them sustain ordinary life.

Social welfare in a broad sense is explained as social policies for all people that deal with various problems resulting from changes in the social structure including industrialization and modernization. These social policies include a wide range of fields like social insurance, public subsidy, social welfare services, health care and medical treatment.

When we put together both concepts of social welfare, we can see that social welfare is a general system made up of private and public intervention programs to guarantee stable living to all people at individual and collective levels, preventing and resolving social difficulties (M.D. Kim 1982, 19).

The concept or scope of social welfare can be more clearly seen by examining its relationship with social security. Social security functions as a guarantee of income

through insurance or direct charge for members experiencing certain difficulties like poverty. On the other hand, social welfare supports individuals to adapt themselves to the environment and other people, so it ultimately functions to satisfy individual needs. There can be differences between scholars or nations, but it is sure that social security includes social welfare, or at least, they are at the same level. In the case of North Korea, the basic principles of social security are stated clearly in Articles 70 (basic rights of citizens regarding labor), 71 (protection of labor) and 72 (welfare system) of the Constitution. According to these articles, social security in North Korea includes social insurance, health, medical treatment, relief work and social welfare service.

As mentioned above, the social welfare system of North Korea needs to be understood from a broad framework of social security including social welfare services. Therefore, the North Korean social welfare system is viewed as larger-scale social security that includes guaranteed medical treatment, income, public support and social welfare services.

The social security system of North Korea is based on the principles of socialism, so it bears similarities to other socialist states. The social security system under the socialist structure shows clear differences in many fields from that of capitalist states including South Korea. Differences between North and South Korea are the result of different political and economic systems based on ideologies. The social security system of North Korea can be better understood when comparing it with the South Korean social welfare system.

This chapter explains the North Korean social security system by comparing it with that of South Korea. The social welfare system based of capitalist South Korea was developed from the beginning of the Social Development Plan in 1972, but it was provided as a supplement to economic development during industrialization. Social welfare was expanded nationwide in the mid-1980s, when the democratization movement was active and legislation of social policy was carried out; general social welfare was provided from the late 1980s. Worker's insurance for employees was formed based on the a structure proportional to remuneration and the financial structure running on public donation. Social welfare system under this kind of structure gives priority to medical insurance, unemployment insurance, pension insurance and accident insurance. On the other hand, living conveniencs and service at the minimum level is provided equally to everyone, including the social weak. In this case, financial resources are taxes such as pension, children's allowance, medical security and public health service.

## **B.** Development Path of the North Korean Social Security System and Its Characteristics

National social security was institutionalized early in North Korea to achieve universal social welfare in accordance with socialist ideology. North Korea enacted many laws and regulations of social security to emphasize superiority of socialism soon after the 1945 Liberation and showed much interest by executing various policies of welfare of the people. The grounds of the North Korean social security system appear in laws and Kim Il-Sung's instructions. Because early laws are still valid at least legally, the North Korean social security system can be understood to some degree through relevant laws (Y.H. Noh and H.C. Yeon 2000, 72).

## 1) Medical Insurance

North Korea's early medical insurance became effective in accordance with the Social Insurance Law, the Decision of Execution of Medical Assistance and Reorganization of Industrial Medical Facilities for Workers, Clerks and Their Families (enacted in 1946). The focus of medical insurance was free medical treatment through social insurance for workers and clerks. However, as those wounded and killed during the Korean War imposed a heavy social insurance burden on the state, North Korea expanded free medical treatment to all people by creating national medical institutions through the Execution of Free Medical Treatment (Cabinet Decision No. 203) in November 1952. In addition, based on the Cabinet Decision No. 203, North Korea institutionalized free medical treatment for everyone except private farmers, merchants and businessman from 1953. However, real free medical treatment by the national social security system was applied to everyone from 1958, when all privately owned assets were nationalized.

The Reinforcement of the People's Health Management (enacted on February 7, 1960) provides for the general execution of free medical treatment and hygiene culture as part of the cultural revolution in North Korea. Based on this provision, North Korea pursued expansion of hospitals and clinics throughout the nation, designation of doctor's rounds, improvement of service in hospitals and sanitariums, improvement of childcare work and establishment of quarantine medicine. In 1962, quarantine work was strengthened into a nationwide campaign through the creation of Model Hygienic County and in the following year, the Designation of Doctor's Rounds began. The Creation of Sickness-Free Villages was launched in 1966.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> The Creation of Sickness-Free Villages was born with the publication of *Socialist Medicine is Preventive Medicine* by Kim II-Sung.

Kim Il-Sung suggested as basic tasks for the development of health work "to build more hospitals and train medical human resources to protect lives and improve health of workers, to produce medical supplies and equipments to improve medical treatment for workers' health to improve facilities of county hospitals and midwifery centers in rural areas, to upgrade village clinics to hospitals and establish children's wards" at the Fifth Party Convention in 1970. To narrow the gap between rural labor and urban labor, one of the Three Technological Revolutions, North Korea extended medical services in rural areas. Village clinics around the country were turned into hospitals on an extensive scale from 1970 to the end of 1974. During the period of the second Seven-Year Plan from 1978, reinforcement of quarantine work, full designation of doctor's rounds, production of pharmaceutical and medical equipment, expansion of medical institutions and better medical care work were proposed.

North Korea enacted the Law of the People's Health in April 1980, which was legislated by synthesizing the existing health policy decisions of the Ministry of Home Affairs and instructions from Kim Il-Sung to complete the medical security structure. Moreover, the Creation of Model Hygienic County and the Creation of Sickness-Free Villages were developed as nationwide hygiene campaigns to raise the quality of medical service. The Law of Medical Service prescribed thorough execution of doctors' rounds, reinforcement of preventive medical care, pursuit of professional medical business, development of medical technology, encouragement of traditional medicine, solidification of medical workers and material guarantees for the medical field based on free medical treatment.

In a nutshell, North Korea adopted the former Soviet Union's health and medical care structure from early on, mixing traditional and western medicine based on preventive medicine and free medical treatment, and built the medical substructure with doctor's rounds and emergency medical service corps. Essentially, this can be interpreted as the representative basic medical care structure that has been established to some degree (S.S. Lee 2000, 62). The medical security system has been legislated to support the structure.

Early medical security was based on social insurance to comply with the principles of socialism. However, North Korea introduced free medical treatment as social insurance fell short of providing necessary financial resources for medical security after the Korean War. This was to mitigate the public discontent arising from the serious post-war damages and induce loyalty to secure legitimacy of the political regime. Afterwards, the North Korean medical security works included doctors' rounds, expanded of health and medical facilities (especially in rural areas), reinforced quarantine work, establishment of preventive medicine, and an emphasis on traditional medicine. North Korea's medical security notably reached maturity through the enactment of the Law of the People's Health in 1980 and the Law of Medical Service recently. However, this kind of medical security system tends to be used domestically as the means to sustain the regime and internationally as a vehicle for propaganda. Medical security in another word, is used as a means to control the people by giving too much significance to the role of securing a healthy workforce for economic development.

## 2) Income Guarantee

The Labor Law, enacted in 1946, stipulated an obligatory social insurance system for enterprises, offices, workers and clerks in the economic field. The Law of Social Insurance, also enacted in 1946, prescribed various subsidies (temporary subsidies, childbirth subsidies, funeral subsidies and unemployment subsidies) and pensions (disability pensions, bereaved family pensions and retirement pensions) as forms of social security.<sup>2</sup> The Law of Socialist Labor, enacted in 1978, integrated and systemized relevant laws and rules on the loss of workforce through accidents, disease and injuries. Later, the Execution of Social Security System for Cooperative Farmers, enacted in 1953, included farmers that were under the mutual aid system at the level of collective farming into the national social security system and shaped national social security.<sup>3</sup> From 1978, North Korea has classified benefits that use insurance premium of enterprises and insurants as a financial resource as 'social insurance' and policies whose total cost is borne by the national treasury as 'national social insurance.' These are covered by social insurance, whereas income security for loss of manpower over six months is provided by national social insurance, reinforcing the state's responsibility.

## 3) Public Subsidies

Various laws stipulate a diversity of subjects of North Korea's public subsidy system. The relevant laws are as follows: Twenty clauses of Political Platform of 1946; the Decision on the Support of the Dependent Families of Soldiers and Staff Sergeants of the Korean People's Army, enacted in 1949; the Decision on Building Educational Institutions for the Surviving Children of Soldiers, Guerrillas and Patriots Sacrificed in the People's Liberation War, enacted in 1950; the Decision on

<sup>&</sup>lt;sup>2</sup> The Law of Social Insurance has the oldest law to be enacted, but it is the only one to specifically stipulate the criteria of social insurance benefit for North Korean workers and clerks (Yong-Hwan Noh 2000, 31).

<sup>&</sup>lt;sup>3</sup> The 1946 Law of Social Insurance enacted the regulations of unemployment subsidy, but as the 1978 Labor Law held that "all workers have the right to work under socialism and unemployment no longer exists in the Democratic People's Republic of Korea," unemployment compensation does not exist.

Relief Plans for War Victims, also enacted in 1950; the National Social Insurance, enacted in 1951; Relief Plans for Flood Victims, enacted in 1951; Establishment of Honorary Soldiers,' Schools for Soldiers and Guerrillas Handicapped in the People's Liberation War, also enacted in 1951; the Recommendation for Job Security and School Admission for Discharged Soldiers and Honorary Wounded Veterans, enacted in 1953; the Decision on Support for Dependent Families of Discharged Soldiers and Honorary Wounded Veterans, also enacted in 1953; the Admission of Social Security for Persons Who Have Rendered Distinguished Service to the State, enacted in 1956; the Establishment of Measures for Stable Livelihood of Discharged Soldiers, enacted in 1956; the Security of Livelihood for Korean Residents in Japan Coming to North Korea, enacted in 1956; and the Security of Civil Rights and Stable Livelihood to South Koreans Coming to North Koreas C

The public support system in North Korea not only covers the maintenance of livelihood, but also education, jobs and relief. That is, subjects of the early public support system were war victims, surviving children of combat casualties and discharged soldiers. Strictly speaking, however, all of North Korea's social security can be understood as a kind of public aid system. For this reason, North Korea maintains a social structure in which the state owns all means of production and directs production and distribution according to the centralized plan, focusing on a broad range of material and cultural compensations for workers to define the principles of socialist state. In other words, North Korea secures the livelihood of its people on the basis of the state blanket subsidies and provides goods for free or at low price, or the socalled price subsidy, apart from cash income such as wage and pension. Systemically, all costs of individual living needed for controlling the people are borne by the state. Ultimately, North Korea's social security mostly depends on the national treasury and aims to go beyond providing support to workers without means of self-support to improve the material and cultural standards of all workers. This kind of socialist social security system has the 'universality of security' that guarantees equal living to all workers and people, the 'generality of security' that allows general security of living regarding all social problems, both of which are actualized by the socialist system (D.H. Lee 1991, 235-236).

### 4) Social Welfare Services

Legal enactment of the welfare service for women, seniors and the disabled has been accomplished through systematic stipulation of social welfare service in the Law of Socialist Labor enacted on April 18, 1978. However, when closely examined, the law only confirms legal rights that had been in force from early in the regime (K.B. Jeong 1992, 36-37). North Korea's social welfare has plainly been sought in relation to the economic situation (socialist industrialization) and labor force, which is an important element of industrial development. Therefore, it is said that the welfare for women and the welfare for children have been promoted in a close relationship.

The laws related to women's welfare vary in number and content. The Law of Gender Equality and the Detailed Rules for Operation of the Law of Gender Equality (enacted in 1946) stipulate gender equality as a social right from many aspects. Paternalistic elements of the society were removed, as well as polygamy, trade of women as wives or concubines, licensed and unlicensed prostitution, and the *kisaeng* (professional female entertainers) system. In addition, provisions of women's health are reinforced in terms of conserving the female workforce with such laws as the Regulations of Women's Help Centers (enacted in 1948) and the Regulations of Midwifery Centers (enacted in 1949). With regard to children's welfare, the system for childbirth and childcare is stipulated in the Law of Childcare and Education (enacted in 1976). Early emphasis on the protection of women before and after childbirth is another characteristic.

The policy of children's welfare in North Korea takes different directions at different times and there are three main perspectives. Children's welfare after the Korean War mainly aimed to secure legitimacy of the political regime. For example, welfare services for the surviving children of war victims and orphans were provided, for example, in Building Elementary Schools for the Children of Deceased Patriots and War Orphans in Pyongyang and Provinces (enacted in 1953) and the Improvement and Reinforcement of Academic Institutions, Elementary Schools and Nursery Schools by the Cabinet (enacted in 1958).

Second, children's welfare emphasized social childcare based on the increasing of economic activity for women due to lack of workforce.<sup>4</sup> Preschool children, mostly pre-kindergarten children, were taken care of by daycare centers and fourand five-year-olds by kindergartens. The number of daycare centers rose rapidly based on the Cabinet Decision on New Measures for Improving and Reinforcing Nurseries (enacted in 1964). The Execution of 11-Year Compulsory Education (enacted in 1975) made older kindergarten classes for five-year-olds to be compulsory.

Finally, children's welfare, until recently, has emphasized the ideological aspect of raising children to be independent revolutionists, instead of attracting women workers. The Law of Childcare and Education (enacted in 1976) provides that "all children should be raised as independent revolutionists, realize the honorable work of liberating women from the heavy burden of childcare, drive the construction of

<sup>&</sup>lt;sup>4</sup> The Regulations for Daycare Centers (enacted in June 1947) stipulate that "daycare centers raise children for the working women."

socialism and contribute to accomplishing historical great work to revolutionize the whole society." However, welfare for the aged and the disabled is ignored from socialist industrialization, since they cannot provide labor. This can be in contrast to a state that raises and cares for children since birth and shows focused attention to women's social position and health. Therefore, regulations on welfare services for seniors are covered moderately by the National Social Security, the Socialist Constitution (Article 58) and the Law of Socialist Labor (Articles 74 and 78). Article 78 of the Social Labor Law (enacted in April 1978) states that "the state takes care of the aged and the disabled who have no family to look after them in retirement homes and rehabilitation centers for free." The National Social Security, distribution of daily necessities and expansion of retirement homes."

There are three general ways of living for seniors in North Korea. The first is to live with their children, the second is to live alone or with their spouses, and the third is to stay in retirement homes.<sup>5</sup> As of 1988, 69 percent of the seniors live with their children (sons 45 percent, daughters 24 percent), 17 percent live alone or with their spouses, and 14 percent live in retirement homes, showing that an overwhelming percentage of the aged population live with their children. However, the seniors prefer to live separately from their children due to changes in the social structure and family system. Financial difficulties impose burdens on the people living with their parents, which has become an important factor causing problems related to the aged population.

Welfare services for the disabled is free of charge, centering mostly on rehabilitation services for war casualties. For this, the National Social Security (enacted in 1951) and the Establishment of Honorary Soldiers' Schools for Soldiers and Guerrillas Handicapped in the People's Liberation War (enacted in 1951) have been enacted and put in force. However, except for the war casualties, welfare service for the disabled, in general, is limited to accommodation and care. Social prejudice toward the general disabled in North Korea is serious and they experience from heavy discrimination. The rehabilitation centers that function as welfare facilities for the disabled put patients to work who have not completely lost their working ability.<sup>6</sup>

As stated above, North Korea's social welfare is a mixture of balanced growth, income and labor aspect in the social welfare service sector (K.B. Jeong 1992, 34).

<sup>&</sup>lt;sup>5</sup> Retirement homes are built in provinces, cities, and counties to protect and provide welfare service to men over 60 years of age and women over 55. However, the residential circumstances are so poor that even seniors avoid living there and retirement homes are evaluated as a desperate measure to be escape from hard living rather than to protect the aged (Naeye Press, May 1, 1997).

<sup>&</sup>lt;sup>6</sup> Rehabilitation centers are facilities accommodating the disabled without family, one in each province, but North Korea has isolated them socially by forcing them to move to remote areas.

Social welfare service for the aged and the disabled is outside the center of attention whereas social welfare service for women and children is advanced for the purpose of securing the workforce needed for socialist industrialization.

## 2. The Social Security Management System

## **A. Medical Service**

## 1) Subjects

The free medical treatment based on North Korea's medical security in the early period covered all workers, clerks and their dependents.<sup>7</sup> That is, medical assistance was provided in such circumstances as illness, injury and pregnancy, and in cases of temporary loss of working ability such as illness, injury and disablement that are unrelated to work, medical allowance equivalent to sickness pay was subsidized by law. The scope of free medical treatment gradually expanded; in 1952, the entire nation except for private merchants and businessmen were covered.<sup>8</sup> In fact, the principle of the free medical treatment as national social security was applied to all North Koreans from 1958, when all privately owned properties were nationalized. In 1960, a free medical treatment system applying to all people regardless of gender, occupation and place of residence was established.<sup>9</sup>

## 2) Payment

In the 1950s, when the Law on Free Medical Treatment System was put into force, medical treatment was free for inpatients, and outpatients only paid for prescription drugs. Medical treatment and medicine was free for those covered by national social insurance and social security, dependent families of employees of government organs and social organizations, war victims and special patients. The free treatment system is in conformity with the Law of People's Health (enacted in 1980); all medical services are provided free of charge, such as drugs given to patients by medical centers, services provided to patients (diagnosis, examinations, medical treatments, operations, doctor's visits, hospitalization and meals), travel expenses for recuperation and medical treatment, childbirth assistance and preven-

<sup>&</sup>lt;sup>7</sup> The Decision on the Reform of Medical Assistance and Industrial Medical Treatment to Workers Clerks, and Their Dependent Families, enacted in 1946.

<sup>&</sup>lt;sup>8</sup> The Free Medical Treatment System was enacted in 1952.

<sup>&</sup>lt;sup>9</sup> The Reinforcement of People's Health Business was enacted in 1960.

tive medical treatment (medical examinations, health consultations and vaccinations).

An allowance for those people temporarily unable to work is paid as a kind of sickness pay according to the Social Security Law (enacted in 1946). The condition for payment is that the patient has been instructed by a doctor to take leave from work and has not received his wages due to illness, injury and disablement unrelated to work; the amount is a certain portion of the wage at the time of absence from work.

## 3) Budget for Medical Services

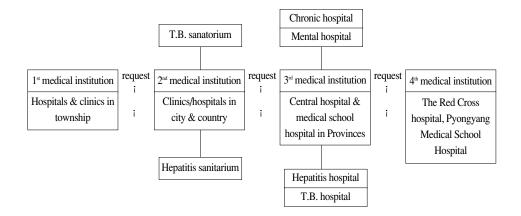
The budget for North Korea's medical security have been raised by social insurance according to the Social Security Law (enacted in 1946). The premium rate of social insurance at that time for national consumers' cooperatives, social enterprises and organizations was 5-8 percent of wage. Insured workers and clerks paid 1 percent of their wage as a premium. That is, individuals and enterprises took care of insurance premiums and the state was responsible for social security administrative costs. However, securing financial resources through social insurance gradually became a burden on the North Korean state.

#### 4) Medical Treatment System

As shown in Figure 11.1, the medical treatment system of North Korea is organized into four stages. First, medical treatment is provided by clinics or hospital in villages, townships and workers zones. If professional treatment is necessary, the patient is sent to the second, third and fourth upper medical institutions. Public hospitals in cities and counties are designated as secondary medical institutions. The lertiary medical institutions include central hospitals in provinces, medical school hospitals in provinces and oriental medical hospitals in provinces. The fourth medical institutions are large general hospitals concentrated in Pyongyang. Most of the medical services are completed at the third stage, as only those with rare illnesses or senior members of the Party can be treated at the fourth medical institutions.

This kind of medical delivery system is related to the system of a doctor's rounds. Doctor's rounds are divided into rounds between residential areas and industrial areas, both of which correspond with administrative areas, creating a national organizational representation, at least superficially. In the city, physicians, podiatrists, obstetricians and specialists in tuberculosis provide medical treatment to about 4,000 residents per city hospital, ward hospital and general clinic. In the rural area, two to 10 doctors stationed at military hospitals and public clinics in townships and workers' zones provide medical service to 1,500-5,000 residents (about 1,000)

## <Figure 11.1> The Medical System in North Korea



## <Table 11.1> Comparison of North and South Korean Medical Security System

Classification	South Korea	North Korea		
	- Medical insurance system: 96% of population			
Medical	covered	- State-run health/medical system (free treatment		
security system	- Medical security system (public aid): 4% of	system): 100% of population covered		
	population (the poor) covered			
	- Premium paid by the state, users, and insurants	- Almost entirely covered by the state		
Financial	- Individuals pay part	- The rest, social security cost (1% of basic income),		
resources	- Medical security is covered by the national budget	treatment fee (treatment outside district), medicine cost (dependant family of the unemployed)		
Medical	- Diversified into medical insurance cooperative,			
management	public corporation, public organizations (integration	- Unified system of national administrative		
system	and unification of medical insurance management	organizations		
	system to be promoted within 1998)			
Medical	- Public medical organizations provide most medical			
supply	services; public organizations (clinics) take charge of	- All medical institutions are state-run		
	preventive and first medical treatment			
Medical	- High-level treatment area, mid-level treatment area	- Doctor's rounds		
treatment area	- Tign-iever treatment area, init-iever treatment area			
Treatment	- Two stages	- Four stages (in reality, three stages)		
system	1 40 500205	- rour stages (in reality, unce stages)		
Scope of	- Focus on treatment, partialy preventive treatment	- Prevention and treatment (oriental medicine		
application	(oriental medicine & pharmacy) included	included)		
Medical choice	- Free to choose doctor	- Impossible when outside the system		

Source: In-hwa Park (1998), p. 304.

people per doctor). Industrial zones arrange terminal-unit clinics such as factory hospitals and factory clinics (C.H. Seung and B.H. Li 1986, 114-116). The comparison of North Korea's medical service with South Korea's is shown in Table 11.1.

## **B.** Income Guarantee

Income guarantee in North Korea corresponds to South Korea's pension and it is based on the Social Insurance Law. This section examines the present conditions of annual payment (the retirement annual payment, illness annual payment and bereaved family annual payment) and industrial accident compensation insurance that form the basis of income guarantee system by provisions of the Social Insurance Law.

## 1) Subjects and Qualifications for Recipients

First, the annual retirement payments cover workers at enterprises, offices and insured workers and clerks of the economic sector. In order to be qualified, recipients have to reach the age of 60 for men and 55 for women; to receive full retirement annual payment, recipients have to work for a certain period.<sup>10</sup> Moreover, insurants can receive the retirement annual payment only when they pay the premium over consecutive seven full months (Article 16).<sup>11</sup>

Annual illness payments are given to those who are approved by social insurance doctors as disabled with disease due to illness or injury unrelated to work. Disabled people are classified into three grades. The first-grade people are those who have completely lost their ability to work and need to be nursed, the second-grade people are those who lost the general ability to work and the third-grade people are those who cannot work continuously, but can work irregular or reduced hours, or those who can take different jobs but have poor competence.

Bereavement payments are given to the family of the insurant when they were living on the income of the deceased. The annual bereaved family payment is given upon the death of an insurant within 15 days of layoff, death of an insurant who was receiving medical assistance or a court decision that the insurant was a permanently missing person.<sup>12</sup>

<sup>&</sup>lt;sup>10</sup> The length of service appears in Article 98 of the 1946 Social Security Law as work experience, but as the relevant clause is left out in the Book of North Korean Statutes available in South Korea, it is impossible to calculate the period of work experience as the receiving condition of full retirement annual payment.

<sup>&</sup>lt;sup>11</sup> The social insurance aid business for retirees (retirement pension system) has been transferred to the Social Security Agency based on the National Social Security (1951).

<sup>&</sup>lt;sup>12</sup> The periodical subsidy for the disabled injured in war and families of war casualties is in charge of

Under the industrial accident compensation system, the allowance for disablement due to sickness or injury related to work goes to the family of the deceased worker. That is, the industrial accident compensation payment organizes some clauses relating to the annual disability payment and the annual payment for a bereaved family. The insurant can receive industrial accident compensation payment after being laid off for sickness or injury related to work and at ter being acknowledged as a disabled person. The coverage of the annual payment was limited to wage earners such as workers and clerks early on, but from January 1986, it was extended to all classes, including farmers on collective farms.<sup>13</sup>

## 2) Payment

Annual retirement payments are paid in cash and goods to recipients. Cash wages are 60-70 percent of monthly basic living expenses given for life (the amount of money supplied is not provided); goods wages are 400g of food (100g of supplement rice included) equally to men and women (those who were awarded decora-

Occupation	Period of Career	Grade	Benefit (of the average annual wage in the recent year)
(Category 1) Workers engaged in underground labor	Less than	Class 1 disability	60%
or harmful labor, exemplary workers and clerks,	10 years	Class 2 disability	40%
technicians	10 years	Class 3 disability	25%
(Category 2) Metallurgy, machine manufacturing,		Class 1 disability	58%
coalmining, petroleum, semi-alkali, railroad,	Less than	Class 2 disability	38%
communications, land transportation, water		Class 3 disability	24%
transportation, fishery, construction, and	10 years		
shipbuilding workers			
(Category 3) All workers excluded from Categories	Less than	Class 1 disability	57%
1 & 2, clerks directly engaged in production,	15 years	Class 2 disability	37%
teachers, artists		Class 3 disability	23%
(Category 4) Clerks not engaged directly in	Less than 15 years	Class 1 disability	57%
production		Class 2 disability	37%
	15 years	Class 3 disability	23%

#### <Table 11.2> Disability Allowances in North Korea

Note: If the length of career exceeds each regulation, workers receive an additional 0.5%-2% (or 3%) of the average annual wage.

the Social Security Agency, which was responsibility of the Department of National Defense before 1951.

<sup>&</sup>lt;sup>13</sup> Yong-Hwan Noh and Ha-Cheong Yeon, ibid, p. 73

tions during career receive 60 won and 600 g). The allowance for disablement due to illness or injury unrelated to work is divided into four grades by industry and occupation. Table 11.2 shows the level of wage according to the degree of loss of ability to work at each grade.

If an insurant that has worked over three years dies, the bereaved family receives the allowance in a lump sum. The allowance is granted based on the average annual wage of the deceased's entire career, differentiated by occupation and the number of people in family of the deceased.

If the insurant were a Category 1 worker with less than 10 years working and had one surviving family member, 85 percent of the average annual wage would be granted, with 110 percent for two and 135 percent for three or more family members. If the insurant were a Category 2 worker with less than 10 years of working and had one surviving family member, 80 percent of the average annual wage of the career would be granted, 105 percent for two and 130 percent for three or more family members. All other workers would be granted 70 percent and clerks 60 percent. Meanwhile, for workers of Categories 1 and 2 with more than 10 years in the workforce, a certain rate of the average annual wage of the career would be added. Industrial accident compensation payment is classified into three classes: Class 1 disability receives 90 percent of the average annual salary of the recent year, Class 2 disability 65 percent and Class 3 disability 35 percent.<sup>14</sup>

#### 3) Delivery System

The Social Insurance Agency under the Ministry of Labor is in charge of social insurance at the central level. At the local level, the social insurance depository, the social insurance office, the secondary judging committee and the social insurance inspection agency (subordinate to the labor administrative agency of Pyongyang or provincial people's committee) take care of social insurance. This kind of social insurance system is maintained equally in the labor administrative agencies of other cities and counties.<sup>15</sup>

In the social insurance system, a company with more than 1,000 employees can set up a social insurance office at the employer's expense.<sup>16</sup> The social insurance inspection agency examines the social insurance industry. The social insurance judging committee evaluates a claim in the case of a protest against the social insur-

<sup>&</sup>lt;sup>14</sup> It was reported that social security pension would be increased by 50.6% from March 1992 to improve welfare (Noh and Yeon, op. cit., p. 75).

<sup>&</sup>lt;sup>15</sup> Social insurance premium is paid through the account of the Ministry of Labor at the central bank (head office and branch) and farmer's banks (branch office or agency).

<sup>&</sup>lt;sup>16</sup> The Social Insurance Law of North Korea (1946).

ance benefit decision. The primary social insurance assessment committee is made up of the people's committee of cities and counties and the secondary social insurance judging committee of the people's committee of Pyongyang and provinces. The social insurance judging committee consists of job union representatives, labor administrators, employer representatives that have insured employees, doctors, sanitation supervisors, technology supervisors, and the representatives of the party and social organizations. Members of the social insurance judging committee are approved by the higher people's committee or requested by the people's committee of province, city and county; the social insurance judging committee is under the supervision of the head of the Department of Labor. If not satisfied with the social insurance judging committee's decision, one can file a suit in the people's court.

The social insurance system was transferred to the Chosun Occupation Union Central Committee from the Ministry of Labor in accordance with the Grant of Management Function of Works Related to Social Insurance and Labor Protection to Chosun Occupation Union Central Committee in 1958. However, social insurance became the management responsibility of the Ministry of Labor in February 1961. That is, the central social insurance work is in charge of the Department of Labor of the Ministry of Home Affairs, the administrative and economic supervision committees of the provinces and major cities, and administrative and economic supervision committees in cities and counties.

## 4) Budget

In accordance with the Social Insurance Law, the social insurance premium is fixed (as shown in Table 11.3). The government provides the required administrative cost from the national treasury and local finance. The employer has to pay the stipulated benefit rate (5-8 percent of the worker's monthly wage in the case of the government or a group) depending on the insurant's wage and the degree of the occupational health risk; the insurant (worker, clerk) has to pay 1 percent of wages for insurance. Since the enactment of the Social Labor Law (1978), subsidies for loss of ability to work for less than six months, annual retirement payment and bereaved family payments are provided by premiums from state enterprises; the pension for loss of ability to work for more than six months is appropriated by the national budget.

Classification	Content	Related laws
<ul> <li>Administrative cost of social insurance</li> <li>Insurant's premium</li> <li>Organization/group's premium</li> <li>Fine due to delay of insurance payment</li> </ul>	<ul> <li>Provided by national treasury and local finance</li> <li>1% of wage</li> <li>5-8% of wage</li> <li>Penalty worth 0.5% of the premium to payment after 5 days of due date</li> </ul>	<ul> <li>Social Insurance Law Article 13</li> <li>Social Insurance Law Article 14</li> <li>Regulations on Social Insurance Premium Payment Procedure</li> <li>Regulations on Social Insurance Premium Payment Procedure (Article 4)</li> </ul>

Notes: 1) Social Insurance Law (Temporary People's Committee Decision No. 135, December 19, 1946), Regulations on Social Insurance Premium Payment Procedure (Temporary People's Committee Decision No. 87, September 28, 1946).

- 2) Wage includes bonus, prize money, allowance and payment (Regulations on Social Insurance Premium Payment Procedure, Articles 7-9).
- 3) Sector paying 5% of wage (administrative organization, financial organization, political party, social organization), sector paying 6% of wage (educational, medical, communicational organization), sector paying 7% of wage (fabric, clothing industry), sector paying 8% of wage (mining, construction). Meanwhile, the payment obligation of private business sector insurance is stipulated in the Table of Social Insurance Payment Rate; however, it has no meaning since private businesses are not officially approved. The following displays the Implementation of Social Security System for Collective Farmers (People's Committee Decree, October 4, 1985).

Source: Noh and Yeon (2000). p. 73.

#### <Table 11.4> Comparison of Social Insurance Systems of North and South Korea

Classification	South Korea	North Korea		
	- Public pension insurance, medical insurance, accident	- Integrated without no classification of risks		
Social	compensation insurance, employment insurance system			
welfare	- Independent organization (public organization, union)	- Overall control by the state		
transmissio	manages social insurance except for employment			
	insurance (operated by the state)			
n system	- Local area social insurance work is taken care of by	- District office is in charge of key local area social		
	individual organization's branch office	insurance work		
Subject	- Scope of application differs by system due to different	- No difference between systems and applied to		
Suejeer	history, background, legal system	everyone equally		
Range of grant	- Different by system and type of damage	- No difference between systems		
Fund	- Revenue from premium and state subsidies	- Integrated management method (Imposition method for		
raising		overall social insurance system)		

Source: Sam-Shik Lee et al. (1999a), p. 143.

## **C. Public Subsidies**

## 1) Subjects and Requirements

North Korea provides public subsidies for soldiers injured during the Korean War that are not poor (soldiers discharged from military service, honorable wounded war veterans, aged people and disabled people) and their family, civilians (war victims, refugees, flood victims and victims of U.S. bombing) and defectors from South Korea and Japan. For example, according to the Decision on Support of the Dependent Families of the Chosun People's Army Soldiers and Staff Sergeants, the recipients. of public subsidy are parents, spouse and children of soldiers supported before enlistment. Fathers over 60 years of age, mothers over 55, spouses with a child below six years of age, children under 14 and the disabled are regarded as nonworkers. If the soldier/staff sergeant is a worker or clerk and there are no workers in the family, or if there are more than three non-workers per worker, or six nonworkers to two workers, state subsidy will be provided. If the soldier/staff sergeant is a farmer and has no worker in the family or if there are four non-workers per worker, agricultural goods tax will be reduced.

#### 2) Allowance

The scope of allowance in the system related to public subsidy shows a large variety of allowances that encompass ever facet of society. According to the Decision on the Aid for the Dependent Families of the Chosun People's Army Soldiers and Staff Sergeants, subsidy is differentiated according to the number of non-workers in the dependent family. Two-hundred won is paid monthly for one non-worker in a dependent family, 300 won for two non-workers and for 400 won for three or more non-workers. When a dependent family lives in a rural area, 80 percent of the above amount is paid. When a farmer joins the army, 15-30 percent of the agricultural goods tax of the family supporter is reduced.

Most of the statutes related to public aid stipulate the placement industry, which includes vocational education, retraining projects, the free supply of land for future farmers and guarantees for agricultural equipment and fertilizer. For the security of education, school expenses, school supplies and clothing are supplied free to war casualties or bereaved families and defectors from Japan and South Korea. The disabled receive special education. The government provides boarding houses for people without families to depend on, nursing facilities for orphans, retirement homes for the aged and refugee camps for victims of disaster. In addition, grains, fuel, clothing and daily necessities are supplied.

#### 3) Delivery system

Due to diversified allowances, public subsidy has various statutes and related organizations. Local committees operate specific projects under the relevant ministries (such as the Ministry of Labor and Ministry of Health).

A part of the public subsidy system shows special features apart from the general delivery system. According to the National Social Security system, North Korea is

Classification	South Korea	North Korea
Social welfare communica tion system	<ul> <li>Livelihood protection system is implemented based on the Livelihood Protection Law</li> <li>Social welfare specialists are in charge of self- support service and income support work of towns, townships, and villages</li> </ul>	<ul> <li>Lack of separate legal system for the poor</li> <li>Lack of special department in charge of the poor, random operation by general administrative agencies</li> </ul>
Conditions of eligibility	- Designation of subjects for livelihood protection of low-income group below poverty line (housing support, facility support, self-support)	<ul> <li>Public support by assigning the poverty line is not available (partial support for seniors excluded from the social insurance system and seniors without family to depend on)</li> </ul>
Range of supply	<ul> <li>Cash payment is given according to income level of housing supporter</li> <li>Self-support program available (education support, financial fund for business operation, vocational training, job creation)</li> </ul>	- Universal guarantee of basic needs through the rationing system
Financial funding	- Appropriation from the state budget	- Appropriation from the state budget

<Table 11.5> Comparison of Public Aid System in North and South Korea

Source: Sam-Shik Lee et al. (1999a), p. 143.

deemed to have a separate social security agency. The social security agency has taken the functions of the payment of regular subsidy to war casualties and bereaved families from the Ministry of National Defense and of the social insurance aid work for retirees and support work of families of army civilian employees and guerillas from the social insurance agency.

According to the Guarantee of Placement and School Admission of Discharged Soldiers and Honorable Wounded War Veterans, job security commissioners are organized in cities and counties to instruct and evaluate the criteria of job security, admission security and relief work for discharged soldiers and honorable wounded war veterans. The Written Decision of War Victim Relief Measures stipulates that the head of the committee organizes extensive social aid projects with the support of the farmers' union, women's union, political party and social organization. Table 11.5 compares North Korea's public subsidy system with that of South Korea.

## **D. Social Welfare Service**

## 1) Women's Welfare

A) Subjects and Requirements

Laws related to women's welfare service are focused on legitimizing the communist regime in its early stages. In particular, the economic activity of female workers received much attention, making all women eligible for welfare without any specific limits.

## B) Wages

The Law of Gender Equality and the Detailed Rules for Operation of the Law of Gender Equality stipulate a number of social rights: the right to work; the right to enjoy equal wage, social insurance, education and cultural activities; the right to freely divorce; the right to sue a former husband for child support; and the prohibition of polygamy, trade of women as wives or concubines and prostitution.

The Regulations on Women's Help Centers (enacted in 1948) was set in place to protect women's health. Women's help centers set clinical measures for women's health, sanitary physical education and assistance for employment, health care for working and pregnant women, the prevention and treatment of gynecological diseases to protect unborn children and mothers, the prevention of artificial abortion, protection against cancer for middle-aged women, education on hygiene, and social and legal assistance for the purpose of preventive treatment of gynecological diseases and social protection of women. Based on the Regulations for Midwifery Centers (enacted in 1949), midwifery centers were established to protect women socially through protection of women's health before and after childbirth and assistance during childbirth.

The Law of Childcare and Education (1976) prohibits night shifts for women raising infants (breast-fed babies) and pregnant women. Article 66 of the Socialist Labor Law (enacted in 1978) stipulates regular and supplementary vacations and maternity leave for working mothers. Regardless of the length of career, maternity leave before childbirth is 35 days and after childbirth is 42 days with a temporary subsidy. In March 1986, the duration of maternity leave was extended to 150 days (60 days before childbirth and 90 days after childbirth) by the Ministry of Home Affairs. In 1993, the Detailed Rules on the Law of Childcare and Education stipulated an extension, but for reasons such as production goal and labor mobilization, it was not actualized (Y.H. Noh and H.C. Yeon 1997, 91)

Article 23 of the North Korean Constitution stipulates that parental duty and the rights of children born out of wedlock are equal to those within normal marriage. North Korea has abolished the family registration system and raise children collectively at daycare centers, giving equal care to all children. However, single mothers are presumed banished to different regions or forced labor camps (T.Y. Lee 1998, 66-67).

Welfare for women has been considered alongside birth encouragement policy. As the birth rate declined in the 1990s, the North Korean authorities worried about future shortages of construction workers and military human resources, so they redirected the population policy toward birth encouragement. In 1998, the government used mass media to announce post-birth vacation (4-12 months) and an additional

300g of food to women raising three or more children, the preferential assignment of housing to households with many children, special subsidies and holiday gifts according to the number of children, 50 percent or greater discounts on school supplies and children's goods, and priority for daycare centers and kindergartens to children with three or more siblings (S.S. Lee et al. 1994a, 52-53).

## C) Financial Resources

It is understood that Women's Help Centers for women's health protection are based on free-of-charge medical care and run on the state budget; expenses concerning maternity leave are covered by the state and social cooperative groups.<sup>17</sup>

## D) Delivery System

The Ministry of Labor deals with women's right to work and receive maternity leave. The Ministry of Health, together with Women's Help Centers, take care of medical security for the protection of women's health. Women's Help Centers are divided into centers under the control of provincial committees and Pyongyang and centers under the control of city and county committees. The centers provide preventive medical treatment and transfer women in labor to midwifery centers and hospitals, quickly hospitalizing pregnant women with problems. Women's Help Centers are staffed with a head of office, doctors and midwives; the head of office and doctors are required to hold medical license in obstetrics and gynecology. The head of office takes care of office administration and doctors are in charge of medical treatment and preventive household hygiene. Midwives visit pregnant women living in the area and register them for home births if necessary.

## 2) Children's Welfare

## A) Conditions of Eligibility

In North Korea, children's welfare has its root in the social upbringing of children for the completion of socialist revolution and the accession of power by Kim Jong-II, the fostering of the post-revolution generation under the *Juche* ideology and the acquisition of female workforce to respond to the shortage of workforce during the process of socialist industrialization. For these reasons, children's welfare takes a universal approach.

Children's welfare in North Korea can be divided according to the children's age and whether they have parents. Children from 30 days to three years of age can be admitted to daycare centers (Regulations on Daycare Centers) and children between

<sup>&</sup>lt;sup>17</sup> The Law of Childcare and Education of North Korea (1976).

four and five years of age can go to kindergarten (Law of Childcare and Education). The Infant Help Centers provide consultation services for health care for children from one day to three years of age (Regulations on Infant Help Centers). Children without parents are sent to orphanages (Law of Childcare and Education), and there are special daycare centers and kindergartens for the surviving children of revolutionary heroes.

## B) Payment

Daycare centers and kindergartens for all preschool children under five years of age are run by the state, which provide food, health care, clothing, children's goods and education for free.<sup>18</sup> Daycare hours range from eight to 24 hours per day.

## C) Finance

The Regulations on Daycare Centers (enacted in 1947) stipulate that daycare centers can charge parents for meals, but this should not exceed 10 percent of parental income. The Law of Childcare and Education (enacted in 1976) stipulates that the state guarantees meals and medical service, and that children's clothing, shoes and other supplies are of the best quality. Moreover, do thing prices were to be equal to production costs or lower and the cost difference would be covered by the state. This shows that at least in the early stages, the operation cost of daycare centers and children's meal expenses were backed by the state and individual items such as children's clothes and supplies were parental responsibility in principle but in reality, they are state subsidized.

However, as individual enterprises were abolished in1958, the state assumed the role of building and operating children's welfare facilities such as daycare centers, kindergartens and help centers.

## D) Institutional System

The Ministry of Health is in charge of daycare centers at the central level and the department of health administration of the people's committees at the local level.<sup>19</sup> Daycare center staff are nurses or midwifes, graduate of childcare schools, public school teachers or nursery teachers.

The daycare center is divided into a daily daycare center, the weekly daycare

<sup>&</sup>lt;sup>18</sup> The Regulations on Daycare Centers (1947) and the Regulations Regarding Daycare Centers (1949). According to the Law of Childcare and Education, "children's wards treat children from daycare centers that are not serious enough to be hospitalized."

<sup>&</sup>lt;sup>19</sup> According to the Regulations Regarding Daycare Centers, daycare centers should submit to the department of health administration within the relevant committee on the status of business, health condition of infants, finance, accounting and medical statistics in accordance with the Ministry of Health.

center and a monthly daycare center according to the period of attendance. Daily daycare centers, set up at workshops or administrative zones, are for parents engaged in simple work during the day. Weekly and monthly daycare centers are used by parents on long-term dispatch duty or long trips, entertainers (on out-of-town tours) and trainees; there is one daycare center for every two sections of Pyongyang, Hamheung and Cheongjin, two or three daycare centers for other cities and one or two daycare centers for counties. The weekly daycare centers look after the children throughout the week, but they are allowed to return home once a week. The monthly daycare centers take care of the children throughout the month and the children can return home for two to three days per month.

Daycare centers are further classified into agricultural workshop daycare centers, village daycare centers, factory daycare centers, workers' zone daycare centers and town daycare centers according to their location. Various associations exist outside the structure of daycare centers that strongly promote the centers, their membership is composed of daycare center staff, parents, and representatives from social groups and the women's union.<sup>20</sup>

	South Korea	North Korea
Subjects	- Expansion from children needing protection to all infants	- Universal application to all preschool children from early on
Supplies	<ul> <li>Children's Help Centers and General Centers for Missing Children, livelihood/medical care/education services for children acting as heads of family, children's welfare centers (centers for newborns, centers for infants, temporary shelters, childcare centers at work, support facilities, self-reliance support facilities), childcare work for preschool children</li> </ul>	<ul> <li>State-run daycare centers and free kindergarten: services such as children's food, health protection, medical service, children's supplies and education</li> <li>Children's Help Centers are established</li> </ul>
Finance	<ul> <li>Children needing protection: government support</li> <li>Children in general: individual financing</li> </ul>	- Government financing
Communi- cation system	<ul> <li>Department of Children's Health and Welfare under the Social Policy Bureau of the Ministry of Health and Welfare, and the department of household welfare of relevant administrative agencies</li> <li>The Committee of Children's Welfare (an advisory body)</li> </ul>	<ul> <li>Ministry of Health is in charge of managing daycare centers and Children's Help Centers</li> <li>Associations of babysitters exist</li> <li>The kindergarten guidance office in the department of primary education of the Committee of Education supervises kindergartens</li> </ul>

#### <Table11.6> Comparison of the Child Welfare System in North and South Korea

Source: Ki-Won Jeong et al., 1995. Comparison of Population, Health and Social Security of South and North Korea.

<sup>&</sup>lt;sup>20</sup> The Regulations Regarding Daycare Centers (1949).

Kindergartens are supervised by the kindergarten guidance office in the department of primary education of the Committee of Education at the central level. The office of education and department of education supervise kindergartens at the local level. Infant Help Centers have the same management system as daycare centers. Infant Help Centers are staffed by the head of office, doctors and nurses. All newborns have to be registered to the center within one week of birth and visiting nurses need to register infants living in the area and visit them regularly. Table 11.6 compares the child welfare systems of North and South Korea.

## 3) Welfare for Senior Citizens

## A) Conditions of eligibility

By law, men over 60 years of age and women over 55 can receive an annual retirement payment from the government, but this is limited to the pension recipients discussed previously. Besides pension for seniors, services for senior citizens' welfare are provided through their admission into retirement homes. The people qualified for admission are those of the eligible age (men over 60 and women over 55) and those whose career falls short of the number of years set for retirement pension, those who have lost the ability to work and those who have no family. It is assumed that as of 1998, 14 percent of the entire senior population was living in retirement homes (The Unification Board of South Korea, 1995).

### B) Supplies

The law provides that men over 60 and women over 55 years of age can receive retirement pensions, but, as promoted by the slogan "600 Is young, 90 Is old," most senior citizens over 60 years of age work at domestic workshops and by-job work-shops against their will.<sup>21</sup> Retirement pension is 60-70 percent (half of this for careers of less than 20 years) of the basic wage at the time of retirement and 300g of food per day. However, if pension recipients continue to work, they earn the full basic wage and 700-800g of food depending on occupation type. Senior citizens receive wages for their labor rather than a retirement pension from the state.

Seniors who are not qualified to receive social insurance but who have a family to look after them receive 500g of food, in the case of less than 20 years of career, under the name of the offspring supporting them. Seniors who are not qualified to receive social insurance, unable to work and are without a family to support them

<sup>&</sup>lt;sup>21</sup> Because of the recent food shortage, rations and pension for the aged are insufficient; it is a general trend that senior citizens continue to work in domestic workshops or by-job workshops (Sam-Shik Lee et al. 1999a, p. 147).

are qualified to enter retirement homes. Except for seniors who have completely lost the ability to work, all seniors in retirement homes are given work (G.C. Ahn 1989, 62-63).

Welfare services for the aged population are financed by the state. However, it is common that seniors, except for those who are unable to work at all, work in one way or another, thus welfare services run on their labor.

## C) Institutional System

In North Korea, one 'recuperative center' is set up in each province to accommodate disabled senior citizens without families, and retirement homes are built in major cities and counties to look after disabled senior citizens who are unable to work. The office of labor of the provincial people's committee under the Ministry of Health manages retirement homes. Senior citizens wanting to be admitted into retirement homes need to submit an application for admission and an approval from the department of labor of the people's committee in cities and counties. However, retirement homes are only for seniors without support, so seniors that receive any kind of support cannot enter retirement homes. Welfare services for the aged are provided through the social security system under the labor department in the Ministry of Home Affairs (G.C. Ahn 1989, 62-63). The differences between the senior welfare systems of North and South Korea are shown in Table 11.7.

## 4) Welfare for the Disabled

- A) Conditions of Eligibility
- In North Korea, the recipients of welfare services for the disabled were mainly

<table 11.7=""> Co</table>	mparison of N	orth and South	1 Korea's Senio	r Welfare System

South Korea	North Korea			
- Subject: men and women over 65 years of age	- Subject: men over 60 years of age, women over 55 years			
- Allowance for the aged: those eligible for livelihood	of age			
protection over 70 years of age (10,000 won per month)	- Subjects of retirement homes: loss of ability to work, no			
- System of preferential treatment for the aged	family to support them			
- Free physical checkup	- Those without dependent family: supply of 300g of food,			
- Operation of senior welfare facilities	individual workload			
- Support for cooperative business establishments by senior	- Children of those ineligible for retirement pension due to			
citizens	insufficient years of career: 500g of food provided to			
- Volunteer service for stay-home seniors	children			
- Interest in the guarantee the basic human rights apart	- Sustenance of livelihood as goal			
from livelihood				

Source: Sam-Shik Lee et al. (1999a), p. 145.

soldiers who had been wounded during war and civilians wounded in the early 1950s.<sup>22</sup> However, the Socialist Labor Law provides an extended scope of welfare to all people with disability who have lost the ability to work.

## B) Services

Services for the disabled include education, medical care, occupation, livelihood protection, residential security and institutional aid. Rehabilitation service for those wounded during war was free of charge. The National Social Security Law (enacted in 1951) stipulates the expansion of workplace dormitories, retirement homes, daycare centers, special nursing homes and schools for disabled children and orphans. The Establishment of Honorary Soldiers' Schools for Soldiers and Guerrillas Handicapped in the People's Liberation War (enacted in 1951) stipulates re-education programs for wounded soldiers.

Education until the high school level was provided to wounded soldiers, and industrial schools, farming schools and bookkeeping schools run for soldiers on the state budget. Graduates were obligated to work for two years at a company or related post in the organization suitable to their health condition and technical ability. Soldiers wounded during the war who wanted to enter school received higher education. There is a production company for wounded soldiers who are somehow able to work (Institute of North Korean Studies 1983, 1,512). It is regulated to guarantee and recommend land, housing, seed grains and farming tools to volunteers to farming.

Free medical care, free supplies of correction tools and guaranteed health care such as monthly health checkups are carried out. There are military hospitals and recuperation centers to provide long-term medical care and convalescence (The Unification Board of South Korea 1990, 267). Disabled veterans are divided into three grades depending on the degree of inability to work and receive pension and food accordingly. At-work dormitories for the disabled, special nursing homes for disabled orphans and schools for children with disability are established to guarantee housing; the disabled that cannot work and and have no family to look after them are accommodated in recuperation centers for free. The Unit 49 Convalescence Home admits people with mental disabilities. However, the services for the general disabled are limited to accommodation. Social bias against disabled people is extreme and rationing is poor, with the basic monthly wage of 60 won often unpaid. State-run social welfare facilities for people with physical and mental disabilities,

<sup>&</sup>lt;sup>22</sup> The 1951 Establishment of Honorary Soldiers' Schools for Soldiers and Guerrillas Handicapped in the People's Liberation War focussed on those disabled during the Korean War, as did the 1951 National Social Security Law. The 1953 Security of Job Recommendation and School Admission for Discharged Soldiers and Honorary Wounded Veterans law focussed on wounded soldiers.

such as recuperation centers and convalescence homes for the mentally disabled, are more for social isolation than governmental aid. Recuperation centers are operated to provide medical assistance for illnesses, injuries, pregnancy and childbirth.

## C) Institutional System

There are various allowances for the disabled such as education, medical care, occupation, livelihood protection, residential security and institutional aid. At the central level, the Ministry of Education provides educational security, the Ministry of Health provides medical security; the Ministry of Labor, the National Planning Committee, and the Ministry of Agriculture provides job security, livelihood security and institutional aid. At the local level, provincial committees supervise welfare services for the disabled. Each province has one recuperation center and one Unit 49 hospital, and each county has one Unit 49 Convalescence Home.<sup>23</sup>

In addition, there is a supervisory committee consisting of the government, the ruling party party and social organizations to direct welfare services for the disabled, but the services are limited to those necessary for the legitimacy of the regime, such as discharged soldiers and wounded veterans. The Security of Job Recommendation and School Admission for Discharged Soldiers and Honorary Wounded Veterans (enacted in 1953) stipulates the establishment of the supervisory committee for job security in each city and county.

## 3. Social Security Problems in North Korea

## A. Medical Insurance

Medical security of North Korea is used to promote socialism. Thus in reality, it is faced with several problems and realistic medical security is not being realized. The problems could be summarized as below.

First, there are insufficient medical resources. High-quality medical security is feasible only when backed by human resources such as doctors and material resources such as facilities and medical supplies.

In the case of material resources, the medical supplies service system has collapsed when aid was cut off due to the economic crisis and the collapse of the socialist bloc in the early 1990s.<sup>24</sup> In the 1990s, the operation rate of pharmaceutical facto-

<sup>&</sup>lt;sup>23</sup> Testimony of Man-Cheol Kim, a North Korean defector.

<sup>&</sup>lt;sup>24</sup> According to the U.S. Center for Disease Control and Prevention, most of North Korea's medical institutions were destroyed by flood and medical supplies have decreased so rapidly that general hospi-

ries was below 20 percent, and as of the end of 1997, medical supplies production is worth merely 33 million dollars (8.17 billion won) out of the total production capacity of 190 million dollars (11.7 billion won). Ultimately, the production of essential medical supplies is less than 10 percent of the goal production (S.S. Lee 1998, 64). As the import of modern medical appliances and equipments became impossible due to the economic crisis, the rate of deterioration and breakdown rose. As a result, problems such as patient neglect, discontinued surgical operations and performing of surgical operations without proper anesthesia are arising.<sup>25</sup>

As of 1997, there were 32.5 doctors and pharmacists per 10,000 North Koreans and the 47.7 paramedics. The rate of doctors is higher than that in South Korea (28.9) but the rate of paramedics is smaller than for South Korea (97.5).<sup>26</sup> However, as of 1986, 50 percent of South Korean medical human resources were six-year medical school graduates, whereas this figure for North Korea was only 5 percent. Considering the quality and characteristics of the work, the quality of North Korean human medical resources is far below that of South Korea. Efforts to resolve the medical supply shortage in North Korea can be found in various places. For example, Article 17 of the People's Health Law emphasizes preventive medicine such as quarantine, vaccination and medical examination. Yet this could also be a measure to deal with the shortage of human medical resources.<sup>27</sup> The emphasis on oriental medical treatment can also be viewed as a part of the efforts.

Second, the communication system is a problem. The system of doctor's rounds is meant to make it easier for residents to gain access medical treatment, relieving the stress on primary medical institutions. However, if a resident haves the city or county of residence, he has to be issued with a pass or a travel certificate, making it inconvenient to visit secondary or tertiary medical treatment facilities, limiting access and the right to choose. For medical demand of doctor's rounds, have to pay separate medical fees and buy medicine at patients pharmacies, increasing burden. Doctors have to devote more than half of their daytime working hours on health education, sanitation and disinfection, vaccination, and physical checkups on their rounds; thus, the actual quality of medical services for patients is naturally low. In

tals have been supplying only oriental medicine for a long time (even before the food shortage, 70 percent of medicine was oriental). The WHO provides North Korea with medical supplies and simple medical equipments worth \$1 million annually (Ok-Ryun Moon, 1998).

<sup>&</sup>lt;sup>25</sup> According to North Korean defectors, North Korea is very short of medical supplies, so only 30-50 percent of patients receive treatment. Moreover, hospitals are asking patients to purchase necessary medical supplies from the market (op. cit., p. 63).

<sup>&</sup>lt;sup>26</sup> National Statistical Office (1999), pp. 94-95.

<sup>&</sup>lt;sup>27</sup> "The State considers the making of plans beforehand to prevent the people from catching diseases as an important duty and puts foremost emphasis on prevention in the people's health project" (The People's Health Law, Article 17).

reality, doctors falsify reports and cover up the outbreak of diseas discoverd on their rounds to avoid responsibility, worsening the spread of disease and suppressing the demand for medical treatment.

The doctor's rounds system comes under the strong administrative control of superior offices, so the operation of the system is rigid, the patients have no right to choose and the improvement of the quality of medical service through competition is not possible. Human medical resources lack the incentive to give complicated medical treatment due to the rigid bureaucracy and the flat fee system for living expenses. This leads to the need for further medical treatment, resulting in minimal service and the qualitative deterioration of medical services.

Third, funding financial resources concerning medical security is another problem. North Korea's medical security is based on free treatment. However, as the country is suffering from economic crisis and food shortage, this system is only free in theory. Every month, a certain amount of money is deducted from workers' living expenses in the name of social security expenses and the resident often has to pay for medicine or treatment. In the name of social security expenses, 5-8 percent of the monthly income for workers in the government or an organization and 1 percent of residents' monthly income is deducted. Medical fees are collected as part of taxes, and when dependents without work are treated at a medical institution, medical a fee is paid (Y.H. Noh 2000, 32). In other words, although North Korea claims that funding from social insurance provides free medical treatment, the people are not entirely free from financial burden (I.H. Park 1998, 303-305).

Fourth, equal opportunity is an issue. In North Korea, all health medical resources are nationalized. Therefore, resources are produced and distributed according to a central economic plan and the operation process is rigid and bureaucratic. There are exclusive facilities for party leaders, causing discrimination between party members and non-party members.<sup>28</sup> This inequality is further intensified by the lack of medical resources.

## **B.** Income Guarantee

Income guarantees in North Korea take the form of social insurance, including pensions, industrial accident compensation insurance and unemployment insurance, under the Social Security Law. There are no social measures to cope with the dis-

<sup>&</sup>lt;sup>28</sup> Hospitals exclusively for executive members of the party (Namsan Hospital, Bonghwa Hospital) are different from hospitals for the general public, and it is reported that there is a big difference in the quality of medical facilities and treatment between the two kinds of hospitals (Yong-Hwan Noh, op. cit., p. 35).

continuation of income for those who are not subject to social security. Moreover, those who are subject to social security still have to provide labor to the state due to the economic crisis, food shortages and the workforce deficiency. Income is the price of labor, thus it is somewhat far from income security. For example, in the case of annual retirement payments, retirees still continue to work to maintain living standards after retirement. Income security such as annual payments for the disable is generally limited to special class such as wounded veterans, hindering a universal approach to social security.

## C. Public Subsidy

The public assistance system in North Korea is a process of distributing stateowned national income, goods and services. However, this system is mainly subject to a special class of those who have contributed to the state, such as national heroes, soldiers in the People's Army, army civilian employees and guerilla fighters or their dependent families. North Korea's public assistance system is similar to the socalled relief work that rewards those who have contributed to the state or given distinguished service to the state. This system cannot be considered as general public assistance for the poor. In other words, the purpose of the public assistance system in North Korea is to support special groups rather than to promote equality. Judging from the current situation in North Korea, the status of actual assistance is thought to be very low.

Meanwhile, the public assistance system of North Korea is based on the universality and generality of security; that is, to secure the people's livelihood and embody the aim of a socialist state. It therefore has passed the superficial limit of assistance for living toward workers who cannot support themselves and has become a form of universal guarantee of livelihood. Security based on so-called "blanket subsidies" is a form of a low-price supply system through rationing or price subsidy. This is a way to maintain a social structure where the state owns the means of production and controls production and distribution by the centralized plan. However, securing the livelihood of the people as through universal public assistance relies mostly on the state budget, highly vulnerable to internal and external shocks. An example to this is the collapse of rationing system caused by food shortage aggravated in the mid-1990s (Y.H. Noh and H.C. Yeon 1997, 25).

In addition, North Korea claims that it abolished the tax system in 1974, following the Abolition of Agricultural Goods Tax (April 29, 1966). However, in reality, the state levies taxes by controlling and exacting all earnings in accordance with the planned economy. Based on North Korea's claim, the principle of paying living expenses is a matter of need, not ability. Nonetheless, it is clearly stated that the payment is a socialist distribution depending on the quality and quantity of labor or the days of labor (Y.H. Noh and H.C. Yeon 1997, 26-27).

## **D. Social Welfare Services**

In April 18, 1978, the Socialist Labor Law systematically stipulated social welfare services, legally reaffirming welfare services for women, senior citizens and the disabled. However, this was only a reaffirmation of the legal rights that were already in place for a long time (K.B. Jeong 1992, 36-37). Clearly, the development of social welfare in North Korea is synchronized with the socialist industrialization drive and labor force, which is an important factor in industrial development. Hence, the welfare of the aged and disabled who are not engaged in economic activities are neglected because they cannot provide labor in the socialist industrialization process. The reality is that the welfare facilities for the disabled or the aged, such as recuperation centers and retirement homes, are forcing their residents to work. The social welfare of North Korea is seen as a mixture of balanced growth, income and labor inducement side of social welfare service (K.B. Jeong 1992, 34). In other words, social welfare services for the disabled and the aged are ignored by the social welfare sector, and during the socialist industrialization process, social welfare services for women and children were active for the purpose of securing the needed labor force. For example, the mobilization of female workforce reached a mere 20.2 percent in 1955 but rose to 33.3 percent in 1960, 38.5 percent in 1965 and 40 percent after 1975. As a result, the number of childcare facilities in the 1970s had increased to 35,361 with 144,000 children in their care.<sup>29</sup>

In North Korea, children are seen as an important generation that will continue the revolution for the complete success of socialism and Kim Jong-II's power. Article 22 of the Law of Childcare and Education states that "it is the most important duty of revolutionists to bring up the children, who are the budding flowers of the state, to become healthy and wise." Article 30 states that "the state should educate children in a way that they would not forget our past and South Koreans, and love our socialist system and glorious communist future." North Korea is using childcare supported by the state and society, that is to say, children's welfare, to educate children on the *Juche* ideology and political ideas even before going to school (S.S. Lee et at. 199a, 100). Children's welfare, focused on daycare centers and kindergartens, is used as a tool for ideology education and a means to boost female labor. As a result, this has become a barrier to the children's emotional development and, considering North Korea's economic crisis and food shortage, the quality of childcare facilities is estimated to be poor.

<sup>&</sup>lt;sup>29</sup> Chosun Central Almanac (1984), p. 292.

The quality of children's welfare in North Korea can be estimated from fragmentary reports. For example, in July 1997, UNICEF, quoting from the data provided by the North Korean Welfare Ministry, has reported that currently 800,000 children under the age of five (37.6 percent of the total population of children) are suffering from malnutrition and 10 percent of those are in a serious state, 65 percent very serious and 25 percent somewhat weak (S.S. Lee et al. 1996b, 36). The infant death rate, according to the Korea Institute of Medical Management, had increased from 26.8 infants per 1,000 infants in 1994 to 28 in 1996.

Senior citizens in North Korea are mobilized for labor if deemed capable of working and a certain level of means for livelihood is secured. Considering the current food shortage and economic situation, the operation and management of welfare facilities for the aged is not expected to be efficient. The educational and technological levels of North Korean seniors are low and, although they are benefited with pension after retirement, the benefits are very insignificant, so they have to depend on their children. Ultimately, the welfare for the aged in North Korea does not translate into state-operated services under the principle of support by families, only emphasizing the advocacy for caring for the elderly.

Although the increasing rate of the aged population in North Korea is slower than that of South Korea, a rapid increase is anticipated in the early 21st century. That is, the aged population is expected to increase from 1.451 million in 2000 to 3.525 million in 2030. The relative rate of the aged population against the entire population is expected to be 7.1 percent in 2002 and 13.6 percent in 2030, signaling the beginning of an aging society. The increase in the aged population would expand the burden on the working population to support the aged. After all, the increase in the cost of supporting the aged means increasing the burden on the working population to support the aged. At the same time, it also means that social security expenditure on the aged rises absolutely and relatively. This signifies that ultimately, the welfare for the aged would become an important problem in North Korea. Thus, the state should focus not on superficial promotion of the welfare for the aged, but on construction of a system that would improve the actual welfare of the aged and expansion of necessary financial resources and infrastructure. In North Korea, welfare services for the disabled are concentrated on war victims and there are no specific laws and regulations for the general disabled (K.B. Jeong et al. 1992, 36-37). What is worse, the state tends to limit residence of the disabled to certain areas so to increase the effectiveness of its propaganda.

The ultimate purpose of the state's welfare administration policy is to improve the quality of life. However, in North Korea, welfare exists only in the form of regulations in the constitution. Except for the ruling elite, most of the people are forced to work for a long time to receive a minimum wage and limited food rationing, unable to change jobs without government approval. In other words, the welfare

	Aged Population			Ration in the Entire Population			Cost of Support		
	S.Korea	N.Korea	Total	S.Korea	N.Korea	Total	S.Korea	N.Korea	Total
2000	3,371	1,451	4,822	7.2	6.5	7.0	39.1	46.6	41.4
2005	4,253	1,887	6,140	8.8	8.2	8.6	40.1	46.4	42.1
2010	5,032	2,321	7,353	10.2	9.9	10.1	38.9	44.3	40.6
2015	5,846	2,767	8,613	11.7	10.3	11.7	38.9	45.8	41.1
2020	6,899	2,555	9,454	13.8	11.5	12.6	40.4	42.5	41.1
2025	8,613	2,972	11,585	17.3	11.7	15.4	45.6	45.5	45.5
2030	10,165	3,525	13,690	20.7	13.6	18.3	51.9	49.0	50.9

#### <Table 11.8> Changes in the Aged Population in North Korea

(Unit: 1,000 persons, %, per 100 people in the working population)

Source: Sam-Shik Lee et al. (1999a), p. 149.

policy of North Korea is merely a formal act to mobilize people for the ultimate purpose of establishing a socialist state (Y.J. Kim 1992, 168-174).

To improe social welfare in North Korea, epochal changes in the system, especially its finance and institutions are critical. The system should be improved in a way that removes the inequality of only extending adequate welfare to the governing class or a particular class. As for finance, it is important to secure financial resources to materialize universal welfare. However, considering the current economic situation of North Korea, it is almost impossible to secure adequate financial resources from individuals or organizations. On the assumption that the state bears the burden of social welfare or social security in all areas, it is rather important to secure the resources from the state budget. To that end, it is necessary to drastically cut military spending and use the funds for welfare.<sup>30</sup> Finally, reform for a more modern and democratic system in social security management is crucial.

## References

\* In Korean

Ahn, Gye-Chun. 1989. *Investigation on the Actual Status of Living in North Korea*. Seoul: Unification Board of South Korea.

<sup>&</sup>lt;sup>30</sup> Compared to other socialist states, the costs of people's economy and national affairs are so large that, even when excluding the defense cost which is suspected to be hidden under other items, the maximum amount of costs for education, health, social security, and social insurance is less than 20% of the annual fiscal budget (Yong-Hwan Noh, 2000, p. 35).

Institute for Peace Affairs. 1997. Handbook on Unification and North Korea.

Institute of North Korea Studies. 1983. Comprehensive Review of North Korea.

- Jeong, Kyung-Bae, Ki-Ok Kim, Sang-Ho Kim and Sang-Eun Lee. 1992. Comparative Research on the Social Welfare System of South and North Korea. Seoul: Korea Institute for Health and Social Affairs.
- Jeong, Ki-Won, Hye-Gyu Kang and Sang-Eun Lee. 1995. *Comparative Research on Population, Health, and Social Security of South and North Korea*. Seoul: Korea Institute for Health and Social Affairs.
- Kim, Jun-Hyeon. 1994. *Research on Social Security System of North Korea*. Seoul: Dongkook University Press.
- Kim, Man-Doo. 1982. Modern Social Welfare Principles.
- Kim, Young-Jong. 1992. "Welfare Administration Policy of North Korea." North Korea Study. Vol. 3, No. 3. Seoul: Institute for Continental Studies, pp. 168-184.
- Korea National Statistical Office. 1999. Comparison of Economic and Social Aspects of South and North Korea.
- Lee, Doo-Ho. 1991. Theory of Public Medical Care.
- Lee, Jeong-Woo. 1997. Long-Term and Short-Term Plans to Unify the Social Insurance System of South and North Korea. Seoul: Korea Institute for Health and Social Affairs.
- Lee, Sam-Shik. 2000. "The Status of Deaths Caused by Starvation in North Korea and Political Implications." *Health Welfare Forum*. Vol. 43; 62-70.
- Lee, Sam-Shik, Nam-Hun Cho, Hwa-Jong Baek and Su-Jeong Son. 1994a. *Change in Population of South and North Korea and Social and Demographic Policy Issues after Unification.* Seoul: Korea Institute for Health and Social Affairs.
- Lee, Sam-Shik, Yong-Hwan Noh, Hwa-Jong Baek and Tae-Hwan Kwon. 1999b. *Estimation of Total Population of North Korea*. Seoul: National Intelligence Service.
- Lee, Tae-Young. 1988. *Research on North Korean Women*. Seoul: The Unification Board of South Korea.
- Moon, Ok-Ryun. 1989. *Analysis of Health and Medical Care System of North Korea*. Seoul: The Unification Board of South Korea.
- Noh, Young-Hwan. 2000. "Evaluation on Health and Medical Functions in North Korea and Basic Direction of Aid to North Korea." *Health and Medical Care* of South and North Korea. Vol. 1; 27-46. Suwon: Aju Research Institute of Health and Medical Care of South and North Korea.
- Noh, Young-Hwan and Hwa-Jong Baek. 1998. *Policy Issues on Southward Movement after Unification*. Seoul: Korea Institute for Health and Social Affairs.
- Noh, Young-Hwan and Ha-Cheong Yeon. 1997. Evaluation on Livelihood Security

292 | Part III. Economic Management System and Mechanism

*Policy of North Korea: on the State Distribution System.* Seoul: Korea Institute for Health and Social Affairs

- North Korea Net. 1999. Social Aspects of North Korea. The Internet Joong-Ang Daily.
- Park, Heung-Woo. 1998. Comparative Research on Social Welfare Policy of South and North Korea. Seoul: Kyunghee University Press.
- Park, In-Hwa. 1995. "Preparation and Cooperation Issues Regarding Unification of Health and Medical Care in South and North Korea: With Reference to the Health and Medical Care Unification of Germany." *Legislative Investigation Research*. Vol. 235; 56-80.
  - \_\_\_\_. 1998. "The Experience of East and West Germany and Health Cooperation Problems of South and North Korea." *Unification Forum*. Seoul: The 21st Century Unification Volunteer Corps.
- Seung, Chang-Hoand Bok-Hee Li. 1986. Experience in Public Health Work.

## XII. The National Innovation System for Science and Technology

Choon-Geun Lee

## 1. Characteristics of North Korea's Science & Technology Policy

North Korea's science and technology policy was formed alongside its economic development strategies and education policy. Table 12.1 shows North Korea's economic development strategies over the last five decades for science and technology policy and education policy. This section will examine how those economic strategies and technological progression have affected North Korea's science and technology policy.

#### A. The Relationship between Economic Development Strategy and Science & Technology Policy

#### 1) Prioritizing to Heavy Industrialization

Like most other socialist states, North Korea gave priority to heavy industrialization in the early period of economic development. After independence from Japan, North Korea tried to obtain political and military autonomy by heavy industrialization, to lead the economic development of the nation. This was accelerated by Kim II-Sung's radical reform ideology and strong will to leapfrog the development process. After Kim's political foothold was solidified through repression of rival factions in 1956 and his single leadership was established during the 1960s, North Korea's priority on heavy industrialization was further reinforced.

However, development of heavy industries takes a long time and enormous investment. In addition, most of the facilities need to be brought in from foreign

Charac- teristics	S Period Development Plan Science & Technology Policy			Education Policy			
Building of economic foundation	1947 1948 1949-1950 1953-1956 1957-1960	1 <sup>st</sup> 1-year plan 2 <sup>nd</sup> 1-year plan 1 <sup>st</sup> 2-year plan Postwar restoration 3-year plan 1 <sup>st</sup> 5-year plan	*Signing of multilateral economic and cultural agreements with socialist states *Foundation of the National Academy of Sciences (October 1952) *Emphasis on heavy industries *Reinforcement of R&D for local industry *10-year plan for science development *Technological innovation based on mass mobilization	*Foundation of Kim Ii-sung University *Expansion of natural science and engineering colleges *Expansion of junior colleges *On-site technology training			
Industriali- zation	1961-1970	1 <sup>st</sup> 7-year plan (3 years extended)	*Parallel development of economy and national defense *Reinforcement of R&D on national defense *Pursuit of mechanization, automation, electricity supply, chemical industry development	*9-year compulsory technology education *Increase of factory colleges *Cultivation of scientists			
Reinfor- cement of self-reliance and economic indepen- dence	1971-1976 1978-1984 1985-1986	6-year plan 2 <sup>nd</sup> 7-year plan Buffer period	*Three Technological Revolution *Self-reliance, modernization and scientific attributes of the economy *Promotion of storming corps of scientists	<ul> <li>*11-year compulsory education</li> <li>*Expansion of open, remote educational institutions</li> <li>*Promotion of specialized universities</li> <li>*Establishment of agricultural and fishery colleges</li> </ul>			
Trade slump and economic hardships	1987-1993 1994-1998	3 <sup>rd</sup> 7-year plan "March of Hardships"	*1st and 2nd 3-year plans of science and technology development *Long-term science development plan *Emphasis on agricultural, light industries and trade *Fostering of electronics, biology, and thermal engineering	*Expansion of science and engineering colleges *Expansion of IT educational and research institutions			
Construc- tion of a "powerful nation"	1998-		*Development slogan of a powerful nation *High priority on science and technology R&D *IT Development *5-year plan for high technology development	*Founding of high technology major in universities *Reinforcement of computer education			

#### <Table 12.1> Economic Development Programs and Major Science & Technology Policy of North Korea

Source: Lee, Choon-Geun and Kye-Soo Kim. 2001. *The National R&D System and S&T Human Resources Training System in North Korea*. p. 29.

countries. North Korea lacked technology, human resources and capital. To make matters worse, the industrial basis established by the Japanese had been destroyed during the Korean War. Therefore, the North Korean government concentrated resource mobilization while fostering its own heavy industries with support from the Soviet Union and China.

The process and result of fostering heavy industries in North Korea can be compared to the Chinese experience, which took place around the same time. According to Yee-Fhu Lynnm of Beijing University, China's economic structure, centering on heavy industries, was fostered by executing distorted macroeconomic policies such as a low interest rate policy, low exchange rate policy, low raw material price policy, low wage policy and low daily necessities price policy in an agricultural economic structure that was short on capital. These caused the acceleration of the planned resource distribution system and nationalization mechanism, hence resulting in the imbalance in the industrial structure, deterioration of technological efficiency and lack of work incentive (Lin 1996, 41-78). North Korea's industrialization process mirrors the Chinese experience. North Korea gradually reinforced its heavy industrial base from the start of its regime, reeliving support from the Soviet Union and adopting a policy similar to that of China. Kim Il-Sung proclaimed North Korea's basic strategy for economic growth as giving priority heavy industries, delaying development in the light industries and agricultural industry, purging advocates of light industry development through the removal of rival factions in the late 1950s. The heavy industries-first policy was further strengthened with the emphasis on the defense industry in the 1960s.

North Korea fostered its heavy industries by first developing the machine manufacturing industry to ensure supply of the machinery and equipment necessary for the energy, mining, metal, mechanical, chemical and building materials industries, intend to facilitating the creation of a modern, self-sufficient economic system based on domestically supplied raw materials, fuel and power sources. Kim II-Sung claimed that the "technological revolution" was to be based on a "mechanical revolution," calling for the mechanization and automation of the manufacturing process. He also stressed that the party members give strong to technological development to promote the socialization of the economy. According to this policy, the machine industry received more attention out of all the heavy industries, as shown in the mass production of machine tools campaign in the late 1950s.

The stress on heavy industries also helped build the defense industry. North Korea concentrated on the growth of an independent national defense industry after the Cuba situation and the China-USSR strife in the early 1960s. Modifying the first Seven-Year Plan (1961-67), North Korea drove forward the parallel development of economy and defense policy, constructing the independent national defense industry system in the process, enabling every facet of weapon production, from the acquisition of raw materials to the final production of arms. Once again, the mechanical industry played a central role in the development of heavy industries. Hence, North Korea resembled China in terms of its a dual structure of the defense industry versus the general industries.

However, fostering heavy industries that in disregard of comparative advantage and the lack of resources worsened the capital recovery effect and management efficiency, thus creating a chronic shortage daily reelssities from the light industry. North Korea, being a small country, had to place more emphasis on industrialization than the Soviet Union and China in order to have a self-reliant, comprehensive heavy industrial structure. Aggravated labor shortages and a lack of capital delayed the refurbishing of outworn equipment and the technological takeoff; as support from the socialist bloc and trade with socialist allies contracted, North Korea ran into more problems.

Unlike China, where local governments have relatively broad authority, North Korea has experienced difficulties due to its smaller population and higher degree of centralization. As North Korea's economic policy is highly centralized, mitigation of problems through decentralization is troublesome. In particular, the single leadership system and reinforced field guidance under "the Supreme Leader" often derailed government plans and led the already difficult situation to deteriorate.

#### 2) Self-Reliant Policy and Independent Technological Innovation

North Korea's pursuit of self-reliance based on the *Juche* ideology greatly affected the its science and technology policy. Kim II-Sung had emphasized independent economic growth from early on, but he promoted the *Juche* economy in all aspects of science and technology development policy after removing weathering the rival factions, China-USSR strife and the Cuban crisis in the 1960s. By the *Juche* economy, we mean an economy that sustains development independently by using domestic raw materials, fuels and power resources. To that end, North Korea stipulates that 60-70 percent of raw materials care to be secured domestically. The national R&D system for science and technology has aimed at supporting the socialist industrialization using domestic resources while supporting an independent economy.

North Korea explains the status and role of independent technology innovation in building an independent socialist economy as follows. First, independent technology innovation is a tool directly guarantee the achievement of the *Juche* economy for the people. Through technological innovation, people can fully develop natural resources and use them to complete the economic system. That is to say, technological innovation would enable independent production from acquiring raw materials to producing end products, guaranteeing economic independence (C.S. Park 1991, 83-90).

Second, independent technology innovation should be used as a major means to modernize the economy. Modernization of technological means would allow North Korea to self-supply necessary equipment through mechanization and automation of production means, as well as through precise, large-scale and high-speed machinery.

Third, the role of science and technology includes the application of science to the general economy by upgrading production processes, production methods and business management activities. Therefore, North Korea promotes independent technology innovation and reinforces scientific research to apply new scientific findings to production.

Fourth, science and technology should maximize production and savings, a crucial condition to spurring the growth of national economy. North Korea thus tries to economize national resources, rationalize management activities, improve quality and promptly apply new scientific technology to production in order to maximize production and savings. As the promotion of a self-reliant economy aggravates the chronic shortage of raw materials, this field is particularly important.

Fifth, independent technology innovation guarantees fast production. North Korea emphasizes that continuous rapid growth of production in a socialist society is accomplished by the *Juche* ideology and reinforcement of technological development. Accordingly, the development of science and technology is to improve work methods, raise the technological level of workers and embrace advanced technology and production processes based on high technology to increase productivity.

As such, the role of technology innovation is strongly emphasized in building a self-reliant economy. Kim Il-Sung stressed that "our party's consistent principle is to practice the *Juche* ideology, realize collectivism, and unite theories and production in our scientific research."<sup>1</sup> He also emphasized that practicing the *Juche* ideology means to set the goal and direction of technology innovation matching the actual circumstances of our nation and solve all problems arising out of the process independently and creatively for the national and people's interests. This was because countries have different circumstances and a technology revolution calls for creative solution to all technological problems. Technological revolution demands strong creativity to change nature for the independent demand of human beings.

North Korea dictates that all scientists must have a firm understanding on executing the technological revolution according to the demand of the people as well as the goal of technological revolution set by the party. This entails that technological innovation that does not serve the interests of the people and the revolution is not supported. Scientists are asked to arm themselves with the Juche ideology and the party's policy line.

In addition, engineers are instructed to oppose stratification and dogmatism, which are seen to paralyze creativity and disable the ability to recognize constantly changing circumstances in technological revolution, impeding them from discover-

<sup>&</sup>lt;sup>1</sup> Jung-Nam Lee. 1992. Technological Revolution Is a Lifeline for Socialist Economy, p. 35.

ing scientific methods needed for the building of socialist economy and technological revolution. North Korea stresses loyalty and unchanging faith in the party and the Supreme Leader, strong will, creativity, a firm belief in socialism, patriotism, self-reliance and research quality to contribute to the development of socialism. Independence and self-reliance, which are the core principle of the party's economic policy, are important grounds for strengthening the leadership of the party in technology innovation. In order to realize this, North Korea strengthens ideological education to induce active participation in technology innovation and brings engineers and workers that are in charge of the technological revolution close to the Supreme Leader. Along with this, the party dominates organizations so that the guidelines of the technology innovation are carried out accurately and instructs engineers to devote themselves to the technology in a timely manner.

North Korea has tried to maintain economic independence and self-reliance from its early days. By having an economic structure that runs on domestic raw materials, fuel and energy resources, North Korea was able to withstand the Oil Shock and the containment policy of developed countries. Although North Korea had attempted to achieve a well-planned economic structure, it failed to achieve economies of scale and international competitiveness. As North Korea tried to supply materials internally for the most part, which was unreasonable for a small country with limited resources, it soon faced outdated technology and had to mobilize massive amounts of capital to resolve the problem. This would be the reason for North Korea's concentration on developing their own methods of steel making, coal energy and chemical products such as vinylon and PVC.

#### 3) Parallel Policy of Pursuing Economic Development and National Defense.

With the conflicts facing the socialist bloc, such as the Sino-Soviet dispute and the Cuban crisis in the early 1960s, North Korea advocated self-defense and pursued the development of its defense industry. At the fifth meeting of fourth session of the Central Committee in December 1962, four military lines were adopted. From the mid-1960s, North Korea further reinforced its armed forces at the expense of economic growth and firmly drove the parallel development policy of economy and national defense.

Alongside the reinforcement of the regular army, reserve armed forces such as the Workers and Farmers Army and Red Youth Guards were established. Military expenses, which took 10 percent of the national budget in 1966, rose to 30 percent of the national budget in the next five years. Although military expenses were allegedly halved from the early 1970s, expenditure was actually maintained as military expenses were disguised as part of heavy industries focusing on the mechanical industry. The parallel development of economy and national defense affected the science and technology policy to a large extent. Heavy industries was priority strengthened according to the promotion of the munitions industry, resulting in considerable development of small and medium-sized local industries evenly across the country. The modernization policy for the armed forces led to indigenous production of modern weapons. In 1962, the National Committee of Science and Technology was established to coordinate research institute activities across the country. In 1964, the National Academy of Defense Science<sup>2</sup> was established with a large number of highly qualified scientists.

The parallel development policy of economy and national defense is still at the center of North Korea's economic policy. The defense industry receives priority in terms of investment and human resources, which has become a major factor in aggravating the shortage of qualified human resources in other industries. As the period of military service was extended to maintain armed forces, of about 1 million juveniles often withdrew from school and timely science-based education was delayed. This is a reason why college students who have been discharged from military service prefer the humanities to natural sciences and the retraining of discharged soldiers in factories takes a considerable length of time.

#### B. North Korea's Technology Innovation Theory and R&D System

North Korean theories on technology innovation have developed along a similar path to the development of the political and economic system and the *Juche* ideology. In the process, theories on technology innovation were formed under the North Korean socialist system, growing into the theory of combinated research and production, the theory of mass technology innovation and the *Juche* technology revolution.

#### 1) Theories Combinating Research and Production and Mass Technology Innovation

One of the distinctive features of North Korea's theories on technology innovation is the emphasis on the combination of research and production aimed at expanding the movement of technology innovation by the people. Strengthening the connection between scientists and workers is a distinctive feature of a socialist system, which puts the group before the individual. As with in the Great Leap Forward Movement, North Korea agitated and mobilized its people to actively par-

<sup>&</sup>lt;sup>2</sup> It was renamed the Second Natural Science Academy in the mid-1970s.

ticipate in major national undertakings and achieve goals. This is the same for technology innovation. North Korea explains that, "realization of collectivism is a natural demand of the socialist society and one of the basic ways to drive the technology revolution."<sup>3</sup> The main features and theoretical basis of the mass technology innovation movement are as follows.

First, there should be no "mysticism" surrounding engineers. The mass technology innovation movement aimed at activating the enormous potential of the masses. However, the belief of that only a special group of people can develop science and technology was dismissed a remnant of the old thoughts, paralyzing the creativity and wisdom of the people. It was also seen to hurt the independent and creative role of the working people (the leaders of the technology revolution) and impede cooperation between engineers and the people. As such, North Korea refuses technology innovation by minority, elite scientists and engineers, and pursues mass technology innovation that involves wide the participation of the working class.

Second, closer creative cooperation and connection between scientists, engineers and the people was promoted. Workers have abundant productive experience and are motivated to solve technological problems, but their knowledge is limited to their proximate technology and lack knowledge on other machines and theoretical issues. To cover such problems, cooperation between scientists and engineers was promoted; North Korea lays emphasizes discarding combined research among the working people, scientists and engineers.

Third, a close relationship between theories and production through mass technology innovation is needed. Unions between education, research and production are at the core of Marxist educational theory. It is argued that capitalist production only emphasizes expertise in specific areas and the division of labor, making it difficult to obtain knowledge in other areas; workers are alienated from the entire process, and delays in the comprehensive acquisition of technology and formation of character would hurt them in technological reform. That is why in a socialist society, workers are, theory, to be well versed in both the practical and theoretical sides of production to understand the entire process. Linking scientific research and production plays an important role not only in the enhancement of the productivity of scientific findings, but also in the formation of the socialist character of engineers. Production is seen as the origin and engine of science and technology, serving as a yardstick for research outcomes. Hence, North Korea demands scientists "take all problems found in production as research subjects and be responsible for the application of research outcomes to actual production." Scientists are encouraged to raise the technological level of engineers to involve them in technology innovation.

<sup>&</sup>lt;sup>3</sup> Kim Il-Sung. 1986. On Development of Our Science and Technology, pp. 59-99.

To link theory and production, North Korea asks scientists and engineers to work at in the actual site of technological revolution; that is to say, they should find problems for themselves and find realistic solutions. As a result, field study became important in research at the Academy of Sciences from the late 1950s, and many onsite research centers were established to deal with technological problems on site and the retraining of workers. Moreover, the National Committee of Science and Technology, which was established in 1962 and integrated with the Academy of Sciences in 1998, devoted itself to coordinating the science and technology administration, national research development and technological instruction at factories. Based on the guidance of the National Committee of Science and Technology, production-affiliated research centers were strengthened to promote the ties between research and production.

The government drove the "Three Technological Revolutions" of ideology, technology and culture. The Three Technological Revolutions was a movement that encouraged young engineers with higher educations and laborers to work together to accomplish the party's policy goals. The resolution of technological problems an important role in this movement. Scientists seeking core technologies for industrial development also played an important role in mass technological innovation.

#### 2) Theory of Juche Technology Revolution

*Juche* technology revolution theory was developed to explain the essence, characteristics and ways to promote the technological revolution in North Korea. First, in connection with the essence of technological innovation, Kim Il-Sung stated that, "the essence of technological revolution is a way of removing the essential difference in labor and to liberate workers from their hard work," which would guarantee independent and creative work conditions.<sup>4</sup> Accordingly, after the working class seized power, the remnants of the old society were seen to bind workers; the essence of socialist technological revolution is to guarantee independence to workers, as in politics. North Korea explains these phenomena as a liberation from the restrictions of nature, which is seen as similar to liberation from political confinement.<sup>5</sup> In the same vein, the technology innovation was called a revolution.

The degree of labor intensity decreases as technological differences in production sectors converge due to technological development. Moreover, technology converts hard work into simplified work by strengthening the technological basis of the

<sup>&</sup>lt;sup>4</sup> Jung-Nam Lee, ibid, pp. 5-9.

<sup>&</sup>lt;sup>5</sup> Jae-ho Shin and Tae-Kook Kim. 1977. Understanding of Technological Revolution Embedded in the Juche Ideology, pp. 17-28.

production process and upgrading technological equipment. As a result, "the realization of workers' social equality by raising the standard of equipments through the technology innovation" becames the main goal of the socialist technology innovation. This is one of the main reasons for North Korea's emphasis on the mechanization and automation of production in research development.

Second, characteristics of technology innovation come from the nature of the socialist technology revolution. According to Kim Il-Sung, "technology innovation is not just a simple method of improving production capacity, it is an important political task to guarantee complete social equality and independent living."<sup>6</sup> Technological innovation was expected free the proletarian class from the binds of nature and allow complete independence

Technological innovation is an important political task for North Korea because "the technology revolution is a political struggle of the people for freedom from the binding of nature and for full realization of independence. It is a struggle for social equality that can be successfully met when the public is mobilized politically."

Third, by stipulating the technological innovation as one of the most important tasks in actualizing the people's independence, North Korea gained grounds for strengthening the party's leadership in carrying out the technology revolution. Kim II-Sung once ordered the party to be stronger to complete the advent of socialism and communism by successfully undergoing ideological, technological and cultural revolution. He also ordered the rapid development of science and technology and the execution of an adequate development plan at the government level.

North Korea emphasizes that as the economy develops, technology is developed and the party's guidelines for technological innovation would liberate the workers from hard labor and improve productivity. In order to meet these requirements, the authorities call for a more accurate analysis of macroeconomic conditions and a production plan based on technological development, while enforcing strict rules and legal framework to reinforce inspection to thoroughly carry out technological innovation.

Whereas a capitalist society finds the motivation for technology innovation in profit-making and consumer satisfaction, North Korea set the goal of the technology innovation to liberate workers from hard labor. In the early stages of socialization, this seemed to work for the pursuit of technology innovation, mobilizing workers and farmers. It also worked for setting the heavy industry-oriented development theory as a policy priority. Yet, without the to technology innovation through the market, a comprehensive inducement to narrow differences in labor failed to continuously promote technology innovation. This became more critical as the basic

<sup>&</sup>lt;sup>6</sup> Jung-Nam Lee, ibid, pp. 9-13 and Jae-ho Shin and Tae-Kook Kim, ibid, pp. 28-48.

industrial structure was completed and shortage of raw materials continued.

Unlike capitalist countries that pursued technology innovation led by the private sector, North Korea put the party and the government at the front of technology innovation. Although this was advantageous for industrialization over a short period of time by concentrating limited resources, lack of invention, materials for technology innovation and the systemic failure from economic development became affected accuracy and efficiency.

#### C. Education Theory and Science & Technology Policy

Education in socialist states develops hand in hand with economic development in accordance with the direction of the party and the government. As a result, the cradle of science technology human resources depends on socialist theory and the status of national economy. This part deals with the state compulsory education, the work-and-learn system, the combination of education and production and North Korea's theory of all-round development of the human being.

#### 1) State Compulsory Education and the Work-and-Learn Education System

For a long time, socialist states thought of education as a method of serving the interest of the empowered class, changing according to the development of relations of production. North Korea treated class elements such as the possession of educational rights and what kind of instructors should teach what kind of knowledge to what kind of students with utmost care. With the view that education in South Korea only represented the interest of capitalists, North Korea put emphasis on education for workers and farmers, for which the government would be responsible.

State education has expanded on a continuous basis to gratuitous compulsory education and gratuitous higher education. North Korea sought gratuitous education in all educational institutions since the 1945. In the 1960s, the nine-year compulsory technological education system was established and the 11-year compulsory education system, which includes one year of preschool education, four years of primary education and six years of middle-level education. All university students were given scholarship and exempted from tuition and dormitory fees. This kind of educational system increased the government's financial burden and hindered quantitative expansion of university students. The same kind of trend also occurred in China before liberalizing the educational system. According to a statistical report of China, the ratio of primary school, high school and university students in fiscal expenditure came out to be 1:36:136. The Chinese government concentrated on increasing vocational high schools, nine-year compulsory education and on-the-job adult education that cost comparatively less while decreasing the number of university students.

North Korea is also facing somewhat similar problems. The percentage of high school attendance by the education population in both North Korea and China still remains around 10 percent, showing difficulties in training qualified human resources required for their economic development. In order to overcome this situation, China introduced market mechanism such as the introduction of private universities making students pay expensive tuition fees to increase higher education without further aggravating the burden on the state. North Korea, which has not adopted market mechanism, still adheres to the state-supported higher education system. This has become a major problem in fostering qualified human resources together with the long period of military service for high school graduates.

To reduce the direct burden on the state and increase opportunities for higher education of university students and discharged soldiers, North Korea began increasing factory colleges, farm colleges and fishery colleges that serve as work-study educational institutions. While advanced countries including the United States increased private universities to make higher education available for everyone and expanded adult schools, China (before opening) and North Korea have adhered to regular national universities and on-the-job adult education without private universities. However, adult education in the workplace had many limitations that hurt the quality of education and efficiency.

#### Theory of Combination of Education and Production and Theory of All-Round Development of the Human Being

Socialist education emphasizes the Marxist theory of all-round development of the human being. This theory can be explained as the following: "In the capitalist production system, division of labor is highly developed and workers are confined to narrow areas of simple work. Education only exists as a tool for teaching control to the offspring of capitalists, while teaching workers' offspring basic skills fit for restricted labor. As the system of labor division changes due to industrial development, change of major industries and methods of production, workers with simple skills cannot adapt themselves to new systems. Workers are alienated from their workplace and they lose their ability to become all-rounded. Therefore, the socialist regime should overcome the alienation of workers on account of division of labor and change of industry, fostering all-round technology human resources who can understand the actual production process and relate it to theory. The combination of education and production is imperative."

North Korea valued the "combination of theory and practice" and the "combination of education and labor," which have become principles of North Korea's educational theory. The educational system in North Korea formed a close relationship with the economy and changed accordingly; experience-and-practice, field experience and mobilization were emphasized in the curriculum. This tendency grew as the demand for mid-level engineers rose and educational institutions responded to the demand. In the same context, science and engineering colleges were promoted in North Korean universities and the distribution of college majors resembles that of industries.

The strengths and weaknesses of North Korea's educational system can be taken from the perspective of the case of China before and after the economic opening in the early 1980s. China also emphasized the combination of education and production, reorganizing universities into colleges and subdividing majors to correspond to economic policy centering on heavy industries. It is true that this system contributed largely to fostering the large number of human resources needed in the field over a short period of time by focusing resources. However, after the introduction of the market economy, problems such as overlapping investment, low efficiency and lack of understanding of related studies and lack of analytical ability of graduates surfaced. Therefore, in the 1990s, China reduced the number of majors and integrated colleges back into universities.

Recently, North Korea has upgraded *Koryo Sunggyungwan* into the level of university, reorganizing the structure of majors at different universities and developing about 20 central universities. In addition, the public opinion that excessive labor mobilization of students deteriorated their scholastic ability led to a decrease in mobilization of labor from regular universities and upgraded a considerable number of junior colleges to colleges. Nevertheless, compared to China, these reform measures alone are limited in fostering qualified human resources necessary for developing high technology industry, reform of industrial structure and technological renovation.

#### D. Characteristics of North Korea's Science & Technology Policies

As shown in the earlier sections, the development of North Korea's science and technology policies was affected by economic strategies, technology innovation theories and education systems. Of the economic strategies, the priority on heavy industries and self-reliance policy had a large influence. Of the science and technology policy, research on heavy industries centering on the mechanical industry, research needed for developing and utilizing domestic materials, fuel and energy were emphasized.

In terms of technology innovation, the theory of combinating of research and production, mass technology innovation and Juche technology revolution were influential. National research institutions such as the Academy of Science carried out research activities focusing on on-site research that could be applicable to production. State-founded education, the work-and-learn system and the theory of the combination of education and production affected the educational theories. However, it also raised the financial burden on the state and impeded quantitative expansion, resulting in the increase in higher educational institutions such as factory colleges, farm colleges and fishery colleges. On-site experiment and practice were emphasized curriculum-wise.

These elements affect not only science and technology, but also economy and education. Generally, there is a very strong connection between economic strategies and science/ technology policy; in addition, the education system strongly affects the distribution of majors, curriculum and research at universities (which are closely related to fostering science and technology human resources). In particular, the priority on heavy industries, the self-reliance policy and the theory of combination of education-research-production theory exerted strong influence over science and technology, and economy and education, serving as a linkage between them.

### 2. The National R&D System and the S&T Human Resources Training System

#### A. The National R&D System

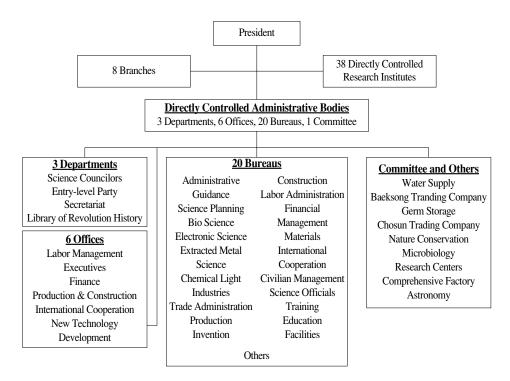
#### 1) Research Institutions

In North Korea, the Academy of Sciences and the Academy of National Defense conduct research at the national level. In addition, research institutions under stateowned enterprises and university research centers carry out R&D activities.

Compared to the former Soviet Union and China, North Korea is small in land size and population, and the centralization of power resulted in few research centers under local governments, except for the agricultural industry. Thus, research centers under the Academy of Sciences direct the research centers under production departments or conduct they research needed by enterprises on their behalf. The regional branch research centers of the Academy of Sciences conduct region-specific industrial research.

The Academy of Sciences took over the functions of research planning, administration of science technology and international academic exchange when the National Committee of Science and Technology was dismissed in 1998. However, the Academy of Agricultural Science, Institute of Medical Science and the Nuclear Research Center carry out relatively professional research and technological guidance under the supervision of corresponding administrative departments. However, university research centers are not very active, except for a small number of top universities.

# <Figure 12.1> The Administrative Organization of the North Korean Academy of Sciences



Notes: 1) The Weather Bureau is managed as an independent organization.

2) Although the Central Information Agency for Science and Technology was placed under the Academy of Sciences, it still operated independently.

Source: Department of Science and Technology.

Figure 12.1 shows the central administrative structure of the Academy of Sciences. There are three departments, six offices, 20 bureaus and one committee. Research institutions are arranged into eight branches and 38 direct controlled research institutes. The House of Science Councilors is in charge of science and technology policy, the Department of Science Planning in charge of research planning, the Guidance Office of International Science Affairs and the Department of International Science and Technology Cooperation are in charge of overseas exchange, and the Guidance Bureau of Biology, Guidance Bureau of Electronic Appliance Science, Guidance Bureau of Extracted Metal Engineering and the Guidance Bureau of Chemical Light Industries in charge of technological support for manufacturers.

Special features can be found when comparing the central administrative organization of the Academy of Sciences to the National Committee of Science and Technology in 1998 before their integration. Before the integration, the central administrative organization of the Academy of Sciences consisted of the Guidance Bureau of Science Technology, Guidance Bureau of Natural Science, Bureau of Science Exchange, Office of Information Planning, Training Center of Science Technology Executive Members, Scientific Apparatus Production Center, factories and trading companies. After the integration, it can be seen that policy making, administration, planning, the international academic exchange and the researcher status evaluation have been reinforced.

Technological guidance has also been greatly reinforced. The Technological Guidance Bureau at the Academy of Sciences is different from the Chinese Academy of Sciences. Bodies relevant to the Chinese Academy of Sciences are the Bureau of Basic Research, Department of Life Science and Biotechnology, Department of Resource Environment Science Technology, and Bureau of High Technology Promotion and Corporation, which are mostly concentrated in basic research and high technology research. The North Korean Academy of Sciences follows the industrial structure of North Korea's key industries.

This may be due to the fact that the Chinese Academy of Sciences focuses on the basic science and high technology research, whereas the North Korean Academy of Sciences concentrates on technological support for production sites. Therefore, research institutions in China are operated around undergraduate programs, but North Korean research institutions tend to follow production technology.

#### 2) Characteristics of North Korea's Academy of Sciences

One of the major differences between North Korea's R&D system and that of other socialist countries is that the concentration of effort and the support of production sites on the part of the Academy of Sciences are especially great. The North Korean Academy of Sciences has guided and conducted most of the nation's research with its affiliated research centers, and the research activities performed by universities and enterprises can be found only occasionally. Such characteristics are found when anatomizing the research organization of the Academy of Sciences.

According to the reform process and recent research outcomes, there are about 92 research institutes. Although accurate data are not available due to the merger and integration of research institutes, research institutes in North are similar in number to the institutes under the Chinese Academy of Sciences. North Korea, with smaller population, land, and economy has an equal number of research institutes under the Academy of Sciences.<sup>7</sup>

Table 12.2 shows the classification of research institutes by the Chinese

Academy of Sciences into six different areas, mathematics and physics, chemical engineering, geology, biology, engineering science and others.

The North Korean Academy of Sciences is behind the Chinese Academy of Sciences in the basic sciences (math and physics). However, North Korea is stronger in the field of engineering science. It is because North Korea's Academy of Sciences conducts research closer to production sites, leading to subdivisions of research areas and more research centers.

Emphasis on production sites can be reaffirmed by the distribution of subdivision of majors. In the field of geology, the Chinese Academy of Sciences has extensive research subjects such as earth science, geology and geography, but the North Korean Academy of Sciences tends to focus on resource exploration, which is directly related to the supply of industrial raw materials. The same trend can be seen in the field of biology. Whereas the Chinese Academy of Sciences follows the latest trend in genetics and cytology, the North Korean Academy of Sciences centers around areas necessary for food supply, such as agriculture, livestock and production plant.

Poor conditions of the research centers under the Department of Production and local governments come from the close relationship between the production site and the Academy of Sciences. In the case of China, there are only 115 research institutes under the Academy of Sciences, but research institutes under the production sector and local governments number 7,000. With the introduction of market mechanism, corporate research centers reached 11,237 in 1999.

In contrast, North Korea only has 300 research institutes around the country and corporate research institutes are in poor conditions. Hence, the support of production sites by the Academy of Sciences is emphasized. The Chinese Academy of Sciences has placed, or transferred the control of, applied technology laboratories under enterprises and changed the structure so as to accommodate basic sciences and high tech-

(Unit: %)

Classification	Math Chemical Chemical G Physics Engineering		Geology	Geology Biology		Others	Total
North Korea	2.5	15.0	10.0	25.8	41.7	5.0	100
China	20.0	13.3	12.5	25.0	26.7	2.5	100

Source: 2000. Yearbook of Chinese Academy of Sciences, pp. 8-13.

<sup>&</sup>lt;sup>7</sup> When the Medical Science Academy and Agricultural Science Academy are included, the number of research centers under the North Korean Academy of Science outnumbers the Chinese Academy of Sciences.

nology sciences. It is a general understanding that the North Korean Academy of Sciences should pursue a similar reform process.

#### **B.** Major Research Projects

#### 1) Changes in Major Research Projects

North Korea's research projects have been developed gradually in accordance with the national economic development plan. Various policies related to economic development such as the priority to heavy industries, self-reliance policy and the popular technological innovation theory have been reflected in the research and development policy until today. Selection of research projects is also made within this framework. North Korea's major research projects in the chronological are as follows.

Right after the 1945 Liberation, North Korea concentrated on basic research, restoration and the fostering of engineers to normalize factories and enterprises built by the Japanese. In the 1950s, the national research project was launched as part of postwar restoration along with creation of industrial basis and the establishment of the Academy of Sciences. At the meeting of scientists in April 1952, Kim II-Sung raised issues about major research projects, claiming that metal engineering should include improvement of smelting furnaces, improvement of the quality of special steel and localization of fireproof bricks. He also mentioned that the mechanical industry should focus on precision machinery, instruments and tools for weapons production. In chemical engineering, research on production of bombs, coal liquidation, usage of carbide, electric insulating materials, paints, plastics and synthetic rubber were highlighted. Nationwide geological research, exploration of usable minerals and hydraulic engineering research was included in the field of resource engineering; reclamation of tideland and research based on stockbreeding, marine products and forestry were chosen in the field of agriculture.

During the industrialization of the 1960s, North Korea's major research areas included coal chemical research, research on the gasification of anthracite appropriate for North Korea's coalfields, studies of independent iron manufacturing methods to substitute coking coal, studies of special steel, research on large oxygen separators, the self-supply of fertilizers, research on improving the level of production and automation of industrial machinery, high-voltage compressors, electric railways, and studies of the establishment of the basis for radio engineering and electronic engineering. Due to the emphasis on self-reliance, the usage of anthracite, which is abundant in North Korea, became a key research area.

During the 1970s, North Korea was faced with a shortage of raw materials, fuel and energy sources. Thus, the following areas became important: automation of mining equipment and large-scale, electric, high-speed transportation method, gasification of anthracite, efficiency in power generation, steel manufacturing method to use less coking coal, production of steel using lignite and spectrum, increased vinylon production, industrialization of synthetic rubber production, construction of chemical industrial complexes, production of composite fertilizer and salt production. In addition, research related to the automation of various instruments, establishment of large conglomerates and their stable operation received much attention, with the Six-Year Development Plan and the Three Technological Revolutions designated as essential to building the socialist economy. Research to foster light industries such as textiles, which had been neglected due to the focus on the defense industry, was strengthened.

The emphasis on the independent technological revolution grew as a independent, modern and scientific economy was promoted in the 1980s. As a result, major research tasks were selected to satisfy the needs of the people's economy and the ideological, technological and culture revolutions, responding to the socialist revolution and production demands as well as developing the basic science.

North Korea's main research tasks in the 1980s included studies of utilizing domestic raw materials, fuel and energy resources. Due to the policy of internalizing 60-70 percent of industrial raw materials, a vast range of research studies were carried out that contained the development of chemical industry using anthracite, the production of ammonia by coal gasification, research based on carbon chemistry, development of new plastics using methanol and carbide, industrial production of synthetic rubber, production of potassium fertilizer, and increased production of fertilizer.

Researches on alternatives for the synthesis of raw materials and fuel that were domestically unavailable or scarce were conducted broadly. Studies on the design of 3,000 and 5,000-meter drilling machines to explore usable minerals such as coal or iron ore were carried out alongside aerospace exploration. Concentration and transportation technology, and production and refining technology of high value-added magnesite and rare earth elements were sought vigorously to increase the quality and the amount of nonferrous metal. A tremendous amount of effort and energy was invested for decades to substitute coking coal with anthracite to accomplish independent steel making capabilities. Oil exploration projects around the west coast of North Korea were pursued on a continuous basis.

The importance of self-supply of raw materials and fuel rose increased due to the priority given to raw material production over the manufacturing industry. With the lack of raw materials since the 1970s resulting in the deterioration of the operation capacity of the manufacturing industry, North Korea concentrated on resource development, metal, transportation and electricity industries. North Korea especially emphasized the increase of coal production as the basic target for the normalization

of the industrial system. Many research centers sought ways to increase the production of coal and effectively transport coal.

Policies to foster heavy industries and eliminate labor disparities of labor led to efforts for mechanizing indigenous production facilities. As the mass production of machine tools campaign shows, research on the expansion of mechanization, automation, robotization, and computerization of production process was promoted extensively. Those researches are as follows; study on large and high-speed precision mechanical equipments, creation and production of various effective mechanical equipments, development of oil pressure element of mechanical engineering, improvement of the quality of cutting tools and machinery facilities, development in the field of electronics engineering and automatic engineering, mass production and quality improvement of integrated circuits, semiconductors and computers.

Moreover, automatic machines such as computers and terminals were put into production and high technology was applied to production and business management. North Korea developed cytology, biotechnology (insulin, plant growth accelerator, hepatitis vaccine), laser technology and low temperature plasma technology to catch up with global trends. Since 1988, North Korea twice established the Three-Year Science Technology Development Plan, trying to nurture electronic engineering, biology and thermal engineering. These facts show how North Korea tried to deal with the intensifying food shortage and lack of fuel and raw materials through the extension of the independent science development and the digital technology revolution.

In electronic engineering, research on electronic devices, large-scale integrated circuits, computers, NC production tools, automation devices, robots and fiber textiles were actively utilized. Agriculture, stockbreeding, the usage of marine materials, cytology and genetics were the center of biological research to find solutions for food shortage; development of superior breeds, protein feed and sea cultivation received particular attention. Utilization of low-heat value coal, solar system, wind power and the supply of heating and gas to regional cities and rural areas were research topics for thermal engineering. In addition, construction and normalization of large-scale heavy chemical industry complexes such as Suncheon Vinylon Union Enterprise and Sariwon Kali Fertilizer Union Enterprise were promoted as national goals.

In 1988, the Long-term Science and Technology Development Plan by 2000 was formulated to foster seven high technology areas, electronics, IT, bioscience, new materials, energy, maritime, meteorology and nuclear power, as seen in Table 12.3.

North Korea has focused on the research issues of advanced countries including biotechnology, new materials and energy, while increasing the number of research institutions that can carry out high technology science. With the fall of the socialist bloc, however, North Korea's high technology research, except for some defenserelated areas, was mostly suspended, resulting in the redirection of major research issues.

Kim II-Sung set three years from 1993 as a buffer period. The policy direction during this period gave priority to agriculture, light industries and trade. Major strategies were set up for the development of the coal industry, electricity and railway transportation, as well as the steady development of the metal industry. These strategies continued even after the death of Kim II-Sung as his dying injunctions. North Korea's Academy of Sciences Report No. 4, published promptly after Kim's death in 1994, emphasized his science and technology achievements during his life and called for the completion of research issues shown in Table 12.4.

It is clear to see that research for the development of basic industries such as coal mining, electricity, metal and transportation was spurred to support agriculture, light industries and trade. Emphasis on high technology such as electronic engineering and new materials in the late 1980s was nonexisitent. This is the part that shows North Korea's hardships during the period of the "March of Suffering" and how the science and technology circle responded. The Academy of Sciences Report No. 1, published in 1998, reports the same.

Subjects	Issues	Goals
Electronics	<ul> <li>* Semiconductor: development of 16 &amp; 64 MDRAM</li> <li>* Ability to make personal computers</li> <li>* Materials and electronics parts: 80% to be domestic</li> </ul>	Achievement of the levels of advanced countries
IT	* Construction of nationwide information network * Total computerization of economic policy	Creation of information society by the year 2000
Bioscience	<ul> <li>* Livestock: Development of breeds with fecundity over 50%</li> <li>* Application of animal cell fusion technology to production</li> <li>* Artificial increase of fruits, plants, herbs</li> </ul>	Fulfillment of need and product export
New Material	<ul> <li>* Superconductive components, VLSI for industrial use, high efficiency magnetic materials for internal combustion, precision magnetic materials (80% domestic)</li> <li>* Metallic and high-intensity resin materials, alloy of metal and resin</li> </ul>	Development of new materials and high-tech materials
Energy	<ul> <li>* Development of solar battery and hydrogen energy technology</li> <li>* Improvement of CO2 laser output (10-20 kW level)</li> <li>* Development of plasma processing, surface treatment, adhesive tools</li> </ul>	Industrialization of semiconductors and laser
Maritime, Meteorology	<ul> <li>* Development of deep-sea resources, underwater exploration and gathering</li> <li>* Antarctica: dispatch of advance party</li> <li>* Development of big technology, such as aerospace and satellites</li> </ul>	Entry into big technology area
Nuclear energy	* Effective use of uranium resource * Atomic fusion at normal temperature	Balanced supply of energy

<Table 12.3> Research Goals for Science & Technology Development by Year 2000

Source: Kim, Byung-Mok, Byung-Ghee Lim and Jang-Jae Lee. 1992. "Science and Technology Policy and Development Plan of North Korea." *Science and Technology Policy*, p. 44.

Subjects	Major Research Issues					
	* Normalization of production of fertilizer and farming machines					
Agriculture	* Development of new high-efficiency fertilizer and pesticides, research for higher soil fertility					
	* Development of breeds with fecundity					
	* Maintenance and modernization of light industry facilities, such as textile, shoes, daily					
	necessities					
Light industries	* Normalization of synthetic fiber, compound resin, dye production					
	* Development of new raw materials for light industries					
	* Improvement of processing technology for agricultural and marine products					
Trade	* Research to improve quality and variety of products					
Trade	* Improvement of rate and capacity of shipbuilding					
Malar	* Research on ways for effective, reliable way to explore					
Mining and excavation	* Maintenance and modernization of mining instruments and mining methods					
Fleetsisite	* Reduction of construction time of power plants and improvement of facility safety					
Electricity	* Improvement of efficiency, minimization of loss of transmitted power					
Metal	* Reduction of time in steel making and development of new metallurgy methods					
Metal	* Diversification of steel products and increase in production of secondary metallic products					
	* Production of freight trains, increase of large freight trains					
Transmontation	* Improvement of strength and life cycle of railway and rail ties					
Transportation	* Improvement of transportation capacity and efficiency through rational management of train					
	service					

<table 12.4=""> Major Research during the "March of Suffering"</table>
------------------------------------------------------------------------

Source: Data is drawn from Report No.4 of the North Korean Academy of Science (1994).

Due to the government's emphasis on agriculture, light industries, trade and basic industry, professional research centers also enhanced research in those industries. For example, research on agricultural topics such as the production of fertilizer and pesticide, research on light industry topics including vinylon, urea resin, dyes stuffs and adhesives, and research on basic chemical products including acid and alkali were highlighted in the field of chemical engineering. Research topics in biological studies included the development and reproduction of superior breeds that consume less feed and yield more production, diversification of feed materials, prevention and treatment of cattle diseases, fish farming technology, mushroom cultivation, double-cropping, microbial fertilizer and biological pesticides.<sup>8</sup>

Furthermore, over 5,000 medium-sized power plants were built until 1988 to alleviate the shortage of electricity and set up the self-supply system by region. As a result, research centers conducted research on remodeling electronic motors into power plants, on raising the efficiency of power generation and on construction of

<sup>&</sup>lt;sup>8</sup> Chemistry and Chemical Industry, 1998(1), and Biology, 1998(1).

#### <Table 12.5> The Five-Year Science & Technology Development Plan and the Key Areas of High-Tech Development

Subjects	Major Research Issues						
Electricity	* Maximization of power generating capacity and construction of power plants						
Electricity	* Energy-saving technology, reduction of loss of transmitted power						
Coal	* Construction of tunnels, enlargement of coalfields						
Coal	* Modernization of equipments and mining methods						
	* Increase in production of iron ores, improvement of quality of magnesia krinka & fire-						
Metal	resistant materials						
	* Steel making by oxygen-added heat treatment process						
	* Improvement of quality of electric locomotive traction motor, development of modern						
Railway	electric locomotive						
	* Computerization of transportation system and control						
Light industries	* Improvement of productivity and quality of primary consumer goods						
	* Seed innovation, potato farming revolution, double-cropping						
Agriculture	* Development of microbial fertilizer and biological pesticide						
	* Development of superior breeds and modern fish farming						
Land management	* Scientific method of land management and forest development						
High technology * Development of electronic engineering, biology, thermal engineering, and new material							

Source: Data is rearranged from 2000 Report No.1 of the North Korean Academy Science.

small-scale dams. Moreover, studies of finding new sources of energy such as wind power, solar power and tidal power were actively made.

From 1999, after the March of Suffering and the launch of strategy of building a strong and prosperous nation, high technology research once again become important. Prime Minister Sung-Nam Hong elaborated on this in his congratulatory speech at the National Convention of Scientists and Engineers in early 1999 on the full execution of the Five-Year Science Technology Development Plan and the Key Tasks of High Technology Development. Specific details are unknownß, but it can be deduced from Hong's speech and articles on the Academy of Sciences Report No. 1 of 2000 that the topics in Table 12.5 have been pointed out.

Although basic problems such as raw materials, fuel, energy and food attracted the foremost attention, research on high technology areas including electronic engineering, biology, thermal engineering and new materials have slowly been regaining popularity. Nonetheless, as was the case with high technology research in the 1980s, the general research conditions and standards, except for national defense and computer programs, do not seem to be favorable. This is due to their continuous emphasis on the conventional methodologies even in high technology research, such as the revolutionary spirit based on self-support, popular technological innovation and the infusion of revolution and proletarian mindset into scientists.

#### 2) Characteristics of North Korea's Research Subjects

Dividing North Korea's main research subjects into periods, we can generate the areas that were of continual focus since the 1945 Liberation, that were accentuated over different periods and that were the subject of high technology of the 1980s.

Subjects that had been continuously carried on since the 1945 Liberation contain research based on the self-supply of fuel mainly using coal, basic material industry, strategic industry, mechanical engineering and agriculture. Research based on the modernization of the transportation system was also emphasized from the early 1970s. Chronic shortage of raw materials, fuel, energy and food due to the priority to heavy industries and self-support policy have been reflected in the selection of major research subjects.

The electronics industry in the 1960s and 1980s and light industries in the early 1970s and 1990s have been targets of intensive research. The electronics industry was emphasized in the promotion of socialist industrialization, high technology and the technological renovation of traditional industries. Much effort has been put into supplying materials for the automation of traditional industries. The light industries were important especially in the early 1970s when the production of daily necessities decreased due to the development of national defense and heavy industries. Period-specific research focused too much on normal operation of factories and accomplishment of production goals, leading to a lack of high-quality research.

Bioengineering, new materials and laser technology from the late 1980s, program development-oriented computer technology, solar power development and wind power development from the 1990s are examples of high technology research topics. Yet these research projects were considerably depressed during the March of Suffering in the 1990s, with only computer programming continuing. Lack of equipment and mobilization of research organizations to resolve the national crisis impeded the progress of high technology research. Nevertheless, studies related to the high technology areas have recently seen attentionagain.

#### C. Management of R&D Policy

#### 1) Execution of R&D Policy

North Korea's research projects are under legal obligation, which makes it a must for all scientists to fulfill their tasks. Accordingly, teams are organized and research equipments is provided following the approval of the research plan; the progress of research and the production adaptability of research are periodically checked. Supply of goods is being reported quarterly and monthly to the National Planning Committee based on the alternative business plan.

However, such legal obligation suppresses creativity and challenging the spirit of the researchers. Manufacturers hesitate to apply research results to production; they only select research plans that are feasible to avoid legal responsibility or include research that has already been accomplished into plans over a number of years.

With the lack of research instruments, researchers tend to focus on theoretical research or imitate foreign literature. During this process, conservatism in research became prevalent. Due to the organizational system, older-generation chief researchers and planners have absolute authority; the only way to solve this problem to adapt new technologies and materials is to replace them.

Manufacturers showed a rather negative attitude toward the adaptation of research output in production for fear of risks from introduction of immature technology. This trend intensified as technologies adopted immoderately during the 1970s started to cause various major disasters. As a result, the North Korean government is trying to avoid direct adaptation of research output from the laboratories by setting intermediate test factories at research centers and encouraging them to come up with results that are close to the field reality.

Research incentives are mainly in the form of intangibles such as medals and titles; the logic is that in a socialist state, the people are leaders of technological innovation and incentives should be given in the socialist way. Excessive material reward has been criticized for bordering on the revisionist line.

Recently, however, incentives are reformed into material prizes to inventors. Offering a part of profits as incentives from surplus earnings made from research is also another way of rewarding scientists. Research outcomes are first reported to the deliberative council of the research center on to the Academy of Sciences. If the result satisfies the requirements, medals and an invention patent are given to the inventor along with grant from the research center. The grant amount is around 20-100 percent of the inventor's salary.

Results that have high technological value are being reported to the superior authorities, which give invention patent, medal and grant amounting to 20 percent of the profit from the invention. Grants are also given to those who suggest ideas for rational factory management that have been approved by the Factory Technology Personnel Deliberative Council. The grant amount is known to be around 15-20 percent of the profit increase due to suggestions.

Kim Jung-II once stated: "Giving money and prizes unsparingly to outstanding scientists is only natural." As a result, material encouragement for the research outcome in specific fields is rising and a considerable amount of resources have been invested to improve the living standard and the working environment of researchers.

#### 2) Storming Corps of Scientists

A form of mobilizing selected groups of outstanding manpower for important national projects has appeared in recent days, which is different from top-down designation of research plans to research centers. In China, the former is called the Regulation Management System and the latter is named as the Target Management System. The target management system of most socialist states is concentrated in the national defense field, such as aerospace engineering and aeronautics. In contrast, the North Korean government is dealing with its target management system with the so-called "Storming Corps of Scientists" to accomplish important scientific tasks surfacing during economic development.

North Korea's "storming parties of scientists" consist of experienced and professional scientific researchers from different production fields, research centers and companies. They were sent to important production companies and construction areas to solve technological problems in a short period of time. Representative storming corps of scientists currently in action are the February 17 Corps of Scientists and Technicians established in February 1978 and the April 15 Technology Innovation Corps of Scientists formed in October 1980.

The February 17 Corps of Scientists and Technicians were made up various scientists and engineers from different fields related on-site research Generally, they are sent to large factories or construction areas for national projects.

The East Coast Floodgate construction is one prime example. It was an extremely difficult task since the distance of both banks measured more than 8 km and the depth of water measuring tens of meters. Nevertheless, scientists helped builders to finish this gigantic construction within five years by utilizing effective construction methods and building an adaptable science-technology database that was verified through thousands of experiments.

The April 15 Technology Innovation Corps of Scientists were reorganized and expanded from the May 19 Technological Innovation Storming Corps in December 1979. Consisting of actual field workers from factories and enterprises, the group aimed to lead popular technological innovation. Their role in introducing valuable inventions and ideas on production sites was substantial. Yet, in general, these groups tend to stop at being abstract slogans or to be absorbed in the areas of interest to the nation's leader. Lately, the "storming corps" have been unable to perform due to the lack of research equipment available.

3) July1 Economic Adjustment Measures and Emphasis on the R&D System

Recently the North Korean government started to drive forward exceptional policies such as reforming foreign exchange, price and wages as well as the creation of the Sinuiju Special Economic Zone. Such policies can result in increased research income, improved work environment and a differentiated wage system that can elevate the status of scientists and increase their research development investment.

Moreover, the increase in autonomy and incentives could increase the industrial demand for technological innovation and research on consignment for excellent research centers, leading to active technology exchange and a de facto semi- or self-supporting accounting system of applied research institutions. Consequently, responsibilities for research tasks, mobility of researchers and research center startups can be actualized along with the open-door policy for outstanding research centers and outside projects based on practical benefits.

Nonetheless, from the perspective of sustaining socialism, large expansion of technological innovation through market mechanisms or high technology cooperation in the short run is unlikely. Due to the poor research conditions at enterprises, research centers that lack self-support measures are expected to concentrate on national projects. On a more positive note, the economic reform of socialist states has always begun from reform of the scientific and technological system, thus leading to other areas. Although it takes a certain amount of time for reform, North Korea has adhered to the scientific and technological reform, and North Korean research centers are now closer to production sites than Chinese research centers. As a result, it is possible for North Korea to drive additional technological reform in the near future, which could lead to an open-door policy.

#### D. Training System of Science & Technology Human Resources

#### 1) Scale of Upper Education

While South Korea managed to follow a gradual process of developing from traditionally manual manufacturing to light industries, the chemical industry and the knowledge industry, North Korea concentrated on driving forward their heavy industries-first policy and self-support policy thanks to backing provided by human resources from universities. Moreover, these policies were without a proper foundation for basic human resources cultivation or an efficient secondary education system. Consequently, North Korea experienced a serious shortage of intellectuals (that is, technicians, engineers and designers throughout the early industrialization period) and programs to foster scientific engineers quickly created problems that have lasted until the present.

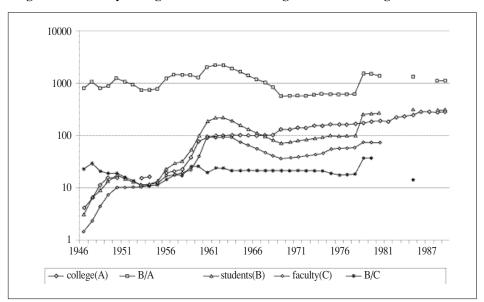
Figure 12.2 shows the change in the number of universities, students, the ratio of students per professor and the average number of students per university.

The number of universities, students and the average number of students per university increased in the late 1950s and early 1980s. Figures illustrating students per

professor slightly rose in the early 1980s but decreased in the mid-1980s. The number of universities increased between the late 1950s and early 1960s owing to the expansion of regular and industrial universities in order to supply their technological human resources. As a result, the average number of university students and the number of students per professor in 1963 reached 2,229 and 23.2, respectively, with 96 universities and 214,000 university students. Kim Il-Sung decreased the number of students by 20-30 percent and increased the industrial universities, as the fiscal burden from subsidies to universities grew large.

In the 1960s, the number of students decreased while the number of universities came to a standstill. The decrease in regular university students, together with the twin development of economy and national defense policy, raised the number of students joining the army, althought Kim Il-Sung once claimed that it was the women who were in charge of farming in the absence of young workers.

The reason for the increase in the number of universities from the early 1980s was the expansion of regular and industrial universities to "intellectualize" all North Koreans and the reorganization of senior technical schools into three-four year colleges from the mid-1980s. Meanwhile, the number of students per professor decreased upon the large increase of irregular universities and colleges. Ordinarily, reorganization of technical schools was expedient to simply increasing the number



<Figure 12.2> Yearly Changes in North Korea's Higher Education Organizations

Note: The unit of number of students is 1,000.

Source: Han, Man-gil. 1998. Research on Status of North Korean Education, pp. 58-59.

of colleges to catch up with the number of colleges in South Korea. As a result, the standard of college education in North Korea was very low.

As of 1996, there were 286 universities and 310,000 students in North Korea. Dividing them into groups, we can come up with three universities, 183 colleges, and about 100 different factory, agricultural and fishery colleges. The average number of students per university was up to 1,084, only about 11.5percent of that of South Korea. A small number of university students can be explained as a common phenomenon in socialist states, where the advantage of scale efficiency is not treated importantly. Even the average number of university students in China remains below 3,000. What is more, the average number of college students in North Korea is decreasing due to long-term military service and the specialized colleges only accept a limited number of students.

The scale efficiency of universities can be used as a measurement for showing how effectively educational budget is used. According to many researchers, U.S. education fees per capita were the lowest at an average of 5,000 students per university. South Korea recorded its lowest between 7,000 and 10,000. China, once in a similar situation with North Korea, also recorded its lowest at 10,000 in a recent study.

Having recognized these facts after the open economy policy, China's Ministry of Education integrated small colleges into universities and began increasing the average number of university students. Consequently, the number of university students exceeded 3,000, which some years before had only been 2,000. From this, we can see that North Korean education fees are being used very ineffectively, as the average number of students only amounts to 1,084. Even the total number of students totals less than 10 percent of South Korea's 3.36 million (in 2000). The percentage of university students to the total schooling population amounts to less than 10 percent, which tells us that the higher education system is still only for the elite. With the government bears all costs of education, budget burdens on the state due to increasing students remains a big problem for North Korea.

#### 2) Distribution of Science and Technology Majors

North Korean universities consist of three universities, 183 colleges and 100 different specialized colleges. Key senior officials are educated not only in the three universities (Kimilsung University, Kimchaek University of Technology and Koryo Sunggyungwan), but also through 20 other universities directly managed by the Ministry of Education. Colleges train professional human resources needed for specialized production fields and the factory, agricultural and fishery colleges can be seen as a vocational higher education institutions.

Whereas South Korea mainly has universities, socialist states mostly have col-

leges. As a direct result of the comprehensive technical education theory, North Korea trains human resources that can be put straight into production sites following graduation. Thus, colleges and majors are highly specialized. China also reorganized its education system in 1952 by breaking up universities into colleges that focused on science and engineering.

North Korea has emphasized the specialization of majors from early on. At the meeting of the Political Committee of the Party's Central Committee on November 30, 1966, Kim Il-Sung gave a speech on "developing biology [and] reinforcing the education program of mechanical engineers." He ordered that: "It is important to specialize majors and train professional engineers to raise the quality of human resource development program and develop the machinery industry. Kimchaek University of Technology maintains all majors, while other colleges should specialize in one area. We have to specialize all those colleges to develop industries including the machinery industry. Specializing technical majors is the current trend of advanced countries. It will be better to break down majors of the machinery industry and medical science to improve the quality of education."<sup>9</sup> Accordingly, many majors were specialized in North Korean universities that were reorganized with science engineering college at their center. Accurate statistics on North Korea's education are not available, however the distribution of colleges in North Korea is given in Table 12.6.

The engineering colleges and industrial agricultural, and fishery colleges based on science engineering colleges demostrated the biggest growth taking 18.9 percent and 35.0 percent, respectively, from 11.4 percent and 30.7 percent of all colleges. The ratio of natural science colleges and humanities colleges changed to 25:75 from 38:62, excluding universities, special colleges and remote education colleges. Except for the increase in teachers' colleges, medical schools for obligatory educa-

Year	Univer- sity	Science Enginee ring	Huma- nities	Educa- tion	Medical	Agricul tural		Factory College	Open College	Special	Un- known	Total
1972	1	16	14	29	11	10	5	43	-	11	-	140
1996	3	54	25	33	14	24	7	100	2	6	18	286

<Table 12.6> Number of College-Level Institutions in North Korea

Notes: Special colleges include the Central Party College, Military School and Intelligence Colleges. Sources: KCIA. 1973. *Status of North Korea*, p. 132.

Han, Man-kil. 1998. Research on Status of North Korean Education, p. 70-77.

<sup>&</sup>lt;sup>9</sup> Kim Il-Sung, 1986, ibid, pp. 217-242.

tion and national medical services, together with the supply of party members, almost all colleges were focused on fostering human resources needed for the development of industry, farming and fisheries.

#### 3) Curriculum

The close relationship between North Korea's educational system and production sites is shown in the curriculum. Generally, there are three types of curriculum in socialist states: general basic courses basic major courses, and intensive major courses. Among these, the basic major courses are the most important. The basic major courses and the most intensive major courses are linked to practices that correspond to lectures; professional human resources that can readily adapt to production sites are trained by increasing the ratio of actual practice and knowledge related to majors. Despite North Korean efforts to maintain this characteristic in the educational system, it harbors differences with other socialist states wherein ideology is emphasized in general basic courses due to the influence of the *Juche* ideology.

It is a well-established fact that those human resources learning specialized majors have contributed greatly to North Korea's industrial development. In a smaller-scale educational structure, practice-oriented education is possible and the cooperation of the industry allows high-quality on-site education. Following graduation, students could immediately start working as experienced engineers at production sites that match their majors. The strength of this educational system was seen well in the heavy industries based on the machinery industry.

From the 1980s, as technology grew faster and became more complex, weaknesses in this educational system surfaced. Graduates had narrow views and failed to understand relevant fields; their lack of general analytical ability and problemsolving power disabled them from leading or adapting themselves to the changing industrial structure. This phenomenon was particularly conspicuous in their career change to another field.

It was the Chinese educational sector that first recognized this problem. Surfacing after the opening and introduction of market mechanisms, the Chinese Ministry of Education merged several colleges into universitie, while integrating many majors. North Korea's promotion of Koryo Sunggyungwan College to a university and conversion of 20 colleges into universities are reflections of this trend.

The constitution, educational law and labor law recognize the work-study system. There are two elements to factory colleges: the main section and the management human resources section. Workers who graduated from pre-college and high school could attend the main section, while incumbent managers attend the management human resources part. The curriculum period is five to six years for the main part, four to five years for the management human resources part and one year

#### for the prepatory program.

The Ministry of Education is responsible for the general guidance of the curriculum in factory colleges and the factories; simultaneously, enterprises and administrative departments of the central government are in charge of the compilation and execution of the budget as well as the supply of equipments. There are day and night classes, with final, year-end and graduation exams in accordance with the "regulation for examination in colleges and specialized high schools." Certification of engineering equivalent to the those given to university graduates is given to graduates who finished the course.<sup>10</sup>

#### 4) International Exchange of Researchers

Having little foundation for raising elite human resources after the 1945 Liberation, North Korea sent students abroad to supplement the lack of manpower and to operate factories built by support from other socialist states. According to statistics, a total of 7,258 students went abroad from 1946 to 1972: 5,000 to the Soviet Union, 400 to East Germany, 400 to Czeckoslovakia, 400 to Poland, 300 to Hungary, 300 to China, 50 to Romania, 50 to the Middle East and 10 to Cuba (C.H. Kim 1992, 70-71).

However, Sino-Soviet unrest, the Cuba crisis and China's Cultural Revolution in the 1960s dampened North Korea's relationship with these countries and the emphasis of the *Juche* ideology discouraged overseas study significantly. Students began to go overseas again from the early 1980s, when Kim Il-Sung ordered inflow of foreign technology subsequent to his tour of Eastern Europe in the early 1980s.

From 1980 to 1984, a total of 1,868 students went abroad: 545 to Soviet Union, 498 to Japan, 287 to China, 97 to East Germany and 87 to West Germany (C.H. Kim 1992, 73). However, with the demise of the socialist bloc and defectors increased in the late 1980s, students were restricted to China.

Registration for students going to China started after the meeting with Zhou Enlai, the prime minister of China, on June 25, 1950, where it was decided that 10 students would be exchanged with Poland and Czeckoslovakia, and five students with Rumania, Bulgaria and North Korea. The main purpose was to cultivate diplomatic officials. However, in the case of North Korea, the number of students increased after sending students from Kimilsung University and Heungnam Industrial College to the Beijing University, Tsing Hwa University and Beijing Agricultural College.

<sup>&</sup>lt;sup>10</sup> Lee, Ki-seop. 1994. Legal System of the Democratic People's Republic of Korea (Labor Law), pp.167-169.

From the late 1950s, when the programs were stabilized, North Korea sent dozens of students overseas every other year. The number of students from North Korea was reportedly the second largest under Vietnam, which supported by China. However in 1966, all colleges in China were closed because of the Cultural Revolution; priorities switched to repatriating those students to their mother countries, including North Korean students.

When study in China resumed in 1971, the North Korean ambassador asked for five to six places for North Korean students so that they could learn English and French. With the exchange programs with other foreign countries severed, it was difficult to train young diplomats and interpreters. The Chinese government accepted and six students arrived in Beijing in the winter of 1972. From 1973, regular registration for study abroad resumed and the 46 students who had stopped their study due to the Cultural Revolution returned.

In the early 1980s, students studying in China increased as North Korea expanded the dispatch of overseas students. The number rose to an average of 150. The overseas study program went through hard times such as the collapse of the socialist bloc and the defection of students in the late 1980s, the Tiananmen Square incident and the establishment of diplomatic ties between South Korea and China in 1992. Recently, however, as China emerged as a safe route to send students, the number of students sent to China has risen. At present, 250-300 students are sent to China every year, most of whom major in science and engineering.

On the whole, there were 15 years of isolation between the mid-1960s and late 1980s. This severance is seen not only in China but also in the former Soviet Union and other Eastern European countries.

The problem caused by this severance is too evident in China. The generation gap between scholars produced a lack of dialogue, field of research and depth of research. Especially in the case of North Korea, there were more students in the Soviet Union until the 1960s and China from the 1980s, widening the gap. When those who studied abroad in the 1960s retire, the academic ball would be in the court of those having studied in China.

With this in mind, we have to consider that North Korean scholars who studied abroad have not fully exercised their capability. As a result of the *Juche* ideology and the policy that values on-site experience, those students could not properly utilize the advanced technologies obtained from foreign countries. Moreover, those having studied abroad were classified as anti-regime forces with the coup in the late 1950s, the establishment of the singular ideology regime and North-South Korea confrontation in the mid-1970s, and most of them were relegated. Kim Il-Sung criticized them for learning foreign languages rather than learning advanced technologies; more critically, they were reprimanded for theories and technologies that were considered far from the domestic reality.

#### 5) Characteristics of the Education System for S & T Human Resources

Rapid Quantitative Growth and Subsequent Quality Retardation

The human resources development system in North Korea grew with the heavy industries-first policy. As North Korea maintained a state-responsible educational system without a proper basis, supply was unable to meet demand. To solve this problem, the work-study system was introduced in the form of factory, agricultural and fishery colleges, becoming a main characteristic of the socialist educational system.

The recommendation system for those discharged from military service and those with social experience is another distinguishing characteristic of the North Korean system. In its initial phase, a class-specific system based on proletarian and revolution activities was applied to foster party members. However, the recommendation system was one of the causes linked the low quality of college graduates which also resulted in people avoiding science engineering colleges after long breaks from study, abuse of authority, and avoidance of hiring elite human resources at factories. According to the party-first policy, graduates from science engineering colleges showed a strong tendency to be stationed in party agencies or national administrative organizations.

Factory, agricultural and fishery colleges, which were initially intended to respond to the lack of basis and equipment, stood as another significant reason for lowing the quality of graduates. On October 27, 1973, Kim Il-Sung pointed out to officials in charge of education that the reason why the Big Three Technological Revolutions were not successful was the low level of scientists and engineers.<sup>11</sup>

First, there were few prepared intellectuals to cultivate students after the 1945 Liberation. In particular, this phenomenon was extremely serious in the natural sciences. To solve this, 70-80 percent of college students majored in natural sciences and the rest in social sciences, and many students were sent abroad to return as professors. Yet the students who studied abroad spent significant time learning foreign languages, which took time away from scientific and technological studies. Generally, the quality of students was low to begin with.

Second, material conditions were not enough, even after colleges were set up. More colleges increased the burden on the state, hence making support difficult.

Third, the students' will power for study was very low. Enrolling in college after the military service or social experiences was a challenge for students when catching up with the curriculum; choosing a job that is unrelated to their major further deteriorated their will to study. Due to the lack of human resources, students were sent to

<sup>&</sup>lt;sup>11</sup> Kim Il-Sung, 1986, ibid, p. 405.

farms and mobilized political activities, which hurt their academic performance.

Fourth, the quality of new professors was very low. Most of them were hired right after graduation; they had no research experience in graduate schools, so they taught students with lecture notes from their own student years. Technically, the state placement of graduates can lead to efficient utilization of quality human resources, however in the case of North Korea, superior graduates preferred party organizations and those teaching at colleges were not top quality.

Fifth, officials in educational administration failed in their organizational activities. Kim Il-Sung ordered authorities to ensure that students had time to study, improve educational conditions and to accelerate textbook production and translation work. He also ordered an increase the importation of scientific journals and papers and the expansion college libraries.

Moreover, he ordered that equipment for experiments was to be supplied to superior universities such as Kimilsung University, Kimchaek University of Technology, Pyongyang Medical University, Pyongyang Mechanical University, Agricultural College, Light Industry College and Chemical Industry College. The chronic lack of resources aborted this measure. Idolization of Kim II-Sung, Kim Jung-II and the political ideology class contributed to the degradation of education. The political ideology class was strengthened as it focused on Kim II-Sung taking about one-third of the whole curriculum. This tendency became a huge factor in depressing student will to study and replaced regular curriculum by mobilizing students for purposes other than academia. There were also attempts to reduce the political ideology class through the science and engineering circle, yet the general trend remains unchanged.

#### Increased State Financial Burden

The college structure focused on science and engineering; more precisely, specified majors remain notable features of North Korea's education system to develop scientific and engineering human resources. North Korean colleges are more focused on science and engineering and are more precise than China. This educational system serves is important to North Korea, which has no market mechanism and where the state decides jobs for graduates. College graduates with intense basic major courses and background in experiments and practical experience are one of the strengths of the socialist education system. In the case of China, however, a considerable proportion of scientific and engineering human resources who were educated in such a system are not able to lead industrial restructuring or create new technology in the rapidly changing technology environment.

With college students accounting for less than 15 percent of the entire student population, insufficient human resources for carrying out national projects are fostered. Having only 1,084 students per college in a state-responsible education system, it is difficult to expect the emergence of more colleges without further

burden on the state. Generally, private colleges lead the popularization of higher education, but the expansion of private colleges is only possible after market mechanisms are in place. Even China set the goal to accomplish popularization of higher education by 2010 and started to apply market mechanisms to private colleges.

North Korea declared the popularization of higher education in the 1980s to increase human resources. However, this goal will be useless if it is achieved through the expansion of higher education without ensuring high quality. The popularization of higher education by expanding science engineering colleges in universities is expensive and the current regime does not seem to be eager to promote private colleges. In conclusion, it is almost impossible for North Korea to maintain its present regime and expand human resources needed for economic development at universities.

The Generation Gap between Scientists and Engineers

There is a large gap between students that went abroad in the mid-1960s and after the 1980s. This gap probably became a large obstacle in dialogue, continuation and development of research between the two generations. Before the 1960s, students usually went to the Soviet Union to study, but most went to China in the 1980s, further widening the gap.

North Korea failed to utilize overseas students because the level of domestic colleges was very low. Students were mostly sent to socialist states, overly concentrated in the Soviet Union in the 1960s and in China after the 1980s. Introduction of high technology from advanced countries was not even possible. Furthermore, domestic circumstances put an end to overseas study programs on many occasions, hence delaying continuous academic development and shortening the period of study.

Placing those students at production site-oriented domestic posts was another big problem. North Korea's research system that relied on domestic raw materials due to the self-support and independent economic theory was an obstacle to the introduction of high technology from advanced countries. Those who advocated the inflow of new technology from foreign countries were criticized for disregarding domestic achievements. Those who studied overseas could hardly carry out future-oriented research for new industries or strategic industries to catch up with advanced countries. Instead, they were regarded as revisionists during periods of instability.

## 3. Prospects for Science and Technology Development

#### A. Problems in North Korea's R&D System and Policy

The research system in North Korea has been developed under the strong guidance of the party, but it is riddled with problems, as North Korea, a small country lacking of resources, concentrated on heavy industries. This phenomenon was aggravated as the socialist bloc disintegrated in the late 1980s, which decreased trade, and natural disasters continued year after year. The major problems are as follows.

First, the research system, which is proximate to production sites contributed to problems with the economic system that were later mirrored in the research system. For example, the concentration of the research system due to the priority of heavy industries created an imbalance in the industrial structure and low efficiency. Putting substantial capital and human resources into heavy industries caused imbalance between industries directly related to the shortage of light-industry products like daily necessities for people. The partial sacrifice of the total growth potential hindered economic development and caused discontent among the people. It also caused serious imbalance and low efficiency between different research areas.

Second, too many research organizations are mobilized to solve economic problems. When the state placed priority on trade, agriculture and light industries, most research organizations had to support the policy. Since resources are distributed according to the government plan, research outside the plan was impossible. Thus, research organizations are subordinate to economic reality rather than leading the industry, they are limited to performing the same tasks as factories. North Korea has failed to create new industries and upgrade technology for conventional industries by not using their superior institutions and researchers.

Third, the industrial structure uses resources unsparingly and continues to depend on low-quality research. Generally, socialist economy uses more resources than capitalist economies for lack of the concept of prime cost. North Korea also uses too much energy in electricity, steel and light industries. The promotion of machinery and electric equipments led to high consumption of electricity. The poor quality of technology and domestic resources caused waste in energy. Hence, the North Korean government is building small power plants and developing automatic production technology to mitigate the waste of research resources that resulted from the vulnerable industrial structure.

Fourth, the serious shortage of research equipment and old facilities weakened the self-sustainability of research centers. Due to the nationwide shortage of resources, the long-term plan to develop science technology had been useless, delaying the supply of equipments and facilities to research areas that were not popular. In addition, the outdated printing industry with lack of paper and reference materials impeded the collection of information on high technology and the publication of research outcomes.

Fifth, North Korea lacks technology outlook and analytical capability. To run a national economic plan, the ability to collect and analyze information and the ability to forecast and plan are essential. However, while the industry develops and the amount of information and complexity increases, the standardization of technology, statistical research and information analysis fail to meet the growth. Irregularities such as faking results and ordering more resources than necessary by affiliated organizations took place, due to the avenues left open by the quantity-oriented production goals in place. The self-supporting accounting system and the shortage of resources aggrauated the situation. Ultimately, national projects that started with limited information and a plan stopped short of their goals, incurring losses huge enough to threaten the survival of the national economy and enterprises.

Sixth, low motivation for technology innovation depressed the desire for research for scientists and engineers. In North Korea, the state plans research instead of market mechanisms, hence making technological innovation to meet consumer demand difficult. Enterprises have weak research centers, only concentrating on the accomplishment of production goals and not showing high enthusiasm in technological innovation. As such, the cycles of product change and facility change were too long and manufacturers failed to actively respond to the technological progress being made advanced countries. The emphasis on production sites and the popular technological innovation led to the spread of low-quality technology, which delayed the systematic introduction of high technology and the creation of new industries. Researchers could not fully reflect their specialty in research, losing motivation and creativity.

Seventh, there is a problem in fostering and utilizing science and technology human resources. Science and technology human resources in North Korea are educated under the state-regulated educational system at science and technology colleges. Majors were specified while experiments and practicals and production labor were reinforced. However, the burden on the state was increased by the expansion of free education and fall in efficiency, thus creating problems for quantitative growth of higher education. The work-study education system is ineffective due to low quality of students and the lack of motivation for learning. Students studying abroad are not properly utilized in solving domestic problems.

Eighth, the backward technology due to the *Juche* science and self-support policy is a serious problem. By attempting to fix domestic resources, technology and human resources, North Korea failed to utilize its comparative advantage in international competition, resulting in a large gap between neighboring countries in terms of scale production, factor dependency, division of labor and specialization. North

Korea failed to utilize the chance to catch up with advanced countries in the latter's technology jump, still maintaining low-level heavy industries such as the coal chemical industry. Furthermore, North Korea faced hardships with the collapse of socialist states and natural disasters. The negative growth in the 1990s and the "March of Suffering" are natural results of North Korea's failure to utilize the comparative advantages of its economic system with the research and development system.

#### **B.** Future Tasks for Improving R&D System

From 1998, North Korea stated that it had successfully finished the March of Suffering and had begun the construction of a strong and prosperous nation. Building a strong and prosperous nation translated into the North Korean regime's desire for a new direction for national construction. The basic ideology was to build a socialist nation that was strong in ideology, politics, military and economy; to realize this North Korea would strengthen the party leadership, maintain its ideology, realize military-first politics, and emphasize science and technology.<sup>12</sup>

The core part of the plan was the promotion of science and technology. In 1999, North Korea designated science and technology as the driving force of the plan, demanding scientific engineers to strive. In July 2000, the joint editorial column with the *Rodong Shinmun* stated that: "If the development of science and technology remains as is, it will depress the revolution and socialism will lose its light. Neglecting science and technology means quitting the revolution." The New Year's joint editorial in 2001 reaffirmed that "[North Korea] will create an environment that values science and technology, fanning the fire of technological innovation."

The key tasks of the science and technology priority policy included the technological renovation of factories and enterprises, informationalization based on IT industry and the development of the high-technology industry. Technological renovation of factories and enterprises mean the repair, maintenance and exchange of old facilities and the modernization of production process. This was to improve the situation, which had only been goal-oriented, hindering the development of technology.

The fostering of the IT industry has many goals including technological renovation, informationalization and the creation of new industries. Support for technological renovation includes the automation of facilities and the supply of automation software. Informationalization involves constructing a nationwide network and creating new industries to develop industries related to those goals, such as semiconductors, computers, electronic parts and NC machines.

<sup>&</sup>lt;sup>12</sup> The North Korean Institute of Philosophy. 2000. *Ideology of Building a Strong and Prosperous Socialist Nation*. Social Science Press and Kim, Jae-ho. 2000. *Kim Jung-Il's Strategy of Building a Strong and Prosperous Nation*. Pyongyang Press.

To that end, North Korea built a new Computer Science College and renamed the Electronic Calculator College as the Computer Technology College at Kimilsung University, creating new majors related to IT and expanding elite computer education in middle and high schools. Human resources and development were supplemented at Chosun Computer Center and the Pyongyang Information Center, where innovative IT-related institutes were established, and construction of the *Kwangmyeong* network system – which was to be used in the dissemination of science and technology information – occurred.

China promoted similar projects throughout the 1980s and early 1990s. They supported the technological renovation of factories, developing automatic equipments and software, and accelerating the information industry by building nation-wide wired and wireless networks. In addition, China gradually promoted the development of the computer industry, starting from simple assembly and the production of related parts to production of final products. In the process, many quality professors, researchers and students were associated with the newly created departments in the Chinese Academy of Sciences, the Beijing University and Tsing Hwa University.

The reasons for China's success were the reinforcement of basic research functions of the Chinese Academy of Sciences and universities, the strengthening of market mechanisms related to research management, the spread of technology, human resources mobility and the incentive system. By introducing market mechanisms, universities could receive enrollment fees from increasing students and merge colleges into universities to improve the scope and depth of studies.

Unlike China, North Korea took measures that were limited in carrying out regime reform and systemic reform. North Korea is currently creating high technology research centers, reinforcing research programs and increasing the number of professional human resources within limited boundaries. Although North Korea criticizes the capitalist information industry for layoffs and class division based on wealth, it is argued that North Korea's information industry only succeed when all the people work together under the careful plan of the government.<sup>13</sup> North Korea has attempted to build a strong and prosperous nation by technological renovation alone, still adhering to its ideology and political system.

The evident weaknesses in North Korea's research and development system paired with the human resources development system seem unresolvable within the near future. Moreover, it seems unlikely that North Korea's reform policy would succeed under the current system. Nevertheless, as many researchers point out, North Korea's hardships and new attempts would form positive circumstances for

<sup>&</sup>lt;sup>13</sup> Rodong Shinmun, April 29. 2001. "The Decisive Superiority of North Korean Socialism in the Development of Information Industry."

regime reform and inter-Korean dialogue. The result of the Juche science and selfreliance policy ironically showed that the only way for North Korea to survive and resolve the current situation is to open up and participate in international economic activities.

## References

\*In Korean

- Hahm, Chee-Young. 1992. Understanding of Continuous Revolution Embedded in the Juche Ideology. Pyongyang.
- Han, Man-Kil. 1998. *Research on Status of North Korean Education Management*. Seoul: Institute of Korean Educational Development.
- Kim, Byung-Mok, Byung-Ghee Lim and Jang-Jae Lee. 1992. "Science and Technology Policy and Development Plan of North Korea." *Science and Technology Policy*.
- Kim, Chul-Hwan. 1992. *Research on International Cooperation of North Korean Science and Technology*. Seoul: The Korean Ministry of Reunification.
- Kim, Il-Sung. 1986. *Developing our Country's Science and Technology*. Pyongyang: The North Korean Workers' Party Publishers.
- Lee, Choon-Geun and Kye-Soo Kim. 2001. *The National R&D System and S&T Human Resources Training System in North Korea*. Seoul: Science& Technology Policy Institute.
- Lee, Jung Nam. 1992. *Technological Revolution is Vital Line of Building Socialist Economy*. Pyongyang: The North Korean Workers' Party Publishers.
- Lee, Khee-Sub. 1994. Law System of Choson Inmin Konghwaguk (the Korean People's Republic). Pyongyang: Cultural Science Publishers.
- Lee, Ki-Seop. 1994. Legal System of the Democratic People's Republic of Korea (Labor Law). Pyongyang.
- Lyn, Yie-Fu. 1996. *Chinese Miracle-Strategy of Development and Economic Innovation*. Seoul: Baeksan Publications.
- Park, Chan-Shik. 1991. *Developing Science Technology is Mortgage of Establishing Juche*. Pyongyang: Cultural Science Publishers.
- Shin, Jae-Ho and Tae-Kook Kim. 1977. *Thoery of Technological Innovation in Juche*. Pyongyang: Encyclopedia Science Publications.

\*\* In Chinese

2002. Yearbook of Chinese Academy of Sciences.

## Part IV

# Fiscal, Finance and Commercial Management

## XIII. Public Finance and Fiscal Policy

Deok Ryong Yoon

## 1. The Role of Public Finance in North Korea

#### A. Function of Economic Management

Public finance basically refers to the income and the expenses required for the functions of state. Accordingly, the public financial structure is an important index that shows the orientation of government policy and how a nation defines the role of government. Thus, the public financial structure of North Korea is important in understanding the function and policy direction of the North Korean government.

The concept of North Korea's public finance policy is not very different from that of capitalist nations,<sup>1</sup> in that it procures and expends funds necessary. With a socialist economic structure, however, North Korea's public finance shows different characteristics. In North Korea, the state possesses the means of production; thus, economic units classified as "enterprises" in capitalist societies are treated as subjects of public finance. Other state-run economic organizations and even political organizations are also within the boundary of public finance. Consequently, the size of public finance that has been created and spent for the comprehensive operation of national agencies and organizations accounts for far more than half of the GNP. This

<sup>&</sup>lt;sup>1</sup> Public finance policy in North Korea is defined as such: "To reveal concrete tasks and methods for realizing the principles and direction to financially guarantee the building of economy and national defense, state management, and improvement of the people's life, it concentrates the social net income which the laborers generate on the nation and in a correct manner distributes and uses it. That is based on collectivization which is stated in Article 49 of the Socialist Constitution: •• the rights and responsibilities of the people remain all for one and one for all." See Jin Park (1994), p. 8.

is a notable difference from capitalist public finances. When comparing this public finance structure with the capitalist public finance structure, it is not difficult to understand that economic management is added to general public finance. The additional functions of North Korea's public finance are resource allocation and control.

**Resource allocation function:** Being the sole owner of nation's production, the state becomes the operator of production facilities. As the operator of production facilities and state economy, the government becomes the main body of production and investment plan and sets the plan for resource allocation in tandem with the production and investment plan. Resource allocation is made in conjunction with the public finance plan.

The public finance plan during the fiscal year includes the national budget, the plan for revenue and the expenditure in both "the people's economic sector" and the enterprise economic section. The role of the national budget is to produce and distribute social products through the revenue and expenditure plan. In terms of making a budget for these economic sectors, the public finance plan is established for the production activity of each sector of the economy. For the budgets of the enterprise sector as a subordinate unit, a financial plan necessary for specific production units is drawn. Generally, the duration of budget year is one year, but quarterly and monthly plans are made and given to the enterprise sector.

**Resource control function:** Public finance management in North Korea is called circular control. It is a system that evaluates and controls whether budget execution is carried out in conformity with the public finance plan in the process of supplying funds to agencies and enterprises the state banking authority. It controls the adequacy of budget execution and management so that production, distribution and consumption of social products are as planned. The absolute function of the budget in every process of production is possible because the state owns all of the means of production.

North Korea's public finance covers the management of all available resources in society, including the supply of capital and the use of products for running the economy. Therefore, the movement of resources in relation to the economic policy direction is reflected in the budget structure. This function of economic management can be regarded as an important feature of North Korean public finance.

#### **B.** Function of Economic Plan Implementation

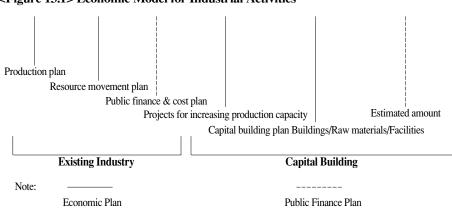
The public finance policy in North Korea is a means to carry out the economic plan. The implementation system for the public finance policy thus has a vertical structure, which has the plan for people's economy at the center and is fleshed out by the basic financial plan of each government hierarchy structure, the financial plan of "the people's economic sector," and the financial plan of agencies and enterprises. Figure 13.1 shows the relationship between the economic plans and budgets.

The economic plan for the economy is decided by the policy goals of the Workers' Party. The State Administration Council (Cabinet) designs the outline for the public finance plan and the financial plan for the economic sector; each governmental agency and organization produces its own financial plan for specific execution. The economic plan presents the state's economy-related goals. In order to achieve these goals, the government and production sectors construct work schedules and necessary financial plans.

These plans signify that all activities related to the production of goods and services and to capital investment are directly controlled through public finance. Once the plan for the economy is decided, the public finance plan becomes the goal of the government's collateral plan execution (Figure 13.2).

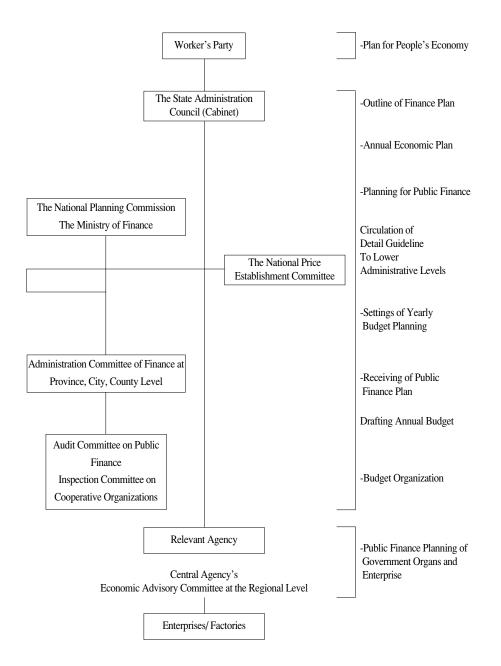
The distribution of products made according to the state's plan is also controlled and actualized by the state budget. The money flow that accompanies the distribution process gains concreteness by government budget; that is to say, the national budget decides the distribution of gross national product for investment or consumption. In the case of the consumption sector, incentives could cause some deviations from the budget boundary, but investment is executed totally by the state budget.

For example, North Korea has traditionally given priority to heavy industries and controlled the demand for consumption for such a policy. As a result, expenditure for light industries and the private sector was suppressed to allow more investment for heavy industries.





#### <Figure 13.2> The Public Finance System



#### C. Procedure of Budget Compilation

According to the Constitution of North Korea (Articles 70 and 109), the State Administration Council (Cabinet) and the Supreme People's Assembly (SPA) undertakes the deliberation and settlement of the budget. The Cabinet, which compiles the budget, submits the draft to the SPA, which takes the draft into consideration and adopts it in the form of an ordinance. When compiling the state budget, the cabinet makes the draft for state budget through the Ministry of Finance and submits it to the SPA for approval.

The authority to construct the budget in North Korea is given to the Ministry of Finance in the State Administration Council in accordance with the Article 32 of the Constitution. However, because of the power structure in which the party is in a dominant position, the national budget must be compiled and executed as part of the general economic plan. Consequently, the Ministry of Finance is bound heavily by the National Planning Commission, which formulates the plan for people's economy with the Worker's Party. Moreover, prices in North Korea are a means to allocate resources and control the supply and demand of materials, thus decided by the government. Throughout the procedure of budget compilation, the Ministry of Finance has to work closely with the National Price Establishment Committee, which determines prices within the budget.

The biggest characteristic of the budget compilation procedure in North Korea is that annual budget compilation is under taken concurrently with the drawing up of the budget plan or as a part of the budget planning process. The Ministry of Finance draws up guidelines for the budget draft in close cooperation with the National Planning Commission and National Price Establishment Committee. It also formulates and gives agency-specific detailed guidelines to government organs at the beginning of the third quarter of the previous year. All those guidelines are made by the National Planning Commission and served as grounds for achieving annual economic goals determined by the Central People's Committee (the top executive decision-making body in North Korea).

When the detailed guidelines for budget compilation are given to the relevant central agencies (committees and agencies under direction of the State Administration Council) and regional administration organs, central agencies and regional economic committees draft financial plans including budgets for affiliated organizations, enterprises and cooperative organizations. These are then submit them to the Ministry of Finance. The Ministry of Finance pieces together the public finance plans and makes the draft for the basic public finance plan, which then becomes the national budget draft of the following year.

The time set aside for drafting the budget is generally December of the previous year or January of the relative year; this is because the new year's budget draft needs

to be adjusted according to the new year's economic plan, which is completed around November to reflect the result of the previous year's economic plan. When the new budget draft is completed in January or February of the year in question, it is reviewed by the Cabinet and ratified by the Central People's Committee, then undergoes a one-month review by the Budget Deliberation Committee of the Supreme People's Assembly and is submitted as a formal agenda to the first meeting of the SPA normally in April.

The SPA reviews and approves the national budget draft submitted by the Cabinet; it decides the form and size of all revenue and expenditure of the state, as well as the size of the central and local budgets. When the SPA approves the budget, the cabinet prepares a quarterly execution plan and execution measures. The cabinet also takes charge of the quarterly and an annual settlement of accounts with regard to national budget execution through the Ministry of Finance, reporting the annual settlement to the SPA. Guiding the budget execution of the Regional People's Assembly is another duty of the Cabinet.

As the highest sovereign agency the SPA deliberates the total budget; the Regional People's Assembly deliberates and approves local budgets in conformity with the local budget preapproved by the SPA. The SPA also has the right to approve the annual settlement of accounts of budget implementation, called "the budget sum total."

In North Korea, the fiscal year is referred to as the budget year and runs January 1 to December 31. The principle of independence is applied to the fiscal year. Although the fiscal year of North Korea follows the calender year, the present year's budget is confirmed by the SPA in April. Therefore, from January through April, economic units run on the previous year's budgetary guidelines or the unapproved budget. However, the fact that the SPA has never revised the budget draft drawn and submitted by the Cabinet shows that the budget draft, even without the approval of the SPA, is equivalent to the final budget.

Budget consists of revenue and expenditure, which are further classified according to the administrative bodies and the nature of budget. The items are subdivided into articles and clauses. These budget clauses have legal effect and cannot be subjected to discretionary changes by the executive body.

North Korea's state budget is comprised of the overall budget making up the total sum that is then divided into central and local budgets. The central budget, the core of the national budget, consists of monetary funds subsidized nationwide and used for carrying out central government duties. The local budget is comprised of funds needed by the regional administrative bodies whose subsidization and usage is planned out. Local budgets are is compiled and executed by local administrations under the government's central direction.

## 2. Financial Revenue and Expenditure

The fiscal scale of North Korea has seen a significant decline since the 1990s due to economic deterioration. In the early 1990s, while the production scale steeply decreased, financial revenue and expenditure increased. This can be interpreted as an effort by the North Korean government to turn the economy around through fiscal policy. However, when North Korea failed to absorb the shock that resulted from the collapse of the economic support from socialist countries by increasing domestic investment, it stopped public announcing data on its budget (from 1995). In 1997, when North Korea resumed the release of its budget data, it was possible to see that the percentage of both compositions of budget scale and gross national income had sharply declined. In terms of scale, it shrank to less than half of the US\$19.19 billion in 1993 to \$9.12 billion; the percentage of GNI decreased from 91 percent to 57 percent. This indicates serious economic deterioration due to declining production capacity, where the basic survival of people cannot be ensured and government funding is not possible. The general presumption is that North Korea's production capacity has shrunk to half the level of 1989 and therefore the government is incapable of executing public finance activities as in the past.

For example, the suspension of the government rationing system had a negative effect on the public, and factories and enterprises were forced to suspend their production activities due to shortages in raw materials and accessories. North Koreans were forced to obtain their food and necessities at farmers markets and self-constituted free economic activities for survival increased. As a result, the government's influence on the overall economy of North Korea decreased, while the importance of the private economic sector rose. The government continues to maintain its role in sectors such as coal, mineral resources and munitions industries, but the government budget is not large enough to cover other areas. As Table 13.1 shows, the decrease in government budget is presumably accompanied by atrophy in government functions.

<table 13.1=""></table>	Government	Budget and	l North	Korean	GNI

(Unit: \$100 million)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Budget	166.0	171.7	184.5	187.2	191.9	N.A	N.A	91.3	91.0	92.2	95.7
GNI	231	229	211	205	212	223	214	177	126	158	168
Percent.	72%	75%	87%	91%	91%	•	•	52%	72%	58%	57%

Source: Bank of Korea, June 2001

#### A. Structure of Budget Revenue

In North Korea, the term budget revenue represents a total monetary sum formed and used for the economic activities of agencies, enterprises and the functions of government.<sup>2</sup> The most important source of budget revenue in North Korea is the socialist income accounting. This is revenue belonging to the government out of the net income of state-run corporations. It consists of cooperative organization profit from collectives, profits from state-operated businesses and business income, which is similar to value-added tax in capitalist states. However, there is no direct tax such as the income tax that imposed on individuals in capitalist economies.<sup>3</sup> Additional sources for state budget revenue include service charge income and other incomes.

Business income is principally additional income earned by selling consumer products at prices that include an additional percentage of the products' wholesale price. A corporation or cooperative association is under obligation to give this revenue to the state. Characteristically similar to an indirect tax imposed at the product trading stage, this business income is the main source of national budget revenue for North Korea. Due to the convenience of administration, North Korea has continuously increased this source of income.

Profits from state-operated businesses form the income that the government takes from the net income of all state-run corporations, both in production as well as in distribution. The government decides the amount of reserve funds out of the net income to hold back in the company as retained income and allocates the remainder as its income. This profit is similar to corporate tax imposed on corporate revenues, in that a part of the profits belongs to the corporation and the rest goes to the government. Both business income and profit from state-operated businesses are similar in that they are incorporated into the state budget as part of social net income, though they show differences in terms of obligatory payer, object of taxation and character.

"Social collective group profit" is a form of commission that various social organizations and cooperative organizations pay to the state in exchange for production method fees or government guidance on management activities. Dues are imposed on the quarterly profits at producer cooperatives, while fixed rate dues are imposed on sales profits fisheries cooperatives. Social collective group profit is allocated to the local budget and is its greatest source of income. Service charge income is net income minus expenses and profits of corporations in the service sector. The gov-

<sup>&</sup>lt;sup>2</sup> The North Korean Academy of Social Science (1985). Dictionary of Economy, p. 469.

<sup>&</sup>lt;sup>3</sup> North Korea propagandized that it had created a tax-free paradise in 1974, when it abolished direct taxation. This understanding comes from defining socialist income accounting as social net income. See Jin Park (1994), p. 52.

ernment directs each type of business to render a fixed percentage of its service charge as budget revenue. The business revenues are convenience service profits, social daily necessities service profits, transportation service profits, communication service profits and theater ticket sales profits.

Other state budget revenues are fixed assets depreciation fund, which is money from depreciation reserve fund, revenue from sales of national assets and revenue from price differences.<sup>4</sup>

Unlike capitalist nations, North Korea does not have a 'tax income' revenue source in its national budget. Like Russia, it abolished the tax system in 1974. In a socialist economy where the state controls all the production resources, production value belongs to the state and thus there is no need to inconveniently allocate value to the population just to take it all back. As previously discussed, there is no tax per se, but the system in place of making deductions from is just business income and state-operated business profits is similar to taxation.

	Planned Est.	Res	sults
Year	Total	Total	Increase
1946	-	111,000	-
1947	679,238.8	920,381	-
1948	1,308,050	1,557,134	169.0
1949	1,976,263	2,030,100	130.4
1950	2,672,274.8	2,165,900	106.7
1951	2,794,700	2,767,800	127.8
1952	4,306,300	4,552,100	164.5
1953	5,528,700	5,272,708.1	115.8
1954	9,018,220.8	9,018,721.9	171.0
1955	10,127,462.5	10,815,721.2	120.0
1956	9,173,419.4	9,025,412.2	83.4

<Table 13. 2> Annual Trends in North Korean Revenue

(Unit: 10,000 won)

<sup>&</sup>lt;sup>4</sup> State revenue is distinguished from state budget revenue. It is comprised of net income (centralized net income plus corporate net income), tariff revenue and fines. For example, fixed assets depreciation fund and profit from sales of state assets are not newly created values and thus are not included in state revenue, yet they are included in state budget revenue. Reserve funds such as corporate revenue are included in state revenue but not in budget revenue. See Jin Park (1994), p. 57.

#### <Table 13.2>

	Planned Est.	Results		
ar	Total	Total	Increase	
1957	-	12,511,566.4	138.0	
1958	122,100	152,914	122.0	
1959	-	171,569.5	112.2	
1960	-	201,930	177.7	
1961	235,988.3	240,000	118.9	
1962	280,575	289,636	120.7	
1963	299,602	314,482	108.6	
1964	343,482	349,878	111.3	
1965	372,172	357,384	102.1	
1966	375,276	367,150	102.7	
1967	396,444	410,663	111.9	
1968	523,440	502,370	122.3	
1969	599,542	531,903	105.9	
1970	618,662	623,220	117.2	
1971	727,727	635,735	102.0	
1972	737,480	743,030	11.9	
1973	854,351	859,931	115.7	
1974	980,121	1,000,525	116.3	
1975	1,151,720	1,158,630	115.8	
1976	1,251,321	1,262,583	109.0	
1977	1,367,215	1,378,700	109.2	
1978	1,529,320	1,565,730	113.6	
1979	1,730,132	1,747,790	111.6	
1980	1,889,360	1,913,923	109.5	
1981	2,047,890	2,068,400	108.1	
1982	2,254,600	2,268,000	109.6	
1983	2,433,500	2,438,360	107.5	
1984	2,630,670	2,630,510	107.9	
1985	2,738,360	2,743,887	104.3	
1986	2,848,154	2,853,850	104.0	
1987	3,030,780	3,033,720	106.3	
1988	3,185,210	3,190,580	105.1	
1989	3,355,070	3,360,810	105.3	
1990	3,565,610	3,569,041	106.2	
1991	3,712,060	3,719,484	104.2	
1992	3,950,092	3,954,042	106.3	
1993	4,044,985	4,057,120	102.6	
1994	4,152,519	4,160,020	102.5	
1995	-	-	-	
1996	-	-	-	
1997	-	-	-	
1998	-	1,979,080	98	
1999	2,038,172	1,980,103	97.2	
2000	2,040,532	2,090,343	102.4	
2001	2,157,080	2,163,994	100.3	
2002	2,217,379	-	-	

Source: The Korean Ministry of Unification (1996). *Economic Statistics of North Korean and KDI (2002), KDI North Korean Economic Review*. 2002 April Issue.

(Unit: %)

/ear	Total Revenue	Socialist Income Accounting	Residents' Tax	Aid	Others
1953	100.0	61.8	19.8	18.5	9.8
1954	100.0	50.2	12.6	31.4	5.8
1955	100.0	60.3	9.2	21.6	8.9
1956	100.0	74.7	8.8	16.5	0.3
1957	100.0	82.2	5.6	12.2	-
1958	100.0	93.5	2.3	4.2	-
1959	100.0	97.8	2.2	4.9	-
1960	100.0	97.9	2.1	2.0	-
1961	100.0	97.9	2.1	-	-
1962	100.0	98.0	2.0	-	-
1963	100.0	98.0	2.0	-	-
1964	100.0	98.1	1.9	-	-
1965	100.0	98.0	2.0	-	-
1966	100.0	98.0	2.0	-	-
1967	100.0	98.0	2.0	-	-
1968	-	-	-	-	-
1969	100.0	98.2	1.8	-	-
1970	100.0	98.2	1.8	-	-
1971	-	-	-	-	-
1972	100.0	98.0	2.0	-	-
1973	100.0	98.1	1.9	-	-
1974	-	-	-	-	-
1975	100.0	100	-	-	-

#### <Table 13.3> Composition of Budget Revenue by Sector

Source: The Korean Ministry of Unification (1996). *Economic Statistics of North Korea and KDI (2002), KDI North Korean Economic Review*. 2002 April Issue.

#### **B.** Fiscal Expenditure

North Korea's state budget expenditure can be divided into people's economy expenditure, socio-cultural policy expenditure, defense expenditure and administration expenditure.

#### 1) Trend of Fiscal Expenditure

First, the most distinctive feature of North Korea's fiscal expenditure is that state budget comprises an extraordinarily high percentage in GNP compared to capitalist states. As shown in the above table, North Korea's state budget accounted for 50-60 percent of GNP in the 1960s. This number gradually increased, and in the late 1960s to late 1970s it maintained a 60-percent level. Continuing past 70 percent in the late 1970s, it had reached 79.2 percent by 1980. From then on, it started to decline, and by 1989 it dropped to 71.5 percent. In 1993 and 1994, however, due to rapid economic decline, state budget comprised 91 percent of GNP. This abnormal increase was due to a rapid decrease in GNP and the fact that the government could not reduce its expenditure all at once.

However, from 1995, North Korea withheld its financial statistics from the public, only resuming the announcement in April 1999. Based on these statistics and the reports North Korea submitted to the U.N., estimated state budget in proportion to GNP dropped to 50 percent. Grounds for this low estimation are the collapse of the foundation for fiscal revenue and the subsequent budgetary contraction. Nonetheless, North Korea maintains a higher level of public finance compared to capitalist countries. For example, North Korea's public finance is twice the amount of South Korea's public finance, which is at 25 percent of GNP.<sup>5</sup>

Second, North Korea's fiscal expenditure shows an inclination to stay within the bounds of fiscal revenue, meaning that the government has made efforts to maintain a balanced budget. Generally, most capitalist countries, including South Korea, have records of budget deficits. North Korea's formation of a balanced budget is typical of a socialist state where the government controls all aspects of the economy to prevent any costs arising from unexpected situations (E.G. Hwang 1992, 176-177).<sup>6</sup> On the other hand, a balanced budget is a reflection of a socialist state's will to minimize consumption. In a socialist state, the need to curb inflation and to control resources put into production for consumer goods caused a need to prevent an increase in real household income. Thus, compiling a balanced budget was the general trend for most socialist states, including the former Soviet Union.<sup>7</sup> However, this has changed since the worsening of the economic rebuilding is thought to be behind this change.<sup>8</sup> The following table shows the change in North Korea's revenue and expenditure from the 1990s to 2001. The data shows that the basic

<sup>&</sup>lt;sup>5</sup> With North Korea's economy run by the government, even after the economic crisis in the 1990s, most of the national income has been used for state budget. For example, North Korea's budget in proportion to GNP in 1999 is 58.4 percent, showing a sharp contrast to the 16.9 percent of South Korea.

<sup>&</sup>lt;sup>6</sup> North Korea itself admits that: "it is typical of a socialist state to always maintain a balanced budget." See the North Korean Academy of Social Science (1985) *Dictionary of Economy*. Vol. 2, p. 707.

<sup>&</sup>lt;sup>7</sup> Won Jin Kim (2000) "A Study on the Transition of North Korea's Budget System and Its Characteristics: Based on Comparison with the Budget Systems of China and the Soviet Union."

<sup>&</sup>lt;sup>8</sup> Even in capitalist countries, the main reason behind a budget deficit is the government's efforts to increase employment.

(Unit: %)

Year	1991	1992	1993	1994	-	1998	1999	2000	2001
Revenue	37.1	39.5	40.5	41.5	-	19.7	19.8	20.9	21.5
Expenditure	36.9	39.3	40.2	41.5	-	20.0	20.0	20.9	21.5

#### <Table 13.4> Changes in North Korea's Revenue and Expenditure<sup>o</sup>

budget structure still approaches the balanced level.

2) Changes and Characteristics of Fiscal Expenditure by Economic Sector

As North Korea points out, public finance in a socialist state serves under the party's political basis to financially guarantee balanced economic development and government functions. North Korea explains that the budget allows this financial role to be fulfilled. "Socialist public funds serve to financially ensure the proper functioning of economic structure and culture in a socialist state. To achieve this goal, public finance guarantees the funds solely for strengthening the economy, culture, and national defense, and for improving people's lives" (the North Korean Academy of Social Science 1985, 469). For this reason, the main components of North Korea's fiscal expenditure are the people's economy expenditure, socio-cultural expenditure, military expenditure and administrative expenditure.

North Korea does not release specific figures on public economy expenditure, socio-cultural expenditure and administrative expenditure, most of the times releasing only partial statistics. The only data released on a continuous basis are the increases from the previous year. However, many institutions, including the South Korean Ministry of Unification, continue to refer to the data released by North Korea to produce their statistics on North Korea's fiscal expenditure.

- People's economy expenditure, similar to South Korea's economic development expenditure in character, provides funds to corporations in the social sector and economic institutions. It constitutes the largest portion of the national budget. The largest portion of the people's economy expenditure goes to the fixed assets investment expenditure, which is used for building various facilities. Fixed assets investment expenditure is divided into the productive construction sector and the non-productive construction sector. The former sector includes industrial, agricultural, transportation, commercial and social construction. The latter sector covers housing, cultural foundations, scientific research institutions and public construction. In addition,

<sup>&</sup>lt;sup>9</sup> The budgets (revenue and expenditure) for 1994 and 2001 are figures decided by the Supreme People's Assembly in April each year, while the rest are actual enforced figures. From 1995 to 1997, North Korea did not release budget details.

it is used for the production and distribution of raw materials and intermediate goods, among others.

Public economy expenditure, excluding fixed assets investment expenditure, includes various subsidies. For example, there are subsidies for corporations with project losses, price subsidies for food and necessities, and support funds for factories and corporations operated on a self-supporting basis. Further, there are agricultural subsidies, funds for scientific and technological development, urban management funds, regional subsidies and international economic activity funds. Others are reserve funds for business startup, expenditure for losses in housing management, offset for overpayment of business income, expenses used for increase of inventory export subsidies and subsidies used to lower the inventory of consumer goods due to high transaction taxes.

- Socio-cultural expenditure related to social development, including costs generated in education, culture, health, sports and social welfare. However, this fund is not exclusively for social and cultural development, as it includes expenses for culture, publicity, publishing and party training. For example, expenses from cultural activities such as domestic and overseas political propagand, to maintain the regime's power and management costs to run training facilities for party executives are all provided through this fund.

- North Korea uses its military expenditure for developing the armament industry, investment in military facilities, modernization of equipment, maintenance of armed forces and arming of its people. Prior to 1967, military expenditure was called national security expenditure and concealed under economic expenditure and social cultural facilities expenditure. As a result, in 1968, it took up 32.4 percent of fiscal expenditure. From then on, it has declined to the current 10-percent level. However, of the annual expenditure figures provided by North Korea, the figures for military are especially questionable. Since the 1960s, North Korea has focused on increasing its military expenditure. During the fifth session of the Worker's Party National Congress in November 1970, it reemphasized its four military policy plans; in 1978, in commemoration of the establishment of North Korea, it announced that it had completed there plans.

The amended constitution in 1998 names the Chairman of the National Defense Commission the de facto highest position of state. Under the slogan "Strong Economy, Great Nation," the government has been concentrating on military buildup, including firing of the Taepodong missile in August 1998.

The statistics of military expenditure provided by North Korea demonstrates that military expenditure comprised a level around 30 percent of the annual expenditure since 1967, which dropped to below 20 percent from the start of inter-Korea dia-

logues in 1972. From 1990, it announced a 12 percent figure, but at the 10<sup>th</sup> session of the Supreme People's Assembly in April 1999, it raised the proportion of military expenses for 1999 to 14.5 percent.

Therefore, caution must be taken when analyzing the size of military expenditure announced by North Korea, considering the comprehensiveness of its military forces and military expenditure. Judging by the fact that the increase in military expenditure corresponds to a decrease in general economic expenditure, it can be concluded that a large proportion of military expenses is included in general economy expenditure. However, even now many experts on North Korea believe the figures released by the North Korean Government are in fact lower than reality. There have long been suspicions that North Korea has concealed its military expenditure in other categories, yet there is no actual data on its military funds. Notwithstanding, typically in socialist states, military expenditure is spread out under other expenses. For example, military research funds can be placed under the socio-cultural policy expenditure and the general economic expenditure can include expenses for munitions inventory. In addition, investment in military industry can be incorporated in the fixed asset investment expenditure.

- The proportion of institution administration expenditure, which includes general administrative and economic management expenditure, and security expenditure in budget expenditure is declining. However, there is doubt as to whether these expenses cover all management expenses of government organizations. For example, it is not clear in which part of the expenditure the administrative expenses for North Korea's intelligence organization are allocated. It is mostly likely that the government administration expenditure only provides for the public administration costs. Therefore, a reduction in administration expenditure can be understood as the minimum amount of administration expenses.

(Unit: 10,000 won)

	Planned Est.	Re	sults
Year	Total	Total	Increase(%)
1946	-	-	-
1947	679,238.8	711,146.4	-
1948	1,308,050	1,365,408	192.0
1949	1,976,263	1,965,700	144.0
1950	2,672,274.8	-	-
1951	-	-	-
1952	-	4,022,453	-

#### <Table 13.5>

	Planned Est.	Results		
ear	Total	Total	Increase	
1953	-	4,959,684,6	123.3	
1954	-	8.064.077.5	162.6	
1955	9,649,615.5	10,061,933.4	124.8	
1956	8,600,258.8	9,559.827.4	95.0	
1957	7,748,800	10,224,484.1	107.0	
1958	118,300	132,141.4	129.2	
1959	-	164,921.2	124.8	
1960	191,551.4	196.787	119.3	
1961	233,423	233,800	119.5	
1962	280,575	272,876	116.7	
1963	298,573	302,821	111.0	
1964	343,482	341,824	112.9	
1965	372,172	347,613	101.7	
1966	375,276	357.140	101.7	
1967	396,444	394.823	110.6	
1968	523,440	481.289	121.9	
1969	599,542	504,857	121.9	
1909	618,662	600,269	118.9	
1970	727,727	630,168	110.9	
1971	737,480	738,861	105.0	
1972	854,351	831,391	117.2	
1973	980,121		112.3	
	,	967,219		
1975	1,151,720	1,136,748 1,232,550	<u>117.5</u> 108.4	
1976	1,251,321			
1977	1,376,215	1,334,920	108.3	
1978	1,529,320	1,474,360	110.4	
1979	1,730,132	1,679,260	115.1	
1980	1,889,360	1,883,691	110.0	
1981	2,047,890	2,033,300	107.9	
1982	2,254,600	2,220,360	109.2	
1983	2,433,500	2,401,860	108.2	
1984	2,623,670	2,615,800	108.9	
1985	2,738,360	2,732,883	104.5	
1986	2,848,154	2,839,610	103.9	
1987	3,030,780	3,008,510	105.9	
1988	3,185,210	3,166,090	105.2	
1989	3,355,070	3,338,294	105.4	
1990	3,565,610	3,551,348	106.4	
1991	3,712,060	3,690,924	103.9	
1992	3,950,092	3,930,342	106.5	
1993	4,044,985	4,024,297	102.4	
1994	4,152,519	4,144,215	103.0	
1995	-	-	-	
1996	-	-		
1997	-	-	-	
1998	-	2,001,521	99	
1999	2,038,172	2,001,821	98.2	
2000	2,040,532	2,095,503	102.7	
2001	2,157,080	2,167,865	100.5	
2002	2,217,379	-	-	

Note: From 1958, the foreign exchange rate was 100 won: 1 dollar.

Source: Statement of Budget Accounts by Year announced by North Korea

#### <Table13.6> Composition of Budget Expenditure by Economic Sector

(Unit: %)

Year	Total Expenditure	General Economy	Socio-Cultural Policy	Military	Administration
1953	100.0	63.9	11.3	15.2	9.7
1955	100.0	69.5	9.8	8.0	8.4
1955	100.0	74.9	9.5	6.2	6.4
1956	100.0	74.3	12.7	5.9	6.1
1950	100.0	70.5	18.2	5.3	6.0
1958	-	-	-	4.8	5.9
1958	100.0	68.9	23.2	3.7	4.2
1959	-	69.2	23.2	3.1	3.2
1960	100.0	73.0	24.5	2.5	3.1
1961	100.0	73.0	21.4	2.5	2.3
	100.0				
1963		74.0	21.5	1.9	2.6
1964	100.0	69.5	20.6 19.7	5.8	4.1
1965	100.0	68.0		8.0	4.3
1966	100.0	68.4	17.3	10.0	4.3
1967	100.0	49.9	17.5	30.4	2.2
1968	100.0	48.9	17.0	32.4	1.8
1969	100.0	47.5	19.7	31.0	1.8
1970	100.0	47.0	19.9	31.3	1.8
1971	100.0	44.2	22.9	31.1	1.8
1972	100.0	55.5	25.4	17.0	2.1
1973	100.0	57.2	25.3	15.4	2.1
1974	100.0	57.0	24.8	16.1	2.1
1975	100.0	57.2	24.3	16.4	2.1
1976	100.0	56.2	25.0	16.7	2.1
1977	100.0	56.8	25.4	15.7	2.1
1978	100.0	57.3	24.7	15.9	2.1
1979	100.0	59.4	23.6	15.1	1.9
1980	100.0	60.5	22.2	14.6	2.7
1981	100.0	61.3	22.0	14.8	1.9
1982	100.0	62.5	20.9	14.6	2.0
1983	100.0	63.1	20.2	14.7	2.0
1984	100.0	64.4	19.9	14.6	1.1
1985	100.0	62.5	20.7	14.4	2.4
1986	100.0	63.5	20.3	14.1	2.1
1987	100.0	66.4	18.9	13.2	1.4
1988	100.0	67.2	19.0	12.2	1.7
1989	100.0	67.4	18.9	12.0	1.7
1990	100.0	67.6	18.8	12.0	1.6
1991	100.0	67.9	18.8	12.1	1.3
1992	100.0	67.7	19.1	11.4	1.8
1993	100.0	67.8	19.0	11.5	1.7
1994	100.0	-	-	11.5	1.6
1995	100.0		-	-	-
1995	100.0		-	-	-
1990	100.0		-	-	-
1997	100.0	-	-	14.6	-
1998	100.0	-	-	14.0	-
2000	100.0	40.1	38.2	14.3	7.4
2000	100.0	40.1	38.2		5.2
2001	100.0	42.3	38.8	14.4 14.4	5.2

Note: Figures for 2002 are planned numbers.

Source: Statement of Budget Accounts by Year announced by North Korea

## 3. Central Budget and Local Budgets

It is a common practice in socialist financial principles to separate the national budget into a central budget and local budgets. North Korea has adopted the local budget system alongside its system of centralized planned economy. Until 1972, the local budget system was used in only a limited number of regions, but by the order of Kim II-Sung in 1973, it became a nationwide system. North Korea incorporated the local finance system under the centralized planned economy to reduce the burden on the central budget and stimulate competition among regions.<sup>10</sup>

The central budget is defined as "monetary funds created across the nation that are needed by central government agencies to operate" and is the core of the national budget. Local budget is "budget raised and used by local governments to operate" and is created by regional governments themselves. However, the authority to assign budget is in the hands of the Supreme People's Assembly and the Cabinet, which means "local agencies are not at liberty to make revenue and expenditure."<sup>11</sup>

Moreover, the central budget is made up of important income sources across the nation and takes into account all the finance needed by the government and its subordinate organizations. Further, the central budget controls the use of local budget through allocation of revenue and subsidies. Therefore, the central budget is one of the basic ways of funding the government to develop the economy and improve the welfare of its people. It also provides revenue, mainly from transactions and business income, to organizations and corporations. All the funds for the military, government and its organizations come from the central budget.

Local budgets are made up of provincial, city and county budgets. The sources of local budget is fixed revenues, such as income generated from local industries and economic activities, and resident income taxes. They also include dividends and subsidies from the central budget. The local budget is used for local industries, farms' commerce and public welfare. Furthermore, maintenance expenses for transportation, education, day-care centers, libraries and hospitals come from local budgets.

Table 13.7 shows the classification for central and local budgets and their respective recipients, sources of income and subjects of expenses.

<sup>&</sup>lt;sup>10</sup> North Korea is also turning budget-based corporations into independent corporations or semi-independent corporations to reduce the tension on the central budget. See the North Korean Academy of Social Science (1985), *Economy Dictionary*. Vol. 2, p. 709.

<sup>&</sup>lt;sup>11</sup> Ibid, p. 708.

	Budget Recipients	Sources of Income	Subjects of Expenses
Central Budget	State-run major corporations, nationwide organizations, cultural agencies, public security agencies, judiciary agencies, courts, transportation agencies	Business income, revenues of public organizations, dividends from local budget, income from price differences, income from disposition of government property	Expenses for public economy (e.g., construction, cash flow), public/cultural expenses (education, medical, etc.) national defense funds, central organization management funds
Local Budget	Small-sized organizations and corporations, public and socio-cultural organizations	Transaction income from organizations using local budget, profits from collective groups, subsidies from central budget, sales of public property	Local industries, farms, urban management, education, cultural expenditure, public welfare.

<Table 13.7> Central Budget and Local Budget Classification

Source: Park, Jin (1994), p. 17.

## 4. New Challenges for Fiscal Policy

#### A. Economical Crisis and Financial Policy

The collapse of socialist states at the beginning of the 1990s struck a heavy blow to the North Korean economy. North Korea's economy recorded negative growth from 1990 to 1998, and its production capacity is expected to be lower than half of that of 1989. As a result, North Korea's public finance system failed to execute its original functions.

Losing production capacity means that the government's financial policy is ineffective. In particular, the government has not been able to resolve problems with energy and raw material shortages, and existing facilities are no longer operational. A direct cause of this is the change of political status of socialist countries; they could no longer provide energy and raw materials at cheap prices. The method of payment had changed; payment made in hard currency resulted in difficult access to the international market. Nonetheless, it is easy to find the underlying causes of North Korea's economic difficulties located in its economic system, such as the inefficiency of planned economy and irrational economic policy, slowness in technological development, outdated industrial facilities and diminishing worker productivity.

Thus, North Korea is trying to enhance its relationship with EU countries, Japan, the United States and South Korea to find new sources of foreign aid previously provided by former socialist countries. North Korea succeeded in improving its diplomatic ties with South Korea and the EU, but it is still far from improving its relationship with the United States, which holds the key to political and economic support.

This has set back North Korea's efforts to find new ways of obtaining sufficient budget.

#### **B. Economical Reform and Fiscal Policy**

1) July 1 Reform Measures

North Korea started a number of economic reform policies on July 1, 2002. The July 1 Reform Measures included price rises, wage increases, partial abolition of the rationing system, abolition of exchanged tags, realistic readjustment of exchange rate, strengthening the self-supporting accounting system of corporations, reinforcing material incentives and increasing the autonomous distribution rate of agricultural products. Each reform measure can be summarized as the following:

Recent policy changes in North Korea, especially the abolition of the rationing

Direction of Economic Changes	Contents of Reform	Policy Measures for Reform
Changes in economic management	Planned economy Monetary economy	Rise in price, wage increase, abolition of rationing system
Reintegration with the international market	Framework isolation from international market connection with international market	Readjustment of exchange rate, abolition of exchange tags
Change in business management	Ethical, social motivation → Material, individual motivation	Strengthening the self-supporting accounting system of corporations, material incentives, increase in autonomous distribution of agricultural products

<Table 13.8> July 1 Reform Measures and the Direction of Economic Changes

system and realistic price fixing, are the basis for monetary economy system and are set for monetization. Monetization is the process of measuring the value of all economic activities by currency and conducting all transactions with currency. North Korea's managed economy shifted to a monetary economy and the macroeconomic management framework was modified so that resource allocation is made through money.

By authorizing rational exchange rates and real-time exchange with foreign currencies, North Korea's domestic economy was able to access the international market. Moreover, the self-supporting accounting system of corporations was strengthened, workers' incentive system based on performance was materialized, and the autonomous distribution rate of agricultural products was increased to boost self-responsibility and individual motivation.

Such policy reform is expected to eventually increase the efficiency of the North Korean economy. However, it is likely that budgetary pressure on the North Korean government will increase. The first reason is that North Korea changed from a managed economy to a monetary economy. Second, there is an increase in currency demand because of the rise in prices and wages. Third, social net income, a source of government budget revenue, has decreased since the government started to strengthen the self-supporting accounting system of corporations and increase the autonomous distribution rate of agricultural products.

#### 2) Chinese Experience

In China, the problem of unbalanced budget surfaced during the reform period. China tried to strengthen the incentive program by raising the percentage of business profits retained at corporations, which led to a deficit in the state budget. China took the following measures to solve these problems.

First, China reduced the budget for non-economic sectors and augmented economy-related investment. For instance, the budget for national defense was over 30 percent of the total national revenue in the 1950s, but it fell to less than 10 percent in the 1970s.

Second, commercial banks were asked to meet financial demand for corporate investment and management. Before the reform, the Chinese government was the owner of all means of production, therefore it took all the profits. After the reform, however, a considerable portion of profits was retained by corporations, which they could use freely, making them responsible for investment results as well.

Third, by allowing corporations to keep more profits than before, the government required them to pay taxes. This was an effort to secure budget for the state in the form of corporate tax. Yet this gave rise to conflict between the corporations' desire for self-support and the government's need to obtain budget revenue. Since the change in both public and private sector was under progress, this problem was unavoidable. The tax system and tax rates went through numerous adjustments before reaching reasonable levels.

Finally, the government controlled budgetary demands by manipulating government subsidies. After the economical reform, the Chinese government gave support funds to corporations instead of directly managing them. The government funds were given to SOC sectors such as energy and transportation. Consequently, the proportion of government budget in the economy decreased on a continuous basis and its role diminished.<sup>12</sup>

<sup>&</sup>lt;sup>12</sup> World Bank (1991), pp. 91-92.

#### 3) North Korean Reform and Fiscal Problems

The budget shortages brough about by the July 1st Reform Measures in North Korea can be characterized by two aspects. One is a temporary budget problem resulting from wage raise and price hike. The other one is a long-term budget problem arising from the increase in the proportion of profits retained by corporations. The temporary budget problem will be resolved once government-owned corporations raise their sales prices. However, problems are expected to emerge from augmented financial burden on corporations to meet wage increases and from management adjustment or restructuring at non-competitive corporations, which will worsen the lack of public finance.

In the long run, increasing corporations' autonomy through the reinforced selfsupport accounting system and pay incentives for workers is expected to induce a decrease in budget revenue, as seen in the Chinese case. Therefore, the North Korean government will have to look for systemic strategies to overcome budget deficits.

Here are some possible measures for the North Korean government to resolve the budget shortage: The first is the diversification of the banking system. Currently, the North Korean government owns and manages the banking system. Therefore, this disallows the creation of credit but enables the monetary system using currency only. In order for North Korea to create the necessary funds without causing inflation, it needs to allow budget supply through credit.

Second, corporations have to seek investment themselves. This will not only lead to the direct effect of decreasing the government's budget demand from corporate investment, but also solve the "soft budget constraint" (a common problem in socialist nations).

Third, North Korea needs to change the structure of budget expenditure to minimize expenses in non-economic sectors. In particular, the high proportion of the defense expenditure hinders the formation of capital funds necessary for the manufacturing sector. Therefore, rational adjustment of budget expenditure is a must. The adjustment of budget expenditure is useful in creating immediately necessary funds; therefore, the North Korean government should consider this option to satisfy the initial demand for funds as soon as possible.

Finally, it is important to change the budget structure. The change in corporate management methods will affect the government budget revenue, signifying that the government needs to develop new tax policies and seek appropriate tax rates.

## 5. Fiscal Policy Problems and Prospects

North Korea's fiscal system shows stronger government control than any other

socialist nation, based on a single organization controlling through centralized managed economic system. Budget revenue and expenditure is controlled directly by the Korean Workers' Party, which allows the state to politically manipulate the budget. However, such a system fell short of meeting the demand of the people, partly duce to the nature of bureaucracy. In addition, the government prioritized producer goods over consumer goods and emphasized savings cover consumption. Consequently, the economy was unable to support the needs of the people and the government was indifferent to meeting social needs.

When most of the other socialist nations, particularly the Soviet Union and China, rode the wave of reform, North Korea adhered to its status quo; it is now suffering economic disintegration and exhausted national coffers. Currently, North Korea is changing its economic policy in order to catch up with other nations. Still, such changes will bring even more hardship at the outset. Moreover, passive and minimal opening to preserve the political power of the socialist regime will do more harm than good to North Korea, increasing budget expenditure and decreasing budget revenue. Therefore, it is necessary to fundamentally modify the revenue and expenditure structure of North Korea's public finance.

North Korea is attempting to reform its economic structure and policy. Systemic reform, however, is not brought about by changes in a single sector. The July reform measures will inevitably put pressure on North Korea's budget structure. To rationally resolve the budget deficit, it should change its financial system, corporate management and tax policy. Moreover, North Korea has to reform its budget revenue and expenditure structure. The result of the economic reform in North Korea will greatly depend on how the North Korean government reacts and makes rational changes in the fiscal sector.

## References

\* In Korean

- Hong, Taek-Gi. 1991. "Conditions of China's Financial Support Policy and Reform." *Research of China*. Vol. 10.
- The Institute for Far Eastern Studies. 1985. *Compendium of North Korea*. Seoul: Kyungnam University
- Juche Research Center in the North Korean Academy of Social Science.1985. *Dictionary of Economy*, Vol. 1-2. Pyongyang: the North Korean Academy of Social Science.
- Jung, Gap-Young. 1990. "Basic Policy Direction of North Korean Socialist Economic System." Lee, Tae-Uk ed. North Korean Economy. Seoul: Eulyoomunhwa Pulications.

360 | Part IV. Fiscal, Finance and Commercial Management

- Kim, Byung-II. 1981. "National Development and Policy." *Budget Policy*. Seoul: Korea Development Institute.
- Kim, Won-Jin. 2000. Research on the Change of North Korean Budget Structure and Its Characteristics–Comparison with Budget Policies of Communist China and Soviet Union. Incheon: Inha University.
- Kim, Yong-Jae. 1983. *Research on North Korea's Administrative Structure*. Seoul: The Korean Ministry of Unification.
- Kim, Young-Bong. 1987. *Theory of Economic System*. Seoul: Pakyoung Publications.
- Korea Institute for National Unification. 1985. Data of North Korean Economy. Seoul: Korea Institute of National Unification.
- The Korean Ministry of Unification. 1998. Summary of the North Korean Economy.
- The Korean Ministry of Unification. 1989. Summary of Communist China.
- The Korean Ministry of Unification. 1989. Recent North Korean Economic and Social Status.
- The Korean Ministry of Unification. 1991. Evaluation of 1990 North Korean Economy.
- The Korean Ministry of Unification. 1991. Monthly North Korean Trend. December.
- The Korean Ministry of Unification. 1992. Monthly North Korean Trend. January.
- Lee, Jong-Ik. 1992. *Theory of Financial Administration*. Seoul: Pakyoung Pulications.
- Lee, Sang-Jun. 1985. *Theory of Communist China's Economy*. Seoul: Pakyoung Pulications.
- Lee, Sang-Woo et al. 1989. 40 Years of North Korea. Seoul: Eulyoomunhwa Pulications.
- Lee, Tae-Uk. 1990. North Korean Economy. Seoul: Eulyoomunhwa Pulications
- Nam, Hyun-Woo. *Analysis of the Change in North Korean Economic Structure*. Seoul: the Korean Ministry of Unification.
- North Korea Research Institute. 1985. North Korea. Seoul: North Korea Research Institute.
- Oh, Yong-Suk. 1988. Non-Marxist Economy of Communist Economies. Seoul: Slav Research History.
- Park, Jin. 1994. *The Present Condition of North Korea's Budget and Its Trend*. Seoul: Korea Development Institute.

\*\* In English

Andref, W. 1987. *Planned Industry and Development in Socialist-Oriented Developing Countries: Obstacles and Reforms.* Seoul: Seoul National University, Center for Social Sciences.

- Bergson, A. 1978. *Productivity and the Social System*. Cambridge: Harvard University Press.
- Bornstein, Morris. 1977. "Economic Reform in Eastern Europe." U.S. Congress Joint Economic Committee eds. *East Europe Economy*. Washington D.C.: U.S. Government Printing Office.
- Burkhead, J. and Miner, J. 1971. Public Expenditure. Chicago: Aldine.
- Chung, S.H. 1974. The North Korea Economy. California: Hoover Institute.
- Clyman, B. 1982. "Socialism." D.Greenwald ed. *Encyclopedia of Economics*. New York: McGraw-Hill.
- Collins, H. 1982. Marxism and Law. Oxford: Clarendon Press.
- Dernberger, R. E. 1988. "Economic Policy and Performances." Joint Economic Committee eds. *China's Economy Looks towards the Year 2000*. Washington D.C.: U.S. Government Office.
- Fallenbuch, Z. M. 1970. "How Does the Soviet Economy Function without a Free Market." M. Bornstein eds. *The Soviet Economy*. Honewood, Ill: Irwin.
- George, G. 1970. Finance and Banking in the U.S.S.R. Honewood, Ill: Irwin.
- Horvat, B. 1987. *The Typology of Contemporary Socio-Economic Systems and the Trends of Reform*. Seoul: Seoul National University, The Center for Social Sciences.
- Kelsen, H. 1967. The Pure Theory of Law. Berkeley: University of California Press.
- Levin, N. D. 1982. *Management and Decision Making in the North Korean Economy*. Illinois: The Rand Corp.
- Normanton, E. L. 1966. *The Accountability and Audit of Governments*. Manchester: Manchester University Press.
- Schulze, C. 1968. *The Politics and Economy of Public Spending*. Washington D.C.: Brookings Institution.
- World Bank. 1991. World Development Report: The Challenge of Development. Washington D.C.: World Bank.

## **XIV.** The Monetary and Price Management System

#### Suhk Sam Park

On July 1, 2002, North Korea executed an economic adjustment program for the changeover to a more market-friendly economic system. In order to achieve positive economic adjustment, reform in the financial sector is essential. However, financial reform was not mentioned until Yong-Sul Kim, Vice Minister of Trade, raised the issue in July, 2003 at a North Korean Economy Seminar hosted by the Tokyo International Forum. Kim stated that North Korea has established a 'trust bank,' a new type of bank. Kim's statement is important in understanding the direction of further economic reform of North Korea, in the sense that it implies North Korea will carry out reform in the banking sector.

So far, North Korea was maintained a mono-bank system. In this system, the central bank is in charge of not only issuing notes, currency control and payment settlement, but also commercial and monetary institution affairs such as the reception of private deposits, industrial loans and insurance. This is a typical banking structure of socialist countries and was adopted by the former Soviet Union, Eastern European countries and China; it is contrary to the market economy's two-tier banking system. The reason that North Korea and other socialist countries adopted the mono-bank system lies in its funding structure. That is, under the planned economy, the operating cost of institutions and enterprises is supported by the national finance and they resort to bank loans only when they have additional financial demands. When all cash accounts and payments are handled through the central bank, the state can efficiently control its capital flows.

However, the mono-bank system has two main problems. First, the mono-bank system maintains a capital supply system focused on national finance; since payment of principles is not mandatory in national finance, it accelerates additional demand for fund and results in lowering the efficiency of capital use in the overall economy. Second, by raising prices and wages through the recent economic reform, North Korea is facing inflationary pressure. This situation is aggrevated because the public avoids saving at banks and prefer foreign currency, thus weakening the central bank's currency control. North Korea is facing problems in efficiently absorbing cash held by inhabitants into financial institutions. Thus, this chapter examines the current situation and problems with North Korea's financial system and price management.

## 1. Characteristics of North Korea's Financial System

Although North Korea's financial system bears some similarity to South Korea's financial system,<sup>1</sup> there are several fundamental differences. The first is the difference in the characteristics of corporate funding. In South Korea, corporate funds come from the financial market in the private sector, whereas they are supplied by the state budget in North Korea. The corporate sector has the highest capital demand, be it in a market economy or planned economy. South Korean enterprises fund capital needed for business operations from (direct/indirect) financial markets. In North Korea, however, it is supplied through public finance. As an exception, North Korean enterprises can take out bank loans when faced with additional financial demands. The difference in corporate funding is a key factor in differentiating the role of finance in North and South Korea's economy. In other words, capital supply through the financial system is only considered in North Korea as a measure to supplement the national budget in North Korea, not a driving force for operating the national economy as in the South.

The second difference is the concept of ownership of financial institutions. In South Korea, except for the central bank and government-run banks, financial institutions are privately owned. However, all financial institutions in North Korea are government-owned.

The third is the difference in the banking system. South Korea has adopted the two-tier banking system of a market economy, but North Korea chose the socialist mono-banking system. In the two-tier banking system, the central bank is responsible for functions typical of central banks, such as note issuing, currency regulation and payment settlement. Commercial financial institutions are in charge of credit and insurance for households and enterprises. In the mono-banking system, the

<sup>&</sup>lt;sup>1</sup> There are some similarities between the financil systems in North and South Korea. For instance, North Korea also has a bank deposit system for the general public and pays interest on savings. Corporate loan and insurance services, although somewhat limited, are provided to enterprises in North Korea.

central bank is in charge of its own work s well as commercial financial works dealing with households and enterprises. In North Korea, the Central Bank of the Democratic People's Republic of Korea undertakes note issuing, currency regulation and payment settlement, as well as receiving savings and insurance from households and loans to enterprises. The size of the Central Bank is enormous due to its workload. There are 220 branches of the Central Bank, with one branch serving 100,000 people, which means the North Korean central bank has 30 times more branches than the South Korean central bank.

The fourth is the issue of household loan and consumer finance. In South Korea, consumer finance services such as household loans, household call loans and mort-gage collateral loans are provided. North Korea has no bank loan system for the general public.

#### A. The System of Capital Supply

North Korea's finance system operates under the single capital supply system. The single capital supply system is a system in which operation funds for institutions and enterprises are supplied through the central bank and only additional financial demands can be met by loans (W.K. Li 1986, 228). In this capital supply system, finance is simply a measure to support the national budget. Therefore, in order to have a deeper understanding of the characteristics of North Korea's financial structure, we need to look at North Korea's national budget system.

In North Korea, budget expenditure is largely divided into "expenditure for people's economy," "people's policy expenditure,"<sup>2</sup> "national defense expenditure" and "national administration expenditure."<sup>3</sup> The "expenditure for people's economy" is typical expenditure of socialist finance. It further breaks down to "basic construction capital," "expenditure for people's economic activities" and "capital for large-scale repair." The operation capital for North Korean institutions and enterprises is included in the "expenditure for people's economy." The characteristics of capital in the "expenditure of people's economy" are explained in Table 14.1. The budget expenditure items, except for the "expenditure of people's economy," are similar to

<sup>&</sup>lt;sup>2</sup> The people's policy expenditure used to be called the social and cultural policy expenditure. But it was renamed on April 5, 2001 at the10th session of the fourth People's Supreme Assembly. Its major contents were expenditure on education, culture, health, science, sports, social security and social insurance. The national administration expenditure is expenditure for maintaining national administrative institutions.

<sup>&</sup>lt;sup>3</sup> At the 10th session of the fourth People's Supreme Assembly, some changes were made in the budget compilation, such as changing additional policy expenditure (included in the expenditure of people's economy) to the people's policy expenditure.

	Characteristics	Contents
Basis Construction Capital	Capital for expanding productive and nonproductive fixed assets. The priority of investment decisions is very important. Budget capital used for the people's	Costs for construction, preparation for production and facilities.
Capital for People's Economic Activities	economy. Cannot be included in the cost of product and cannot be supplemented by basic construction capital, current funds and estimated appropriation capital.	Additional policy expenditure, capital for manufacturing, capital for farming, capital for science and technology development, capital for urban management, capital for land, capital for foreign and capital for maintenance and repair.
Capital for Large-Scale Repair	Budget capital used for repairing fixed assets such as mechanical equipments, building, and constructions.	

Note: Additional policy expenditure was compiled as the "people's policy expenditure" from the fiscal year of 2001.

Source: Jin Park (1994), p. 31.

the expenditure items of a market economy government.

When the "expenditure for people's economy" is not supplied smoothly, economy activities of institutions and enterprises would slow down and lower the production of the overall economy. This is in the same context as finance capital having to be supplied in order for business activities of enterprises to be carried out properly in South Korea. The size of North Korea's national budget can be seen as representative North Korea's economic situation. The amount of North Korea's fiscal expenditure has shown a big structural change since 1995. Total budget expenditure in 1995 was 24.2 billion North Korean won, a 41.5 percent reduction from the 42.4 billion won in 1994. The reduced amount was maintained until 2001. The reason for the reduction is unknown, but many believe that it is due to the serious economic recession. The North Korean government was not able to secure sufficient national capital due to the harsh economic situation. Due to the reduced budget size, national capital was sufficient for institutions and enterprises.

The main revenue source for North Korea's national budget is the transaction income from institutions and enterprises, profits of state enterprises and cooperatives and public service income.<sup>4</sup> Transaction income is a kind of indirect tax, which is a certain percentage of the wholesale price of products made by state-run enterprises

<sup>&</sup>lt;sup>4</sup> North Korea abolished "tax" on ordinary residents in 1974.

					(2						
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
National Income	39.6	40.6	41.6	24.3	20.3	19.7	19.8	19.8	20.9	21.6	22.1
Expenditure	39.3	40.2	41.4	24.2	20.6	-	20.0	20.0	20.9	21.7	22.1
People's economic expenditure	26.7	27.4	-	-	12.4	-	-	-	8.4	9.2	9.2
(proportion)	(67.9)	(68.2)	(-)	(-)	(60.2)	(-)	(-)	(-)	(40.1)	(42.4)	(41.6)
People's policy expenditure	6.7	6.9	-	-	5.0	-	-	-	8.0	8.3	8.6
National defense expenditure	4.3	4.5	-	-	3.0	-	-	-	3.0	3.1	3.2
Administration cost	0.6	0.5	-	-	0.2	-	-	-	-	1.1	1.2
Others	1.0	0.9	-	-	-	-	-	-	-	-	-

<Table 14.2> North Korea's Budget Expenditure Trends

(Unit: 1 billion North Korean won)

Note: The proportion of the expenditure for people's economy is in the total annual expenditure. Sources: The National Unification Board (1996), IMF (1997) and *Rodong Shinmun* (April 6, 2001).

or production cooperatives. Profits of state enterprises are a kind of corporate tax, which is the amount of corporate profits excluding costs. The transaction income and state enterprise profits are 39.8 percent and 31 percent respectively, of the total budget revenue in 1996. These two are the basis of North Korea's national income. Profits of cooperatives are utility fees for production means provided by the state and business consulting fees. Public service income refers to a part of the net profit of institutions and enterprises in the service sector to the government.

In North Korea, the state budget supports not only social security, but also the operation cost of institutions and enterprises, making it only natural that the size of state budget is larger in comparison with its economic size. North Korea's tax burden ratio is 57 percent, which is much higher than South Korea's 18.8 percent.

#### **B.** Characteristics of North Korea's Banking System

North Korea adopted the mono-bank system during 1946-1964 and the two-tier banking system during the 1964-1976 period, returning to the mono-bank system from 1976 until present. North Korea established the Central Bank of the People's Republic of Korea in October 1946, putting it in charge of note issuing, domestic and foreign settlements, loan, savings, insurance and national treasury receipt work. The Construction Fund Bank was set up in 1950 to be in charge of supplying and

		1991	1996		
	Amount	Component ratio	Amount	Component ratio	
Total annual revenue	37,121	100.0	20,320	100.0	
Transaction income	17,252	46.5	8,080	39.8	
State enterprise profits	14,259	39.1	6,290	31.0	
Fixed asset depreciation cost	2,510	6.8	2,250	11.1	
Cooperative farm payment	41	0.1	180	0.9	
Social insurance fee	77	0.2	90	0.4	
Income from national properties					
sales & other income	2,706	7.3	3,430	16.9	

#### <Table 14. 3> North Korea's Budget Revenue

(Unit: 1 million North Korean won, %)

Source: Complete Guide to North Korea (1994) and IMF (1997).

controlling basic construction funds and large-scale repair funds. In 1959, the Foreign Trade Bank was established to control overseas settlements, which was formerly the responsibility of the Central Bank, partly changing North Korea's banking system. North Korea again reformed the banking system in 1964; the Construction Fund Bank was merged with the Central Bank. The Central Bank took care of the supply of state funds and transferred its control of loan, savings and insurance works to the newly established Industrial Bank. The separation of the central bank and commercial banks meant the beginning of the two-tier banking system. This reform can be seen as a follow-up measure of Kim Il-Sung's article, "What Needs to Be Changed in the Banking Business Structure" presented in November 1963 at the Political Committee of the Labor Party Central Committee. In this article, Kim Il-Sung accused banking institutions of recklessly supplying national funds and loans from the central bank to enterprises. When enterprises were short of capital, they should obtain the necessary funds by borrowing from the Industrial Bank; if the principle were not paid back on the date of maturity, penalty interest that is twice the normal interest would be imposed. At the time of the banking sector reform, the first Seven-Year Plan (1961-67) was in process. The government intended to control moral hazard at enterprises and reduce demands for state funding, by transferring the surplus capital to the construction sector.

North Korea reformed its banking system again in 1976. The Industrial Bank was merged with the central bank. The Central Bank of the Democratic People's Republic of Korea assumed the responsibilities of the Industrial Bank in addition to its own works. North Korea's banking system had once again changed to the monobank system; the Six-Year Plan (1971-1976)<sup>5</sup> was terminated that year and North Korea's industrialization was at its peak. The reason for North Korea's banking system reform in 1976 to a strict mono-bank system to control the supply of all funds through the central bank (or the single capital supply system), to strengthen the centralized socialist, planned economy.

### 1) Types of Financial Institutions

North Korea's financial institutions include the Central Bank, the Foreign Trade Bank, special banks by sector, Golden Delta Bank, Cooperative Farm Trust, Ministry of Post and Communication (savings), international insurance companies, joint venture banks and joint investment companies. The Central Bank deals with national budget-related affairs and domestic financial affairs. The Foreign Trade Bank and special sectoral banks take care of foreign financial affairs and the Golden Delta Bank financial affairs of the Rajin-Sonbong Zone. The Cooperative Farm Trust is in charge of rural finance.

The Central Bank under takes note issuing, currency control, account settlement, capital supply, collection of national income, loans, savings, insurance, registration and evaluation of fixed assets and the safekeeping of precious metals. If we divide the functions of the central bank by characteristics, note issuing, currency control and account settlement are typical central bank work. Capital supply and collection of national income, registration and evaluation of fixed assets and safekeeping of precious metals can be regarded as work related to national budget. Loan, savings and insurance can be regarded as work of the commercial financial institutions. The North Korean central bank activities are not so different from the central bank activities in a market economy. However, work related to the national budget and commercial financial institutions originating from the mono-bank system are not covered by market economy central banks. In particular, the work of capital supply to institutions and enterprises is directly connected to the production activities of the overall economy, so it can be considered the most important part of the Central Banks duties. The goal of the Central Bank's works is stable currency circulation, efficient execution of national budget and improved business management at institutions and enterprises by "control by won" and the "mobilization of idle capital." "Control by won" indicates income controls and limits on spending of institutions and enterprises to prevent waste.6 "Mobilization of idle capital" means the acquisi-

<sup>&</sup>lt;sup>5</sup> The objective of the Six-Year Plan was the parallel development of national defense and economy, strengthening of material and technical basis of socialism, modernization of industrial facilities, promotion of the technological revolution and the liberation of workers from hard labor. The Six-Year Plan seems to be successful, following the Seven-Year Plan. Between 1971 and August 1975, the total industrial production grew by 2.2 times, the production of production means by 2.3 times and the production of consumer goods by 2.1 times.

<sup>&</sup>lt;sup>6</sup> "Control by won" is the state's control on economic activities using monetary space. North Korea

tion of loaning sources by expanding private savings and insurance. The Central Bank is under the command of the Cabinet, with 15 main departments and 11 general branches in major cities and provinces, as well as 210 posts in cities and counties.

The Foreign Trade Bank is under the Central Bank and undertakes foreign financial affairs. The functions of the Foreign Trade Bank are foreign settlement, signing and enforcement of business transaction agreements with foreign banks, account management agreements, credit, deferred payment and loan agreements. It is also in charge of guaranteeing funds for domestic trading institutions, maintaining international the balance of payments, foreign currency savings, loan, remittance, foreign currency exchange work (issuance of written statements of money exchanged with foreign currency) and decisions on foreign exchange rate. The Foreign Trade Bank in North Korea makes financial transactions with about 1,000 banks and financial institutions around the world.

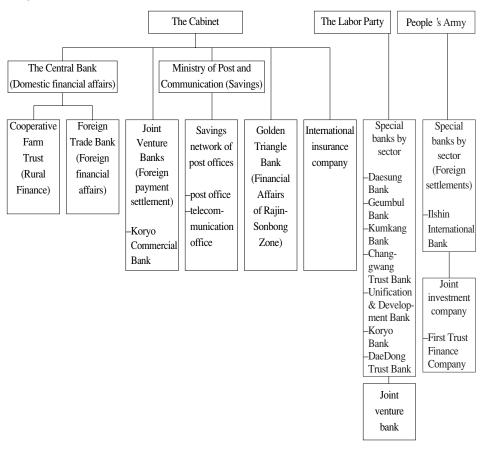
There are financial institutions besides the Foreign Trade Bank that deal in foreign settlement affairs: special sectoral banks and joint venture banks. Special banks under the Labor Party include the Chosun Daesung Bank, the Geumbul Bank, the Kumkang Bank, the Changgwang Trust Bank, the Unification and Development Bank, the Koryo Bank and the Daedong Trust Bank. Special banks under the Ministry of the People's Army are the Ilshin International Bank and the First Trust Finance Company. These banks are in charge of overseas settlements for institutions and enterprises under the Labor Party and the Ministry of the People's Army. The Joint-Venture Bank and Koryo Commercial Bank are under the Cabinet. Since these banks do not deal with savings and loans, they are considered as "foreign settlement windows" rather than "banks."

The Golden Triangle Bank is in charge of financial affairs in the Rajin-Sonbong Free Economic and Trade Zone. This bank was capitalized with \$3 million in 1995 to support development and foreign trade of the Rajin-Sonbong Zone. There were six foreign currency exchange posts and 11 bank branches dealing with savings, as of the end of 1998. Although the Central Bank deals with domestic insurance work,

insists that 'control by won' reduces waste of capital and actualizes planned management of national economy, both of which are important to overall national management. 'Control by won' is executed in every unit that creates and uses monetary funds; from that, 'control of banks,' carried out by banking institutions, plays the most important part. In a socialist society, banks are national institutions that implement 'control by won' in order to properly execute national budget. North Korea tries to efficiently use national funds through 'control by won' and makes all sectors of the people's economy strictly abide by accounting rules payment rules, and cash circulation rules. The government believes it can plan and manage the socialist economic system, strengthen the economy in expenditure, properly implement the self-supporting accounting system, clearly execute the national budget, and protect the socialist owner-ship system (Social Science Institute, 1995, p.1464).

the Chosun International Insurance Company is responsible for international insurance business. In addition, the Ministry of Communication receives savings.

An unusual financial sector of North Korea's mono-bank system is the Cooperative Farm Trust that controls rural finance. The Cooperative Farm Trust uses farming' investment and accumulated cooperative funds to provide capital for side businesses and consumer loans to farmers. Moreover, when short of resources for loans, the trust may borrow from the central bank. Cooperative farms, not the government, manage the Cooperative Farm Trust, but the central bank controls the guidelines regarding management. In this sense, we can regard the Cooperative Farm Trustee as a subordinate financial institution of the Central Bank. That the Cooperative Farm Trust is able to independently conduct financial affairs means that the mono-bank system is not applied to rural finance. Figure 14.1 illustrates the



## <Figure 14.1> North Korea's Financial Institutions

current status of financial institutions in North Korea.

2) Banking Services: National Capital Accounts, Lending, Depositing and Insurance

North Korea's banking services can be summarized as business affairs related to national budget, lending, deposits, insurance and foreign financial affairs. The Central Bank is in charge of domestic financial affairs and the Foreign Trade Bank covers all foreign financial affairs. This section looks at their services.

The Central Bank is the sole organization handling the cash accounts of the national budget. It receives budget revenue according to the national budget regulations, supplies budget capital and settles accounts. In the process of handling the cash accounts belonging to the national budget, the Central Bank enforces institution and enterprise obligations toward national budget payment and controls budget to accurately enforce the fiscal plan.<sup>7</sup> The Central Bank, using the national budget system, classifies budget by central administration, province, city and county. It manages accounts by separating each budget item into revenue and expenditure. The reason for the separation into revenue and expenditure is to clarify the form of execution and to accurately execute the budget. In North Korea, national budget is broken down into articles, clauses and items. The Central Bank also has this classification system and writes down revenue and expenditure accordingly. Budget revenue and expenditure are appropriated accumulatively from the beginning of the

<sup>&</sup>lt;sup>7</sup> North Korea controls the budget of institutions and enterprises to avoid waste and to execute plans accurately. According to the Dictionary of Finance: "Budget control is distinguished from other national controls such as legal or administrative controls in the sense that it is done through the medium of money. In addition, it is distinguished from bank control in the sense that it is based on budget control. Given that goods coincide with money in terms of quantity and time, the financial control guarantees that social products are, by design, efficiently produced, distributed and consumed. It should be enforced systematically and wholly through all reproduction processes of social products, such as production, division, distribution and consumption. It is repeated in different forms and objects."

It is divided into normal control and inspection control according to form. Control by national authorities and administrative bodies, control by the fiscal bank, control by sectoral financial institutions, and internal or social control of institutions and enterprises are classifications according to controlling bodies. According to the stage of control, it is divided into *ex ante*, ongoing, and *ex post* control. The Chosun Central Bank takes charge of fiscal bank control by supplying money needed for enterprises to execute planning, settling payments and receiving the national budget revenue. The fiscal bank control aims to accurately allot budget resources based on the budget regulations to each business, including basic construction, large-scale repair, people's economic activities, and people's policy, and to save resources. When we compare fiscal control with bank control, fiscal control regulates that institutions and enterprises execute budget as accurately as planned. Bank control (control the won) is related to bank businesses. It supplies money for all business activities such as lending and controls efficient use and conservation of raw materials and resources. See Social Science Institute (1995), pp. 1098-1099 and pp. 1463-1465.

year. The Central Bank's annual settlement of national budget revenue and expenditure is used as a basis for the settlement of national budget execution. The Central Bank makes payments to installment savings<sup>8</sup> with surplus revenue.<sup>9</sup>

The Central Bank uses idle capital in the savings accounts of institutions and enterprises and in private savings as sources of loans. With respect to the savings system of institutions and enterprises and the private savings system in North Korea, institutions and enterprises have to open savings accounts in one of the banking institutions. They have to focus surplus capital into accounts, and all transactions are made through accounts.<sup>10</sup>

Money transactions that rise from business of institutions and enterprises, such as income from selling products, payments for raw materials, settlement of national budget and bank loans, are all made through savings accounts of banking institutions. The money remaining in the savings accounts of institutions and enterprises is used as the source of bank loans. The balance of savings accounts of individual institutions and enterprises increases when the income from selling products or national capital supply is deposited. The balance of accounts will be reduced due to salary payments, payments for goods, payments for national budget and the repayment of loans. However, for the overall economy, there is always a gap between the deposit and withdrawal of capital and the capital in savings accounts can be used as a source of bank loans. In order to make use of surplus capital in the bank accounts of institutions and enterprises, the Central Bank continuously monitors and analyzes their bank accounts.

The private savings system is a system that absorbs surplus cash, which people hold temporarily because of the time different in receiving and spending their salary (cash), bank savings, stabilizing cash circulation. This expands the amount of loan sources for banks to promote economic development and improvement of living for the people. Private savings are important for the socialist monetary system. If residents avoid bank savings, cash cannot be collected to the central bank, encouraging black market, laxity in cash circulation and decreases in loan sources. This may lead to disorder in the socialist economic structure. For these reasons, North Korea is pro-

<sup>&</sup>lt;sup>8</sup> Installment savings is the account for managing and settling budget reserves.

<sup>&</sup>lt;sup>9</sup> In the case of budget deficit, settlement of excess expenditure can be considered. However, North Korea insists that budget deficit occurs only in the free market system not in a planned socialist system. According to the Dictionary of Finance, "socialist budget is founded on independent and creative labor force and independent and stable national budget. In this context, both fiscal deficit and budget deficit are impossible because budget revenue always exceeds budget expenditure. See Social Science Institution (1995), p. 1,090.

<sup>&</sup>lt;sup>10</sup> Payment in trade among institutions and enterprises should be settled in a non-cash way through banks. The non-cash circulation system will be discussed later in this paper.

moting the increase in savings across the nation.

There are regular savings, lottery savings, reserve savings and issued savings. Regular savings does not have fixed amount and period; depositors can withdraw or deposit any time. The interest rate of regular savings is around 3 percent. Regular savings similar to South Korea's regular deposit. Lottery savings are similar to regular savings in that depositors can withdraw or deposit at any time in any amount. There is no interest, though whoever wins the quarterly lottery receives a prize. Since there are no commercial raffles in North Korea, the lottery savings was introduced to motivate savings. Reserve savings have fixed periods, within which depositors can deposit once or several times and make the withdrawal upon due date. The reserve savings is similar to South Korea's fixed deposit. Its interest rate is 3.6 percent, which is slightly higher than the interest rate for regular savings. Issued savings means depositors are given savings certificates equivalent to the amount of deposit; when they present savings issues, they can withdraw their money. Although there are no bankbooks, depositors receive interest for their savings. Regular savings, issued savings and lottery savings can be seen as short-term savings, whereas reserve savings are long-term saving.

North Korea adheres to principles of volunteering, service, planning and confidentiality to boost savings. The principle of volunteering asks all workers to participate in the promotion of savings voluntarily. The service principle is to guarantee residents' convenience when they withdraw or deposit their money. The planning principle pursues planned promotion of savings from residents' wage and cash. The principle of privacy guarantees privacy for individual savings.<sup>11</sup> North Korea is emphasizing these principles because mobilizing private savings is not as easy as controlling savings of institutions and enterprises. Enterprises and institutions are obliged to focus their monetary funds in bank savings, so the bank is able to immediately utilize the idle capital in their bank accounts as loan sources. However, private surplus capital cannot be used unless it is deposited in the bank. North Korea has a savings network of banks and communication offices. North Korea uses branches of the Central Bank in cities and counties and thousands of savings offices as the bank savings network. Post offices, communication savings network.

In North Korea's capital supply system, capital used for business activities (basic construction, large-scale repair, general activities) are in principle supported by the state, but additional capital demands have to be met with bank loans. The Central Bank makes loans to institutions and enterprises by utilizing savings of institutions

<sup>&</sup>lt;sup>11</sup> Considering the tendency to avoid putting private savings in a back bank savings, it is likely that these principles are not observed in reality.

and enterprises, residents' savings and insurance fees. However, loans are strictly for institutions and enterprises; residents are not allowed to borrow from banks.<sup>12</sup> Loans to institutions and enterprises are strictly controlled by four principles: planning, goal-orientation, repayment and security. The principle of planning signifies the mobilization and method of distribution of loan sources and limits on loans. The goal-oriented principle implies that loans should be used for specific purposes. The principle of repayment means that loans have to be paid back on the due date. The principle of security indicates that bank loans require collateral (commodities, production cost, monetary property).

As a principle, the borrowing period should be short-term (within one year, mostly three to four months).<sup>13</sup> Loans are divided into state-run enterprise loans, cooperative organization loans and other loans. State-run enterprise loans, which resolve liquid capital demands, supplement state-guaranteed capital. State-run enterprise loans consist of planned loans, controlled loans and supplementary loans. Planned loans are loans for normal production activities based on the amount of liquid capital holdings. Controlled loans are loans on additional capital demands created by objective reasons in the process of economic activities. The supplementary loan is a loan for the shortage of capital incurred by the mismanagement of enterprises. Cooperative organization loans are to support the additional capital demands of institutions and enterprises based on their collective properties.<sup>14</sup> Other types of loans include loans for foreign currency gains and side business accounting capital loans.

Interest is imposed on bank loans to control the usage of capital; interest plays a role of stimulating and regulating loans so that they are used properly and paid back on time. Normal loan interest is lower than arrears of state payment and payment of commodities and higher than savings interest. Loan interest is lower than arrears in so that enterprises can fulfill their repayment obligations on time, stimulating the circulation of capital by transferring the creditor-debtor relationship between enterprises to that between banks and enterprises. It is higher than savings interest to prevent reverse margin. Interest on loans is differentiated according to borrowers. For instance, if an enterprise borrows from the bank due to poor management, the bank

 $<sup>^{\</sup>rm 12}$  In the case of cooperative farm members, however, they may receive loans from the Cooperative Farm Trust.

<sup>&</sup>lt;sup>13</sup> Long-term loans are exceptionally applied in the cases of ginseng cultivation, which has a long growth cycle. North Korea recognizes the principle of long-term loans for capital demands for the expansion of fixed assets and capital loans related to reproduction. See Social Science Institute (1995). p. 398, 400-401, 405.

<sup>&</sup>lt;sup>14</sup> Loans for cooperative enterprises have low interest rates. For instance, loans for tideland farms and mulberry farms have no interest.

imposes a high interest rate; if it fails to repay upon maturity, a penalty, is imposed.

In order restrict loans to absolutely necessary capital demands in North Korea, loan planning is approved by the government. Once the loan limit is established, it has legal and instructive characteristics. The process of establishing a limit on the amount of loan is as follows: institutions and enterprises submit a request for a loan application to the central bank's branch banks (including other banks) every quarter —branch banks of the central bank (including other banks) set up a loan plan and submit it to the Central Bank—the Central Bank sets up the overall loaning plan— after receiving government approval, the Central Bank gives out the limit on loaning to its branches (including other banks).

The Central Bank is in charge of domestic insurance.<sup>15</sup> North Korea operates the insurance system to protect the loss of lives and property in the unexpected disasters. There is no fundamental difference when compared to the market economy reasons for maintaining the insurance system, but only a state-operated insurance system exists.

North Korea's insurance is divided into property insurance and life insurance compulsory insurance and voluntary insurance and into direct insurance and reinsurance. The property insurance, which covers fixed and floating assets, includes fire insurance, vessel insurance, cargo insurance, airplane insurance, machine damage insurance, construction and facility assembly insurance, atomic energy insurance, glass insurance (for glass damage and cracks), forest insurance, crops insurance and livestock insurance. In North Korea, assets held by institutions, enterprises, and cooperative organizations have to be insured, but private properties or livestock are subject to voluntary insurance. Property insurance pays for the loss of property during the insurance period, but the insurance premium is not returned after the termination of the contract. Life insurance, maturity insurance, passenger insurance, child insurance and disaster insurance come under health insurance (only passenger insurance is compulsory). Health insurance is different from property insurance in that insurance fees are returned with interest even after the termination of the contract. So it may seem like a long-term savings product to collect idle capital from people. Most insurance services in North Korea are direct insurances, but there are some indirect insurance products such as vessel insurance, cargo insurance, airplane insurance and technical goods insurance. Third-party liability car insurance is operated as a compulsory insurance.

North Korea also operates a social insurance system. The social insurance system guarantees workers in institutions, enterprises and cooperative organizations that have lost their ability to work temporarily and that can recover within six

<sup>&</sup>lt;sup>15</sup> The Chosun International Insurance Company is in charge of international insurance.

months. Social security provides benefits in the form of temporary aid, childbirth subsidies, funeral subsidies, medical aid, recuperation aid and convalescence aid. Social insurance, in the case of workers in the manufacturing industry, is given as a certain percentage of monthly salary. In the case of cooperative farm members, it is given according to average working days. The main source of social insurance comes from national budget, but workers pay 1 percent of their wage for insurance fee. Upon losing the ability to work completely or for a long period of time, social security is applied instead of social insurance. In the case of social security, pension, housing, food and fuel are provided on a continuous basis.<sup>16</sup>

## C. Monetary Policy and Foreign Exchange Management System

#### 1) Definition of Money in North Korea

In North Korea, the definition of money is "special goods used as a medium of general parity." "General parity" functions as a medium of value and exchange for all other commodities. Such a definition emphasizes the measuring function and exchange function of money.<sup>17</sup> In that sense, the concept and definition of money are not so different from those of the market economy. However, North Korea's mone-tary system is based on Marxism, so the interpretation and management of the mon-etary system from social and economic aspects are very different from the interpretation of the market economy.

In a capitalist society, money is transformed into "capital" and is used as a tool to exploit workers, but in a socialist society, money is a tool to stabilize life.<sup>18</sup> In a socialist society, money is used because of the goods-money relationship,<sup>19</sup> but money is not transformed into "capital." The goods-money relationship is a three-step circulation relationship of "capital" according to the circulation relationship formula G-W… P… W'-G'(money-goods… production process… goods'-money'). In the first step, which is the circulation step (G-W), "monetary capital" is

<sup>&</sup>lt;sup>16</sup> North Korea's social security system gives cash or goods in the form of pension for meritorious people recognized for merit, pensions for the elderly, pensions for the loss of working ability due to long illnesses or disability, pensions for bereaved families and subsidies for families in the rear. Medical support is provided to the people and jobs are guaranteed for those with social security that have recovered their health. The most important people in North Korea's social security are "revolutionary fighters" and their families, families of patriots, families of those in the military and honored soldiers. See Social Science Institute (1995), p. 655.

<sup>&</sup>lt;sup>17</sup> North Korea admits that cash also functions as a means of savings and payment.

<sup>&</sup>lt;sup>18</sup> In North Korea, the definition of capital is 'a value used for exploiting wage workers to obtain surplus value.'

<sup>&</sup>lt;sup>19</sup> Kim Jong-Il (1990), p. 182.

transformed into a means of production (machines, raw materials) and labor. In the second step, the production means and labor combine and create surplus value through capitalistic reproduction. The third step, which is the circulation step (W'-G'), signifies a capital circulation process where the surplus value is materialized into money and the capitalist exploits the surplus value that has been created in the production stage by workers.<sup>20</sup> North Korea explains that although the capital circulation process is shown in socialist nations, the state possesses all means of production, so the surplus value created in this process is returned to workers and that money is not transformed into "capital." North Korea's basic concept of money is reflected in its money circulation system. In North Korea, the use of "cash" is limited to transactions for consumer goods under taken by people. Institutions and enterprises are not allowed to use cash in transactions of productions means; instead, they have to use "non-cash" transactions to settle costs. The principle of "non-cash" transactions is to prevent cash from transforming into capital in the North Korean society.

North Korea's monetary circulation system is largely divided to "cash circulation" and "non-cash circulation." Money circulation is linked with retail goods circulation and service transactions; the non-cash circulation is usually linked with the circulation of the means of production.<sup>21</sup> Due to the monetary circulation system, cash (bank issues) is used when the people trade consumer goods. Payment in transactions for production means by institutions and enterprises cannot be made in the form of cash; only settlement through bank accounts is allowed. The reason for the "non-cash circulation" is that the bank can financially control the monetary transaction of institutions and enterprises and block private transactions of production means. From this point of view, the control of the North Korean government on the monetary system, at least when it comes to non-cash circulation, is almost perfect. However, the North Korean government faces limits in perfectly controlling the

<sup>&</sup>lt;sup>20</sup> Social Science Institute (1995), pp. 874-875.

<sup>&</sup>lt;sup>21</sup> North Korea has divided money circulation into currency circulation and non-currency circulation because it differentiates "goods" from "forms of goods:" only consumer goods are called "goods." On the other hand, machinery, tools of production, and raw materials are regarded as 'forms of goods.' The most important criterion for "goods" and "forms of goods" is the change of ownership. That is, things are called "goods" only when the ownership is transferred as a result of transaction. For example, when people buy shoes from government-run stores, they own the shoes; thus, the shoes are "goods" and buyers have to pay for them. On the other hand, when the producer of power generators (A) sells power generators to a cement producer (B), the power generators are not "goods." The reason is that both A and B are state-owned companies and there is no change of ownership. However, because both of them have their own self-supporting accounting system, B should pay A for the power generators. Although the power generators are not "goods," they are not largely different from "goods" in real terms, in that payment has to be made. From this point, they are called "forms of goods."

cash circulation. In North Korea, cash is provided to the people as monthly salary, and if they deposit the money left from acquiring supplies from state-run stores in the bank, the money can be collected by the central bank. Yet, if they use the farmers markets instead of state-run stores and keep the floating cash at home, a monetary overhang occurs and smooth cash circulation cannot be achieved.<sup>22</sup> The North Korean authorities have promoted savings and expanding insurance to prevent monetary overhang. However, with savings and insurance, if it is thought that redemption of cash will be difficult, compulsory 'monetary exchange management' is mobilized.

#### 2) Monetary Policy

In North Korea, "currency" is a concept that designates cash. "Savings" is not included in currency, so the idle money in the accounts of institutions and enterprises is not considered currency in North Korea.<sup>23</sup> The objective of currency control is to maintain purchasing power of money and guarantee smooth money circulation. The Central Bank is in the center of currency control. The Central Bank controls the supply and demand of money according to cash circulation and non-cash circulation, based on its monetary and financial plans. In non-cash circulation, inflows and outflows of funds take non-cash forms according to the state's financial plan, allowing full control of the central bank. Cash circulation, however, is dependent on the consumption and savings of residents, making it difficult for the central bank to control. Therefore, the central bank's currency control focuses on maintaining the size of cash circulation at a reasonable level based on the "cash plan." We can say that the "cash plan" is the foundation of North Korea's currency control mechanism.

The "cash plan" is a national plan that regulates the size and the source of all cash income and the size and use of all cash outflows that are made through the central bank. It regulates the "circulating cash"<sup>24</sup> and limits the additional issuance of

<sup>&</sup>lt;sup>22</sup> Cash drain is a common phenomenon in socialist countries. This phenomenon has always existed in North Korea but has been aggravated since 1995. "Monetary overhang" is often used as the term for money deposited in private holdings owing to cash drain. Acharya and Spagat (1993) explained monetary overhang by analyzing household savings and the demand for money under socialism. Cottarelli and Blejer (1992) and Kim (1999) made studies on the size of deposited money. According to Kim (1999), monetary overhang in Russia was estimated as 38 percent of household cash balance in 1991. Chawluk and Cross (1997) estimated Polish household cash balance between 1965 and 1993 to be 40 percent. Calvo and Frenkel (1991), and Sahay and Vegh (1996) discovered that private monetary overhang is an obstacle to regime changeover, acting as an inflationary pressure during the changeover.

<sup>&</sup>lt;sup>23</sup> The market economy includes savings in currency.

<sup>&</sup>lt;sup>24</sup> This is the total amount of cash that residents, institutions and enterprises hold. Although institutions and enterprises are supposed to deposit all their idle money in the bank, they can temporarily hold cash to pay monthly salaries.

bank notes.<sup>25</sup> Under cash inflow and outflows are listed goods sales income, transportation income, admission income, public accounting income, communications income, savings, insurance income, service income, remittance income, commodity sales income and other income. In the outgo items are wage capital, award capital, scholarship capital, distribution capital, procurement capital, pension aid capital, travel expenses, retail goods purchasing capital, savings and insurance, remittance, commodity purchasing capital and others. Only the cash that is directly deposited in or withdrawn from the central bank is reflected in the cash plan's income and outflow items. The cash transactions at the farmers market is not reflected in this. The cash plan is formed and executed every quarter; branches of the central bank review the draft of the cash plan of institutions and enterprises and set up the overall cash plan of cities and provinces, submitting it to the respective main branch of the province. The main branch of the province submits the overall cash plan of the province to the Central Bank. The Central Bank designs the indexes for the plan of the people's economy and the financial plan, together with the quarterly cash plan, and finalizes them with the Cabinet's approval, handing them down to its branches.

The goal of the Central Bank's currency control is to realistically synchronize the "necessary amount of cash circulation"<sup>26</sup> with the "amount of cash circulation" based on the cash plan. If the necessary amount of cash circulation is less than the amount of cash circulation, the Central Bank plans an additional bank note issuance; if the necessary amount of cash circulation is more than the amount of cash circulation, the bank seeks to retrieve the cash being circulated. Based on the quarterly cash plan, the Central Bank controls the daily amount of cash increase or decrease according to the range of cash circulation.<sup>27</sup> When the supply of circulation cash (banks' cash holdings for guaranteeing normal cash circulation) given to branches in cities and provinces surpasses the given limit, the central bank's main branch of the province controls cash payments in the provinc and the Central Bank controls the

<sup>&</sup>lt;sup>25</sup> Social Science Institute (1995), p. 1265.

<sup>&</sup>lt;sup>26</sup> The formula to calculate the 'necessary amount of cash circulation' is (total goods price-sales on credit+amount that has reached payment due date) ÷ the speed of cash circulation). However, the speed of cash circulation included in this formula is hard to measure, so the concept of 'speed of cash return' is used. The speed of cash return shows how long it takes for bank issues to be returned to the central bank. The formula for this is 'the total cash income of bank over a certain period ÷average cash issue in that period.' The speed of cash return means the speed of nationwide cash circulation. North Korea believes that if the speed of cash return is increased, it can meet the increased demand for cash with a relatively small amount of cash. In order to increase the speed of cash return, North Korea emphasis the need to strengthen commercial and service sector businesses, planned control of banking institutions' cash circulation rules.

<sup>&</sup>lt;sup>27</sup> The "range of cash circulation" means the cash-holding economic range including the concept of inflows and outflows of residents, institutions and enterprises.

cash payment throughout the nation.28

There are six kinds of North Korean bank notes: 1 won, 5 won, 10 won, 50 won, 100 won and 500 won. There are five types of coins: 1 jeon, 5 jeon, 10 jeon, 50 jeon and 1 won (100 jeon = 1 won). In addition to bank notes, there is foreign currency exchange coupon issued by the Foreign Trade Bank. A foreign currency exchange coupon is currency issued to prevent foreign currency from being directly circulated in North Korea. It guarantees the value of foreign currency and has characteristics of convertible cash. The official exchange rate of North Korea, which is US\$1/2 North Korean won, is applied to foreign currency exchange coupons. Although it is denominated in North Korean currency, it has equivalent value to the US dollar in the black market.<sup>29</sup> It can be used in foreign goods stores, department stores, restaurants and hotels. Recently, North Korea abolished the coupon system to allow foreigners and North Koreans to use foreign currency.

#### 3) Foreign Exchange Management

North Korea's foreign exchange management is monopolistic, indicating that socialist regimes gather all foreign capital to the center for planned use. In North Korea, the Foreign Trade Bank is the core institution of the monopolistic system. The Foreign Trade Bank is in charge of foreign settlements, foreign currency management and control of foreign currency inflows and outflows. Until the collapse of the socialist bloc, the liquidation system was applied to foreign settlements, but now the foreign exchange settlement system through the Foreign Trade Bank is used.<sup>30</sup>

The monopolistic system is closely related to the single trade system. The single trade system means that the state monopolizes all foreign trade; to that end, the state

<sup>&</sup>lt;sup>28</sup> If we compare North Korea's "currency control" and South Korea's "currency management," we see that the subject of North Korea's "currency control" is limited to cash, whereas South Korea includes savings, meaning that North Korea has a narrower subject range of "currency control." Moreover, North Korea directly controls the amount of currency in circulation according to the "cash plan," but South Korea uses monetary policy measures such as loans to financial institutions, payment reserves and open market operation to indirectly control the amount of currency in circulation, with due consideration to the impact on economic indicators such as interest rate and price.

<sup>&</sup>lt;sup>29</sup> For instance, one dollar on the black market is traded at 200 North Korean won. This exchange rate of the black market is also applied to "money tokens": a money token worth one won (0.5 dollar) is 100 North Korean won.

<sup>&</sup>lt;sup>30</sup> In the liquidation system, once liquidation banks of both nations are decided, trading parties go to their designated liquidation bank and collect their payment per case. However, the liquidation banks do not make case-by-case settlements; they hold bonds and debts for a certain period of time (normally one year) and liquidate them in the agreed currency on the decided date. In the exchange settlement system, the trading parties designate their exchange settlement bank (correspondent bank) and open a letter of credit, through which they and their correspondent banks make settlements per case.

must monopolize foreign exchange transactions. In addition, North Korea has adopted the single price in trade system. The single price in trade system means that the state decides the price of imports and exports and trading companies must make import and export contracts with foreign companies based on the price set by the government.

Trade price is established on the average price of the past five years or on the current trade price and is reestablished every year or after several years by mutual agreement. North Korea explains that the single price in trade system can prevent excessive competition between trading companies, liberalizing and decentralizing trade and enabling the state to control and manage foreign trade efficiently. North Korea's monopolistic system and single trade system relaxed with the increase in contraband trade via China for food and daily necessities after the distribution system collapsed in the mid-1990s, which led to increased private holdings of foreign currency.

North Korea adopted the fixed exchange rate system and the Chosun Trade Bank decides the trade exchange rate as the official exchange rate. Officially, the trade exchange rate is only used for domestic settlements. In other words, contracts between trading companies and foreign companies are made in foreign currency and settlements are made in foreign currency, leaving no room for the trade exchange rate. On the other hand, the Foreign Trade Bank pays trading companies exported goods prices in North Korean won, so the trade exchange rate is only applied to domestic settlements. In the cases of foreign travelers and foreign public office workers exchanging foreign currencies with the North Korean won or vice-versa, the non-trade exchange rate is applied, since it is not considered as currency exchange by trade. However, now North Korea applies the trade exchange rate even to such situations.

The North Korean government independently decides the exchange rate decision system, taking many factors into consideration such as the value of the domestic currency, the value of foreign currencies and the level of the international price of trade goods. North Korea has chosen one of the convertible currencies, the US dollar, UK Pound, German Mark or the Swiss Franc, as a peg currency, and decides the basic exchange rate by comparing the market price of the capitalist world denominated in that currency with the state-determiald price of North Korean products. In addition, North Korea applies the exchange rates of the peg currency with other currencies to indirectly calculate the exchange rate. The exchange rate is calculated by comparing the total amount of dollar-denominated foreign currency earned from export over a period of time with the total exports costs denominated in the North Korean won. Moreover, North Korea follows the changes in the value of foreign currencies to adjust its exchange rate.

North Korea's official exchange rate is 2 North Korean won per dollar, but in the

black market, 200 North Korean won is equal to one dollar. Considering that the North Korean authorities recently readjusted the official exchange rate to 150 North Korean won per dollar, we can see that North Korea has overvalued its currency greatly and largely discouraged the corporate sector's desire to export. That is, when a North Korean company wishes to export products worth one dollar, the actual export cost is 200 North Korean won (200 North Korean won per dollar), but the government insisted upon its position that only 2 North Korean won is needed (2 North Korean won per dollar). Such an attitude forces companies to believe that their profitability is so low that it would be better not to export.

# 2. North Korea's Financial System Problems and Future Tasks

## A. Problems

The major problems of the North Korean financial system are the undersized financial sector<sup>31</sup> caused by the structural limits of the socialist financial system and the failure of the socialist financial system when faced with the expansion of private economic activities.

The limits of the socialist financial system are the inefficiency of capital usage due to the undersized financial sector. That is to say, under North Korea's capital supply system, the fund that guarantees production activities, comes mostly from the fiscal fund. As the financial fund only supplements the fiscal fund, the fiscal fund surpasses the financial fund. Therefore, the fund supply system based on the fiscal fund causes inefficient capital use. The capital needed by North Korean institutions and enterprises for production activities is provided by the state budget. However, a fiscal fund free from obligation to redeem principal and interest is more beneficial for enterprises compared to bank loans. From the position of institutions that run the self-supporting accounting system, increased fiscal funding means a higher possibility of accomplishing their production goals.<sup>32</sup> The desire to acquire more funds is shown as a tendency to request excessive funds. In the process of financial planning, institutions and enterprises attempt to include a fund demand that is much bigger than the actual amount of funds needed for production. On the other hand, since

<sup>&</sup>lt;sup>31</sup> The concept of undersized financial sector was introduced by the author to describe the North Korean system of fund supply in which fiscal fund surpasses financial fund.

<sup>&</sup>lt;sup>32</sup> According to Kornai, companies under socialism tend to negotiate with superior institutions to acquire more capital funds. This behavior is explained by the concept of soft budget constraint. See Kornai (1992), p. 131-138.

North Korea strictly controls state funds, institutions and enterprises try to fabricate overstated capital demand as the actual capital demand. The overstated capital demand and the tendency to fabricate information at institutions and enterprises leads to inefficient capital use in the overall economy.

For instance, if institutions and enterprises receive more capital than they need from the government, they would waste their funds by purchasing unnecessary raw materials in the process of achieving their production goals, to conceal the fact that they have asked for more than they needed. However, even if they receive less than they have asked for, they still need to waste their funds and not achieve their production goals in order to justify their request.<sup>33</sup> Thus, not withstanding strict financial control, excessive demand for funds occurs in the process of making financial plans under the capital supply system based on fiscal funding. It is difficult to restrain inefficient capital use, and the system goes as far as fanning the inefficient capital use.

Nonetheless, unlike the fiscal fund, the financial fund raises the efficiency of capital use even when the state does not impose controls. If institutions and enterprises have to finance from bank loans instead of fiscal funds, they would have to spend more than they need to on financial costs in the case of excessive borrowing; in the case of borrowing lesser than they need, problems may rise in running their business. Ultimately, institutions and enterprises would receive only the amount of capital they need, reducing chances of capital being wasted. In terms of efficient capital use, financial fund is more advantageous than fiscal fund. However, since the financial fund supply is not active in North Korea, the overall efficiency of capital use is low.

North Korea's financial problems appear in the failed operation of the socialist financial system. From the mid-1990s, the farmers market expanded and North Koreans chose to hold cash, avoiding bank savings, holding foreign currency and engaging in private financial transactions. These phenomena caused the incompetence of the "cash circulation system" that supports North Korea's socialist financial system. If North Korea's cash circulation system operates normally, the central bank can supply cash for workers' wages and recollect the cash through state-run stores and bank savings, controlling so that an adequate amount of cash is circulated in the market. Since 1995, however, the distribution system has collapsed and public participation in private economic activities has resulted in the malfunctioning of the cash circulation system. As the people went to farmers markets and spent their cash to buy goods instead of state-run stores that had no goods to sell, the central bank was unable to properly control the expansion of cash circulation.

<sup>&</sup>lt;sup>33</sup> If companies meet their production goals without problems despite having received funds smaller than their demand, it is a self-confession that they have made an overstated demand in the first place.

The amount of cash circulating rapidly increased in two ways. First, wages flows into farmers market and cash constantly flowed into the civilian sector. The central bank could not recollect cash, so the amount of cash circulation increased on an accumulative basis. Second, due to the high price of commodities in the farmers market and fairs, North Koreans withdrew their money from the bank and used it for living expenses or business funds. This was the reason for expanding the stock of cash circulation in the North Korean economy since 1995 in such a short period of time.

The recent amount of cash circulation in North Korea is assumed to be 72.96 billion won, which is estimated to be 7.5 times the 9.72 billion won of 1990. The amount of cash held per household is 14,069 won, which is 78 times the monthly salary (160-200 won) per worker household. By region, North Pyeongan province has the largest cash holding per household, 23,095 won, followed by the 20,860 won of Pyongyang. The average amount of cash holding per household in South Pyeongan Province, South Hamgyeong Province, North Hamgyeong Province, Jagang Province and Yanggang Province is between 11,428 and 14,799 won. In South Hwanghae Province, North Hwanghae Province, the amount of cash holding per household is 6,482 won, creating the lowest stratum. North Korean households began to hold a massive amount of cash because the current market price has risen by 11 times the state-fixed price based on purchasing power. During the 1990s, when distribution was normal, North Koreans were able to manage their life by spending 1,920-2,400 won (with a monthly salary of 160-200 won) a year. In recent days, however, they need to spend 23,590 won, 11 times more

		Recent size of c	ash circulation	Size of cash circulation in 1990			
Region	Number of households	Amount of cash circulation (1 million won)	Average of Households (won)	Amount of cash circulation (1 million won)	Household average(won)		
Pyongyang	829,336	17,300	20,860	2,307	2,781		
S. Pyeongan	709,749	9,359	13,187	1,248	1,758		
N. Pyeongan	630,002	14,550	23,095	1,940	3,079		
S. Hwanghae	510,382	3,308	6,482	441	864		
N. Hwanghae	406,709	2,636	6,482	351	864		
Gangwon	390,760	2,533	6,482	338	864		
S. Hamgyeong	717,723	9,785	13,634	1,305	1,818		
N. Hamgyeong	518,355	7,671	14,799	1,023	1,973		
Jagang	303,042	3,463	11,428	462	1,524		
Yanggang	167,472	2,321	13,857	309	1,848		
Total	5,183,530	72,926	14,069	9,724	1,876		

<Table 14.4> Cash Circulation by Province

Source: Seok-Sam Park (2002).

than the past amount, to sustain living.

Although direct use of foreign currency is officially prohibited in North Korea, with an active private economy, the people's propensity to hold foreign currency has spread. Recently, the total amount of foreign currency held by households is \$960 million, or 192.82 billion North Korean won (at the market exchange rate of 200 won per dollar). The average amount of foreign currency held by households is \$186. Households in North Pyeongan Province have the highest average foreign currency holdings: \$275 dollars. Pyongyang is next with \$253 dollars. Households in South Pyeongan Province, South Hamgyeong Province, North Hamgyeong Province, Jagang and Yanggang hold \$160-194 on average. In South Hwanghae Province, North Hwanghae Province and Gangwon Province, households have \$111. The total amount of foreign currency held by households is 2.6 times larger than the total amount of cash circulation (72.93 billion won). North Koreans have a tendency to hold foreign currency to keep as financial assets rather than to use as a

	TotalRatio onumber ofhouseholhouseholdsholding		Number of households holding		nt of foreign ld by civilian	Average amount of foreign currency held by households		
	(10,000)	foreign currency	foreign currency (10,000)	1 million North Korean won	1 million dollar	1 won	1 dollar	
Pyongyang	82.9	043	35.8	41,913	209.6	50,538	253	
S.Pyeongan	71.0	030	21.5	25,172	125.9	38,632	193	
N.Pyeongan	63.0	047	29.6	34,605	173.0	54,928	275	
S.Hwanghae	51.0	019	9.7	11,379	56.9	22,295	111	
N.Hwanghae	40.7	019	7.7	9,068	45.3	22,295	111	
Gangwon	39.1	019	7.4	8,712	43.6	22,295	111	
S.Hamgyeong	71.8	031	22.3	26,084	130.4	36,343	182	
N.Hamgyeon	51.8	033	17.1	20,025	100.1	38,632	193	
Jagang	30.3	027	8.3	9,701	48.5	32,012	160	
Yanggang	16.7	031	5.3	6,160	30.8	36,782	184	
Total	518.3	0.32	164.7	192,819	964.1	37,198	186	

<Table 14.5> Household Foreign Currency Holdings in North Korea

Note: Applied market exchange rates: 200 won/dollar, 25 won/yuan, 2 won/yen. Source: Seok-Sam Park (2002).

<sup>&</sup>lt;sup>34</sup> This is a general trend in socialist countries. For instance, from the late 1970s, due to the depreciation of the Russian ruble, households chose to hold hard currency in order to maintain the actual value of their assets. See Meyendorff (1994).

means of payment.<sup>34</sup> The foreign currency held by North Koreans from the aspect of financial assets has the characteristics of savings assets or bonds rather than savings for payment on demand. For instance, the foreign currency held by the people is mostly in large bills. In order to obtain a bill of \$100, they need at least 20,000 North Korean won in cash, which shows that foreign currency is used as a financial asset that can keep the value of currency instead of bank savings. The North Koreans' tendency to hold foreign currency signifies that dollarization is in progress in North Korea.

Under North Korea's financial system, ordinary residents cannot borrow from the bank and financial transactions between residents are prohibited. However, the lax distribution system in 1995 stimulated the private economic sector and residents began to make financial transactions with one another to buy food or to do business. Private finance is most active in North Pyeongan Province, North Hamgyeong Province, South Hamgyeong Province, Jagang Province and Yanggang Province, while Pyongyang, South Hwanghae Province and North Hwanghae Province saw relatively less active private finance. According to information from North Korea defectors on the size, purpose and interest of loans, the size of the loans on average is 2,000-3,000 North Korean won, sometimes 10,000 North Korean won. The purpose of borrowing is to use money as a seed for business (75-80 percent), but also to buy food (Pyongyang, North Hwanghae Province, Gangwon Province). The loan interest is normally 10-30 percent a month; the interest is high because the financial transaction between residents is illegal in North Korea. According to defectors, money holders hesitate to make loans.

## **B.** Direction of Financial Reform

As the foundation of the monetary and financial systems that sustained the planned economy was shaken due to the expansion of the farmers market, the North Korean regime was at crossroads. One choice was to introduce a coercive "monetary exchange arrangement" and collect cash in the private sector to close down the farmers market and restore the central bank's ability to control currency. The other choice was to develop depository products through the reform of banking

<sup>&</sup>lt;sup>35</sup> Song-Sim Lim (2000a, 2000b) pointed out the problems in designing the "resident's currency account balance chart," statistics showing the currency incomes and expenses of the residents. His study suggests that more basic data needs to be collected to resolve the problem simultaneously in two major journals (*Kim Il-Sung University Journal*. 2002. No. 2. and *Economic Research*. 2000. No. 2. This shows the possibility that the North Korean authorities will conduct research regarding the size and distribution route of cash in the private sector to redeem cash.

<sup>&</sup>lt;sup>36</sup> In December 1947, North Korea enforced monetary reform by abolishing Chosun Bank notes from

system and induce residents to voluntarily deposit cash in the bank.35

However, if the North Korean authorities collected cash by coercive measures such as the monetary exchange arrangement (February 1959, April 1979 and July 1992),<sup>36</sup> the market price and currency rate would not be able to function as market signals. The farmers market in North Korea would no longer be able to provide North Koreans with food and daily necessities. This instability could give rise to discontent with the North Korean regime. Taking these points into consideration, the North Korean regime seemed to recognize the need to maintain the existing market price system, inducing voluntary bank deposits from its people through "trust banks" rather than using coercive monetary exchange.

The establishment of trust banks can be interpreted as a preliminary arrangement for transition to a market economy. The major economic reforms that a socialist state executes when switching to a market economy are revision of the banking system, abolition of the state's fund guarantee for state-run companies, liberalization of price and wage, revision of the tax system, reform of trade and foreign exchange system and privatization of companies, land and houses. Of these reforms, the revision of the banking system is usually enforced prior to the other reforms. In the case of abolishing the state's fund guarantee for state-run enterprises, institutions and enterprises have to depend on such financial funds as bank loans that were previously supplied from the fiscal fund (national budget). In order to prevent confusion and provide quick financial funds during the process of systemic switchover commercial banks, the financial architecture must be established in advance to handle increasing loans.

Due to these reasons, all countries that converted their systems, including China

the time of the Japanese colonization and issuing notes of the Central Bank of North Korea. At that time, the exchange rate of old notes against the new notes was set at 1:1. New bank notes (100 won, 10 won, 5 won, 1 won) were issued, as well as small-sum bank notes (15 jeon, 20 jeon, 50 jeon). Thereafter, North Korea underwent three phases of monetary exchange reform. The first monetary exchange measure was enforced in February 1959; at that time, the Central Bank of North Korea was renamed the Central Bank of the People's Republic of Korea. The exchange rate of the old notes (North Chosun Central Bank notes) against the new notes (Chosun Central Bank notes) was set at 100:1. The face values of wages, product prices, service fees, bonds and liabilities were readjusted at 100:1. Bank notes (100 won, 50 won, 10 won, 5 won, 1 won, 50 jeon) and coins (10 jeon, 5 jeon, 1 jeon) were newly issued. During the first monetary exchange reform, there were no regulations to limit exchange. The second monetary exchange measure was enforced in April 1979. The monetary exchange rate at this time was 1:1, and there were no exchange limitations. During the second monetary exchange reform, bank notes (100 won, 50 won, 10 won, 5 won, 1 won) and 50 jeon coins were newly issued. The existing coins (10 jeon, 5 jeon, 1 jeon) were maintained. The third monetary exchange reform was enforced in July 1992. Exchange rates were set at 1:1 and exchange limits were within 1,000 won (it was unclear whether this limit was per capita or per household) and the balance was to be deposited in banks. At that time, North Korea issued new bank notes (100 won, 50 won, 10 won, 5 won, 1 won).

(1984), Russia (1987), Hungary (1986), Poland (1989), East Germany (1990) and Czechoslovakia (1990), reformed their banking system prior to executing a fullscale economic reform program.<sup>37</sup> After deciding to reform and liberalize its market in 1978, China showed efforts to dismantle its mono-bank system by establishing national banks in March 1979, including the Agricultural Bank and People's Construction Bank. In January 1984, China chose the two-tier banking system and put an end to its mono-bank system by creating the Industrial Bank and transferring the control of commercial finance from the People's Bank.<sup>38</sup> Russia took the first step in the economic reform process by choosing the two-tier banking system in 1987. In December 1991, laws related to the central bank and commercial banks were officially adopted; from January 1992, economic reforms such as price liberalization and privatization were enforced. Hungary revised its banking system, choosing the two-tier banking system in 1986. From 1988, full economic reforms began and the range of reforms was expanded to price liberalization in 1991 and privatization in 1992-1993. Poland adopted its bank laws and introduced the two-tier banking system in 1989. A full-scale economic reform took place between 1989-91. East Germany enforced financial reform in April 1990 before the enactment of "Economic, Currency and Social Integration Agreement of East and West Germany" (July 1, 1990) and dismantled the existing mono-bank system and introduced the two-tier banking system. Czechoslovakia chose its two-tier system in 1990, undertaking full-scale economic reform. It has become typical for socialist states to adopt the two-tier banking system before all other reform measures in the process of systemic switchover to market economy.

The speed of reform depends on what kind of reform measures are taken after the revision of the banking system. The abolition of fund guarantee for state-run enterprises and the liberalization of price and wage are core reform measures that enable self-regulatory and self-responsible economic activities for all economic subjects including enterprises and households. The order of the two measures is crucial, since they decide the speed of transition.

When the liberalization of price and wage is enforced before the abolition of fund guarantees for state-run enterprises, the systemic transition tends to be radical. Transition goes through the following stages: ① revision of the banking system  $\rightarrow$  ② price and wage liberalization  $\rightarrow$  ③ changes in the price and wage system  $\rightarrow$  ④ price and wage increase  $\rightarrow$  ⑤ remove fund guarantees for state-run enterprises with state budget and consequent abolition of the state's fund guarantee  $\rightarrow$  ⑥ change of

<sup>&</sup>lt;sup>37</sup> European Bank for Reconstruction and Development (1996), pp.33-64.

<sup>&</sup>lt;sup>38</sup> The two-tier banking system was established in China in 1984. However, it was in March 1995 that the "People's Bank Law" was officially enacted, the monetary policy was established and carried out by the People's Bank, and the authority to audit financial institutions was given to the Bank.

fiscal fund to financial fund  $\rightarrow \bigcirc$  revision of the corporate tax system to maintain the small state budget. The economic reform may go astray in the absence of followup measures after the liberalization of price and wage. Therefore, once the price and wage liberalization measure is enforced, a follow-up measure is absolutely necessary. Hence, the economic reform tends to be radical.

On the other hand, if the abolition of fund guarantee for state-run enterprises comes before price and wage liberalization, the transition tends to be gradual. The process of the reform may be as follows: ① revision of banking system as the preparation stage  $\rightarrow$  ② abolition of fund guarantee for state-run enterprises  $\rightarrow$  ③ change of fiscal fund to financial fund  $\rightarrow$  ④ completion of a series of reforms under the name of "revision of corporate tax system to maintain small state budget" and prepare countermeasures for inflation  $\rightarrow$  ⑤ price and wage liberalization  $\rightarrow$  ⑥ change in price and wage system  $\rightarrow$  ⑦ rise in price and wage. In this case, even if measures removing fund guarantees for state-run enterprises are executed, there is no need for price liberalization to be followed immediately. Therefore, there is time to seek measures to respond to inflation.

It would be desirable for North Korea, in pursuing economic reform, to abolish fund guarantees for state-run enterprises and choose gradual price and wage liberalization after revising its banking system. To restrain the rise in prices due to free pricing and wages, supply in the overall economy should be able to expand rapidly. However, when taking into account North Korea's current factory operation capacity rate, it is not easy for North Korea to plan a short-term productivity increase sufficient to offset this kind of price rise. Yet, North Korea has actually liberalized price and wage by raising the price to the price level of the farmers market through economic arrangements last July. This suggests rapid progress in North Korea's economic reform. Due to these arrangements, North Korea is in a situation where it cannot slow down the rate of the current progress of the economic reform, and now it it will have difficulty resolving such problems as inflation and shortage of goods if it does not accelerate the reform.

In this view, it is necessary for North Korea to promptly carry out all kinds of reform arrangements. First, the fund supply system based on fiscal funds should be based on financial funds. To that end, the supply of fiscal funds to state-run organizations and enterprises should be completely stopped. By transferring the functions of commercial banking at the Chosun Central Bank to trust banks, organizations and enterprises would be asked to borrow from the trust banks. Funds related to public expenditure (additional policy fund, agricultural fund, military fund, local management fund, fund for urban management, science/technology fund and fund for land

<sup>&</sup>lt;sup>39</sup> The fund for people's economic activities consists of additional policy fund, fund for industry, agri-

business) in the fund for people's economy, as well as people's policy fund, military fund and state management fund, will still be supplied with financial expenses.<sup>39</sup> In this case, the proportion of the expenditure for fund guarantee for organizations and enterprises from the existing state budget in the overall budget would decrease rapidly.

The revision of fund supply system would serve as an opportunity to reinforce the self-supporting accounting system of enterprises and revise the tax system. Under North Korea's budget-oriented fund supply system, the self-supporting accounting system was in name only because the state covered losses that were incurred by poor business management. The enterprises' responsibility for management would increase and the self-supporting accounting system would eventually be reinforced if the state stops fund supply and asks enterprises to make bank loans, since they would have to pay not only the interest, but also the principal. Moreover, North Korea is expected to revise the tax system. Until now, state enterprise profits and transaction income from the corporate sector have been the state's financial resources. However, if the state does not provide funds to enterprises, it would not be easy to demand they hand over financial resources. Therefore, the government would need to ease corporate tax burdens and revive the tax system to levy certain taxes on the residents instead. With such tax revision, factories and enterprises would be better motivated to produce due to tax burdens and the form of their management would be similar to that of companies under the market economy system, which are after the maximization of profits.

cultural fund, science and technology fund, fund for urban management, fund for land business, local management fund, fund for international economic activities and fund for maintenance and repair.

<sup>·</sup> Additional policy fund: A kind of price subsidy for food and necessities, such as compensation for price reduction, compensation for state food price reduction, compensation for the difference of state food price, compensation for the difference of clothes price. • Fund for industry: Funds provided to enterprises operating the self-supporting accounting system, such as fund for production expansion, fund for price differentials, fund for organization activities and operation fund. • Agricultural fund: Financial support for farms, such as fund for production increase, subsidy, and compensation. Science and technology fund: • Fund for science research and experiments, basic research, applied research, import research and fund for technological development. • Fund for urban business: Fund for planting trees, fund for city beautification activities. • Fund for land development: Fund for production increase, fund for organization maintenance and fund for forest protection. • Local management fund: Fund for local organizations, fund for organizations of budget system and compensation for price differentials. • Fund for international economic activities: Loans, deferred repayments, loan repayments, losses from trade differentials and support funds. • Fund for maintenance and repair: Funds for materials for repair and remodeling of fixed assets of organizations and budget organizations operating the self-supporting accounting system. Sources: Social Science Institute (1995), Institute of North Korea Studies (1983) and Jin Park (1994), p. 33.

# 3. The Price Management System<sup>40</sup>

## A. Definition of Price in North Korea

In North Korea, price originally applies to products, that is, general consumer goods. However, it also applies to means of production (raw materials, subsidiary materials and mechanical facilities) that are traded between organizations and enterprises. Price is applied to means of production because North Korea wants to expand socialistic accumulation and reinforce the self-supporting accounting system of enterprises. Price in North Korea is planned by the state, aiming at ① planned management of the people's economy and sparing of social labor, ② increase of the state's accumulation and profits of enterprises and ③ improvement of the people's life through distribution and redistribution of national income.

The price of each product is estimated on the basis of the necessary social labor expenditure. The necessary social labor expenditure indicates the average working hours put into the production of goods. The amount of the necessary social labor expenditure decides the value of products and becomes the basis for the price decision of products. It is argued that the necessary social labor expenditure, which is reflected on the products, must be calculated accurately when deciding the price of products. If prices are not decided based on the necessary social labor expenditure, the equilibrium of prices between products would not be maintained and appropriate socialist distribution would be difficult. All that would hinder the rapid development of socialist production.

North Korea insists that price may not always correspond with the necessary social labor expenditure. This is due to that fact that the state decides prices based on both the "law of value" (necessary social labor expenditure = value of product = price of product) and the "standard economic laws of socialism."<sup>41</sup> For example, the low price of consumer goods and high price of luxury goods is a clear example of the "standard economic laws of socialism." North Korea claims that this price policy is based on the natural requirements of the socialist society, which plans to fulfill everyone's needs by actively separating the price of products from their value.

<sup>&</sup>lt;sup>40</sup> For more details of North Korea's price management system, refer to Social Science Institute (1995), Encyclopedia Press (various volumes) and Chosun Labor Party Publication (1999), pp. 350-375, and Myeong-Seon Li (1991), pp. 32-58.

<sup>&</sup>lt;sup>41</sup> The "standard economic laws of socialism" are economic laws that regulate the means to actualize the basic objectives of economic activities. ① Satisfaction of materialistic and cultural demands; ② tenet of an independent national economy; ③ basic tenet of building socialist economy with priority to heavy industries and twin development of light industries and agriculture; ④ simultaneous growth of accumulation and consumption; and ⑤ simultaneous pursuit of economic construction and national defense construction. *The Chosun Encyclopedia*, Vol. 10, p. 130.

### **B.** Types and Structure of Price

#### 1) Types of Price

The types of price in North Korea are wholesale price, retail price, purchasing price, freight charge and charges. Wholesale price is applied when state-run enterprises trade the means of production with one another or when they supply consumer products. When considering that every means of production of state-run enterprises belongs to the people as a whole, transactions of the means of production between enterprises are internal transactions, which would make the application of price a contradiction. However, each state-run enterprise has relative individuality based on the self-supporting accounting system; the wholesale price, therefore, is applied with the view that the principle of mutual equal compensation is observed when enterprises trade the means of production with one another or supply consumer products. As a rule, retail price is applied only to consumer products. Retail price is broken down into the state-fixed retail price and farmers market price. The state-fixed retail price is imposed on consumer products sold at state-run stores. The farmer's market price is can be decided freely by demand and supply. Purchasing price is applied when the state buys agricultural produce and uses materials from collective farms and residents. Charge indicates a service charge and rental fee that is paid for services and the use of facilities. Freight charge, for transportation services, is classified into passenger transport charge and a cargo transport charge (regular cargo portage, cargo fare, specified fare) according to the mode of transportation. It is also classified into railway fare, automobile fare, vessel fare and airfare according to the means of transportation.

### 2) Price Structure

The price of products is estimated by the related social labor expenditure. The price consists of the prime cost, social net income (profit + transaction income) and additional cost from the view of compensation for labor to reproduce the necessary social labor. These elements can be applied to each type of price. The wholesale price is made up of the prime cost and social net income. The state-fixed retail price consists of the wholesale price and commercial additional cost. Freight charges and charges are made up of the prime cost and social net income. Let us look into the meaning of the elements of price.

The prime cost is the foundation of price structure. The prime cost of products has the biggest proportion in price, so it is not only the basis to decide the price of individual products, but also a measure to estimate the price equilibrium with other products. The prime cost includes all production costs. It is made up of the costs of raw materials, basic materials, subsidiary materials, fuel, power, living expenses, fixed asset depreciation cost and other expenses. The prime cost is the standard of business evaluation of factories and enterprises. The lower the prime cost, the higher the business efficiency. Consequently, reduction of the prime cost is considered an important task for North Korean enterprises. Individual enterprises with a self-supporting accounting system that reduces the prime cost can extend the internal holdings of profit and lower the price of products by reason of an increase in their net income.

Social net income, which is an element of price structure, refers to the distribution of labor that workers newly create for society, and it consists of profit and transaction income. The social net income is a primary financial resource of national enterprise profit and transaction income, which are the major budget resources of North Korea. Profit means the net income of enterprises and constitutes the enterprise price (the prime cost + profit). Most of the corporate profit is paid to the state in the form of national enterprise profit; enterprises can distribute and use the rest for the enterprise fund, prize fund, collective accumulation fund and cultural welfare fund. Enterprises pay most of their profits to the state for the concentrated use of social net profit by the state. Transaction income means payment of a fixed rate of the wholesale price to the state, which is then used for national budget. The North Korean government collects transaction income for the national use of the social net income. In this way, most of the social income reflected in the wholesale price generated by enterprises is paid to the state in the form of national enterprise profit and transaction income. Enterprises can use a limited amount of the social net income for themselves.42

Price also includes additional costs. The additional cost is an element of price to compensate for the costs of product distribution. Commercial additional cost is added to commercial enterprises, and material supply additional cost to material

<sup>&</sup>lt;sup>42</sup> The national enterprise profit and transaction income have in common the distribution form of social net income but are different in substance.

Taxation: Transaction income is a value-added tax (indirect taxation) imposed with a certain percentage on the product's wholesale price. It is supposed to be paid immediately to the state after production. However, the national enterprise profit is a corporate income tax (direct taxation). Enterprises allocate some of the profits for their own internal demand and the rest of the profits go to the national budget in the form of national enterprise profit and local maintenance fund. Because of this, national enterprise profit can change according to the corporate profit and the amount of internal demand.

Imposition subject: Transaction income is imposed on producers such as state-run enterprises and production cooperative unions, but the national enterprise profit has various subjects because it is imposed not only on producers, but also on commercial and service enterprises.

Imposition method: Transaction income is imposed with the portion of "100x (wholesale price—enterprise price)/wholesale price" on the basis of the wholesale price. The national enterprise profit is imposed as the amount of "planned national enterprise profit + [surplus profit—(compensation for business loss + enterprise fund + prize money)—local maintenance fund payment]." Source: Social Science Institute (1995), pp. 34-35, p. 130.

trading companies. The commercial additional cost consists of distribution cost and profit from commercial enterprises. Commercial enterprises take consumer products from producers at the wholesales price and sell them to residents at the retail price that includes the commercial additional cost. The additional cost is an element of price structure that allows business activities based on the self-supporting accounting system by compensating the distribution cost for commercial enterprises and giving them profits. Even if products go through several distribution stages from producer to consumer, the additional commercial cost is imposed only once in accordance with the "principle of one-time imposition of commercial additional cost." Distribution, however, is divided into wholesale additional cost and retail additional cost by distribution stage. When products are supplied directly to retailers without going through wholesalers, all additional costs become retail additional costs. On the other hand, when products pass wholesalers, the commercial additional cost is divided into additional wholesale cost and additional retail cost. The additional wholesale cost becomes income of the wholesale commercial enterprise and the additional retail cost becomes income of the retail commercial enterprise.

Consequently, the commercial additional cost is an important element of the product retail price structure and income of commercial enterprises operating with the self-supporting accounting system. The material supply additional cost has the same substance as the commercial additional cost, but it is applied when material supplying organizations and institutions sell materials to producers.

In sum, wholesale price = the prime cost + profit + transaction income; retail price = the prime cost + profit + transaction income + commercial additional cost; freight charge as well as charge = the prime cost + enterprise profit + transaction income; social net income = profit + transaction income; enterprise price = the prime cost + profit; commercial additional cost = commercial enterprise distribution cost + commercial enterprise profit.

### C. Price Policy

North Korea adheres to the principle of price unification as the basis of its price policy. The principle of price unification guarantees exclusivity of pricing under the national price establishment institution. That is to say, the national price establishment institution guarantees nationwide price exclusivity by directly deciding the price of important products and, in the case of giving authorization to subordinate units to set the price, by strictly controlling the production sector and producing units from raising or lowering the price of products at their disposal, standardizing the method and procedure of price decision. North Korea asserts that the superiority of socialism, which is giving equal welfare opportunity to all workers, is manifested through the price unification policy, making mass consumer products cheap and luxuries products expensive.

North Korea operates the "price differential compensation policy" to maintain the price unification principle. The price differential compensation policy means that the state pays price differential compensation to compensate for the producer's loss when the state sets the product price lower than the actual price for policy purposes. The price differential compensation is either related to business activities or the stabilization of workers' living. The price differential compensation for business activities is paid when the wholesale price (the prime cost + profit + transaction income) is lower than the enterprise price (the prime cost + profit). The price differential compensation for stabilization of workers' living includes the national food price differential compensation, coal supply price differential compensation and product price differential compensation. For example, the national food price differential compensation is paid when a food administration enterprise buys grain at 80 won and sells for 8 won. The coal supply price differential compensation is paid for coal used as public fuel and the product price differential compensation is paid for oil, children's food, fruits, canned food, children's clothing, and children's merchandise for kindergartens and daycare centers.

North Korea has a merchandise price index that has the same function as the consumer price index. The merchandise price index is calculated as  $\frac{\sum P_a Q_a}{\sum P_a Q_a}$ , using the Paasche price index that applies the weighted value at the point of comparison. When considering the weighted value by item, the merchandise price index can be computed as the following:<sup>43</sup>

 
$$I = \frac{1}{\sum_{i} \frac{P_{i0}}{P_{i1}} w_{i1}}, w_{i1} = \frac{P_{i1} Q_{i1}}{\sum_{k} P_{k1} Q_{k1}}, i, k = 1, \dots n$$

In the formula, I indicates the merchandise price index,  $P_{i0}$  the price of i item at the basis time,  $P_{i1}$  the price of i item at the time of comparison,  $Q_{i1}$  the amount of merchandise distribution of i item at the time of comparison, will a weighting ( $\sum w_{i1} = 1$ ) of i item at the time of comparison.

Assuming that the price at the base time is 100, this merchandise price index indicates that a price higher than 100 means a rise in price and a price lower than 100 means a fall in price. Accordingly, there is no difference with the price index of the market economy when limited to the merchandise price index itself. However,

<sup>&</sup>lt;sup>43</sup> The consumer price index is computed by the Laspeyres formula in South Korea. The Paasche formula applies weighting at the point of comparison  $(p_l q_l / \sum p_l q_l)$  when averaging the change of merchandise price, but the Laspeyres formula applies the added weight  $(p_0 q_0 / \sum p_0 q_0)$ .

the state decides the price in North Korea, so the merchandise price index does not have high significance because it does not change without price adjustment. North Korea takes advantage of the merchandise price index for propaganda regarding the government economic policy to its people. For instance, it argues that a drop in the merchandise price index resulting from a state price cut indicates improved material and cultural life.

#### D. Problems with the Price Management System

The problems with North Korean price management are rooted in the inefficient resource allocation due to price decisions based on necessary social labor expenditure, the discrepancy between price and value, and the differential between state-fixed price and farmers market price.

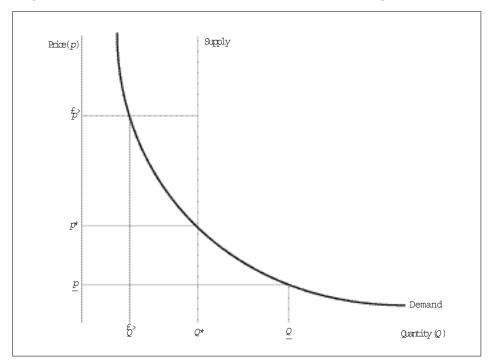
The logic of North Korea's pricing decision is based on "amount of necessary social labor expenditure = product value = product price." This theory does not take into consideration the demand side of production and causes inefficient resource allocation. The above equation means that enterprises come to produce allotted quantity under the given technological circumstances when the state gives necessary social labor expenditure and product price to enterprises. If this is expressed by a numerical formula, the profit function of enterprises is the same as Formula 2:

 
$$\pi = (p - w)Q$$

In this formula,  $\pi$  is enterprise profit, p is the product unit price, w is the necessary social labor expenditure per product item and Q is the allotted amount of production to the enterprise. However, North Korea synchronizes the necessary social labor expenditure with product price, so w becomes p(w=p) and the corporate profit always becomes  $0.^{44}$  Accordingly, enterprises only accomplish the product goal (Q) set by the state, but it is not necessary for them to maximize profit or to minimize expenses. Meanwhile, consumers judge the value of products by their satisfaction from using the products and not by the amount of necessary social labor expenses. In this context, the amount of necessary social labor expenses does not correspond with the utility value of products from the consumer's standpoint. Consumers pay to receive satisfaction from consumption and this can be expressed by the demand curve.<sup>45</sup> Figure 14.2 explains that the method of price decision based

<sup>&</sup>lt;sup>44</sup> North Korea imposes the profit of enterprises and transaction income on the price, so in reality, p > w. Here, it is stated as p = w in order to synchronize the necessary social labor expenditure with product price.

<sup>&</sup>lt;sup>45</sup> North Korea seems to be familiar with such a meaning of the demand curve. See *The Chosun* 



<Figure 14.2> Differences between State-Fixed Prices and Market Equilibrium Prices

on "value of necessary social labor expenditure = product value = product price" brings inefficiency of resource allocation when considering both demand and supply.

In Figure 14.2, if the state-allotted product goal of the enterprise is  $Q^*$ ,  $Q^*$  becomes producer supply. If the North Korean government sets the price at  $p^*$  with consideration to the balance of demand and supply, there is no inefficiency in resource allocation because it corresponds with the market equilibrium price.<sup>46</sup> However, since the government sets the price (p = w) on the basis of necessary social labor expenditure instead of the balance of demand and supply, price (p) becomes lower or higher than  $p^*$  (except for coincidence). If the country sets the price higher than the equilibrium price,  $\overline{p}$ , the part that is not consumed occurs as  $Q^* - \overline{Q}$ . Yet if the state sets the price lower than the equilibrium price, p, the surplus demand of  $Q - Q^*$  occurs. In either case, inefficiency of resource allocation occurs.

Encyclopedia (Volume 1), p. 38.

<sup>&</sup>lt;sup>46</sup> The supply-demand principle works in the market and  $p^*$  is automatically achieved.

The problem of North Korea's price management system is that it deepens the inefficiency of resource allocation by purposefully separating price and value. That is to say, the price system is already distorted by setting the price on the basis of the principle of "necessary social labor expenses = product value = product price" and it is further distorted because the state sets the mass consumer product price low and luxury price high on purpose. Formula 2 can explain this theory. The mass consumer product becomes p < w, as it is set lower than the necessary social labor expenditure and luxury price becomes p > w, as it is set higher than the necessary social labor expenditure. The producers of mass consumer products suffer a loss ( $\pi < 0$ ) and the producers of luxury products make a profit ( $\pi > 0$ ). Consequently, the more the producers of mass consumer products produce, the more losses they suffer. On the other hand, the more luxury producers produce, the more profits they make. As North Korea gives price differential compensation to producers of mass consumer products to compensate for their losses, this price-setting principle causes the inefficiency of resources in two ways. First, if North Korea increases luxury products and decreases mass consumer products on purpose, it can increase budget revenue. Accordingly, the price policy that sets the mass consumer product price and a high luxury product price, despite the fact that the government set out to pursue stability for its people, can be used as a means to supplement budget revenue by using the monopoly of product supply. Second, this kind of price policy causes inefficient resource allocation as it generalizes the lack of resources across the nation. The low price of mass consumer products causes chronic excess demand and the high price of luxury products discourages purchase, causing shortage of materials in all aspects.

Another problem of North Korea's price management system is the dual structure of the state-fixed price and the farmer's market price. The farmer's market price is set hundreds and thousands of times higher than the state-fixed price. This price duality means the failure of the price management system of North Korea in that North Korea's price unification policy does not work well in reality. If there is more than on price for a single product in oue economy differences, it causes illegal economic activities such as abuse of power and corruption, aggravation of the gap between rich and poor, and impede sound capital accumulation. As a result, the foundation of economic development can be weakened.

## 4. Conclusion

On July 1, 2002, North Korea revised its pricing system, raising the price of provisions, fuel, electricity, traffic fare and house rent from tens to hundreds of time. North Korea raised the wage of general workers by 18 times (from monthly average of 100-150 won to about 2,000), 6,000 won a month in the case of a coal miner. North Korea had to revise the price system because the unrealistically low statefixed price system was meaningless when the people began to obtain supplies from the farmers market after the collapse of the state rationing system in the mid-1990s.

The farmers market price was very high when compared to the state-fixed price due to the lack of supplies. For example, 1 kg of rice was 49 won, which was 612 times higher than the state price and corn grains 33.6 won, which was 1,120 times higher than the state price. The rise in price, however, made the state price almost the same as the farmers market price. North Korea also changed its price setting method based on the price of rice. When the government decided the price of rice in the past, it only considered prime production costs of such inputs as water, electricity and fertilizer. Now, it includes the international market price and domestic demand and supply.

The price hike suggests that North Korea has been reviewing the switchover to market economy in three respects. First, North Korea's abandonment of the price decision method based on the necessary social labor expenditure and adoption of the farmers market price, which reflects the demand and supply situation, can be interpreted as a preliminary measure for price liberalization. Second, North Korea, based on the basic economic laws of socialism, kept the price policy by setting mass consumer product prices low and luxury product prices high, compensating for producer losses with price differential compensation from the state budget. However, the recent rise in price de facto repealed the price differential compensation system. Third, although the price is decided by the central and local administrative organizations, local factories were allowed to decide the price of their products. This can be interpreted as relaxation of the principle of price unification adhered by North Korea.

The establishment of trust banks is only the beginning of North Korea's financial reform. There is a possibility that North Korea is seeking financial reform in various fields such as expansion and opening of the financial market, acquisition and development of financial techniques and price stabilization through the central bank's monetary control.

The support from South Korea and international financial organizations is essential for the successful financial reform of North Korea. North Korea can learn from South Korea about the bank accounting system, credit and reception operation and credit rating in terms of commercial banking, as well as the management of monetary control, composition of financial statistics, method of economic research and experiences of cooperation with international financial organizations in terms of central bank operation. North Korea should attempt again to join the Asia Development Bank and accept the Fact-finding Mission of the IMF. Furthermore, North Korea needs to prepare for the public release of economic statistics, which is an obligation of IMF members. North Korea also needs to accept the educational program on market economy provided by the World Bank group and should broaden its network in the international financial market through participating at the BIS conference.

# References

\* In Korean

- Bank of Korea. 2002. "The Meaning of North Korea's Recent Economic Reform and Prospects." (Press release).
- Cho, Myeong-Cheol. 1997. "Research on Management of North Korea's Planned Economy." *Unified Economy*. Seoul: Hyundai Economic Research Institute.
- Cottarelli, Carlo and Mario I. Blejer. 1991. "Forced Savings and Repressed Inflation in the Soviet Union: Some Empirical Results." IMF Working Paper WP/95/55.
- Encyclopedia Press. *The Chosun Encyclopedia*. (various volumes). Pyongyang: Encyclopedia Press.
- Institute of North Korea Studies. 1994. *The Complete Guide to North Korea (1983-1993)*.
- Kim, Jong-II. 1997. "On Strengthening Fiscal and Financial Business." Selection of Kim Jong-Il's Writings. Vol. 10. Pyongyang: North Korean Labor Party Press.
- Li, Myeong-Seo. 1991. *Reasonable Organization of Socialist Reproduction*. Pyongyang: Social Science Press.
- Li, Won-Kyeong. 1986. Socialist Monetary System. Pyongyang: Social Science Press.
- Lim, Song-Sim. 2000a. "Several Problems in Collecting Basic Information on Cash Equilibrium Index of North Korean Residents." *Kim Il-Sung University Gazette: Philosophy and Economic*. Vol. 46, No. 2, pp. 56-60. Pyongyang: Kim Il-Sung University Press.

\_\_\_\_. 2000b. "Problems in Cash Equilibrium Index of North Korean Residents." *Economic Research*. Vol. 2, pp. 20-22. Pyongyang: Science Encyclopedia Press.

- North Korean Labor Party Press. 1999. *Textbook of Political Economy of the Juche Ideology*. Pyongyang: North Korean Labor Party Press
- Park, Jin. 1994. *Current Status and Development of North Korea's National Budget*. Seoul: Korea Development Institute.
- Park, Seok-Sam. 2002. "Research on North Korea's Second Economy: Size of Private Economy, Amount of Cash Circulation and Foreign Currency Held by Households." Seoul: Bank of Korea.
- Social Science Institute. 1995. Dictionary of Finance. Pyongyang: Social Science

Institute.

- The National Unification Board. 1996. *Statistical Data on North Korea's Economy*. Seoul: NUB.
- The National Unification Board. 1999. "Recent Analysis of North Korea's Farmers Market and Price Movement." Seoul: NUB.

\*\* In English

- Acharya, A. and M. Spagat. 1993. "Individual Savings and Monetary Overhang: A Model with Empty Shelves and Parallel Markets." *Economic Systems*. Vol, 17. No, 3. pp. 213-232.
- Calvo, G. A. and J. A. Frenkel. 1991. "Obstacles to Transforming Centrally-Planned Economies: The Role of Capital Markets." IMF Working Paper WP/91/66.
- Chawluk, A. and R. Cross. 1997. "Measuring of Shortage and Monetary Overhang in the Polish Economy." *Review of Economics and Statistics*. Vol. 79, No. 1, pp. 105-115.
- European Bank of Reconstruction and Development. 1995. Transition Report.
- International Monetary Fund. 1997. Democratic People's Republic of Korea: Fact-Finding Report.
- Kim, Byung-Yeon. 1999. "The Income, Savings, and Monetary Overhang of Soviet Households." *Journal of Comparative Economics*. Vol. 27, No. 4, pp. 644-668.
- Kornai, Janos. 1986, *The Socialist System: The Political Economy of Communism*. New Jersey: Princeton University Press.
- Meyendorff, Anna. 1994. "The Black Market for Foreign Exchange in the Former Soviet Union." *Comparative Economic Studies*. Vol, 36. Issue, 4. pp. 161-171.
- Sahay, R. and C.A. Vegh. 1996. "Inflation and Stabilization in Transition Economies: An Analytical Interpretation of the Evidence." *Journal of Policy Reform.* Vol. 1, Issue 1, pp. 75-108.

## **XV. The Commerce and Distribution Systems**

### Myoung-Chul Cho

## 1. The Nature and Concept of Commerce in North Korea

In a socialist country like North Korea, there is a social division of labor in production, goods production and distribution resulting from specialized ownership over products and commerce for distributing products. Commerce in North Korea, however, is defined as "supplying products to the people"<sup>1</sup> and is mainly the supply of life commodities. As a result of the transitional characteristic of North Korean socialism,<sup>2</sup> consumer commodities are categorized as goods. Cost of labor is paid in cash because commerce in North Korea serves to convert monetary income according to the quantity and quality of the labor into actual goods. As opposed to capitalist commerce, North Korea's commerce is highly organized and planned, implying that it does not occur spontaneously or free from government.

Commerce in North Korea has developed since the establishment of commercial state-run and collective organizations in the course of "democratic reconstruction" after independence from Japan. After the Korean War, North Korea went through a socialist transition in agriculture, commerce and industry that resulted in exclusive management by the state. Now, the types of commerce in North Korea are classified into state-managed commerce, collective organization commerce and farmers markets.

<sup>&</sup>lt;sup>1</sup> "Socialist commerce in essence is the business of supplying to the people" (*Collection of Kim, Il-Sung's Writings*. Vol. 18, p. 233).

<sup>&</sup>lt;sup>2</sup> The ownership of the means of production cannot be simplified into state ownership.

North Korean commerce is categorized according to economic mission and distributional organization into wholesale commerce, retail commerce, social supply and procurement. Wholesale commerce connects producers and retailers, secures products from production companies and acts as an intermediary in charge of the circulation of products within the distribution network. Retail commerce is the final stage of product circulation, serving to supply products directly to workers. Social supply is the part of retail commerce that supplies workers with food, but it is different from retail commerce in that it performs production activity and commercial activity at the same time. Procurement is a type of commerce that aggregates collectively owned and private-owned products for state ownership, unlike retail commerce, which supplies products state-owned products to the people. The most important procurement is the purchase of agricultural products.

North Korean commerce is managed and operated through the commerce management system and the product supply system. The former links organizations in charge of managing and directing commerce, and the latter links the units securing products and supply. The product supply system was originally based on an ordering system. However, the ordering system does not work anymore due to economic difficulties. As a result, the supply function of commerce is now restricted only to the function of equally allocating and distributing products.

In North Korean commerce, administrative and management functions are separated, as are the management of wholesale commerce and retail commerce. North Korea has separated the commerce administrative agencies from the from the central to the military agencies in order to specialize. Thus, the directing role of the commercial administrative agencies in the people's committees at province, city and county level, as well as the Ministry of Commerce, was enhanced and a coherent commerce administrative system was established at every level. North Korea also adopted a policy of separating direction and management for wholesale commerce from retail commerce, the former being controlled at the central level and the latter being controlled at the regional level. The reason for wholesale commerce to be controlled at the central level is for the state to consistently concentrate the sources of products and to regulate the whole process of product circulation from production to retail commerce enterprises. The reason for regionally controlling retail commerce was to enhance the responsibility and role of regional government agencies in the supply of commodities to the people. Through this policy, the Ministry of Commerce within the Cabinet oversees a wholesale commerce management department and provincial wholesale commerce management agencies as well as shipping wholesale agencies and regional wholesale agencies, thereby allowing one central wholesale commerce system. Along with this, the regional commerce management system was established by organizing retail commerce management departments in every city and county. Every distribution-related store is supplied through these commerce management departments and sells products to residents.

Distribution cost is included in commercial surcharge in North Korea. It involves living expenses for commercial workers, expenses for other services (transport, communication, electricity rates, water rates), expenses for other commodities in the process of distributing products, depreciation in the course of shipment, storage and sales of commodities, and management cost of commercial enterprises. Commercial distribution costs are divided into the cost of extending production in the area of distribution and the cost of realizing production. Distribution cost includes transportation, storage, packing, selection and additional treatment of products. In distribution cost, expenses related to delayed production and completion occupy an absolute portion. Expense related to the realization of products are the net distribution costs for the process of buying and selling products, including living expenses for the commercial workers, advertising, depreciation, maintenance for buildings and other facilities, communication and traveling expenses.

As is a characteristic of socialist commerce, the expenses related to the realization of products takes a small portion of distribution cost. Distribution cost is divided into variable cost and fixed cost according to whether the distribution cost changes in proportion to the fluctuation of the size of product distribution. Variable cost includes transportation, storage, packing and depreciation cost, which moves along with fluctuation of the size of the product distribution. Fixed cost is relatively constant regardless of fluctuations in product distribution and includes maintenance for buildings, fixtures cost, refund of fixed capital, administration cost, communication cost, traveling expenses and labor protection cost.

## 2. Development Trajectory of Commercial and Distribution Systems

North Korea's commercial and distribution systems have multiple stages of development: private commerce  $\rightarrow$  socialist reconstruction of commerce  $\rightarrow$  socialist commerce enhancement  $\rightarrow$  combination of market and socialist commerce.

Since the beginning of the 1990s, however, the end of the Cold War and ensuing fall of the socialist economic network caused North Korean domestic economic conditions to deteriorate, leading to the breakdown of socialist commerce and distribution and boosting the private market (focused on the farmers market).

North Korea announced a new economic policy on July 1, 2002 that led to various reform measures, including the realistic readjustment of price of goods, the reduction of the regime's function of supplying goods and the creation of an exchange market for the distribution of production means. However, the production of goods shrank to the degree that supply did not meet demand and commerce distribution.

bution has not been able to fully perform its function.

#### A. Private Commerce-Led Distribution Period (1945-1956)

North Korea took many transitional measures related to commerce to abolish the market economy and transform to socialist commerce during the 1945-1956 period. The new regulations and measures were, however, in a preparatory stage, so many characteristics of private commerce still remained.

The government set up departments for commerce in the administrative bodies of five provinces in October 28, 1945 and organized a department of commerce as one of the three departments and 10 bureaus of the Temporary People's Committee in February 8, 1946. The Major Industries Nationalization Act of August 10, 1946 stipulated that Japanese-owned companies and "traitors" enterprises, 1,034 major industry facilities and trading capitals in total were to be confiscated and repossessed by the government. Commerce was partly nationalized by the Major Industries Nationalization Act in August 1946, but the management of private commerce and industry was permitted until the mid-1950s.<sup>3</sup>

Since September 1947, independent handicraftsmen, home manufacturers and labor cooperatives that combined the labor force, means of production and funds for collective production were organized. At that time, the government focused on increasing social production and profitability by eliminating the "exploiting" class in intermediary distribution and maximizing the strength of common production and management. In addition, it tried to incorporate dispersed minor production corporations into the national economy.

State-run commerce was first establish on November 17, 1948. The state-run commerce network has since increased dramatically and the people's market, a private distribution market, was reformed into an agricultural market with a collaborative feature (by Cabinet Decision No. 9) in September 1950.

When categorizing commerce enterprises by the type of ownership, private ownership decreased from 27 percent in 1949 to 21 percent in 1957, state/public ownership increased from 73 percent to 79 percent during the same period. The amount of current money of private-owned enterprises in retail industry was reduced from 51 percent in 1949 to 20.4 percent in 1956, showing a 20.4 percent decrease over seven years. To the contrary, that of state/public-run commerce has augmented from 49.1 percent to 79.6 percent during the same period. Since 1959, state or collaborative organization management occupied more than 99 percent of retail trade and private

<sup>&</sup>lt;sup>3</sup> Private enterprises were developing daily under the government's special consideration of private enterprises (*Chosun Almanac* (1951-1952). The Korean Central News Agency, pp. 356 and 362).

management less than 1 percent.

North Korea set a restoration plan after the Korean War mainly prioritized the light manufacturing industry and agriculture. Since little of the state commerce network that existed was paralyzed, the government had to adopt a series of appeasement policy towards private commerce. In this way, private commerce practically undertook the commerce and distribution sectors in North Korea for three years from 1954 during the economic plan period.

## **B.** Socialist Reconstruction of Commerce and Distribution Period (1957-1960)

After the period of preparation for unified ownership, North Korea completed the socialist reconstruction of commerce from 1957 to 1959. Distribution was unified into socialist commercial distribution. North Korea nationalized or reorganized the small-scale private commercial network into cooperative units.

In October 1957, the government moved the wholesale function of consumption cooperative societies to the Ministry of Commerce and organized the "regional wholesale agency" and "shipping wholesale agency" under the Ministry to establish a wholesale commerce system. The regional wholesale agency is an enterprise that supplies products for retail commerce enterprises in the pertinent distribution region.<sup>4</sup>

In August 1958, Cabinet Decision No. 140 was promulgated mainly to incorporate private companies into production cooperative societies for socialist reconstruction of the production sector. State-owned department stores were built in cities, and stores managed by agriculture cooperative societies in the rural area were set up to sell necessities. Farmers markets were also established to replace pre-war private agricultural markets. The small surplus of food that was given to farmers would sometimes be traded in the farmers market. If the surplus food were large in quantity, however, it had to be sold through the procurement agency.

In October of the same year, agricultural consumption cooperative stores were reorganized into agriculture cooperative stores. This was to construct a large-scale integrated store system such as department store chairs by unifying retailers managed and dispersed across cities and workers' zones. North Korea tried to enforce the self-supporting accounting system as well as the specialization of commerce through the integrated store system.

<sup>&</sup>lt;sup>4</sup> Juche Research Center in the North Korean Academy of Social Science. 1985. *Dictionary of Economy*. Vol. 1, p. 433.

## C. Socialist Commerce Reinforcement and Development Period (1961-1984)

The North Korean commerce and distribution system was transformed and reinforced into a centralized and planned distribution and supply system.

The government first aimed to expand the role of distribution organizations, enhancing the commercial network through the "product order system" and executing various sales methods such as traveling sales and nighttime sales in the early 1960s.<sup>5</sup> Along with the expansion of shipment wholesale agencies, wholesale commerce was to be managed by the central government and retail commerce by provincial governments.<sup>6</sup> Stores run and managed by cooperative farms and the convenience service network were converted into a state-run single commerce system. Furthermore, a consignment sales network was organized across villages in the rural area and remote mountain villages to expand delivery sales, nighttime sales and traveling sales.

In the 1970s, North Korea established refrigeration, cold storage and storage systems in the grocery commercial network; it established branch stores and consignment sales agencies in the rural area. Rural stores filled out farmers' cards by household and age, setting out traveling sales posts according to the survey result, thereby increasing service to the people.

Moreover, North Korea started to show interest in the mechanization and automation of commerce. The government tried to modernize facilities such as display racks, depositories, and calculation and measuring equipment; processing units were set up in stores for independent production and supply of some products that were not procured expiditiously from factories.

North Korea founded the Pyongyang Commerce College on September 1, 1970 to train commercial workers and established schools for commerce executives in major cities. Even with various policy attempts by the North Korean government in the 1970s, however, production and supply could not meet the increasing demand for daily necessities, causing a shortage of goods in many areas of North Korea and aggravating the situation in the 1980s. Thus, the North Korean authorities grew more interested in increasing the production of daily necessities and increased investment substantially. Yet, the absolute shortage of investment sources made it difficult to meet the expectations of the North Korean people.

<sup>&</sup>lt;sup>5</sup> Ibid, p. 59.

<sup>&</sup>lt;sup>6</sup> The Korean Central News Agency (1965). Chosun Almanac, p. 159.

## **D.** Diffusion of Private Commercial Activities Period (1990-July 2002)

North Korea started the "August 3 Movement of Increasing Production of People's Consumer Goods" in August 1984 to increase supply of products. The government designated 1989 as the Year of the Light Industries<sup>7</sup> and urged the realization of the so-called Light Industries Revolution Policy. The government emphasized production: it adopted the "Three-Year Plan (1989-1991) for the Development of Light Industries" in the 16<sup>th</sup> Plenary Session of the sixth Party Central Committee, held on June 7-9, 1989, which was a separate plan from the on-going Third Seven-Year Plan (1987-93), and held nationwide exhibitions of light industry products as often as possible.

Commerce in North Korea has not dramatically changed in terms of policy and system, but the existing foundation showed a rapid collapse due to the serious lack of supply. This is mainly because the product supply from the state commerce network has been radically reduced, leading to the increase of illegal trade, such as private commercial distribution (black marketing).

North Korea's GNP has decreased 4-5 percent every year,<sup>8</sup> and accordingly, the commercial and current amount has also been dramatically reduced. Continuous downturn of the economy resulted in the severe shortage of commodities, on one hand greatly reducing the product distribution in the state commerce system and on the other, facilitating black marketeering in the farmers market.

North Koreans are supposed to be paid monthly by their workplace and buy food and necessities at state-owned stores at state-decided price. State-decided price refers to the price applied when the state sell commodities to the people. Statedecided price system in the socialist economy tends to fix a very low price for food and necessities, but quite a high price for other commodities (TV, refrigerators, watches).<sup>9</sup> Ordinary workers are officially paid on average of 80-100 North Korean won per month.<sup>10</sup> Before 1995, when the distribution system functioned properly, an ordinary worker could lead a life with an average income of 160-200 won (double income), buying rationed goods such as food and necessities at the state-decided price.

<sup>&</sup>lt;sup>7</sup> Kim Il-Sung. New Year's Address in The Rodong Sinmun (Workers' Newspaper). January 1, 1989.

<sup>&</sup>lt;sup>8</sup> The average annual economic growth rate from 1990 to 1994 is estimated at negative 4.5 percent.

<sup>&</sup>lt;sup>9</sup> Comparing the price system of North Korea with that of South Korea, the price of rice in North Korea is 0.08 won/1kg and the price of TV is 350 won per set, the price differential being 4,375 times. In the case of South Korea, the price of rice (Seoul, packed rice) is 2,612 won per kg, and that of a TV set (Standard, color, 29 inch) is 485,000 won (South Korean currency), the price differential being 186 times.

Most North Korean defectors stated in a survey that they did not remember the state-decided prices of main crops such as rice and corn powder. It can be interpreted that North Korean residents had not often bought the rationed goods at state-owned stores for the last few years due to the deterioration of the distribution system. Recently, it is said that food support from South Korea and the international society partly resumed and that food for 15 days was rationed per month in Pyongyang and food for one and a half months was distributed per year in other regions, with rice prices in the farmers market falling somewhat.

There has been a big change in the economic life and consumption propensity of the North Koreans because of the slack distribution system. The reduction of rations after 1995 forced them to buy food and commodities from the farmers market or fairs. The price at the farmers market, where prices are freely decided, tends to go up tens or even thousands of times higher than the state-decided prices. Thus, it is impossible for one household with a monthly income of 160-200 won to sustain life. For instance, the price of rice at the farmers market in 2001 was about 50 won/kg, which is 625 times higher than the state-decided price (0.08 won, or 8 jeon), and normally the total monthly income only amounts to 3-4 kg of rice (5-6 days' food for an adult). Thus, most people are forced to have side jobs or businesses to meet the increasing household expenses.<sup>11</sup>

In the meantime, economic activities in the private economic sector are unofficially performed and greatly influenced by the control of the authorities, but have been tolerated to a degree. As the authorities usually penalize absence without notice at workplace to prevent the loss of labor force at organizations and enterprises, in many cases husbands report to work and wives go to market for business.<sup>12</sup> It reflects a very important change in the North Korean distribution system, a strict supply-oriented system. In short, the recent socialist commerce and distribution system of North Korea has been suffering from accumulated structural inconsistencies and facing the limitation of development. Thus, institutional improvement is necessary to meet the new economic environment.

<sup>&</sup>lt;sup>10</sup> The income of farmers shows much difference from that of workers. Farmers officially earn cash from the state and profits from selling crops and farm produce from vegetable gardens at the farmers market. Farmers are known to be better off than ordinary workers in North Korea.

<sup>&</sup>lt;sup>11</sup> Many households go into sales, and some of them can earn up to some 100,000 North Korean won a year. Such people with high income in Pyongyang avoid state-owned stores, for they have to stand in a line to receive rations; in some cases, they use the market whenever they can to readily and conveniently purchase goods at a high price.

<sup>&</sup>lt;sup>12</sup> The rate of female labor force was estimated at 49 percent as of 1991 (Sun, Han-seung, 1994, p. 149). The literature on economic activities of North Korean women includes Shin, Mi-jeong (1996), Kim, In-gu (1997), and literature on women and household economy in Russia includes Ofer and Vinokur (1993).

#### E. Rationalization of Distribution Period (July 2002-Present)

The basic objectives of North Korea's planned economy are to "rationally use labor force and resources under the control of the state, to realize production, investment and consumption in a planned way, and to pursue socialist reproduction."

Since mid-1990s, however, the loosened control of the state on supply across every economic sector, including enterprises and commercial distribution, due to worsened financial difficulties has resulted in the private economic sector becoming the substantial major economic sector. The sharp cut in national budget, curtailment of state subsidies for the production activities of plants and enterprises, and fall of the operating capacity rate of factories led to the chronic failure of the planned economy and revealed the limitation of the planned economy. In particular, the state rationing system collapsed and household food and commodities became scarce. Household dependency on the farmers market increased, in dividing the planned economic system into the planned economic sector and private economic sector.

Since July 1, 2002, North Korea carried out a series of economic measures such as a steep increase in price and wage, reform in the price deciding method, partial transfer of authority to establish the national plan for subordinate organizations, granting management autonomy to plants and enterprises, establishment of raw material and subsidiary material markets, reinforced differentiation of distribution, and reform of the social security system (de facto abolishment of the rationing system).

The new economic measures caused food, fuel, electricity rates, transportation fares and rent to increase ten to hundredfold. Wage for an ordinary worker rose by 18 times (on average by 100-150 won to 2,000 won per month).

Meanwhile, only the production cost based on input factors such as water, electricity and fertilizer was considered in determining prices, but now international price and domestic supply and demand factors are taken into consideration as well. The Price and Finance Department and local administrative units fixed the price, but partial authority to fix the price was given to local factories. When the state sets the standards for price determination, local factories, which mainly produce consumer products, can fix their prices under the supervision of superior organizations and sell their products.

Since 1965, the authority to establish the national plan was solely concentrated on the National Planning Committee (unification and specification of planning), but it was changed so that the National Planning Committee would only set up strategic and nationwide projects and relevant organizations, enterprises and local administrative units would be in charge of specific project planning. In addition, management autonomy was given to factories and enterprises through such measures as the reinforcement of the self-supporting accounting system and the concept of cost, special-

(Unit: North Korean won)

						<b>`</b>		rean won)
			State-decided price			Differences from market		
		Unit	adjustment			price		
Tours	Terry / Jame		Before	After	Range	times)	<sup>1</sup> (C)	(C/A)
Туре	Item/class		adjust-	adjust-	of	Price of	Before	After
			ment	ment	increase	farmers	adjust-	adjust- ment
			(A)	( <b>B</b> )	(B/A,	market	ment	(C/B)
	Rice	1 kg	0.08	43	538	49	612.5	1.1
	Corn	1 kg	0.07	33	471	33.6	480	1.0
	Diesel oil	1 kl	1	38	38			
	Electricity	1 kWh	0.035	2.1	60			
	Tram fare	1 time	0.1	1	10			
	Subway fare	1 section	0.1	2	20			
	Sleeping car fare	Pyeongseong	50	3,000	60			
Price		(N. Hamgyeong						
		province)-Namyang						
		(N. Hamgyeong						
		province)						
	Entrance fee for	Songdo beach	3	50	17			
	amusement park							
	House rent	Pyongyang	0.03% of	2 won/m <sup>2</sup> /	-			
			income	month				
Waga	Production worker	Month	110	2,000	18			
Wage	Miner	Month		6,000	-			

#### <Table 15.1> Recent Increases in Prices and Wages

Note: On the basis of national average as of the end of 2001.

Source: KOTRA, Chosun Sin-bo, Yonhap News, The Economist.

ization in production and therelaxation of regulations by the cabinet and national economic agencies.

There were no raw or subsidiary material markets, but the government opened the "socialist goods supply market" and let factories and enterprises trade permitted items of raw material and parts at the market. However, settlement were only to be made through banks and the principle of no cash circulation was maintained when trading means of production.

Under the previous distribution system, the state offered food, consumer goods and housing almost for free, but by dramatically increasing prices and rent, the distribution system became nearly useless, except for the socialist security system such as free education, free medical care and social insurance.

Туре	Before Regulation	After Regulation	Notes
	; /State-deciding price < farmers'	; State-decided price ; Farmers	; Unification of price
Price	market price (over tenfold-	market price	; Stability in market price
	hundredfold price difference)		
	; Monthly average for a worker:	; Average monthly wage of a worker:	; Support living expenses
Wage	100-150 won	increase of about 2,000 won	resulting from price
			increase
	; Consideration: production cost	; Considerations: production cost,	
	¡ Organization: central and local	•	
	administrative organizations	demand and supply	abolished (compensation
Price fixing		¡ Organization: In addition to the	
		central and local organizations, local	the actual price and the
		factories are given limited authority	selling price from national
		to fix price	finance)
	i/ By the 'unification and		
	specification of planning'	charge of strategic, national key	planned economy
	principle, the authority to plan		
Planning	is concentrated on the National	1	
-	Planning Committee	investment	
		; Other specific projects are set by	
		relevant organizations, enterprises	
		and local administration	
	:/Lax management of self-		
	supporting account system:	-	
	tendency to depend on the state	-	account system
	for materials	materials problem	; Enhancement of profitabi-
	: Lack of concept of 'cost':		lity through cost reduction
	priority on national project rather than cost	financial planning and calculation method to understand the benefit of	
Management	i/Lack of specialization of		1
of factories	production: factories and		rehabilitation' principle
and	-	; Specialization of production: to	
enterprises	everything from raw materials		production
chicipiises	to end-products by the 'self-	enterprises, cooperative farms, all	-
	rehabilitation' principle	factories and enterprises	
		Abolition or revision of unnecessary	
	agencies over management		
	activities of factories and	e	
	enterprises (finance control,		
	'won' control, etc.)	and enterprises	
	won condot, cic.)	and enterprises	l

#### <Table 15.2> Changes in North Korea's National Economic Management

Туре	Before Regulation	After Regulation	Notes
		¿Establishment of raw and subsidiary	; Æxpansion of range of
	materials is possible only	material market	market
Raw	through contract between	¿Delivery of a certain portion of	; Ænhancement of
material	factories and enterprises, not	products to material markets	efficiency of distributing
market	through market	¡ However, the kind and range of	raw and subsidiary
market		goods traded are decided by the state	materials
		and settlement should be made	
		through banks	
	¡/Average distribution' prevails	¡Ævaluation of actual performance of	; Reinforcement of
	; Socialist principle of	factories and enterprises is based on	payment according to
	'distribution according to	income earned	ability
	workload' in name only	¡ Distribution of more profits to	¡ Practice of indiscriminate
Method of		profit-making factories and	mobilization of labor force
distribution		enterprises to provide additional	by the state is restrained
distribution		wage (bonus) to workers	
		¡ Mobilization of idle labor for land	
		and rural community development	
		and obligatory payment according to	
		performance	
	; Almost free supply of food,	¡ /Application of realistic price to	¡ /De facto abolishment of
	commodities, housing, etc.,	food, commodities, housing, etc.	distribution system
Social	applying state-decided prices	¡ Free education, free medical care,	; /Basis for 'small
security		social insurance (grant living	government' through
system		expenses to workers who	reduction of fiscal
		temporarily lost work power) are	expenditur
		maintained	

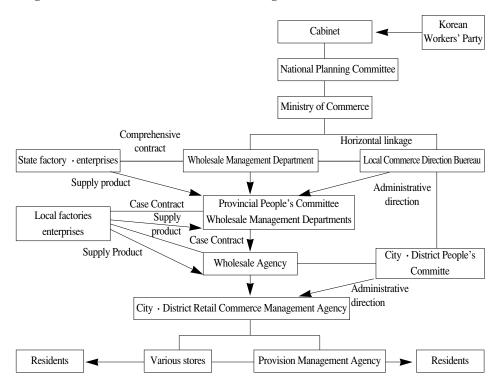
#### <Table 15.2> Continued

## 3. Commercial and Distribution Organizations

#### A. Organization System

North Korea separated administrative direction and management functions related to commerce and organized the system of direction and management over wholesale commerce and retail commerce by separating the management of wholesale and retail commerce. North Korea separates commercial administrative bodies and management agencies, whether urban or rural, and specializes each group.

Accordingly, a coherent commercial administrative direction system covering the Ministry of Commerce and commercial administrative departments of the People's Committee in provinces, cities and counties was established. Moreover, wholesale commerce is managed by the central government and retail commerce by provincial governments to maintain the separation policy of wholesale and retail commerce.



<Figure 15.1> Commercial and Distribution Organizations in North Korea

The purpose of the central management of wholesale commerce is to equally distribute products manufactured by centralized corporations to regions according to the size of their population. On the contrary, local management of retail commerce aims to enhance the responsibility and role of the local governments and corporations in supplying products to residents (see Figure 15.1).

The national planning of the commerce and distribution sector is, as with other sectors, under taken by the Ministry of Commerce and subject to the ratification of the National Planning Committee. For instance, the National Planning Committee draws up the Plan for Product Distribution and the Plan for Procurement and Food Administration, together with plans for other sectors. The plans made by the

Committee are conveyed to the Commerce Department, which makes specific measures for execution and hands them down to commercial distribution agencies and corporation in provinces and cities through the Wholesale Management Bureau and local commercial direction departments. The Wholesale Management Bureau of the Commerce Department controls and supervises the activities of the regional wholesale agencies, its subordinate organizations. Thus, the Wholesale Management Bureau enforces product distribution projects based on the Party's commercial policy and the National Planning Committee's plan, taking various measures to raise product quality.

The departments under the Wholesale Management Bureau have various roles. The Planning Office conveys the distribution plan and outlook of products to subordinate agencies, directs and controls the execution of the plan of the affiliated organizations. The Bookkeeping Office is in charge of its own execution of the budget allocated by the superior organization, product distribution, and profit and loss. The Transportation Office draws transportation plans to support subordinate agencies, and directs and controls relevant transportation activities. The Exchange Office deals with product exchange, and investigates and handles accumulated goods. The Textile Office and the Food Office arrange the allocation of textiles and food, respectively, and control the amount of demand and supply for affiliated enterprises.<sup>13</sup>

There are the central wholesale agency, provincial wholesale agencies in each province, regional wholesale agencies governing product distribution of two to three cities and districts, and specialized wholesale agencies such as the Textile Wholesale Agency, Footwear Wholesale Agency, Refreshments Wholesale Agency, Meat Wholesale Agency, Marine Products Wholesale Agency and Agricultural Wholesale Agency.

The central wholesale agency secures the products allocated to the center produced by production enterprises in Pyongyang, delivers them to the shipment wholesale agency or regional wholesale agency, deals with distribution of cities and handles reserve items that should be controlled at the central level. Provincial wholesale agencies were organized in October 1957 mostly at large-scale production enterprises. They directly acquire products from the enterprises and supply them to regional wholesale agencies or ship them directly from production enterprises to requesting wholesale agencies.

Regional wholesale agencies were also organized in October 1957 to supply products from retail commerce enterprises in their regions; some of them ship products made by production enterprises in their regions. On the other hand, organiza-

<sup>&</sup>lt;sup>13</sup> North Korea Research Institute (1983). A Comprehensive Studies of North Korea, p. 655-656.

tions and enterprises related to retail commerce are the basic units of commerce that buy and sell commodities used for daily life from wholesale dealers and directly supply them to residents. When the wholesale enterprises secure products from enterprises according to the supply plan and provide them to the retail enterprises, the retail enterprises make quarterly orders and supply the allocated products.

North Korea's commercial network is categorized by the characteristics of the product demand, conditions of production and living, and geographic conditions into grocery stores and industrial product stores, department stores and specialized stores, ordinary stores and special goods stores, large and small stores, and directly managed stores and consignment stores. In particular, there are large-scale stores such as department stores and shopping malls in major cities including Pyongyang and direct sales stores in each town and village. Other convenience facilities include hotels, restaurants and barbershops.

#### B. Linking Mechanism of Production, Commerce and Distribution System

We need to look into the commerce and distribution system by production unit to understand the production and distribution flow. North Korea's commerce and distribution system can be largely divided into the following areas: the distribution system of goods and services produced by state-owned enterprises; the distribution system of goods and services produced by cooperative group enterprises or personal side jobs; the distribution system of services produced by government organizations; and the black market (The National Unification Board 1984, 68-72).

The distribution system of goods and services produced by state-owned enterprises can be also subdivided into the following five categories. First, intermediate products produced by state-run enterprises and services such as transportation and telecommunications are provided through state-run enterprises or directly put into other state-run enterprises. In other words, the final products produced by state-run enterprises are bought as investment goods of other state-run enterprises, and their price is the sum of production cost, profit of state-run enterprises and industry wholesale price plus trade income (value-added tax).

Second, a part of the goods produced by state-run enterprises are purchased by state-run distribution corporations as intermediate goods for production of public services by government organizations, or as investment goods and put into the government's investment plan. The price is the industrial wholesale price, and the total value of intermediate goods and investment goods is the addition of cost and profits of state-run enterprises.

Third, some goods produced by state-run enterprises are sold through state distribution enterprises to cooperative organization enterprises or private producers as intermediate or investment goods, or sold directly to consumers. The price is the retail price, composed of wholesale price plus trade income and commercial value added.

Fourth, a part of services produced by state-run enterprises and services produced by state-run non-production enterprises are directly traded to cooperative organization enterprises, private producers and consumers. The price is either the sum of cost and profits of state-run enterprises or the retail price, which is the sum of cost, wholesale price, profits of state-run enterprises and trade income.

Fifth, a part of services produced at agricultural machine workshops, irrigation management agencies, seed-gathering farms, seed-handling farms, agricultural test laboratories, breeding stock farms and veterinary quarantine agencies are put directly into the production of cooperative farms and state-run farms. Cooperative farms in turn pay the value of services composed of labor, intermediate goods and depreciation cost put into production of services. The total value of services is supposed to be made up of production cost only.

In the meantime, the distribution of goods produced by cooperative organization enterprises and private side-job accounting is categorized into the following three types. First, parts of goods produced by cooperative organization enterprises and private side-job accounting are distributed through the farmers market or direct sales stores where consumers, other private producers or cooperative organization enterprises sell consumer goods, investment goods and intermediate goods. The trading price is market price decided by demand and supply, however this market price is made up of intermediate goods put into production and sales, compensation for depreciation and remaining income of cooperative organizations or individuals. Hence, the total value of goods is composed of cost of intermediate goods, depreciation and the remaining income of enterprisers.

Second, goods are put into production at state-run enterprises and government organizations as intermediate goods or purchased as a type of investment goods required for the investment plan of state-run enterprises and government organizations. The intermediate goods and investment goods traded in this case are traded at a procurement price.

Third, goods are distributed by state-run enterprises to consumers, other private producers or to cooperative organization enterprises as consumer goods, investment goods or intermediate goods. The price of goods traded here is the retail price comprised of procurement price, considered as cost from the state-run enterprise perspective, added to trade income and commercial value-added. Thus, the value of goods in the process of distribution is made up of the cost of intermediate goods, depreciation, remaining income of enterprisers, distribution cost of commercial enterprises, profits, trading income and so on.

Fourth, services produced by government organizations, such as national

defense, security and public facility management, are provided for free to consumers, private producers, cooperative organization enterprises and state-run enterprises. The sum of services produced by the government organizations is composed of intermediate goods put into the production of services, depreciation of fixed assets and the cost of labor.

Finally, black marketeering involves domestic black marketeering between individuals or cooperative organizations, black marketeering prevalent around national borders and smuggling in connection with foreign merchants. The price is set freely between buyers and sellers depending on demand and supply.

## 4. Types of Commerce in North Korea

The private ownership of commerce was abolished in August 1958 and commerce has since been controlled and managed by the central authorities and cooperative organizations. The ownership over means of production is still divided into people's ownership (state ownership), collective ownership (public ownership) and individual ownership. Commerce in North Korea is categorized into three types, according to the types of ownership.

There are state-managed commerce, cooperative organization commerce and commerce in the farmers market. State-managed commerce is the highest level of commerce based on the people's ownership, occupying an immense part of product distribution and being under control of the national plan and management. Cooperative organization commerce is based on the collective ownership and run and managed by cooperative organizations. Farmers markets are based on the private side-job accounting system, with a strong feature of free market. Individuals make up for the state's insufficient supply at farmers markets.

North Korea views that cooperative organization commerce or farmers markets are transitional types of commerce, that will disappear when production develops enough to provide the people with abundant consumer goods and collective ownership finally turns into the people's ownership, leading to full socialist state ownership.

The component ratio of product distribution from the socialist reconstruction until the end of 1970s shows that state commerce took more than 90 percent, cooperative organization commerce 5-6 percent, and farmers markets 1-3 percent, which reflects that North Korea's commerce has mainly been based on state-managed commerce, with cooperative organization commerce and farmers markets playing an auxiliary role. However, the current ratio has changed dramatically and the distribution through farmers markets takes more than 50 percent of the total.<sup>14</sup>

North Korea's commerce can also be divided into consumer goods commerce,

social supply and procurement according to the economic function of products and the distribution channel. Consumer goods commerce is again divided into wholesale commerce and retail commerce according to its status in the process of product distribution. Wholesale commerce is the intermediary link between production and retail commerce, which buys products from production enterprises and provides them to retailers. Retail commerce directly provides consumers with products.

Social supply is a commercial sector producing and selling food, and offering convenience in consumption to the people. Procurement is a type of commerce that aggregates collectively and privately owned products for state ownership; a representative type of procurement is agricultural product procurement. We will look into more details about the various types of commerce.

#### A. State Ownership

State-managed commerce is the centralized socialist commerce based on the people's ownership (state ownership). The central authorities directly run it and the people own all fixed assets (commercial facilities and fixtures), and liquid assets (products and currency), and the source of products should be of socialist production.<sup>15</sup> In state-managed commerce, products are traded at a single price (the state-decided price) and the central authorities plan all commercial activities. The plan of the central authorities includes the development of commercial networks, the range of product distribution, distribution cost, labor, and other indexes.

There are wholesale commerce and retail commerce, both of which are in charge of different stages in the process of product distribution and social supply and procurement in the state-managed commerce. In addition, distribution of wholesale products is realized in the form of state-managed commerce, and retail commerce is mostly taken care of state-managed commerce as well. State-managed commerce used to provide products to cities and workers' zones before the establishment of socialist commerce system and was expanded to rural areas since the Socialist Reform in 1958.

The reason the growth of North Korea's commerce was centered on statemanaged commerce is the government's belief that it could not establish and drive various specific economic plans without controlling the system of production methods and distribution. It is noteworthy that North Korean economic plans are

<sup>&</sup>lt;sup>14</sup> Testimonies by defectors from North Korea.

<sup>&</sup>lt;sup>15</sup> Juche Research Center in the North Korean Academy of Social Science. 1985. *Dictionary of Economy*. Vol. 1, pp. 244-245. *Collection of Kim Il-Sung's Writings*. Vol. 23 (1983). Korea Workers' Party Publisher, p. 458.

unified and specified so that production, distribution and supply should go hand in hand.

#### **B.** Cooperative Organization Commerce

North Korea defined cooperative organization commerce as commerce before the people's ownership (state ownership) stage.<sup>16</sup> It is based on the collective ownership (public ownership) and performs an auxiliary role in state-managed commerce. Products and currency are collectively owned, and management activities like production and product distribution are run by the cooperative organizations.

Cooperative commerce usually refers to co-management with investment from members, entrance fee and a part of profits gained from management activities. The cooperative commerce in North Korea, however, is a transitional type of ownership in socialism, and it merely performs a role of supporting the supply of products in the sectors that the state cannot facilitate, as opposed to general cooperative organization commerce.

Cooperative organization commerce used to be a consumers' cooperative society organized by farmers, but it went through reform and reorganization from 1959.<sup>17</sup> It began as collective accounting by farmers in the distribution sector to eradicate the exploitation of intermediary merchants in agriculture and to improve product supply to farmers. Farmers provided commodities and industrial necessities such as salt, textiles, shoes and matches, and procured agricultural products and secondary products produced by farmers to sell in the cities. The profits made through commercial activities were distributed to members according to their investment share.

By reforming consumerism into cooperative organization commerce, collective farms could plan using larger-scale organizational power from production to distribution, exchange and consumption. Stores managed directly by production cooperative societies and marine products associations were also created.

Cooperative organization commerce was mostly incorporated into state-managed commerce in 1964 and only a few stores remained that were directly run by production cooperative societies and marine products associations. However, after the "August 3 People's Commodities Production Movement" in 1984, cooperative organization stores reappeared in large numbers throughout the country.

<sup>&</sup>lt;sup>16</sup> Ibid, pp. 587-588.

<sup>&</sup>lt;sup>17</sup> Collection of Kim Il-Sun's Writings. Vol. 8. Workers' Party Publisher (1982), p. 79.

#### **C. Farmers Markets**

Cabinet Decision No. 140 of August 1958 abolished the existing agricultural market and instead established farmers markets, which have continued until now. A farmers market is a form of commerce where people in different regions directly trade agricultural products and livestock products amongst themselves in fixed places.<sup>18</sup>

The government defines that although a farmers market is a form of socialist commerce, it is "inferior commerce, that has a lot of capitalism in its nature."<sup>19</sup> First, price is not planned but spontaneously decided by supply and demand in the farmers market, and second, products are traded directly between producers and consumers, not by commercial organizations.

The farmers markets still exist because of the low productivity of the state, and cooperative accounting and production remain. Since the authorities define farmers markets as the most backward form of commerce hinting of capitalism, they have taken various restrictive measures against it. By promoting the leading role of state-managed commerce and adjusting the market price to procurement price (by lower-ing the selling price of products), the government can prevent the expansion of the farmers market and restrict the size of personal backyards to maintain the transactions in the farmers market at a constant level, thus serves to containing the development of capitalism.

The main items sold in the farmers market are vegetables, meat and homemade handicrafts, and the trading of crops, such as rice and barley, and industrial products is banned. The market can only open three times a month (1<sup>st</sup>, 11<sup>th</sup>, 21<sup>st</sup> day of the month) at one or two designated places per district.

However, due to the supply deficit through the state-managed commerce system and the low procurement price, farmers tend to prefer trading through the farmers market to procurement, which results in the black marketeering of prohibited trade articles like crops and industrial goods at prices five to 10 times higher than the procurement price or state-decided price.

In particular, with the help of some measures to stimulate the farmers market since 1984, big cities throughout the country, including Pyongyang, established farmers markets where trade is active. These measures were discouraged in 1987 but came to life again in the 1990s when the economic hardships became serious. As a result, the farmers market now has an important position in North Korea's commer-

<sup>&</sup>lt;sup>18</sup> Collection of Kim Il-Sun's Writings. Vol. 23. Workers' Party Publisher (1983), p. 465.

<sup>&</sup>lt;sup>19</sup> Juche Research Center in the North Korean Academy of Social Science. 1985. *Dictionary of Economy*. Vol. 1, pp. 367-368.

cial distribution.

#### **D.** Consumer Goods Commerce

#### 1) Wholesale Commerce

Wholesale commerce is realized when products are distributed from production enterprises to wholesale commerce enterprises from wholesale commerce enterprises es to retail commerce enterprises, and between wholesale commerce enterprises. Therefore, wholesale commerce plays an intermediary role (as a gateway to distribution) in the process of production circulation, covering production to consumption.<sup>20</sup>

The general characteristics are, first, that mass trade of products is made, and second, that product trade is not directly targeted at consumers, but made between production enterprises and commercial enterprises, and between commercial enterprises. Wholesale commerce in North Korea mainly pursues securing products from enterprises and guaranteeing the planned supply of products to retailers. The main function and role of the wholesale commerce are: ① the normal supply of products based on orders to retailers; ② research in the origin of products and inventory management; ③ additional processing of products and reorganization of production articles into commerce articles; ④ elevation of the quality of products and proactive efforts for the expansion of product items; and ⑤ planned allocation of products and rational organization of comprehensive product movement.

North Korea has a single wholesale commerce system composing of the wholesale commerce management department in the Ministry of Commerce, wholesale commerce management offices in each provincial Peoples' Committee, central wholesale agencies, shipment wholesale agencies, district wholesale agencies and specialized wholesale agencies.

#### 2) Retail Commerce

In North Korea, products go through three stages before reaching consumers: ① from production to the distribution sector; ② within the distribution sector; and ③ from distribution to the consumption sector. Retail commerce takes care of the final stage.

Retail commerce is realized through the state-managed commerce, cooperative organization commerce and farmers markets in North Korea. Thus, the development of retail commerce means the smooth circulation of currency and the realization of

<sup>&</sup>lt;sup>20</sup> Kim Il-Sung stated that: "Wholesale organizations are the intermediary units that provide products produced by factories and enterprises to retail organizations. That is to say, they are a very important chain linking products from producers with stores." *Collection of Kim Il-Sung's Writings*. Vol. 26 (1984). Korean Workers' Party Publisher, p. 226.

extended reproduction of socialism and of socialist distribution according to workload.

Retail commerce is performed according to the distribution plan of retail products (a kind of supply plan regarding consumer goods that is in principle designed after assessing demand by region, season and class). The distribution plan of retail products includes the product sales plan, product guarantee plan and distribution network allocation plan. The product sales plan is the basis of the distribution plan of retail products on which the product guarantee plan and other plans are made.

Retail price is in principle only applied to consumer goods, it has two different prices: state-decided price and farmers market price. State-decided price is the one applied when the state provides workers with products through the commercial network, comprised of wholesale price plus trade income and additional commercial value added. Since the central authorities provide most consumer goods, retail price in North Korea can be thought as state-decided retail price.

#### E. Social Supply

Social supply is a commercial sector that produces and sells food products to the people. Social supply is similar to retail commerce in that it directly sells the supply products to the residents, but it is different in that social supply both produces and sells products, and the sold food is consumed on the spot by workers. Although it bears external similarity to restaurants in the capitalist society; it does not carry much independence since the price setting and the sales amount are directly controlled by the local administration or supply agencies. Social supply suffers from lack of network and a poor variety of food. In the 1990s, successive bad harvests worsened the food shortage and general social supply facilities are suffering from lack of raw materials.

#### **F.** Procurement

As North Korea is in a transition period of socialism, the ownership of agricultural products, livestock products and agricultural by-products remains collective ownership. Some produced in private fields remain private ownership. To control these products at the national level, the authorities collect them through procurement. Procurement in North Korea differs from normal commerce in that the state is the buyer, not seller, and national products go into the hands of the people but products of cooperative accounting or of people become state property.

Agricultural products are first acquired through the national procurement network and provided to workers and city residents. Procurement in North Korea is in essence supply to the people and a form of distribution of goods that links cities and rural areas.

The North Korean authorities adhere to the following basic principles. First, they would combine the interests of the state and of the people. It means that the state should make profits when purchasing agricultural goods from individuals and selling after processing, and that farmers should cover their expenses in producing agricultural products and further obtain a certain level of profits.

Secondly, they would maintain the principle of voluntary participation. They argue that the exchange of products is not made by a forcible demand of any party but by mutual agreement. But in reality, solely the government decides the amount and price of procurement and trade is unilateral as well as. North Korea has a procurement plan to concentrate on surplus agricultural products of cooperative farms and of the people, natural resources, used materials and waste into the hands of the government. The procurement plan is deeply related with the planned supply of raw materials for agricultural production to urban residents and the local industrial sector.

The procurement plan is made up of a compulsory procurement plan, free procurement plan and self-procurement plan. The compulsory plan is to deliver production assignment and procurement assignment to the targeted collective farms, obligating producers to complete the assignments. Since most of the agricultural products are subject to the compulsory procurement plan, compulsory procurement is usually referred to as planned procurement.

Free procurement is non-compulsory procurement for organizations, enterprises and residents, so the plan assignment is delivered only to the procurement organization. It deals with all the articles of procurement that are not included in the planned procurement (compulsory procurement). Self-procurement is procurement for products that factories and enterprises directly procure and consume without passing special procurement organizations. In the procurement plan, there is a "total budget plan for procurement articles" reflecting the size of procurement, an "procurement plan for various articles," a plan to supply goods by sort and a "procurement exchange plan between provinces" reflecting local special products and the required amount of the relevant region.

The methods of procurement are different by the kind, place, timing and target of procurement. The characteristics and uses of the procurement articles, activities of government purchasers and payment methods differentiate procurement methods. Representative methods are contract procurement (reservation procurement), local procurement, traveling procurement, concentrated procurement, consignment procurement and exchange procurement.

### 5. The Price Structure of Commercial Distribution

An examination of the price structure of commercial distribution shows that prices in North Korea are not determined by the laws of market supply and demand as in capitalist economies, but by state planning. Another defining characteristic of the North Korean economy is that it has a double-price system: the producer price, which the state pays to the producer, and the retail price, which consumers pay for retail goods. The prices in North Korea are largely categorized into wholesale prices, industry wholesale prices, commercial institutions retail prices, procurement prices and freight rates and fares.

Wholesale price is applied when goods or means of production in the form of goods are distributed among state-owned enterprises (SOEs). Distribution among the SOEs includes the distribution between an enterprise and the supplies agency, or the distribution between enterprises. In general, the wholesale price is calculated by adding the cost of production (the expenses used in producing goods, including depreciation cost, wage and administrative cost) and net earnings (profit) of enterprises. The wholesale price is determined systematically by such authorities as the Price Setting Committee of the Ministry of State Affairs and Provincial Administrative Committees.

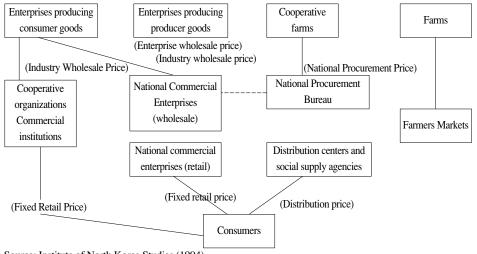
The industry wholesale price is calculated by adding income from wholesale (indirect taxes in a sense) to the wholesale price. It is applied to such industries as lumber and electricity, as well as agricultural products from state-owned farms and ranches.

The commercial institutional retail price is made up of the wholesale price plus income from transaction, distributive costs incurred by stores (transportation cost, labor cost, and packing charges) and profits. It is applied to when an individual consumer purchases consumer goods from stores. In general, manufactured goods deemed necessary for everyday life and school supplies are priced low, while luxury goods or other types of goods that are short of supply or regarded as unnecessary to supply are priced high.

The procurement price is the price charged on agricultural products and livestock procured by the government, and it is divided into planned procurement price and market procurement price. The planned procurement price is the price that is planned and determined by the state; the market procurement price, influenced by the planned procurement price, is determined after consideration of the levels of supply and demand in the market. As the actual procurement price tends to be low, government procurement of products is generally unpopular among farmers.

The freight rate is the price paid for transportation of goods, and all freight rates are, like product prices, simultaneously determined by the state. Generally, the freight rate is composed of cost and profits. The rate for individual demand is composed of cost, profits and earnings from transaction, as is the case with retail prices.

The fare is the price paid by institutions, enterprises and citizens for various public services. It pays for electricity, postal service, telecommunications, infrastructure, the use of printing equipment and repairs, and is divided into productive fare and nonproductive fare. Productive fare is composed of production cost and profits, while nonproductive fare is composed of production cost, profits and earnings from transactions.



<Figure 15.2> The Price Structure of Commercial Distribution

Source: Institute of North Korea Studies (1994).

## 6. The Size of Commerce and Distribution in North Korea

## A. Size of Commercial Distribution in State-run and Cooperative Organizations

Product distribution can be divided into the wholesale products sector and retail products sector; distribution of the former is made through wholesale commerce organizations and the distribution of the latter through retail commerce organizations. Thus, in order to seize the total amount of commerce and distribution, one needs to look into the total distribution amount of wholesale and retail industries. However, as the North Korean government does not share relevant sources with the public, one can only make approximate estimations, based on the data published and sporadically.

For a few years after the 1945 Liberation, some parts of the commercial sector had maintained the form of capitalist market economy. In 1949, the total amount of the retail product distribution was 368 million won, of which distribution in the government sector only accounted for 24 percent or 89 million won, and distribution in cooperative organizations 25 percent or 92 million won. Compared to this, the amount of distribution in the private market was 187 million won or 51 percent of the total.

After the Korean War, North Korea announced its socialist reform policy to be implemented in the commercial sector and started to reduce the extent of private markets, while increasing the network of state commerce and cooperative organizations. However, even in the early phase of socialist reconstruction plan, the capitalist form of commerce still persisted to a considerable extent. For instance, state commerce accounted for 44.2 percent (341 million won), cooperative organizations 35.4 percent (273 million won) and the private market 20.4 percent (157 million won) of the total retail product distribution of 771 million won in 1956.

Туре	1949	1953	1956	1959	1960
Distribution of retail	368	811	771	1,712	1,806
Goods					
State and cooperative	181	399	614	1,706	1,792
Organizations					
(State)	(89)	(191)	(341)	(1,312)	(1,424)
(Cooperative organizations)	(92)	(208)	(273)	(394)	(368)
Farmers market	-	-	-	6	14
Private market	187	412	157	-	-

<Table 15.3> Retail Goods Distribution According to Ownership Type

(Unit: million won, current price)

Source: The Korean Central News Agency. Chosun Almanac. Various issues.

However, after Cabinet Decision No. 140 was promulgated in August 1958, enterprises and hotels under private ownership were absorbed into state-owned or cooperative organizations, thereby transforming the whole commercial and distribution sector into a complete socialist accounting system.

The distribution of retail goods by ownership structure shows that state-run commerce and distribution accounted for 76.6 percent (1,312 million won), cooperative organizations 23 percent (394 million won), farmers markets 0.4 percent (6 million won) of a total of 1,712 million won, the state and cooperative organizations accounting for 99.6 percent of the total distribution of retail goods. In addition, the total amount of distribution of retail goods increased fivefold from 1949 to 1960, state-owned commerce increasing by sixteen-fold and cooperative organizations by fourfold.21

According to estimation, the total amount of retail goods distribution reached 5.779 billion won in 1970, of which the state sector accounted for 78.9 percent (4.557 billion won), cooperative organizations 20.4 percent (1.177 billion won) and farmers' markets only 0.8 percent (46 million won). The planned amount of distribution of retail goods in 1976 was 11.559 billion won, of which the state sector accounted for 78.9 percent (9.115 billion won) and cooperative organizations 20.4 percent (2.354 billion won) and farmers markets a small share of 90 million won. This reveals that the ownership structure of the commercial network has not shown significant changes since the 1970s.

In addition, about 75 percent of the comprehensive real plan was carried out in 1997, so assuming that the performance of real plan of North Korea can be reflected by the distribution of goods, the total amount of retail goods in 1977 was 8.669 billion won, of which the state sector was estimated to account for 6.836 billion won, cooperative organizations 1.765.5 billion won and the farmers markets 67.5 million won.

However, these figures were calculated on the assumption that the commerce and distribution structure by type of ownership was invariable and the performance rate and retail product distribution are proportionally related, thus they cannot be used as economic indexes to show the precise amount of retail product distribution. At least, however, we can roughly outline the size of commerce and distribution of North Korea.

North Korea aimed to increase retail product distribution by 1.9 times during 1978-1984, (the second Seven-Year Plan).<sup>22</sup> Assuming the goal was achieved as planned, the size of the retail product distribution would be 24,066 million won, of which the state sector is 18,978 million won, cooperative organizations 4,901 million won, and farmers markets 187 million won. However, taking into consideration that only 74 percent of the Seven-Year Plan was accomplished and the actual amount of product distribution (estimated) in 1977,<sup>23</sup> the actual total amount of retail product distribution in 1984 would be 12.188 billion won, of which the state sector is 9.617 billion won, cooperative organizations 2.486 billion won, and farmers markets 85.32 million won.

North Korea planned and executed the third Seven-Year Plan (1987-1993) after a two-year arrangement period resulting from the unsatisfactory achievement of the

<sup>&</sup>lt;sup>21</sup> The estimated amount of retail product distribution, The National Unification Board (1985). *Statistics of the North Korean Economy*, p. 647.

<sup>&</sup>lt;sup>22</sup> The North Korean government adopted this plan at the first session of the Sixth Supreme People's Assembly, held on December 15, 1977.

<sup>&</sup>lt;sup>23</sup> Estimate by the National Unification Board.

second Seven-Year Plan. It set the target to increase the total amount of retail product distribution by 2.1 times by the end of 1993, with particular focus on distribution to agricultural regions.<sup>24</sup> Assuming the target was realized, the total amount of retail product distribution would be over 25.59 billion won, of which the state sector is 20.19 billion won, cooperative organizations 5.22 billion won, and farmers markets 179.11 million won.

However, North Korea suffered from chronically low economic growth since the beginning of the third Seven-Year Plan, and subsequently it fell immensely short of the target due to successive negative growths from 1990. In the 1990s, the government took active measures to promote the production of consumer goods under the slogan of "Light Industries Revolution" after Kim Jung-II's succession, but still, compared to the heavy industries, the domestic commerce and distribution sector was too small due to the structural imbalance of the economy that concentrated excessively on the heavy industries.

The achievement rate of the third Seven-Year Plan<sup>25</sup> was estimated to be only 51.8 percent. North Korea acknowledged that the disappointing performance could be attributed to "the collapse of the socialist countries and socialist market that led to the breach of long-term and short-term trade agreements and the failure of expected goals."<sup>26</sup> Thus, when one estimates the total amount of retail product distribution by applying the 51.8 percent rate, one gets 13.259 billion won as of 1993, the state sector accounting for 10.461 billion won, cooperative organizations 2.705 billion won and the farmers markets 92.82 million won. The size of the distribution of retail products and the composition of ownership types are summarized in Table 15.4. The size of the commerce and distribution sector shows a sharp fall in growth rate since the 1970s. The annual growth rate in the amount of retail product distribution fell to the 6 percent level in the 1970s, from the 12 percent level of the 1960s. It fell again to around the 5-percent level during the second Seven-Year Plan (1977-1984), and marked the lowest annual growth rate of 0.9 percent in the third Seven-Year Plan.

Now, North Korea advocates the agriculture-first principle, light industries-first principle and the trade-first principle as a part of restructuring the distorted economic structure and shows relatively high interest in developing the light industries sector. However, given the high growth in demand for basic investment in the heavy industries sector, such interest could not develop beyond economic slogans such as "Production Increase and Savings," "Carrying through the Policy of Revolutionizing

<sup>&</sup>lt;sup>24</sup> Adopted in the Sixth session of the Eighth Supreme People's Assembly.

<sup>&</sup>lt;sup>25</sup> National Unification Board (1994). *The Comprehensive Evaluation of the Third Seven-Year Plan of* North Korea, pp. 23-24.

<sup>&</sup>lt;sup>26</sup> The report of the Party's Central Committee Plenary Session on the performance of the third Seven-Year Plan (1987-1993). December 9, 1993.

<table 15.4=""> Distribution of</table>	Retail Products by Ownership	Type and Annual Growth
Rate		

Year	Distribution amount	State commerce	Cooperative organizations	Farmers markets
1949	368	89	92	-
	(-)	(-)	(-)	(-)
1956	771	341	273	-
	(11.1)	(21.1)	(16.8)	(-)
1960	1,806	1,424	368	14
	(23.7)	(43.0)	(7.8)	(-)
1961	2,023	1,609	390	16
	(5.8)	(6.3)	(2.9)	(6.9)
1970	5,779	4,557	1,177	45
	(12.4)	(12.3)	(13.1)	(12.1)
1977	8,669	6,836	1,766	68
	(6.0)	(6.0)	(6.0)	(6.1)
1984	12,189	9,617	2,486	85
	(5.0)	(5.0)	(5.0)	(3.2)
1993	13,259	10,461	2,705	93
	(0.9)	(0.9)	(0.9)	(1.0)

(Unit: million won, %, current price)

Light Industries" and "August 3 Movement of Increasing Production of People's Consumer Goods."

The size of cash in circulation recently in North Korea is estimated to be 72.96 billion won, an increase of 7.5 times from 9.72 billion won in 1990.<sup>27</sup> In addition, the average amount of cash held by household was 14,069 won, about 78 times of the monthly salary (160-200 won) of an average North Korean worker. Analysis of the average amount of cash held by household in provinces shows that North Pyeongan Province held the highest amount of cash, with 23,095 won, followed by Pyongyang, 20,860 won. The average amount of cash held by households in South Pyeongan Province, South Hamgyeong Province, North Hamgyeong Province, Jagang Province, and Yanggang Province, North Hwanghae Province and Gangwon

<sup>&</sup>lt;sup>27</sup> Lee, Won-Gi and Dae-Gi Lee (1998) estimated the average amount of cash in the 1989-1994 period to be around 2.5 billion won, using the method that applied a constant to the North Korean case, obtained from the regressional analysis of the difference between Marshall K and the ratio of amount of fiscal expenditure to national income of Eastern European countries. The estimated figure is about one-quarter of the amount estimated by this paper (9.72 billion won).

Province are found to hold cash of 6,482 won, forming the lowest group.

North Korean households hold such large amounts of cash because, compared to the state-fixed price level of the past, the current market prices have risen by 11 times in terms of purchasing power. While a North Korean household lived on 1,920-2,400 won (equivalent to the monthly salary of 160-200 won) for one year in 1990, nowadays 23,590 won, is needed to live per year.

		Recent size of ca	ash in circulation	Size of cash in circulation in 1990		
Province	Number of	Amount	Household average	Amount	Household average	
Trovince	households	(1 million North	(North Korean	(1 million North	(North	
		Korean won)	won)	Korean won)	Korean won)	
Pyongyang	829,336	17,300	20,860	2,307	2,781	
S. Pyeongan	709,749	9,359	13,187	1,248	1,758	
N. Pyeongan	630,002	14,550	23,095	1,940	3,079	
S. Hwanghae	510,382	3,308	6,482	441	864	
N. Hwanghae	406,709	2,636	6,482	351	864	
Gangwon	390,760	2,533	6,482	3387	864	
S. Hamgyeong	717,723	9,785	13,634	1,305	1,818	
N. Hamgyeong	518,355	7,671	14,799	1,023	1,973	
Jagang	303,042	3,463	11,428	462	1,524	
Yanggang	167,472	2,321	13,857	309	1,848	
Total	5,183,530	72,926	14,069	3,724	1,876	

<Table 15.5> Volume of Cash in Circulation by Region

#### **B.** Size of Distribution in Private Economic Sector

The Bank of (South) Korea carried out extensive research on the North Korean private economic sector in 2002 from survey results on North Korean defectors to South Korea and published data that estimated the size of distribution of goods in the private economic sector. Although the accuracy and reliability of the estimation method used for the published data are questionable, it is still a result of significant importance in that the data estimated the size of North Korea's private economic sector.

Officially, North Koreans receive salaries from workplaces and purchase goods from state-run stores at state-fixed prices. The state-fixed price is a price that the state charges when selling ration goods. This is a typical system in socialist economies, and food and necessities are priced very low, while other goods such manufactured goods (TV, refrigerators, watches) are charged very high.<sup>28</sup> Officially, average workers in North Korea receive monthly salaries of 80-100 North Korean won.<sup>29</sup> Prior to 1995, when the distribution system operated normally, an average

household (double income earners) could live on with an income of 160-200 won.

According to North Korean defectors, the state distribution has almost stopped since 1995, with some parts having resumed of late. However, the majority of those surveyed did not even seem to remember the fixed price level of major staples such as rice and corn powder. This may be interpreted that the North Korean people have not purchased ration goods from state-run stores for many years, as the distribution system became lax. However, as food support programs from the South and the international society began recently, distribution started to resume partially, for instance, half-a-month's food ration per month in Pyongyang, and one and a half months' ration per year in other parts, and the price of rice in the farmers market fell slightly.

In recent years, the lax distribution system has caused a significant change in the economic life of North Korean people and the pattern of consumer spending. As rationing was cut back sharply after 1995, consumers had to purchase food and necessities from the marketplace. Yet the price level at the farmer's market, determined by the laws of supply and demand, is several tens to thousands times higher than the state-fixed price level, which makes providing for average households, with an average income of 160-200 won, impossible. For instance, the price of rice at the farmer's market in 2001 was about 50 won/kg, which is 625 times higher than the state-fixed price (0.08 won or 8 jeon), too expensive for average households that can only purchase 3-4 kg (5-6 days' provisions for an adult) with their monthly income. In order to make up for the raised living cost, the majority of North Korean households are forced to take up side jobs at markets.

Private economic activities such as private businesses or side jobs are, although unofficial and subject to control of the state, under taken with the partial cooperation of the state. However, to prevent the workforce from depleting, the state penalizes workers who miss work without permission, so it is the wives who normally participate in private economic activities.

According to the data published by the Bank of Korea, the total annual household expenditure in the private economic sector is estimated to be 122.3 billion North Korean won, and the average annual spending per household 23,590 won. By

<sup>&</sup>lt;sup>28</sup> The price system of North Korea can be compared with that of South Korea. The difference in statefixed prices between rice (0.08 North Korean won per kg) and a TV set (250 North Korean won, *"Sonamu"* brand, black and white, 17 inches) was 4,375 times, while in South Korea, as of October 2001, the price difference between rice (2,612 South Korean won per kg) and a TV set (485,000 South Korean won, flex screen, color, 29 inches) was only 186 times.

<sup>&</sup>lt;sup>29</sup> There is qualitative difference between the income of North Korean farmers and urban workers. The income of farmers is made up of cash and income in kind (cereals) distributed by the government after state procurement and the profit earned from the sales of agricultural produce coming from vegetable gardens. Farmers' life is often better off than the life of workers in North Korea.

region, households in North Pyeongan province on average spend 38,750 won, Pyongyang 35,000 won, North Hamgyeong Province 24,941 won, Yanggang Province 23,250 won, South Hamgyeong Province 2,875 won, South Pyeongan Province 22,125 won, Jagang Province 19,175 won, North and South Hwanghae Provinces 10,875 won and Gangwon Province 10,675 won (S.S. Park 2002, 21).

In the case of Jagang province, although it is situated adjacent to the Chinese border, household spending is rather low because trade between the two countries is not active, so income from trade is also rather low. For North and South Hwanghae Provinces, the private economic sector is not well developed and household spending is relatively low. Nevertheless, residents can produce and supply foodstuff on their own, so food problem is not grave in that region.<sup>30</sup> Gangwon province, unlike Hwanghae provinces, does not have a large area arable land and finds difficulty in self-sufficiency. Topped with low private sector consumption, the life of residents of this region is expected to be the toughest.

The above estimation of the total annual household spending in the private economic sector (123.3 billion won) is equivalent to \$610 million (US\$1 = 200 North Korean won). The GDP of North Korea in 2000, as estimated by the Bank of Korea, is \$16.79 billion, and the share of the private economic sector is estimated to be around 3.6 percent in the North Korean economy. The result implies that although the private economic sector in North Korea may be said to have become more active, the planned economic sector still accounts for the majority of North Korea's GDP (96.4 percent) and is still the most important part of the economy.<sup>31</sup>

One may compare the size of North Korea's private economic sector with Eastern European countries before regime transition (1990-1991) and find that it is similar to that of Hungary in 1980 (3.5 percent),<sup>32</sup> East Germany in 1988 (3.6 percent)<sup>33</sup> and Bulgaria in 1988 (4.1 percent).<sup>34</sup> However, it is much lower than the Czech Republic in 1989 (11 percent), Hungary in 1989 (14.9 percent), Poland in 1989 (28.6 percent) and Slovakia in 1991 (27 percent).<sup>35</sup> The reason that the size of

<sup>&</sup>lt;sup>30</sup> North and South Hwanghae provinces have the largest arable land. The proportion of paddy fields is 34.4 percent (South Hwanghae province 25.8 percent, North Hwanghae province 8.5 percent), non-paddy fields 24.1 percent (South Hwanghae province 11.8 percent, North Hwanghae province 12.3 percent), and orchards 33.1 percent (South Hwanghae province 22.3 percent, North Hwanghae province 10.8 percent).

<sup>&</sup>lt;sup>31</sup> Nam, Seong-Wook, and Moon, Seong-Min (2000) estimated the size of North Korea's "market economy" in 1998 to be 27.1 percent. This is a figure much higher than 3.6 percent, as estimated in this paper. Their figure was high probably because they directly applied the shares of "planned economy" and "market economy" to all industrial sectors of GDP of North Korea.

<sup>32</sup> Kornai (1986).

<sup>33</sup> Kornai (1992), p. 72.

<sup>&</sup>lt;sup>34</sup> Ibid, p. 72.

<sup>&</sup>lt;sup>35</sup> Borish and Noel (1996) suggest that Hungary's private economic sector was 20 percent, but this

the private sector economy of Visegrad nations such as the Czech Republic, Hungary, Poland and Slovakia before transition is much higher than that of North Korea today is that there already had been movements to privatization of stateowned enterprises before the regime transition (1990-1991), and those enterprises led economic activities in the private economic sector. However, privatize the corporate sector in North Korea is yet to be made and private economic activities are made up only of mostly individual side jobs such as sales in the market. Thus, the size of North Korea's private economic sector is much smaller than that of those countries.

### References

\* In Korean

- Bae, Jin-Young. 1991. Monetary System and Conversion to Market Economy in East Germany.
- Cho, Myung-Cheol. 1997. "Research on Price System of Market Economy in North Korea," in *The Unified Economy*. (July).
- Choi, Soo-Woong. 1995. *Reform of Distribution Management System in China and Prospects of Opening.*

\_. 1993. Pyongyang: The Korean Central News Agency.

- Eberstadt, Nicolas. 2000. "Accessibility and Reliability of North Korea's Official Statistics," in *The Unified Economy*. (April).
- Hong, Seong-Kuk. 1992. "Commercial Distribution System in North Korea." *Research on North Korea.* Vol. 3, No. 1.
- Jeon, Hong-Taek. 1998. "Situation and Future of North Korea's Non-planned Economic Sector," in *Journal of North Korean Economy*. Vol. 4.
- Ju, Young-Sang. 2001. "Factors of Change in the Pace of South Korean Currency Circulation," presented in regular discussion of the Society of Monetary and Finance Studies and Bank of Korea Special Research Center in December 2001.
- Juche Research Center in the North Korean Academy of Social Science. 1985. Dictionary of Economy. Vol. 1-2. Pyongyang: The North Korean Academy of Social Science.
- Juche Research Center in the North Korean Academy of Social Science. 1995.

paper uses the estimation by the European Bank for Reconstruction and Development (EBRD), which in *Transition Report 1995* (p. 28) shows with clear specification of the reference, that it is 14.9 percent (28.6 percent when including corporate farms and corporative unions). In addition, Borish and Noel's estimation of Slovakia's private economic sector (27 percent) is considerably higher than that of the EBRD.

*Dictionary of Finance*. Pyongyang: The North Korean Academy of Social Science.

- Lee, Won-Gi and Lee Dae-Gi. 1998. "Estimation on the Swap Ratio of Integration of South and North Korean Currency." Seoul: Bank of Korea Research Center.
- Ministry of Unification. 1999. "Recent Fact Findings on North Korean Farmers Market and Price Trend." (Press Release).
- Nam, Sung-Wook and Moon, Sung-Min. 2000. "Research on the Estimation of North Korea's Market Economy: Focusing on 1998," in *Current Study on North Korea*. Vol. 3, No. 1. Seoul: The Graduate School of North Korean Studies, Kyungnam University.
- The North Korean Workers' Party Press. 1982-84. *Collection of Kim Il-Sung's Writings*. Vol. 23, 25, 26 and 27.
- Park, Seok-Sahm. 2002. "Research on the Private Economic Sector in North Korea." Seoul: The Bank of Korea.
- Rhee, Won-Gyeong. 1986. *Socialist Monetary System*. Pyongyang: Political Science Publications.
- Rhim, Song-Shim. 2000a. "Substance of Equilibrium between Residents' Monetary Incomings and Outgoings and Several Problems Arising from the Basic Data Collection," Kim Il-Sung University Gazette, Philosophy and Economics. Vol. 46, No. 2. Pyongyang: Kim Il-Sung University.

\_\_\_\_\_. 2000b. "Several Problems in Equilibrium between Residents' Monetary Incomings and Outgoings." *Economic Research 2*. Pyongyang: Publications of Science Encyclopedia.

- Seon, Han-Seung. 1994. *Work Life and Labor of North Koreans*. The Korean Information Service.
- Shin, Mi-Jeong. 1996. "The Second People, North Korean Women," in *The Unified Economy*.
- Yoon, Chan-Hyuk. 1993. *Reform Measures on Product Distribution in Russia*. Seoul: Korea Institute for International Economic Policy.

\*\* In English

- Acharya, A. and M. Spagat. 1993. "Individual Savings and Monetary Overhang: A Model with Empty Shelves and Parallel Markets." *Economic Systems*. Vol. 17, No. 3, pp. 213-232.
- Borish, M.S. and M. Noel. 1996. "Private Sector Development in the Visegrad Countries." *Finance & Development*, pp. 45-48.
- Calvo, G.A. 1996. Money, Exchange Rates and Output. MIT Press.
- Calvo, G.A. and J.A. Frenkel. 1991. "Obstacles to Transforming Centrally-Planned Economies: The Role of Capital Markets." *International Monetary Fund*

*Working Paper* WP/91/66, July.

- Chawluk, A. and R. Cross. 1997. "Measuring of Shortage and Monetary Overhang in the Polish Economy." *Review of Economics and Statistics*. Vol. 79, No. 1, pp. 105-115.
- Chun, Hong-Taek. 1998. "The Second Economy and Economic Reform in North Korea," presented in International Conference Commemorating the Opening of the Graduate School of North Korean Studies, Kyungnam University.
- Cottarelli, Carlo and Mario I. Blejer. 1991. "Forced Savings and Repressed Inflation in the Soviet Union: Some Empirical Results." *International Monetary Fund Working Paper* WP/95/55, June.
- The European Bank for Reconstruction and Development (EBRD). 1995. *Transition Report* 1995.
- Fisher, Irving. 1922. *The Purchasing Power of Money*. New York: The Macmillan Publishing Company.
- Grossman, G. 1977. "The Second Economy of the USSR." *Problems of Communism*, No. 26.
- Kim, Byung-Yeon. 1999. "The Income, Savings, and Monetary Overhang of Soviet Households." *Journal of Comparative Economics*. Vol. 27, No. 4, pp. 644-668.
- Kornai, Janos. 1986. *The Socialist System: The Political Economy of Communism*. Princeton University Press.

\_\_\_\_\_. 1992. "The Hungarian Reform Process: Vision, Hopes, and Reality." *Journal of Economic Literature*.

- Meyendorff, Anna. 1994. "The Black Market for Foreign Exchange in the Former Soviet Union." *Comparative Economic Studies*. Vol. 36, No. 4, pp. 161-171.
- Ofer, G. and A.Vinokur. 1993. "The Soviet Household under the Old Regime: Economic Conditions and Behavior in the 1970s." *Journal of Economic Literature*, Vol. 31, No. 4, pp. 2010-2011.
- Sahay, R. and C.A. Vegh. 1996. "Inflation and Stabilization in Transition Economies: An Analytical Interpretation of the Evidence." *Journal of Policy Reform*, Vol. 1, No. 1, pp. 75-108.

## Part V

# International Economic Relations

# **XVI. Foreign Economic Relations**

## Ihk-pyo Hong

## 1. Changes in Foreign Economic Policy

The basis of North Korea's trade policy is to complement and develop self-reliance and the national economy based on the principles of equality and reciprocity under centrally-planned economic management. The distinctive features of North Korea's foreign trade under the centrally planned economy are as follows. The first is that supply of raw materials and production goods for domestic needs is self-reliant, regardless of comparative advantage. The second is that market and price mechanisms, such as market price and foreign exchange rate, are completely disregarded in terms of trade included in the economic plan. The third is the lack of diversity and narrow range of trade owing to concentration on items that are domestically unavailable or scarce. The fourth is that government organizations in charge of foreign trade affairs have difficulty in adjusting to changes in the international market thanks to the monopolized trade system.

Political purposes have been the super-ordinate concept in North Korea's foreign economic relations, as in North Korea's domestic economic policy. The foreign economic policy has placed its political relationship with socialist countries at its center for decades, and unrealistic aid and trade made for the sake of maintaining the authority of the ruler and friendly ties with other heads of socialist state are clear examples of how political goals take precedence over economic needs in North Korea's foreign economic relations.

It was only in 1980 that foreign trade was proposed as a fundamental issue in North Korea's national policies. Kim Il-Sung emphasized that imported raw materials and resources were the major obstacle to the development of the North Korean economy. To deal with that obstacle, the principle of "credibility before everything" was advocated when engaging in trade and the production of export items was given priority to observe this principle. La addition, Kim stressed that North Korea should promote diversified and multilateral trade and mobilize all domestic resources for exports.

In October 1980, Pyongyang declared again that would strengthen economic cooperation with friendly capitalist countries and actively brought in capital goods from the West However, the excessive increase in imports again created a foreign debt problem in 1981 and the scale of trade was reduced. However, Kim II-Sung's visit to the former Soviet Union and Eastern European countries in 1985 rapidly restored economic ties with these countries; as various agreements on economic cooperation were signed and economic aid increased, the size of North Korea's trade began to grow once again. In particular, the Soviet Union came to make up more than 50 percent of North Korea's foreign trade until the end of 1980s.

It was in the 1980s that Pyongyang made various moves to expand foreign economic relations and trade. In the Supreme People's Assembly of January 1984, the promotion of transit-trade and processing-trade was decided and the SPA placed emphasis on inter-korean cooperation. Indeed, North Korea enacted and promulgated the Joint Venture Law in September 1984, which permitted foreign capital investment. It was from this time that North Korea called upon foreign businessmen including the pro-North Korean association of Korean residents in Japan (*Chochongnyon*) to invest in North Korea.

The first feature of foreign economic policies in the 1980s was the return to the expansion of trade with socialist countries from the increase of trade with the West during the 1970s. The second feature was North Korea's attempt for the first time to solve its balance of payment problem by attracting foreign capital when the repayment of foreign debt became almost impossible. The third feature is that the regime's search for effective foreign economic relations was influenced by China's market-oriented reform and open-door policies. However, despite some policy changes, North Korea could not obtain substantial results from the foreign economic policies of the 1980s because of the poor investment environment, the absence of effective policies, outdated telecommunication and financial systems, and the lack of an adequate legal framework.

The sudden collapse of the Soviet Union and Eastern European socialist regimes in the early 1990s served as a decisive momentum for North Korea to change its foreign economic policies. The breakdown of economic ties with the Soviet Union and Eastern Europe was a critical blow to the North Korean economy. Considering that trade with socialist countries occupied 72 percent of North Korea's overall trade, the total loss of the North Korean economy from the collapse of socialist allies was enormous. The economic relations with the socialist countries rapidly decreased with the collapse of the socialist bloc and regime transition, and North Korea was suddenly forced to change the form of trade and payments. After 1991, Eastern Europe abolished the previous trade system with North Korea and adopted a new system of payment in hard currency, while the former Soviet Union started a partial system of payment in hard currency from January 1991 and moved to a system of full hard currency payment from 1992. China also changed its preferential barter trade system with North Korea into hard currency for bilateral trade,<sup>1</sup> acknowledg-ing barter trade only in the case of border-trade.<sup>2</sup> North Korea was faced with serious challenges from the international trade environment and needed to reestablish its foreign economic relations.

With a sense of a looming economic crisis, Pyongyang tried to change its foreign policies. Features of North Korea's new foreign economic policy in the 1990s are as follows. First, North Korea implemented a policy of capital inducement by establishing special economic zones. A new policy to stimulate trade and expand foreign investment was the designation of the Rajin-Sonbong area as a Free Trade and Economic Zone in 1992. In addition, trade-oriented policy was advocated at the 21<sup>st</sup> session of the sixth Central People's Committee. In order to dynamize the special economic zone, the North Korean regime has enacted and amended more than 50 laws related to foreign capital investment, including foreign investment law and free economic and trade zone law, from 1992 to the present time. From the mid-1990s, with the help of the UNDP, North Korea attempted to attract foreign capital, using the slogan "Trade First." However, inducing the foreign capital through the special economic zone was successful because Pyongyang reinforced precautions against the dependency on foreign capital following the 1997 Asian economic crisis. Indeed, the U.S. sanctions on North Korea has worked as obstacles to attracting foreign investors.

Second, Pyongyang promoted a market diversification policy to depart from the socialist market. In order to cope with the deterioration of trade with socialist countries in the early 1990s, North Korea turned to a trade policy that encouraged trade with developed countries.<sup>3</sup> Simultaneously, Pyongyang has been concentrating

<sup>&</sup>lt;sup>1</sup> In the case of China, "socialist friendly price" was reestablished only for strategic goods such as food and energy since 1995. This measure was taken by the Chinese government to prevent the North Korean regime from collapsing when a crisis was suspected due to severe economic difficulties in the mid 1990s.

<sup>&</sup>lt;sup>2</sup> The method of payment with China and the former Soviet Union changed to payment using hard currency through international market price when North Korea concluded theAgreement on the Changes of Trade Settlement System with the Soviet Union in November 199 and the DPRK and China Trade Agreement in January 1992. Since then, North Korea started experiencing difficulties in importing raw materials and all sorts of goods from the former Soviet Union and China, which occupied the largest share of North Korea's international trade. Overall trade also began to fail due to the lack of opportunity to export finished goods to the Russian and Chinese markets.

<sup>&</sup>lt;sup>3</sup> This policy appeared in the statement of the late Kim Il-Sung. He said: "We have developed trade

efforts on expanding trade with developing countries such as India, Pakistan, Thailand, Malaysia, the Philippines and Indonesia. North Korea chose these developing countries because Kim Il-Sung intended to build a bloc with the developing countries in Southeast Asia to strengthen solidarity and cooperation with them.<sup>4</sup> Pyongyang also showed interest in export-processing trade with such countries as Japan, Germany, Hong Kong, Singapore and even South Korea. North Korea's expansion of its foreign economic relations with both developed and developing countries is North Korea's attempt to adjust to the changing international circumstances.

Third, North Korea is turning to market principle and market efficiency while reducing the political weight in foreign economic relations. North Korea's foreign trade before the early 1990s was contract-based activities realized by mutual needs between socialist countries. Therefore, political and diplomatic principles worked as much more important factors than the economic principles of trade. However, upon entering the 1990s, foreign trade moved into a market-centered framework. In particular, the enactment of Trade Law in 1998 reflecting market transactions clearly proved Pyongyang's policy change.<sup>5</sup> The Trade Law emphasizes not only diversification of trade, but also payment ability. North Korea tried to adapt itself on capital-ist credit transactions by imposing accountability to management activities.

Fourth, North Korea is diversifying trade methods. For this, the government calls for foreign trade in various ways and methods by sector and unit. North Korea has adopted a policy to promote earning foreign currency by focusing on processing trade, along with direct and intermediate trade.<sup>6</sup> Pyongyang has also reinforced other policies such as re-export trade and the construction of industrial bases for export items through joint ventures and projects with foreign companies, and establishment of the special economic zones (S.K. Han 1991).

Fifth, in order to break away from monopolized trade, North Korea has tried decentralization of trade management through organizational reform from the early 1990s. Related to the decentralization of trade management, the most notable

based on socialist market in the past, but now, the socialist market is as good as wiped out. With the destruction of socialist system, capitalism returned to the Soviet Union and the Eastern socialist countries are also moving forward to the road of capitalism. We have to convert to a trade policy that is focused on a capital market from the one based on socialist market" (the Korean Worker Party, 1996b).

<sup>&</sup>lt;sup>4</sup> Kim Il-Sung emphasized the importance of inter-korean cooperation and the international gathering for solidarity and cooperation among the heads of developing countries (the Korean Worker Party 1996a)

<sup>&</sup>lt;sup>5</sup> The Trade Law is composed of five chapters and 58 articles and prescribes the foreign trade system and the establishment procedure of trading companies.

<sup>&</sup>lt;sup>6</sup> In October 1997, North Korea had already established processing trade zone at Nampo and Woan. In addition, to stimulate trade, the regime revised and promulgated the existing processing trade law at the Supreme People's Assembly in April 2001.

change was the reform of trade organization in 1998. Pyongyang renamed the Ministry of the External Economy under the State Administration Council as the Ministry of Trade.<sup>7</sup> Inaddition, while restructuring trade organizations in overlapping areas, the government established an economic institute for international trade under the Ministry of Trade to strengthen research on trade policies.<sup>8</sup> Enhancing the administrative status of the Ministry of Trade through the reform of trade management, the North Korean government executed overall restructuring of trading companies through specialization of the management structure and the merger of trading companies that did not have export lines for their products. These measures can be considered as reflections of the North Korean authorities' determination to boost the efficiency of foreign trade.

## 2. The Current Status of North Korea's Foreign Economic Activities

### **A. Foreign Trade Performances**

North Korea's foreign trade recorded US\$4.17 billion in 1990 a record high. However, the volume of foreign trade decreased to 38 percent in 1991 due to the collapse of socialist countries. Since then, the amount of the North Korean trade shrank continuously; in 1998 it dropped to about \$1.44 billion, equivalent to about 35 percent of 1990's trade volume. However, North Korea's foreign trade began to increase from 1999 thanks to the economic assistance from the international community, the rise in industrial operation and the increase in foreign currency earning from the tour business of Mt. Geumgang. The total amount of North Korea's trade was about \$2 billon in 2000. In 2001, it reached about \$2.27 billion, showing an annual increase of 15.1 percent. Nonetheless, whereas exports decreased or stagnated before starting to increase in 2001, imports continued to grow since 1998. This phenomenon shows that the increase in trade has its root in the expansion of imports. Indeed, although North Korea's recent foreign trade is slowly increasing, its level is slightly over 50 percent of 1990 and the trade deficit accumulated through-

<sup>&</sup>lt;sup>7</sup> North Korea formed some organizations under the Ministry of Trade such as the Department of Economic Cooperation Management, the Department of External Construction Management, the Department of Provincial Trade Guidance, the Department of Laws and Regulations, the Department of Planning and the Trade Comission (K.P. Kwon 199979).

<sup>&</sup>lt;sup>8</sup> In the early 1990s, Kim Il-Sung stressed the necessity of fostering professional human resources for trade "We have to develop trade: by entering the capitalist market. For this, we need to cultivate capable workers for trade who can trade with capitalist countries skillfully" (the Korean Worker Party 1996).

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Export	1733	945	933	990	858	736	727	905	559	515	566	650
Import	2437	1639	1622	1656	1242	1316	1250	1272	883	965	1407	1,620
Total	4170	2584	2555	2646	2100	2052	1977	2177	1442	1480	1973	2,270
Trade Balance	-704	-694	-689	-666	-384	-580	-523	-367	-324	-450	-841	-970

#### <Table 16.1> Trends in North Korea's Foreign Trade

(Unit: \$ million)

Source: KOTRA

out the 1990s, widening since 1998.

Upon the demise of the socialist bloc, changes in the international trade environment and the decrease in the trade volume brought immense changes to the trade structure. A clear change in North Korea's exports was the sudden decrease in the export of metal products. In 1993, metals were the largest trade item, amounting to \$293.70 million, or about 29.7 percent of total exports, but exports continued to decrease; in 1992, the export of metal products fell to \$60.25 million (9.3 percent of total exports). The reason for the decrease in the export of metal products such as steel, zinc ingots, lead ingots and bronze products was the shortage of energy and raw materials needed for production. Mineral products also decreased to the point that actual production was only half of the level in the early 1990s. The major cause of decline in mineral products is assumed to be the reduction of anthracite coals, cement and metallic minerals.

On the other hand, although machinery, electric and electronic products occupied only 6.5 percent in 1993, they grew to be the third-largest export items in North Korea, occupying 15.1 percent of total trade in 2001. The electric and electronic industries, unlike other sectors, were able to grow against North Korea's difficult circumstances due to support from the North Korean regime as special sectors for trade promotion. It shows that Pyongyang is supporting high value-added products. Kim Jong-II's interest in the IT industry is boosting the production and export of computers and telecommunications products.

The textile industry developed into the forerunner of exports, occupying 23.2 percent of total exports in 1994. Although the export volume of textiles has decreased from 1995, the textile industry is considered the primary source of foreign currency, and it maintains about 20 percent of total exports on account of the light industries promotion policy of the 1990s.

The products that have contributed to earning foreign currency for North Korea during the 1990s are fishing products such as clams, crustaceans and molluscs. The export of marine products to Japan and South Korea is as effective as the export of

Classification	20	00	20	01	Increasing rate	
Classification	Amount	Percentage	Amount	Percentage	- mcreasing rate	
Animal products	97,900	17.3	158,359	24.3	38.2	
Vegetable products	30,331	5.4	42,029	6.5	27.8	
Mineral products	43,158	7.6	50,464	7.8	14.5	
Chemical & plastic	44,929	7.9	44,600	6.9	-0.7	
Wooden products	10,941	1.9	5,596	0.9	-95.5	
Textile products	140,044	24.8	140,530	21.6	0.3	
Precious metals	9,814	1.7	14,077	2.2	30.3	
Base metals	43,869	7.8	60,245	9.3	27.2	
Machinery, electrics, electronics	105,247	18.6	97,914	15.1	-7.5	
Others	39,572	7.0	36,394	5.6	-8.7	
Total	565,805	100.0	650,208	100.0	13.0	

#### <Table 16.2> Major Export Items

(Unit: \$ thousand, %)

Source: KOTRA

textile goods or electric products in earning foreign currency. In addition the export of vegetable products, such as pine mushrooms, rice chaff and herbal medicine ingredients, contributed largely to earning foreign currency, reaching \$111.21 million in 1994. However, these products decreased on a continuous basis and amounted to \$29.75 million (about 5.4 percent of total export) in 2000.

The items occupying a large portion of North Korean imports are mineral products, animal and vegetable products, textiles, machinery, electric and electronic goods. These were the most important import items throughout the 1990s, occupying the majority of imports. However, the import of those items had a tendency to synchronize with the conditions of the North Korean economy and imports decreased extensively throughout the 1990s. In particular, the import of mineral products such as crude oil, heavy oil and coke steadily decreased, having negative impacts upon energy production and the production activity of industries.

The recent increase in the import of machinery products shows that North Korea is trying to modernize laggard industrial facilities. For the year 2000, the import of electric, electronics and machinery goods rose by 52 percent year on year. Pyongyang's focus on developing computer science and IT industry was fleshed out by the establishment of the Ministry of Electronics Industry in November 1999, with the majority of production in the electric and electronics sector being computers and their peripherals.

With respect to North Korea's trading partners, the fall of the socialist bloc in the early 1990s brought a significant change. Foreign trade with Russia, taking 53

				(	nt. o ulousund, 70)
Classification	20	00	20	01	Increasing rate
Classification	Amount	Percentage	Amount	Percentage	
Animal products	20,333	1.4	73,904	4.6	263.5
Vegetable products	159,008	11.3	221,024	13.6	39.0
Oil and fat manufactured foods	89,073	6.3	89,868	5.5	0.9
Mineral products	171,202	12.2	231,100	14.3	35.0
Chemical products	108,436	7.7	123,403	7.6	13.8
Plastic products	67,540	4.8	65,980	4.1	-2.3
Textile products	171,897	12.2	203,901	12.6	18.6
Metals	85,188	6.1	100,355	6.2	17.8
Machinery	205,051	14.6	243,826	15.0	18.9
Automobiles	146,185	10.4	88,427	5.5	-39.5
Others	182,617	13.0	178,503	11.0	-2.3
Total	1,406,530	100.0	1,620,291	100.0	15.2

(Unit: \$ thousand, %)

#### <Table 16.3> Major Import Items for North Korea

Source: KOTRA

percent of North Korea's total trade in 1990, shrank sharply to 14 percent in 1991. The main reason for the rapid decrease in bilateral trade was that trade settlement changed to payment in hard currency upon the conclusion of the "Agreement on Trade Balance Payment in Hard Currency" in November 1990. Indeed, the former Soviet Union's economic difficulties brought the trade with North Korea in the form of aid through favorable pricing to a standstill. Russia also avoided trade with North Korea because of North Korea's insolvency for payments on a commercial basis. When the former Soviet Union turned to market economy, North Korean exports in the Russian market were no longer competitive. As a result, the trade between North Korea and Russia kept decreasing in the 1990s and in 2001 it was down to 3 percent of North Korea's trade. North Korea's trade with Other former socialist countries also decreased drastically. Foreign trade with China, Eastern European countries and Russia occupied about 70 percent of the total trade in 1990 but shrank to 30 percent in 2000.

With the expansion of foreign trade with South Korea, China, Japan and Western,<sup>9</sup> North Korea's trade dependency on market economies gradually enlarged. This trend means that Pyongyang is very aggressive in pursuing foreign trade with

<sup>&</sup>lt;sup>9</sup> Trade with Asian countries except China and Japan remained at 10 percent until 1994. It rose to 32 percent in 2000, showing a large proportion than trade with China and Japan (KOTRA 2001, 48).

Rank	Country	Export of North		KoreaImport	of North Korea	Total	trade	Share	
Nalik	Country	2000	2001	2000	2001	2000	2001	2000	2001
1	China	37,214	166,727	450,824	573,131	488,038	739,858	24.7	32.6
2	Japan	256,891	225,618	206,760	249,077	463,651	474,695	23.5	20.9
3	India	25,542	3,060	142,881	154,793	168,423	157,853	8.5	7.0
4	Thailand	19,522	24,922	188,301	109,586	207,823	134,508	10.5	5.9
5	Singapore	2,875	3,050	46,245	112,298	49,120	115,348	2.5	5.1
6	Germany	25,574	22,756	53,575	82,077	79,150	104,834	4.0	4.6
7	Hong Kong	46,384	37,974	68,451	42,555	114,835	80,529	5.8	3.5
8	Russia	3,404	4,541	42,881	63,794	46,285	68,335	2.3	3.0
9	Spain	12,693	12,637	15,312	31,626	28,005	44,236	1.4	1.9
10	England	1,305	2,034	25,338	40,713	26,643	42,747	1.4	1.9
	of 10 trading partners	431,405	503,319	1,240,568	1,459,650	1,671,973	1,962,970	84.8	86.5
Total v	olume of trade	565,805	650,208	1,406,530	1,620,291	1,972,335	2,270,499	100.0	100.0

<Table 16.4> North Korea's Major Trading Partners

(Unit: \$ thousand, %)

Note: Top ten trading partners are selected on the basis of the year 2001. Source: KOTRA

capitalist countries to revitalize the economy and sustain the political system. Recently, North Korea has made diplomatic efforts to promote trade with developed countries. Major trading partners of North Korea since the late 1990s are mostly capitalist countries such as South Korea, Japan, Russia, Hong Kong, Germany, India, Thailand and Singapore.

#### **B.** The Status of Foreign Investment

When enacting the Joint Venture Law in September 1984, North Korea attempted to invite foreign investment rigorously, but the results were poor. The total amount of investment from 1990 to 2001 is estimated at less than \$397 million. Foreign investment was mostly made by pro-Pyongyang Korean enterprises in Japan, Chinese firms and South Korean investors; investment by other developed countries was very rare. As of the end of 1994, 148 cases of foreign investment made in electronics, machinery, chemical, clothing, food and mining industries. Nonetheless, 131 cases (or 88.5 percent) were joint ventures between *Chochongnyon* and North Korea. Until 1986, the service industry, including department stores, coffee shops and hotels, took up most of the Japanese investment. However, investment by *Chochongnyon* turned to the light-industries and the manufacturing industry, such as textiles and clothes, from 1987. In addition, diversification of foreign investment became visible from 1989 as investment expanded to finance, mechanical manufacturing and electric industries. However, the joint ventures with *Chochongnyon* had the following problems: (1) Small-scale investment by Korean resident in Japan due to their difficulties of mobilizing capitals and credit problems led to little contribution to the economic development of North Korea; (2) Japanese investment was made mostly in the light-industries instead of the heavy chemical industry and infrastructure, as desired by Pyongyang (J.B. Han 1998, 100-101).

Meanwhile, North Korea lags behind China and Vietnam in terms of foreign capital inducement even though Vietnam's policy of inducing foreign capital was implemented later than North Korea. Along with the open market system and economic reform, China and Vietnam obtained considerable results from foreign investment by improving their relationship with the United States and other developed countries. In contrast, North Korea's military tension with the United States due to nuclear missile issues and the a promotion of a limited open-door policy are seen as the major cause of poor performance of North Korea's foreign investment.<sup>10</sup>

Political reasons rather than economic needs seem to have decided the investment in North Korea by foreign companies until recently. This is shown by the following three phenomena (Y.S. Dong 1995, 345-346). First, companies run by the Korean diaspora played important roles. Almost all of the investment from Japan was from pro-Pyongyang Korean residents. Most Chinese investment that began to expand since the early 1990s is also made by Korean-Chinese enterprises operating

<table 16.5=""> Foreign Investment Trend</table>	s of North Korea, China an	d Vietnam
		(Unit: \$ million)

			(01111 \$ 1111101)
Years	North Korea	China	Vietnam
1990 ' 95	14	19,360	947
1996	2	40,180	1,803
1997	307	44,237	2,587
1998	31	43,751	1,700
1999	-15	40,319	1,484
2000	5	40,772	1,289
2001	7	46,846	1,300

Note: The figures on North Korea are estimated values.

Source: UNCTAD (2002). World Investment Report 2002: Trends and Determinants. p. 305.

<sup>&</sup>lt;sup>10</sup> When North Koreadesignated th Rajin and Sonbon area as a Free Economic and Trade Zone and expanded the extent of openin in December 1991, foreign investment in 1992 showed a considerable increase up to \$42 million. It rapidly decreased to \$6 million as the military tension with the United States grew after North Korea's withdrawal from the Nuclear Non-Proliferation Treaty (NPT) in 1993.

around the Yanbian Autonomous Prefecture in the Jilin province of China. Considering the fact that South Korean companies have shown interest in investment in North Korea, it is said that investment decisions interest in North Korea is not made simply on the basis of investment environment analysis. These phenomena are what North Korea wants to some extent; under the concept of "independent national economy," investment by overseas Koreans is regarded as North Korean capital by the authorities.

Second, Chinese and overseas Chinese investment has been slowly expanding in recent years. The general characteristic of overseas Chinese investment is that real estate and financial sectors are primary investment sectors. North Korea was no exception; Chinese capital showed more interest in North Korea after the retrocession of Hong Kong in July 1997.

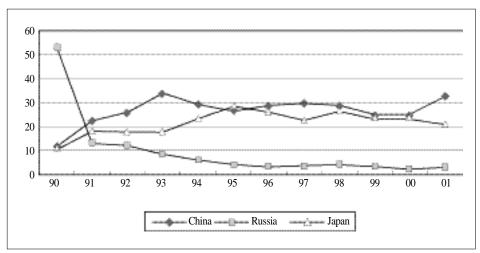
Third, investors in the United States and Japan are carefully preparing for investment in North Korea. Investors of both countries best represent developed corporate attributes. On one hand, the investment from U.S. enterprises is closely connected to the removal of economic sanctions. On the other hand, the investment of Japanese enterprises is linked with diplomatic normalization between Japan and North Korea.

Consequently, in order to induce full-scale investment of foreign enterprises in North Korea hereafter, Pyongyang needs fundamental changes in the investment environment: first, the settlement of North Korea's property claims against Japan following normalization of diplomatic ties between Japan and North Korea; second, the improvement of the relationship between Washington and Pyongyang and the consequent easing of U.S. economic sanctions; third, the decrease in investment risk thanks to the improvement of inter-Korean economic cooperation. Unless fundamental changes are made, there is nothing for industrial investment in North Korea but to be confined within the scope of such areas as agricultural cooperation, tourism and service businesses in some regions. Although these investments might contribute to a short-term increase of foreign capital earnings, they will not help the full recovery of the North Korean economy.

## **3. Recent Economic Relations with Major Countries**

## A. China

Although the economic cooperation between North Korea and China centers on trade, investment and economic/technological aid, trade has been the most important part of economic cooperation. From the early 1990s in particular, the importance of trade with China grew. In 1990, the share of trade with the Soviet Union amounted to 53.3 percent of North Korea's total foreign trade, but it shrank sharply to 13.4



(Unit: %)

<Figure 16.1> China, Russia and Japan in North Korean Trade

Source: KOTRA

percent a year later. The share of trade with China was only 11.6 percent in 1990, but it rose more than twofold to 22.4 percent in 1991. From then on, China positioned itself as North Korea's largest trading partner, maintaining an average level of 25-30 percent.

Unlike China's large-scale economic assistance to North Korea, trade between the two countries has been at a standstill due to the rapid decrease in North Korea's trade volume after recording a high of \$899 million in 1993. Recently, the volume of bilateral trade recorded \$739.86 million, showing an annual increase of 51.6 percent, as the relations between two countries became more active after Kim Jung-II's visit to China and Jiang Zemin's reciprocal visit to North Korea in 2001. As the share of trade to China in total trade of North Korea increased to 32.7 percent, North Korea's trade dependency on China increased.

The increase in bilateral trade, driven by imports from China, further worsened the trade imbalance. The major import items to North Korea from China include crude oil, corn and rice. Since North Korea imports the major items at a cheaper price than the international price, trade with China has characteristics of economic trade. North Korea's export to China continued to drop from 1997. Reasons for this trend include the lack of comparative advantage of North Korean exports in China, the change for North Korean export market from China to South Korea and the reduction of cross-border trade partly due to tightened control over the Wonjongri Market.

Year	Ex	port	Im	port	Total	Trade	Trade Balance
I cai	Amount	Increase rate	Amount	Increase rate	Amount	Increase rate	Haut Dalance
1990	124,580	-	358,160	-	482,740	-	-233,580
1991	85,670	-31.2	524,780	46.5	610,450	26.5	-439,110
1992	155,463	81.5	541,107	3.1	696,570	14.1	-385,644
1993	297,290	91.2	602,350	11.3	899,640	29.2	-305,060
1994	199,217	-33.0	424,523	-29.5	623,740	-30.7	-225,306
1995	63,606	-68.1	486,187	14.5	549,793	-11.9	-422,581
1996	68,638	7.9	497,029	2.2	565,667	2.9	-428,391
1997	121,610	77.2	534,680	7.6	656,290	16.0	-413,070
1998	57,313	-52.9	355,705	-33.5	413,018	-37.1	-298,392
1999	41,709	-27.2	328,660	-7.6	370,369	-10.3	-286,951
2000	37,214	-10.8	450,824	37.2	488,038	31.8	-413,610
2001	166,727	348.0	573,131	27.1	739,858	51.6	-406,404

#### <Table 16.6> Trends of North Korean Trade with China

(Unit: \$ thousand, %)

Source: Statistics of the Chinese Maritime Customs.

Cross-border trade is the most important part of the North Korean trade with China.<sup>11</sup> Currently, more than 70 percent of total cross-border trade between two countries is peddler trade. In the spring of 1997, a large amount of scrap iron in North Korea was carried out to Dandong area of China mostly through peddler trade. In North Korea, there are eight national trade areas and three provincial areas for cross-border trade. Among these areas, Dandong is the most active border trade area. There are 800 provincial government-run and individual trading companies and therefore Dandong takes 80 percent of North Korea-China borderline trade.

<sup>&</sup>lt;sup>11</sup> Cross-border trade is allowed in the special border area by the Chinese government for its needs. The government exempts 50 percent of import tariff and value-added tax to promote economic development in the economically lagging borderline area The Chinese government enacted the Management Law on the Cross-Border Trade in 1984, and by this law, cross-border trade is divided into "small-scale border trade" and "trade in the cross-border people's market." Small-scale border trade is the trade by Chinese enterprises that have the right of border trade with neighbor countries that share land borders. It is not applicable to products from third counties and requires the verification of origin. Cross-border trade between North Korea and China mostly takes the form of small-scale border trade. In the borderline people's market trade, import tariff and value-added tax is exempted only for the products value a less than 3,000 Chinese yuan per person day at an established open market within 20 km from the border with permission of the Chinese government. Trade items that are excluded from the tax exemption are television, movie cameras, VCRs, air conditioners, refrigerators, washing machines, computers and peripherals, telephones, facsimiles, electronic calculators, typewriters, word processors, furniture, automobiles and autmobile parts. While the size of North Korea's exports to China is on a decreasing trend, North Korea's export dependency on border trade with China is rising. This reflects that North Korea does not have items with export competitivenes and prefer tax-favored cross-border trade.

Year	Export	to China	Import fro	om China	Total borderline trade		
I Cal	Amount	Share	Amount	Share	Amount	Share	
1997	58,423	48.0	159,688	29.9	218,111	33.2	
1998	37,659	65.7	92,921	26.1	130,580	31.6	
1999	32,092	76.9	75,252	22.9	107,344	29.0	
2000	29,521	79.3	106,929	23.7	136,450	28.0	

(Unit: \$ thousand)

#### <Table 16.7> Trends in Border Trade between North Korea and China

Note: Figures in the share part means the share of borderline import and export between North Korea and China in the total import and export between the two countries.

Source: KOTRA.

Meanwhile, after enacting the Joint Venture Law in 1984, major economic cooperation projects between North Korea and China are mutual investment activities and the promotion of the Tumen River Area Development Plan. Ten cases of Chinese investment in North Korea have been reported from 1984 to 1990, while North Korea also made scores of investments in Beijing, Yanji and Dandong.

According to North Korean data, 21 Chinese companies invested about \$40 million in North Korea until the end of 1995. Foreign capital that North Korea attracted by 1996 totaled to some 130 cases worth \$130 million, 40 cases of which were made by China. Following the establishment of the Rajin-Sonbong Economic and Trade Zone, contracts for 49 cases of foreign investment were made, totaling \$350 million. It is reported that 22 cases totaling \$34 million were actualized. When examining the actualized investment, amounting to \$34 million, foreign investment related to infrastructure took the largest share (40.4 percent of the total), recording \$13.5 million. It was followed by commerce, transportation, services tourism and manufacturing. According to the UNIDO Report after the Rajin-Sonbong Investment Forum held jointly by UNIDO, UNDP and North Korea in September 1996, the result of foreign capital inducement during the Investment Forum was four signed contracts totaling \$265 million and 12 written agreements.

The foreign investment that increased largely since 1996 was mostly from Chinese and Hong Kong enterprises. It is said that the Chinese government has been promoting the investment of Hong Kong and overseas Chinese entrepreneurs in the Rajin-Sonbong Economic and Trade Zone since the late 1990s. According to KOTRA, there are 56 foreign enterprises operating in the Rajin-Sonbong area and more than 70 percent of them are from China or Hong Kong. Even though investments from Chochongnyon is still larger than other groups, the investment of Chinese and Hong Kong enterprises, in terms of the investment volume, is larger. It is expected that the number of investments from Chinese and Hong Kong enterprises will surpass that of the Chochongnyon in the near future. Looking at the major investment areas from China and Hong Kong, the service industry related to tourism, such as restaurants, stores and hotels, makes up most of the Chinese investment. Investment in infrastructure such as roads, harbors, marine transport, airport and finance is quite considerable: construction of Rajin and Chungjin container facilities; Rajin-Niigata regular shipping service and Rajin-Pusan regular container ship service by Yanbian Marine Transportation Firm; construction of the Rajin Heliport annex and the Yanji-Rajin and Rajin-Pyongyang helicopter service by Hong Kong New East Asia Corporation; Rajin-Wonjong road expansion and pavement work by Hong Kong Tyson Corporation; the Sonbong Airport construction by Hong Kong Paul ITC Company; the Rajin Port construction by the Hong Kong Hutchison Group; hotel and casino business by Hong Kong Imperial Group. Some investment in the logistics sector such as intermediate transportation is continuously made. However, the manufacturing sector is not enjoying significant attention from foreign investors.

When considering investment-related bilateral cooperation the scale and substance are still small and might be in an experimental stage. The most important reason for mutual investment activities to be sluggish compared to trade is that the rigid socialist economic systems of North Korea are making the implementation of profit-seeking joint ventures by investors from China difficult. In addition, the sharp clash of interests between North Korea, China and Russia concerning the Tumen River Development Plan is making the revitalization of economic cooperation difficult. China has made small-scale investment centering on light-industries and distribution sector. Chinese investment in North Korea officially ratified by the Foreign Trade and Economic Cooperation Ministry of China (MOFTEC) limited to six projects including restaurants, store, mineral water production and marine cultivation, until 1999, totaling only \$1.88 million. On the contrary, according to the publication of the MOFTEC, direct investment from North Korea to China from 1993 was \$67 million and, according to investment volumes ratified by the Chinese government, it reached a total of 270 cases, amounting to \$170 million.

#### B. Japan

Although North Korea expected the participation of Japanese investors after the Joint Venture Law went into force in September 1984, the Japanese business community was apathetic toward North Korea, which already broke the promise to redeem its debts over several occasions. North Korea turned to pro-Pyongyang Korean enterprises in Japan from 1986. On February 28 of the same year, Kim Il-Sung appealed at the 40<sup>th</sup> anniversary of the formation of the Confederation of Korean-Japanese Commerce and Industry: "In order to solidify your economic footing in Japan, you need to make joint ventures with your fatherland. If a person in

the pro-Pyongyang Korean commercial and industrial group has political power, make a political contribution, if a person has money, give financial support, and if a person has knowledge, use it for the fatherland. You should actively contribute to the economic development of the socialist fatherland and the improvement of life by promoting joint ventures and production with people in your fatherland. It is a revelation of lofty patriotism that fellow businessmen of the diaspora do many good things for the economic development of the fatherland and the improvement of people's lives."<sup>12</sup> This statement was called the "February 28 Instructions" becaming the platform for joint ventures between North Korea and *Chochongnyon*. Taking this opportunity, joint ventures between two countries started to make rapid strides.

In June 1986, the Association of Joint Venture Business Study was inaugurated in Osaka as with the Chochongnyon steering the joint venture project. Several projects began in November after the association and North Korea's Joint Venture Promotion Committee founded the North Korea International Joint Venture General Company to promote joint venture businesses. In June 1987, the Association of Joint Venture Business Study was renamed the Joint Venture Business Promotion Committee. Through the series of preparatory works, the joint venture projects between North Korea and *Chochongnyon* was well under way. With hopes of making investment as well as promoting nationalism a joint venture boom occurred in the North Korean community in Japan from 1987, lasting for three years.

While Japanese enterprises did not favor the initiative due to North Korea's outstanding debt problems, pro-Pyongyang Korean enterprises kept the joint ventures alive. Exports to North Korea from Japan exceeded Japanese imports until 1986, but the situation reversed from 1987. While Japan's exports to North Korea dropped because of the negative position of Japanese enterprises, North Korean products made by joint ventures were imported to Japan, reversing the trade balance. Moreover, the rapid increase in the export of raw materials from North Korea and the re-import of finished goods to Japan brought significant changes to the structure of the North Korea-Japan bilateral trade. In spite of Japan's economic sanctions on North Korea due to North Korea's bombing of a South Korean commercial airplane, the joint ventures between North Korea and *Chochongnyon* became the driving force of maintaining the bilateral trade at a certain level. The share of trade between North Korean and *Chochongnyon* is assumed to be 80-90 percent of total bilateral trade (JETRO 1993, 69).

In the early 1990s, the joint venture business between North Korea and pro-Pyongyang Korean enterprises in Japan reached a regular scale, with more than 100 joint ventures. However, far from initial expectations of pro-Pyongyang Korean

<sup>&</sup>lt;sup>12</sup> Cited in the North Korea Commerce and Industry Newspaper. February 28, 1986.

Business sector	Number of operating companies	Ratio	Joint venture	Joint production	Processing on Commission
Light industries	38	37.60	16	11	11
Heavy industries	24	23.80	12	10	2
Agricultural and	19	18.80	5	14	0
marine products					
Services	20	19.80	15	5	0
Total	101	100	48	40	13

<Table 16.8> Status of Joint Ventures between North Korea and Chochongnyon (Unit: cases, %)

Source: The figures are reproduced by the author based on internal sources from the *Chochongryun* Joint Venture Business Promotion Committee.

enterprises in Japan, the joint ventures failed due to North Korea's ignorance of business practices and knowledge of market economics.

Joint ventures in North Korea are based on joint investment and joint management. Even though property rights, management rights and the right of labor management for foreign investors was guaranteed by the Joint Venture Law, in reality, only property rights were acknowledged in the operation process; the exercise of management rights and labor management rights clashed with the Daean Work System, the North Korean management system. In particular, the exercise of labor management rights was almost impossible. In addition, contractual violations occurred frequently, further increasing the damages of pro-Pyongyang enterprises in Japan. An analysis of internal sources of the *Chochongryun* Joint Venture Business Promotion Committee shows that businesses exifing this market reached 48 percent of the total. Recently, the situation took a turn for the worse, leaving only about 10 enterprises in operation.

In the end, the *Chochongryun* businesses came to lose interest in doing business in North Korea. Moreover, Japan's long-term recession during the 1990s negatively affected business between North Korean and pro-North Korean enterprises in Japan. Financing investment funds became more difficult, as the Chosun Credit Union - a *Chochongryun* bank - received public funds from the Japanese government on account of insolvent bonds and became subject to guidance and supervision from the Japanese Ministry of Finance.

Meanwhile, the economic relations between North Korea and Japan underwent many changes owing to the demise of the Cold War system since the late 1980s. Kanemaru Shin's visit to North Korea in September 1990 marked a turning point. Meeting with Kim II-Sung, Kanemaru agreed to hold a summit meeting between two countries.

As such, new movements started to appear in the economic sector, with the com-

mencement of amity negotiations serving as momentum. Some Japanese politicians who actively supported improved bilateral relations advocated improved economic and trade relations and decided to review projects that could help North Korea's foreign currency earning by strengthening North Korea's export industries.

In response to this, an inspection group consisting of the East Asia Trade Institute and the Japan-North Korea Trade Association visited North Korea in the spring of 1991. In May 1992, representatives of the North Korea International Trade Promotion Committee visited Japan for the first time in 10 years. At the meeting with economic organizations such as the Japan Federation of Economic Organizations, the Japan External Trade Organization, the Japanese Chamber of Commerce and Industry, the Ministry of Trade, Industry and Energy and the North Korea International Trade promotion Committee set forth its hopes of revitalizing bilateral trade and economic cooperation, even before the normalization of diplomatic relations. Two months later, the Japan Economic Cooperation Delegation, composed of 50 persons including executives of business conglomerates, visited North Korea. However, the delegation, after inspection, came to the conclusion that infrastructure and other circumstances were not apt for Japanese investment; even if circumstances were improved, it would be very difficult for companies to take any action before the issues of debt problems and the normalization of diplomatic relations were resolved. In sum, Japan made it clear that the North Korea's enthusiasm was understandable, but starting new businesses would be difficult to begin in view of the outstanding debts.

In June 1992, negotiations for the outstanding debts issue took place in Pyongyang. At the negotiation table, North Korea requested a long-term rollover of its debts since it would need a considerable time before adjusting to new circumstances following the disintegration of the socialist bloc. Japan asked for economic data to obtain the consent of creditors and concerned parties. When North Korea refused, citing unavailability of data due to the circumstances surrounding the division of the Korean peninsula, negotiations came to a standstill.

With no progress made in economic cooperation between the two countries, suspicions of North Korea's nuclear development surfaced as a major issue in the international community, puting an end to negotiations for diplomatic normalization between Tokyo and Pyongyang. The apparent reason for the end of negotiations was the issue of a japenese woman kidnapped to North Korea. However, the real reason was the North Korean nuclear issue.

When the nuclear issue was resolved for the time being by the Geneva Agreement between North Korea and the United States in October 1994, the concerned parties resumed talks. The delegation of the East Asia Trade Institute visited North Korea in November 1995 and held a meeting with the North Korea International Trade Promotion Committee, discussing the issue of outstanding debts with the North Korea International Trade Promotion Committee and North Korea Trade Bank. As a result of the negotiations, both sides shared the understanding that the rollover of debts was unlikely with North Korea's lack of ability to redeem its debts, but it could be possible upon the normalization of diplomatic relations.

However, North Korea's test firing of Taepodong Missile on August 31, 1998, shocked Japan, and the public opinion in Japan toward North Korea grew extremely bad. The Japanese government immediately put sanctions including the suspension of food aid and irregular airfreight services between Pyongyang and Nagoya. By these measures, bilateral trade was hard hit and the export of North Korea's pine mushrooms which are transported by air suffered the biggest damage.

Despite North Korea's active attitude in expanding economic relations before the normalization of diplomatic ties, the foreign debt problem, military tensions due to nuclear development and missile threats and the negative public opinion toward the abduction of Japanese citizens froze any efforts for bilateral economic relations. Bilateral trade began to decrease from the mid-1990s due to the failure of the joint venture businesses between North Korea and pro-Pyongyang Koreans in Japan, as well as due to security matters. A considerable increase in the amount of trade in 1995 was derived from 43-percent increase in annual exports owing to Japan's rice aid to North Korea. With the 1998 test firing of missiles aggravating bilateral relations, the trade between North Korea and Japan was below \$400 million from 1998 to 1999, but it recovered to the usual level from 2000.

#### C. The United States

North Korea has attempted to resolve severe food shortage and economic difficulties through improving its relationship with the United States. North Korea needs economic aid from the international community in the form of foreign capital, advanced technology and economic aid. Therefore, Pyongyang has sought ways to attract investment from the United States, analyzing U.S. policies that would lift the economic sanctions on North Korea, including legal and institutional barriers. The U.S. economic sanctions largely restrict investment in North Korea by not only U.S.

<table 16.9=""></table>	<ul> <li>Trade between</li> </ul>	North Korea	and Japan	since 1990
-------------------------	-----------------------------------	-------------	-----------	------------

(Unit: \$ thousand, year)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Exports	300,682	283,574	257,393	252,351	322,684	339,680	291,412	310,484	219,489	202,564	256,891	225,618
Imports	175,900	223,993	222,894	219,654	170,780	254,957	226,994	178,804	175,137	147,839	206,760	249,007
Total	476,582	507,567	480,287	472,005	493,464	594,637	518,406	489,288	394,626	350,403	463,651	474,625

Source: KOTRA

companies but also foreign companies and prohibits the export of North Korea-originated products to the United States.

Meanwhile, North Korea is trying to receive long-term low-interest funds for economic development from international financial institutions such as the Asia Development Bank (ADB), the International Monetary Fund (IMF) and the World Bank.<sup>13</sup> However, it is also impossible without U.S. assistance. The law in the United States stipulates a veto on financial assistance from international financial institutions to terrorist countries. The United States can exercise veto power at international financial institutions such as the IMF and World Bank, and with its enormous influence, U.S. consent is needed in decisions on financial aid. Under these circumstances, North Korea's nuclear issue can be considered ultimately as a strategic choice on the part of North Korea to link the U.S. relations with the preservation of its regime.

The United States has regarded North Korea as a hostile country since the Korean War and a deep-seated distrust in North Korea has intensified with five decades of terrorist activities and invasion threats to South Korea. The United States did not acknowledge the existence of North Korea in line with the containment policy against communist countries during the Cold War. In addition, it has continuously placed comprehensive and rigorous sanctions on North Korea since the Korean War.

The U.S. economic sanctions on North Korea are classified as follows: ① a substantial and absolute ban on commercial and financial transactions; ② freezing of North Korean assets in the United States; ③ restriction on economic assistance and aid to North Korea; ④ refusal of most-favored-nation treatment to North Korea; and ⑤ embargo on the trade in weapons and armaments with North Korea. The US economic sanctions stipulate North Korea as the following and are exercised accordingly: ① a hostile country; ② a communist country; ③ an international terrorist country; ④ a nation with nuclear power that violated the IAEA Safety Agreement; ⑤ a nation violating human rights; and ⑥ a nation engaged in missile technology proliferation activities.

As explained earlier, trade between North Korea and the United States is all but non-existent due to comprehensive and rigorous sanctions. The features of trade between North Korea and the United States from 1988 are insignificant in scale extremely restricted usually one-off trade without or trade focused on imports from the United States.

The trade between North Korea and the United States was \$65,000 in 1988,

<sup>&</sup>lt;sup>13</sup> On the standards of financial assistance for developing countries and feasible size of financial assistance to North Korea by international financial institutes, see S. K. Hong, March 2000, pp. 33-39.

\$592,000 in 1989, \$32,000 in 1990, \$111,000 in 1991, and \$475,000 in 1992. It increased to about \$2 million in 1993 but dropped to \$180,000 again in 1994. The bilateral trade rapidly increased past \$5 million in 1995, one year after the conclusion of the North Korea-U.S. Basic Agreement, but it fell sharply again in 1996. From 1997, the trade between North Korea and the United States showed a rapid increase, recording \$2.409 million in 1997, \$4.45 million in 1998 and \$11.289 million in 1999, but in 2000 diminished drastically to \$2.891 million. The economic exchange between North Korea and the United States is mainly made up of U.S. export to North Korea. The U.S. export items until 1994 included mining machine and parts, lumber and acrylpolymer; mining machinery and parts took 84 percent of the total exports in 1992 and 100 percent in 1994.

U.S. firms that have advanced into North Korea are concentrated in areas such as energy, telecommunications and finance. The Stanton Group is the sole company from the United States active in investment. The Stanton Group said it received special permission from the Department of Treasury for investment in North Korea and invested \$13 million in September 1996 to establish a joint venture the North Korea Equipment Stanton Development Company, with the Seung-Ri Chemical Company to produce light oil products, such as gasoline and diesel and some heavy oil needed by KEDO. In August 1998, the Stanton Group announced that a joint-venture oil refinery was in operation and that it planned to invest about \$1 billion in

Year	Total amount	Imports from U.S.	Exports to U.S.	
1988	65	65	0	
1989	608	16	592	
1990	32	32	0	
1991	111	100	0	
1992	475	467	0	
1993	1,979	1,979	0	
1994	180	180	0	
1995	5,006	5,006	0	
1996	542	542	0	
1997	2,409	2,409	0	
1998	4,454	4,454	0	
1999	11,289	11,260	29	
2000	2,891	2,737	154	

<Table 16.10> North Korea's Trade with the United States

(Unit: \$ thousand)

Source: KOTRA. North Korea Newsletter. October 1997 and April 2000. KOTRA. 2001a, pp. 22-24. the future to expand the oil refinery by two or three times.<sup>14</sup>

AT&T is operating triangular commercial telephone service among the United States, Japan and North Korea by using the International Telecommunication Company of Japan as a relay point since April 1995. Companies like MCI, Caltex and GM are known to have visited North Korea and are conducting preliminary inspection to work on specific business plans. However, investment from U.S. companies is for the most part still at the preliminary research stage, except for the Stanton Group, and many limitations to the actual implementation of business remain.

Meanwhile, U.S. companies became interested in advancing into North Korea upon the relaxation of economic sanctions on North Korea in June 2000, and they have been working closely with the U.S. Chamber of Commerce in South Korea to review the investment environment of North Korea. However, it is difficult to expect

Sectors	Corporations	Projects		
	The Stanton Group	Purchase of thermal power plant, construction of Rajin-		
Energy	The Stanton Group	Sonbong oil refineries		
	Mobile	Reviewing oil field exploration and development		
Mineral	Cometal	Planning import of magnesite		
Ivimerai	Mineral Technology	Conclusion of magnesite import contract		
Manufacturing	GM	Construction of automobile parts factory		
	AT&T Communication	Opening of direct telephone line between North Korea and		
		the United States		
Telecommunications	AT&T Network Group	Sales of digital communication equipment		
Telecommunications	MCI	Satellite communication, telephone, FAX service facilities		
		construction		
	CNN	Planning to open branch		
Wood processing	Murphy Overseas	General lumber factory in Woong Sang		
Finance	Visa, Master, Amex	Establishment of offices, preparatory work for credit card		
Finance		business		

<Table 16.11> Investment from U.S. Firms to North Korea

Source: Chosun Sinbo (September 28, 1995); The Joong-Ang Daily (December 1, 1995).

<sup>&</sup>lt;sup>14</sup> According to KOTRA's *North Korea Newsletter* (April 2000 pp. 2-3), the Stanton Group agreed to increase the 200,000 kW operating capacity of the Sonbong Heavy Oil Thermoelectric Power Plant to 400,000 kW and expand the oil refining capacity (2 million tons per year) of Seung-Ri Chemical Combination Corporation to make petroleum-processed products. It has already made a contract for joint venture construction of a power plant. Moreover, the representatives of the Stanton Group visited the Rajin-Sonbong Economic and Trade Zone four times and inspected the project site (East Asia Trade Institute, December 1995).

U.S. firms to make full-scale investment in North Korea at this stage because North Korea still needs to be more transparent in its macroeconomic management. The interests of U.S. companies might be divided into the aspect of grabbing business opportunities through the expansion of inter-Korean economic cooperation and North Korea's market opening and economic reform. Therefore, the expansion of economic relations between North Korea and the United States will begin once circumstances are fit for the expansion of bilateral trade and steady economic exchanges are guaranteed.

#### **D.** Russia

Russia officially abandoned the socialist ideology of the Soviet Union in late 1991. When it switched over to a regime that pursued capitalism and market economy, it discarded foreign economic relations of the past that had been based on communist political and ideological alliances. The application of market price and payment in hard currency in foreign trade in 1991 best represents Russia's change. As Russia's foreign economic policy changed thus, the economic relations between North Korea and Russia could no longer be sustained. Elimination of socialist political from Russia's foreign economic relations atrophied all bilateral economic relationships with socialist countries: In particular, as the Russian government pursued pro-South Korean policy in the early 1990s, the relationship between North Korea and Russia deteriorated.

From 1992, Russia stopped grant aid to North Korea and at the same time pressed North Korea to redeem its accumulated debts. The redemption of North Korea's debts to Russia, over 3 billion rubles, has been the biggest issue in the economic relations between North Korea and Russia until today.

Consequently, trade between North Korea and Russia decreased rapidly in the 1990s. In 1990, the amount of North Korea's trade with Russia was about \$2.3 billion (53 percent of North korea's total trade), which was much bigger than the scale of trade with China (about \$0.5 billion), its second largest trading partner. According to the Russian data, this scale of trade continued until 1991, when the Soviet Union collapsed. However, the size of trade between North Korea and Russia decreased to below \$300 million from 1992, and further fell to below \$100 million in 1994. Throughout the 1990s, the scale of trade between North Korea and Russia maintained a level of \$100 million per year.

The total trade size of North Korea during the 1990s dropped to almost a third of the size of the 1980s, but the trade between North Korea and Russia dropped to one-twentieth. In the case of Russia, although the amount of trade in 1990 generally contracted with the demise of the Soviet Union, trade with no other country dropped so rapidly as with North Korea. The total amount of Russia's trade decreased substan-

			(Onit: \$ mousand)
Year	Export	Import	Total Trade
1990	908,336	1,315,040	2,223,376
1991	171,018	193,725	364,743
1992	65,200	277,100	342,300
1993	39,000	187,600	226,600
1994	40,000	100,000	140,000
1995	15,518	67,893	83,411
1996	28,978	35,840	64,818
1997	16,970	66,860	83,830
1998	8,462	56,500	64,962
1999	1,613	48,507	50,120
2000	3,404	42,881	46,285
2001	4,541	63,794	68,335

(Unit: \$ thousand)

#### <Table 16.12> Trends of North Korea's Trade with Russia, 1990-2001

Source: KOTRA

tially in the early 1990s, with 1994 as the starting point for rapid increase in trade, recovering the level similar to that of the times of the Soviet Union in the late 1990s.

The rapid reduction of trade between North Korea and Russia occurred both in exports and imports. With Russia demanding payment in hard currency based on international market price for bilateral trade rather than a trade system based on preferential prices and open account in 1991 and 1992, North Korea could not continue to import Russian goods as it was experiencing a severe shortage of foreign currency. With the abolition of the open account system, Russia was no longer under the obligation to buy North Korean products. It became difficult for non-competitive North Korean goods to find a place in the Russian market. In addition, North Korean products had no competitive edge against products from developed countries in the open Russian market. Accordingly, both North Korean imports and exports to Russia declined drastically.

The sudden contraction in trade with Russia was a fatal blow not only to North Korea's international balance of payments, but also to its industrial structure and economic development. In particular, the rapid decrease in the import of machines, equipment and fuel resources from Russia became one of core reasons for serious economic depression in North Korea in the 1990s. As most North Korean production facilities had built by the support from the Soviet Union in the 1950s, the rapid fall in the acquisition of machinery and equipment parts from Russia was a blow. In addition, North Korea imported 1 million tons of petroleum and petroleum-based products every year from the Soviet Union before 1991, which played a very important role in operating major industrial facilities in North Korea. Therefore, the fact

that the import of fuel resources from Russia rapidly diminished to one-tenth of the previous level after 1992 is a reason for North Korea's extensive energy shortage during the 1990s. As often pointed out in literature, the rapid fall in the operating capacity<sup>15</sup> of North Korean industrial facilities during the 1990s was mainly caused by the sudden contraction of trade with Russia.

The rapid contraction in trade between North Korea and Russia and change of trade items in the 1990s is deeply related to the falloff of the North Korea-Russia political and diplomatic alliance. That is to say, the depression of economic relations between North Korea and Russia from the early 1990s came from the collapse of bilateral political alliance; in particular, Russia's pro-South Korea policy after the establishment of diplomatic ties between North Korea and Russia was critical in deteriorating the relationship between North Korea and Russia. From the mid-1990s, attempts were made to recover the diplomatic relationship between North Korea policy weakened Russia's influence in the Korean peninsula as the deterioration of relation with Russia had brought about serious economic damages to North Korea.

It took several years to normalize political and diplomatic ties between North Korea and Russia. After several high-level visits in the mid-1990s, both sides were able to conclude the Treaty of Friendship, Good-Neighborly Relations and Cooperation in February 2000. The Treaty was a basic agreement to establish a new relationship between North Korea and Russia that was in a diplomatic vacuum after the friendship and cooperation treaty of the past was scrapped in the early 1990s. Although the new treaty did not included articles facilitating automatic bilateral participation in the case war, it provided a chance to normalize the relationship between North Korea in July 2000 and the return visit of North Korea's leader, Kim Jong-II, to Russia signalled the formation of a new relationship between North Korea and Russia.

However, although the diplomatic relationship normalized, the scale of trade between North Korea and Russia is still at a low level and is showing no signs of recovery. Trade with Russia was only 3.0 percent of North Korea's total trade in 2001.

<sup>&</sup>lt;sup>15</sup> For example, according to the Bank of Korea, the serious fall in the operating capacity of North Korea's manufacturing industry after 1990 worsened to the point of recording 20 percent out of 100 percent in the steel industry, 25 percent in the automobile industry, 31 percent in the cement industry, 27 percent in the chemical fertilizer industry and 22 percent in the textile manufacturing industry. See Bank of Korea, "the 1999 Estimation of North Korea's GDP."

#### D. Problems in North Korea's Foreign Economic Relations

The most fundamental problem of North Korea's foreign economic policy comes from the socialist economic system itself. If North Korea adheres to the current socialist system and avoids adopting an open-door policy, the gap between the world economy and the North Korean economy will further widen and worsen its foreign economic ties.

In particular, since North Korea's economic reality is such that North Korea is not capable of independent recovery, the foreign economic sector has to play an important role in mitigating North Korea's economic difficulties. Decisive policy changes are necessary to that end; first of all, the improvement of investment environment is needed to attract foreign investment. North Korean products are low in quality, unable to fulfill the quality requirements of the international market. To overcome this, North Korea has to attract foreign capital and foreign direct investment to make competitive products. This can be made possible through improving the circumstances surrounding investment, such as special economic zones. It is urgent that North Korea establishes special economic zones in the areas of Sinuiju, Gaesong and Nampo, in addition to the existing Rajin-Sonbong special economic zone and enhances circumstances for investment in those zones.

There are no alternatives except for the establishment of special economic zones to resuscitate the foreign economic sector. It is important that North Korea benchmarks successful model cases in China, such as the Shenzhen SEZ, and acquires know-how on facilitating investment and SEZ management. North Korea has given SEZ legal status to enhance the investment environment and make the zones a door to bring in capital and technology. North Korea needs to strengthen the competitive edge of state-owned companies by promoting decentralization, which would make trading companies and local factories responsible for management activities. By inviting foreign direct investment through the improvement of investment environment, North Korea has to pursue the improvement of export product quality, increase the capacity for import with the foreign currency earning and enhance the competitiveness of the domestic industries.

If these measures succeed, North Korea can shift the heart of its industry from the primary industry to high value-added industry and it would be able to generate larger foreign currency earning by increasing the proportion of finished goods, rather than half-finished goods in processing trade.

For the foreign economic activities, the other important issue is North Korea's need to change from the closed standpoint of insisting on self-reliance to an exportoriented development strategy. From the beginning of its socialist system, North Korea employed the import substitution strategy "to satisfy the needs of domestic market through self-production based on internal accumulation and to build the domestic economy by utilizing own resources, technology and human capital."<sup>16</sup> This means importing intermediary materials from foreign countries for domestic needs and using domestic technology and capital for domestic processing, assembling and producing. While import substitution may be suitable for countries like China that have large domestic demand, it is not desirable in a case like North Korea, which has low domestic consumption and a small internal demand. For that reason, North Korea needs to switch from the existing import substitution strategy to export-oriented trade policy. Needless to say, foreign investment is necessary to modernize North Korea's industrial facilities and production structure.

Export-oriented policy, as in the cases of countries like South Korea, Hong Kong and Taiwan, can contribute to the expansion and growth of domestic market. It may be argued that North Korea is concerned about dependency on the capitalist market. However, North Korea should execute the export-oriented strategy with primary industry products or items such as textiles, simple electric and electronics products. In addition, the country needs to change its export industry structure to high valueadded industry or technology-intensive industry. This strategy might have a negative influence on the domestic economy and in the long run, be undesirable for increasing the scale of trade. Nonetheless, North Korea cannot increase its market share in the international market with import substitution for it disconnects North Korea from the rest of the world in trade. Therefore, it is important for now that North Korea promotes its foreign economic activities.

## Reference

\* In Korean

- The Bank of Korea. North Korea GDP Estimation Result. Various issues (1995-2001).
- Bae, Jong-Ryul. 1996. "Special Economic Zone in North Korea." *The Question of Unification Environment*. Seoul: Ohreum Publiscations.
- Cho, Myung-Cheol ed. 2001. 10 Years of North Korean External Economy Policy: Evaluation and Tasks. Seoul: The Korea Institute for International Economic Policy.
- Cho, Myong-Cheol and Hong, Ik-Pyo. 1998. *The Foreign Investment Inducement Policy of North Korea and Investment Environment*. Seoul: The Korea Institute for International Economic Policy.

Chosun Sinbo. September 28, 1995.

<sup>&</sup>lt;sup>16</sup> This is quoted from a lecture in Tokyo by Professor Kim Su-Yong of the Kim Il-Sung University in October 1995 and re-quoted in C.W. Lee (2000).

- Dong, Yong-Seung and Seo, Yang-Won. 1995. *Let's Solve South and North Korean Economic Cooperation This Way.* Seoul: The Samsung Economic Research Institute.
- Han, Su-Kil. 1991. "The Development of External Trade is Today's Urgent Demand for Economic Development." *Workers*. April issue. Pyongyang: North Korean Workers' Party Publishing Office.
- Han, Jong-Baek. 1998. "The Trends and Characteristics of North Korean Foreign Capital Inducement." *Tongil-Kyongjae (The Unified Economy).* November issue. Seoul: Hyundai Economic Research Institute.
- Hong, Seong-Kug. 2000. "The Financial Transaction to North Korea and the Support of International Financial Institutes." *Tongil-Kyongjae (The Unified Economy).* March issue. Seoul: Hyundai Economic Research Institute.
- JETRO.1993. "Japan and North Korea Economic Relations." *The Economy of North Korea and the Prospect of Trade*. Tokyo: JETRO.
- Kim, Kyu-Ryun. 1997. U.S. Economic Policy against North Korea: The Status Quo and Prospect. Seoul: Korea Unification Institute.
  - \_\_\_\_\_. 2000. The Alleviation of U.S. Economic Sanction on North Korea and the Measures for the Construction of Economic Community between South and North Korea. Seoul: Korea Unification Institute.
- Kim, Young-Su, et al. 1997. *North Korea of the Kim Jong-Il Era*. Seoul: The Samsung Economic Research Institute.
- KOTRA. 2001a. *The Trends of North Korean External Trade between 1990-2000*. Seoul: KOTRA.

\_. 2001b. North Korean External Trade Trends. Seoul: KOTRA.

- Kwon, Kyong-Bok. 1999. "The Reform of North Korean Trade System and Lessons." *Tongil-Kyongjae (The Unified Economy).* July. Seoul: Hyundai Economic Research Institute.
- Nam, Kung-Young. 1994. "The Reality of North Korean Foreign Capital Inducement Policy and the Analysis of Results." *Tongil Yonunguronchong*. No. 3, Vol. 1. Seoul: National Unification Institute.
- North Korea Commerce and Industry Newspaper. February 28, 1986.
- Rim, Kang-Taek. 1998. *The Characteristics of North Korean External Trade and the Prospect of Trade Policy Chang.* Seoul: Korea Unification Institute.
- The Korea Association for Comparative Economics. 1995. *Economic System and Integration of South and North Korea*. Seoul: Parkyoung Publications.
- The Korean Workers Party. 1996a. "The External Economic Development Relations and Shortage of Foreign Currency." *Collection of Kim Il-Sung's Writings*. Vol. 43. Pyongyang: North Korean Workers' Party Publishing Office.

\_\_\_\_. 1996b. "The External Economic Development Relations and Shortage of Foreign Currency." *Collection of Kim Il-Sung's Writings*. Vol. 44. Pyongyang:

North Korean Workers' Party Publishing Office.

- Timonin, Alexander. 1995. "The Current Affairs and Prospect of North Korea and Russia Economic Relation." *Tongil-Kyongjae (The Unified Economy).* July issue. Seoul: Hyundai Economic Research Institute.
  - \_\_\_\_. 1996. "The Prospect of Economic Cooperation among South Korea, North Korea, and Russia." *Tongil-Kyongjae (The Unified Economy).* January issue. Seoul: Hyundai Economic Research Institute.

\*\* In English

- McMillan, J. and B. Naughton eds. 1996. *Reforming Asian Socialism*. Michigan: The University of Michigan Press.
- Noland, M. 2000. *Avoiding The Apocalypse: The Future of The Two Koreas*. Washington D.C.: The Institute for International Economy.
- UNCTAD. 2002. World Investment Report 2002: Trends and Determinants. New York and Geneva: United Nation Publication.
- Zachary, S. Davis et al. 1994. *Korea: Procedural and Jurisdictional Questions Regarding Possible Normalization of Relations with North Korea.* CRS Report for Congress, November 29.

## **XVII. Special Economic Zones**

## Ihk-pyo Hong

# 1. Lessons from the Rajin-Sonbong Economic and Trade Zone

#### A. The Background of the Establishment and Result

North Korea established the Rajin-Sonbong Economic and Trade Zone (RSETZ), which covers 621 km<sup>2</sup> in the northern part of Hamgyung (125 km<sup>2</sup> was added in September 1993 and now it is 746 km<sup>2</sup>). In 1993, the North Korean regime planned three-stage development (first stage: 1993-95; second stage: 1996-2000; third stage: 2001-2010), but in 1995, adjusted it to two stages: the present stage (1995-2000) and the prospective stage (2001-2010). It was planned that North Korea in the present stage would concentrate on making a base for the transit transportation of international cargo through expanding and modernizing infrastructure, including roads and ports. In the prospective stage, North Korea planned to build a comprehensive, modern base for international business that corresponds with the development of the world economy in the 21<sup>st</sup> century.<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> In December 1991, North Korea established a promotion committee for the External Economic Cooperation under the Ministry of the External Economy (the present Ministry of Trade), which is in charge of various types of policy planning and external economic cooperation including the preparation of the Rajin-Sonbong Zone. Foreign Missions were stationed in Beijiug and Guangzhou, China, to deal with activities such a consultations with foreign entrepreneur and issue of invitation letters. The regional authority - the Rajin-Sonbong Administrative and Economic Committee - established a trade mission in Yanji to deal with foreign direct investment.

Although the population of the Rajin-Sonbong area was about 140,000 in 1991, the regime planned to increase the number to 300,000 and ultimately to 1 million. Major industrial facilities in the area included the Seungri Chemical (annually refining 2 million tons of crude oil), Sonbong Thermal Power Plant (200,000 kW), and Rajin Shipbuilding Corporation (annual building capacity of 28,000 tons), but their operating capacity was extremely low due to the lack of raw materials and the energy shortage. Major targets of foreign investment, according to the Investment Target General List, were in the sectors of manufacturing industry with about \$3.6 billion, infrastructure with about \$900 million, and the service sector (hotels, etc.) with \$100 million, totaling 119 cases amounting to \$4.731 billion.

The North Korean regime determined to develop the RSETZ in the mid-1990s, shortly after Kim Il-Sung's death, an evaluation mode for three reasons. First, the development plan for the RSETZ was part of Kim Il-Sung's last injunctions.<sup>2</sup> Considering that North Korea has been governed by Kim's deathbed wishes, the development plans spelled out by Kim's last injunctions would have been the foremost policy issues for the North Korean regime. Kim Il-Sung's statement on RSETZ was written at the beginning of *The Investment Environment of Rajin-Sonbong Free* 

	Present Stage (1993-2000)	Prospective Stage (2001-2010)
Development objectives	- International transportation hub base for export processing	- A modern/comprehensive base for international business
Priority of major projects	<ul> <li>Making a base for operation for special economic zone in the Rajin Area</li> <li>Formation of transportation network with China and Russia (railroad, road, telecommunication)</li> <li>The expansion of loading and unloading capacity of free trade ports to 30 million tons</li> <li>Construction of industrial complex for exportoriented processing</li> <li>Creating a tourism base in and around the area</li> </ul>	<ul> <li>Expansion of loading and unloading capacity of free trade ports to 100 million tons</li> <li>Construction of areas that can perform general functions such as relay trade, export processing, manufacturing industry, finance services and tourism</li> <li>Modernization and informatization of the area</li> </ul>
Urban con- struction	<ul> <li>Population of 300,000</li> <li>Concentration on Rajin and expansion to Sonbong</li> </ul>	<ul> <li>Population of 1 million</li> <li>Construction of a new city in the suburb of Rajin such as Huchang and Sinhae, and in the Tumen River area such as Sahoi and Hongeui</li> </ul>

#### <Table 17.1> Development Targets of the RSETZ

Source: Bae, Jong-Ryul (1996). P. 308.

<sup>&</sup>lt;sup>2</sup> One month before his death, Kim Il-Sung made a speech on driving the development of the Rajin-Sonbon area and the construction of power at the Rajin-Sonbong Economic and Trade Zone Development and Power Plant Construction-Related Sector Workes Committee.

#### <Table 17.2> Foreign Direct Investment in the RSETZ

(Unit: \$ million)

Years	1992-1993	1994	1995	1996	1997	1998	Total
Amount	1	1	4	31	26	25	88

Source: UNDP Tumen Secretariat (2000).

#### Economic and Trade Area, published in February 1995.

Second, it is derived from detailed internal preparation. After the enactment of the Joint Venture Law in 1984, there was no sign of establishing and revising foreign investment-related laws until 1991. However, North Korea prepared institutional framework for attracting foreign investment such as the promulgation of the Foreign Investment Law, the Foreign Business Law and the Joint Venture Law in October 1992. Following this, the North Korean authorities prepared a dozen relevant laws and regulations almost every year and 46 laws and regulations have been introduced.<sup>3</sup>

Third, North Korea showed enthusiasm for international publicity. The North Korean regime actively engaged itself in overseas publicity and direct investment by foreign firms from 1995, one year after the death of Kim Il-Sung, until 1998.

According to a publication from the UNDP (2000), despite North Korea's efforts, foreign investment in this area as of the end of 1998 was about \$700 million on the basis of contracts and only \$88 million on the basis of execution.<sup>4</sup> As of the end of 1997, the amount of foreign investment in the form of joint venture corporations was \$25.47 million, \$11.68 million in joint production corporations and \$20.76 million in the operation of wholly foreign-owned firms. There were 46 joint venture contracts, 14 joint production contracts and 17 wholly foreign investment cases; countries, in the order of foreign investment, were Hong Kong, China, Thailand, Holland and Japan (J.B. Han 1998, 101). The reason why foreign investment falls short of North Korea's expectations is that North Korea still has problems such as the lack of infrastructure, institutional rigidity, low international credit and the delay

<sup>&</sup>lt;sup>3</sup> In terms legal and institutional framework, *Regulations on the Management of the Free Econoic and Trade Region Corporation, Regulations on the Price in the Free Economic and Trade Zone, and Regulations on the Domestic Service Industry in the Free Economic and Trade Zone were enacted and promulgated in June 1997. In addition, North Korea is expected to further enact the Cooperation Firm Law, Duty-Free Area Law and Finance Law. A former's market was opened in Wonjongri from June 1998, facilitating cross-border trade between Northern part of North Korea and Yanbia province in China.* 

<sup>&</sup>lt;sup>4</sup> The People's Chairman (equivalent to the mayor) of the RSETZ stated that 111 contracts were concluded, with a total of \$50.77 million and \$140 million being invested. See Geumsugangsan (Land of Embroidered Rivers and Mountains). 1999. March.

in improving relations with the United States. Furthermore, Japanese and Korean firms and financial organizations, which were expected to play an important role for the development of the RSETZ, experienced severe financial difficulties owing to the 1997 financial crisis, nullifying investment inducement for the Rajin-Sonbong area.

Under the circumstances, the North Korean authorities accepted some elements of market economy to promote the development of the area, carrying out such measures as permitting the Wonjongri Free Market, permitting private enterprises and adjusting of foreign exchange rates. North Korea also dispatched economic research groups to developed countries, including Australia and Singapore, to obtain capitalist economic management skills. The major reform measures taken in June 1997 for the RSETZ were as follows. The first measure was to support a single foreign currency and introduce realistic adjustment of foreign exchange rate: circulation of foreign exchange vouchers and dollars was prohibited, only allowing the circulation of North Korean Currency (won), and foreign exchange rate was actualized at 200 won against the U.S. dollar. Second, private business activities were allowed, and the establishment of some service industries such as restaurants and hotels was permitted. Third, the self-supporting accounting system of corporations was introduced: government subsidies were abolished and independent management was permitted in corporations. Fourth, a free market was created in Wonjongri. Fifth, government funds for the construction of infrastructure were increased. Sixth, the railway operation system was readjusted: several railway management systems were streamlined to a single system. Seventh, the condition of Rajin port was improved: a container wharf and sea courses were developed at the Rajin Port. Eighth, professional schools including the Rajin vocational commercial school were established with the support of UNDP. Ninth, the Wonjong Bridge, which has the heaviest traffic in the Tumen River area, was opened for passage. Tenth, the border traffic procedure was simpli-

								(Unit: case)
	Joint Venture		Joint Production		Wholly Foreign		Total	
	Contract	Execution	Contract	Execution	Contract	Execution	Contract	Execution
1993	0	0	0	0	1	1	1	1
1994	0	0	0	0	1	1	1	1
1995	20	19	3	3	3	2	26	24
1996	16	8	8	7	15	9	39	24
1997	30	19	7	4	7	4	44	27
Total	66	46	18	14	27	17	111	77

Source: KOTRA (1998). North Korea Newsletter (October 1998), p. 18.

fied.

Major companies to have set up in the Rajin-Sonbong area are as follows. The East Asia Company in Hong Kong, which was the first company to make a wholly foreign-owned contract, built an alcohol beverage and soft drink factory and constructed the Sonbong International Airport. Thailand's Loxley Group planned to invest \$28 million initially for the construction of telecommunication facilities and concluded a joint venture contract with North Korea. Hong Kong's Tyson Trading Company Ltd. started a \$6 million investment for the construction of road networks in the RSETZ and is planning the construction of a cement storage facility holding the capacity of 100,000 tons. England's Shell Petroleum Development Company Ltd. decided to lease 1.7-hectare land for 50 years to use it as storing facility for 100,000 tons of petroleum products in the Sonbong Port area and has a plan to invest \$2 million at the outset. The Stanton Group of the United States made a contract with North Korea for normalizing operation of the Sonbong Thermal Power Plant, expanding the power plant facilities and expanding the Sonbong Petroleum Processing Factory. Holland's ING Bank set up the ING-North East Asia Bank with \$15 million through a joint venture with the Korean Foreign International Insurance Company. Hong Kong's Peregrine Investment Company is planning to establish a joint venture, Peregrine-Daeseong Development Bank, with North Korea's Daeseong Bank, investing \$15 initially. China's Yanbianyongheung Trade Firm was established for the purpose of operating construction business, taxi services and stores around the Rajin Station.

Completed construction projects that had received foreign capital in the Rajin-Sonbong area are the Rajin Port Fertilizer Storehouse (August 1994) and the Bipa Tourist Hotel (August 1997) with the investment of pro-North Korean groups in Japan, the Rajin Hotel, supported by Hong Kong's Tyson Trading Company Ltd. (August 1996) and the Rajin Market, built through a joint venture with Yanbian

	(Unit: \$ 10,000							
	Joint Venture		Joint Production		Wholly Foreign		Total	
	Contract	Execution	Contract	Execution	Contract	Execution	Contract	Execution
1993	0	0	0	0	120	120	120	120
1994	0	0	0	0	200	200	200	200
1995	13,444.0	2,013.0	3,095.0	1,065.6	1,628.2	101.7	18,167.2	3,180.6
1996	4,458.9	393.8	1,004.5	78.8	45,913.2	780.7	51,376.6	1,253.3
1997	2,897.0	140	409.6	24.1	1,914.2	874	5,220.8	1,038.1
Total	20,799.9	2,547.1	4,509.1	1,168.5	49,775.6	2,076.4	75,084.6	5,792.0

(Unit: \$ 10.000)

<table 17.4=""> Investment</table>	Amount in the RSET	Z (as of the end of 1997)	
------------------------------------	--------------------	---------------------------	--

Source: KOTRA (1998). North Korea Newsletter (October 1998). p. 18.

Construction Corporation in China (April 1998). Although investment in infrastructure is insignificant, representative cases in construction were a project for expanding the road between Rajin and Wonjong (60 km), through a Hong Kong corporation, and the Rajin People's Hospital, supported by the International Catholic Foundation.

With respect to the development of the RSETZ, North Korea has maintained a contradictory position in recent years: while taking precautions against the negative factors of development by deleting "Free" from the full name of the Rajin-Sonbong Free Economic and Trade Zone in April 1998, North Korea expressed its authority related to the development of the area by stipulating in the revised constitution that "North Korea encourages the establishment of various types of corporations in the special economic zone (Article 37, September 1998)." However, successful results from the development of the RSETZ are not expected for some time thanks to the closed social environment, poor infrastructure and nonexistent international credit rating. In addition, the interest of foreign investors in the Rajin-Sonbong area would further decrease when additional special economic zones are established in Gaeseong, Nampo and Wonsan, including the already-confirmed Sinuiju Special Economic Zone. Nonetheless, although North Korea's limited open-door policy toward the RSETZ cannot be seen as complete abandonment of the past self-reliant line, it is significant that North Korea has mitigated its closed position on foreign economic relations. The RSETZ holds profound significance in the sense that it was the very first special economic area that North Korea opened with a legal and institutional framework.

#### **B.** Reasons for Failure and Lessons

Despite the efforts of North Korea, the special economic policy for the RSETZ did not achieve substantial results. The RSETZ adopted a similar type of special economic zone policy to that of Shenzhen in China, but it had highly unfavorable initial conditions compared to Shenzhen. First, although low-wage labor had been available, the labor force was not abundant. In 1993, the population rate of the agricultural sector was only 30 percent of the total population. Since collective farms were already short of labor, it was impossible to generate additional labor given the massive transition of agricultural labor to the industrial sector.

Second, North Korea was very negative about economic reform and opening during the period when Kim Il-Sung's style of socialist economic development policy line was sustained. Up until the economic crisis became serious in the early 1990s, Kim Il-Sung tried to find alternatives on the premise that North Korea's socialist economic development line had been correct. Profound political reform was impossible in the process of power succession after Kim Il-Sung's death in 1994 because Kim Jong-II set his power base and legitimacy in the continuation of Kim II-Sung's last injunctions.

Third, the experiment of decentralization was not an easy task since North Korea is a geographically small country that intensified centralized control to overcome economic crises. The North Korean regime has a dilemma: experiments in one area may easily and quickly spread to the rest of the nation. However, intercept this reform would impede the effective drive of the reform policy as a whole. In addition, as North Korean society is close-knitted under the centrally planned economy, North Korea expressed concerns that a partial experiment would threaten the regime. In spite of the execution of experimental reform and open-door policy in the RSETZ, North Korea strengthened its control over the special economic zone to prevent capitalistic elements from spreading to other regions. As the management of the special economic zone became more rigid and limited, the interest from foreign investors and and the inflow of foreign capital began to drop.

Fourth, North Korea had few friendly countries with investment capability, and political tensions continued between North Korea and the United States and Japan. Economic cooperation with socialist countries in the 1990s contracted drastically due to such factors as the demise of the socialist market and China's demand for payment in hard currency. Although the situation appears somewhat better these days, North Korea has been in a hostile relationship with the United States and Japan for a long time because of nuclear and missile issues. This means that North Korea's attractiveness for foreign investment as an export-processing zone has dropped, with the economic sanctions with the label of a terrorist country since 1988. Thus, North Korea had to rely on foreign capital from pro-North Koreans in Japan or the Yanbian region of China. However, the investment capability of those groups was not sufficient. The exclusion of investment from South Korean companies for political reasons was another reason for the low foreign investment, as seen by the canceled dispatch of South Korean representatives to the investment briefing session in Rajin and Sonbong in September 1996.

Fifth, it is not expected that demand from the domestic market since North Korea's internal resources of North Korea are totally exhausted. North Korea is in a situation wherein the driving force of economic growth cannot be generated domestically. Therefore, the domestic market, with its low purchasing power, discourages investment from foreign investors.

Apart from the initially unfavorable conditions attributed to the RSETZ, North Korea could not implement policies properly to create an environment conducive to foreign investment. The reasons for the policy failure of the RSETZ are as follows. First, the investment attractiveness was very low because of the area's geographical isolation. The RSETZ is an isolated region with underdeveloped surroundings. The Rajin-Sonbong area was originally an underdeveloped region with only limited

trade with the Russian Far East and isolation from the domestic market. This region has poor transportation services, insufficient infrastructure and low domestic consumption. Thus, North Korea at first planned to build a foundation for economic development by promoting the Tumen River Economic Development Area (TREDA) with investment funds of international institutions such as UNDP, together with China and Russia. However, the plan fell through and foreign investment in Rajin and Sonbong was unsubstantial.

Second, there was no implementation of precise programs or consistency in SEZ policy for the development of the RSETZ. starting in 1991, no particular policy changes were made with regard to investment-related policies for the RSETZ until 1994. From 1995 to 1996, there were visible signs for policy change that were made to attract foreign capital, but the open-door policy retreated again. Indeed, investment priority was not clearly identified because the investment focus was spread across all the sectors, including the construction of various infrastructure and heavy industries. Hence, there is an imbalance in investment; most of foreign capital flowed into infrastructure such as telecommunications and hotel construction, but less than 5 percent was invested in the manufacturing sector. This discrimination stems from the fact that manufactured goods found no market and the supply of electricity and raw materials would not be easy.

Third, the North Korean regime was passive in investing domestic resources in the expansion of infrastructure in the RSETZ due to limits on the use of domestic resources. Legal and institutional framework did not exist in the initial stage of the area's development, and foreign capital investment was impossible due to the tense relationship with the United States after North Korea's withdrawal from the Non-Proliferation Treaty. When the RSETZ project became a legitimate goal, as stated in Kim Il-Sung's last injunctions, North Korea's internal resources were mobilized. About \$150 million of domestic funds were raised and relevant laws and regulations were formed between 1995 and 1996. However, severe economic hardships hindered the supply of internal funds, depressing investment to the RSETZ; lately, the development plan has shown signs of retreating. The existing infrastructure in the Rajin-Sonbong area is so poor that such a small scale of foreign capital was unable to improve the investment environment.<sup>5</sup> Since North Korea heavily relied on foreign investment capital for construction of infrastructure, the development of investment infrastructure was delayed. It is very difficult for private foreign firms to invest in infrastructure because the retrieval period for capital investment is long and its risk is high, with of low profitability. Favorable loans from the World Bank or

<sup>&</sup>lt;sup>5</sup> Using the example of railroads in the RSETZ, more than \$45 million is need for the repair of old tunnels and bridges and the installation of rock-slide prevention facilities.

ADB that are made to developing countries for building infrastructure were vetoed by the United States.

Fourth, North Korea completely isolated the RSETZ from other areas in North Korea and prohibited domestic firms in other regions from moving into the Rajin-Sonbong area. For the designation of the special economic zone, North Korea chose a region that was not likely to be in contact with other regions so as to prevent the spread of capitalist ideology. A large amount of domestic resources spent in this area in 1995 was used to install barbed wires around the RSETZ. This forms a striking contrast to China, which does not have any external boundaries for its special economic zones. Moreover, North Korea controlled the entry of North Korean firms in other regions into the special economic zone, and foreign corporations can only select their North Korean joint venture partner from the pool of firms designated by the North Korean government. Hence, differences in management techniques arising between foreign corporations and North Korean partners have created serious conflicts.

In addition to the macro-policy issues, unfavorable management environment caused by administrative regulations and the poor tax system caused the RSETZ to fail. First, the environment for business management was very poor because various preferential policies did not provide incentives for foreign investment. The administrative processing period existed only in name and regulations lacked transparency. The idea of no visas entry for foreigners with invitations when entering the RSETZ was proposed, but in reality there is no direct passage to the zone and visa issued by the North Korean Ministry of Foreign Affairs or Consular Affairs was necessary for entry. As the independent operation of the administrative body in charge of the RSETZ is almost impossible, orders from the central government were deemed necessary for solving business problems. Therefore, the process of negotiation with the zone's administrative body is painstaking and time-consuming. Although tax benefits in the RSETZ are designed to provide better investment conditions than the special economic zones in China, foreign investments have difficulty in actually receiving these benefits since there is no clear, specific legal clauses related to tax and administrative procedures.

Second, elements of the market economy are severely restricted in the RSETZ. North Korea took measures, including permission for advertising, with the understanding that the introduction of market-economy elements would be necessary for attracting foreign investment. However market-economy elements were introduced only in the areas of the transaction of goods and foreign currencies. Furthermore, North Korea in the late 1990s seemed to have eliminated these elements of a market-economy while reinforcing state control, giving the impression that the open-door policy was retreating. The removal of market-economy elements accelerated when the country's foreign relations froze due to the missile testing in 1998 and

when North Korea was able to earn foreign currency with the Mt. Geumgang tourism project. From 1998, North Korea began to restrict market-economy elements. The government strengthened its control over the Wonjongri Free Market, where free trade of goods and foreign exchanges had been permitted. North Korea took measures to strictly limit commercial advertisement and remove existing signboards. Macroeconomic management was more rigid than ever, as military officers replaced economic bureaucrats in economy-related posts.<sup>6</sup> The elimination of the word "Free" from the formal name of the zone, the Rajin-Sonbong Free Economic and Trade Zone, in 1999 signifies that North Korea was backing from its determination to open its economy.

Third, foreign companies investing in the zone were not given autonomy in managing their labor force. The wage floor in the RSETZ was 160 won (about \$76), which is higher than China's Hunchun, in the lower reaches of the Tumen River, (\$48), Nakhodka in the Russian For East (\$67) and Vietnam (U\$ 40). In addition, since the employment of workers in the RSETZ was considered the responsibility of labor-related departments within the government, foreign firms could not direct recruit labor and they were required to consult with North Korean agencies when recruiting foreign employees. Thus, it was difficult for foreign companies to have effective personnel management due to state controls labor, the numerous social security requirements, the agreement with labor organization for labor hour extension and the guarantee of labor conditions. Furthermore, foreign companies have to consult with government agencies when laying off staff. With respect to wage decisions, political logic weighs down economic logic; for instance, foreign companies cannot pay wages directly to workers, thus the room for incentives through a bonus system is restricted, and hiring workers from outside the zone is thoroughly controlled.

# 2. North Korea's Special Economic Zone Policy

#### A. Background of Expanding the Special Economic Zone

Recently, North Korea has viewed the establishment of special economic zones in Gaeseong, Mt. Geumgang and Nampo, as well as the already confirmed Sinuiju Special Economic Zone. When looking at the background for the expansion of

<sup>&</sup>lt;sup>6</sup> The chairman of the Promotion Committee for the External Economic Cooperation and other working-level members lost their positions, with the vice chairmen of the Promotion Committee for the External Economic Cooperation in the Rajin-Sonbong Zone reduced from 10 people to three.

special economic zones, it is evident that North Korea had no choice but to take active open-door measures for economic recovery. When North Korea's international isolation deepened after the demise of the socialist bloc in the 1990s, its economic difficulties further worsened. Negative economic growth continued from 1990 to 1998. The North Korean economy began to show signs of recovery from 1998, recording positive economic growth rates from 1999 thanks to the improvements in the agriculture, fishery, mining and construction sectors. However, it should not be interpreted as a full recovery since the positive growth rate is the result of the increase in the operating capacity of some factories and superficial growth in the construction sector utilizing idle labor, as well as increased economic aid from the international community. The heavy chemical industries, which are the forerunners of North Korean industry, are still in a production slump. North Korea still counts on external assistance for food and energy. Therefore, the rigorous open-door measures seen by the decision to open the Sinuiju SEZ were an inevitable if the the North Korean government was to seek economic recovery on the basis of the stability of the Kim Jong-Il regime.

Second, the expansion of special economic zones is a follow-up measure for facilitating substantial results from the economic reform beginning in July 2002. North Korea began to take reform measures such as raising prices and wages, reforming price allocation, changing the rationing system, decentralizing national planning, increasing autonomy for factories and corporations, establishing a distribution market for means of production and reforming the social security system (I.P. Hong 2002). However, North Korea is expected to face many difficulties in the process of executing the economic reform measures; the most urgent issue is the rise in consumer prices and social unrest following the short-term shortage of supply. The normalization of the production sector is expected to take a long time. When considering the serious shortage of energy and raw materials, the normalization of the supply of goods in a short period of time will be impossible. Moreover, although the price allocation system has been decentralized in part, the government still has the right to decide prices, so it is difficult to expect the efficient allocation of resources on the basis of market principles at this time. To resolve the supply shortage and minimize negative side-effects from the recent economic reform, North Korea should look to the international community for economic assistance and pursue an open-door policy for foreign investment, of which the expansion of special economic zones would be the first step.

Third, North Korea basically has technocrats and human resources to promote the regime reform and open-door policy. Considerable human resources are needed for a country to pursue economic reform and opening, but the most important need is to establish decision-makers and secure human resources who can plan and drive reform-oriented policies. The simultaneous promotion of internal economic reform, the improvement of international relations and the opening to the outside world represented by special economic zones is unprecedented. This means that the internal opinions of North Korean authorities on the future direction of policy are consolidated for the most part, and working-level technocrats in charge of the July 1 reform measures are secured.

Fourth, North Korea has continuously concentrated its efforts on the improvement of its international relations since the inter-Korean summit meeting in June 2000. The fundamental groundwork for the successful promotion of economic opening has been established on the basis of those efforts. North Korea has promoted the improvement of relations with South Korea since the June 15 Summit Meeting and has been taking a very active attitude toward economic cooperation with South Korea. With regard to its relations with neighboring countries, North Korea achieved satisfactory results, such as the improvement of diplomatic relations through a series of summit meetings with China, Russia and Japan. Although the stalemate in relations with the United States is unfavorable, the basic direction of North Korea's policy is to minimize U.S. pressure through improving of relations with neighboring countries and finding a breakthrough for economic development. Consequently, in spite of the unfriendly relations with the United States, the expansion of special economic zones was an expression of confidence based on the results of improved relations with foreign countries, with which North Korea might be successful in the opening and foreign investment.

Fifth, the establishment of special economic zones is a measure to break from the deep-seated negative image in the international community until now and to alleviate the offensive movement of the United States against North Korea. North Korea has been criticized by the international community for many things such as its strong dictatorship, the starvation of its people, the bombing of a KAL airplane, the development and export of weapons of massive destruction, and the recently disclosed abduction of Japanese citizens. The recent denouncement by the Bush administration of North Korea as an "axis of evil" and the call to reduce conventional weapons as well as weapons of massive destruction may become a burden to the North Korean regime and cause severe problems to arise. Therefore, North Korea's opendoor policy represented by the establishment of special economic zones is expected to alleviate the U.S. sanctions against North Korea in the short run as well as the reconsideration of North Korea's national image and improvement of relations with the United States in the long run.

#### **B.** Evaluation of the Sinuiju Special Economic Zone

North Korea announced that Sinuiju in North Pyongan Province, which shares

its border with China, and some neighboring districts, were to be designated as the Sinuiju Special Administrative Zone (hereafter the Sinuiju Special Economic Zone, SEZ). According to the Basic Law of the Sinuiju Special Administrative Zone adopted by the Standing Committee of the Supreme People's Assembly, North Korea endowed autonomy on legislative, administrative and juridical bodies for the special economic zone, while stipulating that laws and institution in the SEZ would be maintained for 50 years (until 2052).<sup>7</sup>

The characteristics of the Sinuiju SEZ can be compared to those of the RSETZ, the Hong Kong Special Administrative Zone and the Shenzhen Special Economic Zone in China. Generally, special economic zones are established for such purposes as the expansion and diversification of exports, increase of revenue, increase of employment, introduction of advanced technologies and management know-how, expansion of foreign capital investment, regional development and experimental economic reform. In addition, most special economic zones are located in strategic points of international transportation, areas and the surrounding areas that have economic potentiality, and areas that are connected to major economies in the world.

The Sinuiju SEZ bears much similarity to the existing special economic zones and is very similar to the cases of Shenzhen, in that North Korea selected the new special economic zone along the coastline to minimize the negative effects from the introduction of capitalism in the early stage of economic opening. In the process of opening, China tried to reduce the burden on the government by choosing a consecutive opening method starting with zones, regions and the entire nation. By choosing Sinuiju, a borderline area, the North Korean regime sought to introduce capitalist elements and minimizing their impact. Endowment of autonomy in legislation, jurisdiction and administration rights (except defense and diplomatic authorities) to the special economic zone is in a form very similar to the Hong Kong Special Administrative Zone after the return to China in 1997. In the cases of Shenzhen in China, the municipal authorities received some of the administrative rights related to foreign economy activities, such as foreign direct investment and trade. However, Shenzhen SEZ is basically under the administrative guidance and control of the central and upper regional governments and does not have autonomy in financial, currency and taxation areas. Therefore, in terms of legal status, the Sinuiju Special Economic Zone is similar in form to the Hong Kong Special Administrative Zone.

North Korea seems to understand that the reason for the failure of the RSETZ was the hesitance of foreign firms to invest in North Korea as the well as inappropri-

<sup>&</sup>lt;sup>7</sup> According to North Kores's Central News Agency, the Basic Law of Sinuiju Special Administrative Zone, composed of six chapters and 101 articles, was adopted in September 2002 by the Standing Committee of the Supreme People's Assembly.

ate function of market mechanism due the severe regulations of the government. Indeed, North Korea expects the Sinuiju SEZ to support North Korea's economic recovery, just as Hong-Kong supported China's economic development. Hong -Kong was in fact a window for the inflow of foreign capital as well as advanced management techniques such as financial and marketing system in the process of China's opening

The Sinuiju SEZ shows considerable differences from the RSETZ in terms of legal autonomy, industrial facilities, and domestic and foreign environment. Sinuiju and Rajin-Sonbong have the advantage of location owing to geographical proximity to the sea and shared borders with China and Russia. However, the Sinuiju SEZ is different from Rajin-Sonbong in that it can, stipulated by law, independently exercise legislative, administrative and judicial rights and is free from the interference of the central government. Furthermore, although the concentration of chemical, steel and other heavy industries in Rajin-Sonbong area did not provide the RSETZ with much of a chance to attract foreign capital, Sinuiju's base of light industries can facilitate foreign firms to begin their operation with manufacturing, which is easy for them to set up joint ventures in the early stage. The July 1 Economic Reform Measures insinuates possibilities of gradually moving toward the market economy internally, therefore creating a synergy effect for economic reform.

Meanwhile, North Korea defied expectations by appointing Chinese businessman, Yang Bin, as the first chief executive of the Sinuiju SEZ. The appointment of a young foreigner as the first chief executive of the Sinuiju SEZ, which was to act autonomously within North Korea, was unprecedented as the designation of the Sinuiju SEZ. It is assumed that the reason for this appointment is North Korea's expectations for the expansion of foreign investment from overseas Chinese and the EU, and the restoration of international confidence about the independence of the Sinuiju SEZ.

However, Yang Bin has negatively affected North Korea's efforts for foreign direct investment in the Sinuiju SEZ. Yang Bin was arrested in October 2002 and investigated by the Chinese Public Security Authority for several charges including tax evasion, manipulation of accounts and stock prices, and illegal real estate development. Concerns and distrust cover Yang Bin's credibility and administrative ability are escalating due to the investigations in China. In addition, the discrepancy between China and North Korea regarding the development the Sinuiju SEZ rising from the problem of Yang Bin is working as adversly for the development of the Sinuiju area. Considering the location of Sinuiju, the success of the SEZ would be difficult without active support from the Chinese side. Consequently, owing to the diplomatic dispute between two countries over this issue, the Sinuiju SEZ is expected to experience a setback.

Nevertheless, North Korea would not stop the implementation of the Sinuiju

SEZ. The Sino-North Korean dispute over the Yang Bin issue is just one of the difficulties that North Korea has to face in the process of Sinuiju SEZ development. The issues surrounding the appointment of Yang Bin as the chief administrative executive has put the development of Sinuiju SEZ to the first test.

#### C. Evaluation of the Gaesong Industrial Complex

The development of the Gaesong Industrial Complex was launched when the Asia-Pacific Peace Committee of North Korea and the Hyundai Group in South Korea announced an agreement on the Gaesong Economic and Tourism Area in Beijing in August 2000. This agreement also addressed the restoration of railroads between Sinuiju and Seoul. The Gaesong Complex will be created in the area of Gaesong and Pyonghwari in the Panmun district. Chairman Kim Jong-Il named the city Pyonghwa (Peace), which became a symbol of inter-Korean economic cooperation, promoted since the inter-Korea summit meeting in June 2000. It is known that 20 million  $m^2$  of the total industrial site will be used in the following manner. The first stage was to complete 1 million m<sup>2</sup> of model complex with the working capital of 300 billion won and invite light industries such as footwear, textile and electronics. The second stage was to prepare 3 million m<sup>2</sup> of industrial complex and attract automobile parts, machinery and computer industries. The third stage is to complete 4 million m<sup>2</sup> of industrial complex and induce advanced technology industries. If this plan goes well, the Gaesong area will be the largest industrial complex in North Korea, as well as a symbol of inter-Korean economic cooperation.

The main reason for North Korea's enthusiasm in the development of the Gaesong Complex comes from economic difficulties. In order to overcome its economic hardship, North Korea concentrated on economic recovery, and the regime's efforts are found in the significant increase of Kim Jong-II's field guidance in the economic sector.<sup>8</sup> Although the North Korean economy shows recovery in general after 1998, it does not necessarily mean the normalization of North Korea's industrial production and economic activity.<sup>9</sup> In this connection, economic reform and open-

<sup>&</sup>lt;sup>8</sup> Out of the seven ofpublic outings of Kim Jong-II in 1998, only eight cases concerned the economic sector, but the frequency rose to 23 times out of 69 times in 1999.

<sup>&</sup>lt;sup>9</sup> After the official launch of the Kim Jong-II regime in September 1998, North Korea revised the priority of policy and shifted the economic target of the buffer period (1994-1996, which had included agriculture, light industies and foreign trade) to the heavy industries, with secondary focus on agriculture and the light industies. It is assumed that the revised policy is based on the realization that the economic strategy adopted during the buffer period was not effective in mitigating economic difficulties, and the reconsideration of industrial operating capacity and the preceding recovery of the key industries are necessary for the resuscitation of the North Korean economy. Therefore, North Korea is focusing on the economy's self-recovery ability by strengthening in vestment in industrial infrastructure such as energy

door policy were needed to attract foreign investment in industrial facilities and foreign capital to modernize outdated industrial facilities and infrastructure.

Another reason for the pursuit of the Gaesong Complex development was the Kim Dae-Jung administration's consistent policy of engagement toward North Korea and the mood of reconciliation between the two Koreas after the 2000 summit meeting. The Kim Dae-Jung administration exercised an engagement policy consistently from its inception, and pursued the establishment of a peaceful system on the Korean peninsula. In order to bring political and military stability to the Korean Peninsula, South Korea stressed to allied countries such as the United States, Japan and the EU that there was a necessity for improved relations with North Korea, while requesting North Korea's ex-allies China and Russia to persuade the socialist country to understand the real intention of South Korea's "Sunshine Policy." Through the summit meeting in June 2002, the South Korean government had a chance to persuade North Korea that the "Sunshine Policy" was not aimed at reunification by absorption. Meanwhile, North Korea also recognized that the improvement of inter-Korean relations and the expansion of economic cooperation were neede to overcome its severe economic difficulties. Therefore, the agreement on the North Korea's Gaesong Complex development is based on the understanding that South Korea is the major econimic supporter for North Korea and that the possibilities of investment by South Korean firms are the most likely. This is clearly shown by the proximity of the Gaesong area to South Korea and its attractiveness as an investment region for South Korean firms.

On the other hand, changes to North Korean policies related to the development of the Gaesong Complex are of interest to neighboring countries, and the development strategy of this industrial complex can be considered a kind of project strategy (D.R. Yun 1999, 51-66). This strategy gives privileges such as the exclusive right to develop specific foreign firms in order to let them take care of the development of the industrial complex. There are several reasons why the North Korean adopts takes these strategies. First of all, if South Korean firms are involved in developing the industrial complex, there is little resource utilization by North Korea for the complex development. Second, the burden on the North Korean regime in attracting foreign capital would be small since North Korea can give South Korean firms the responsibility of attracting other foreign firms to the complex. Third, by restricting South Korean and foreign companies to designated areas such as industrial complexes, North Korea can manage and control them efficiently, while minimizing the burden on its system. The Gaeseong Complex can be a special economic zone for South Korean firms. In this context, the Gaesong Complex has the best geographical conditions; once the railroad and roads between Sinuiju and Seoul are connected, logistics conditions will improve enormously.

# 3. Prospects for the Development of SEZs

# A. Special Economic Zones and their Functions for Economic Development

By functional objective, the special economic zone can be divided into four categories: trade; both the manufacturing industry and trade; science and technology for the acquisition of advanced technology; and the multi-purpose category (Y.S. Oh 1995, 233-236). The trade part of the special economic zone means that a country designates a special trade port or a certain area and exempts tariffs on foreign goods passing through the area.<sup>10</sup> Second, the combined manufacturing industry and trade category is a mixture of the free-trade zone and industrial complex. This type of SEZ is established to obtain the economies of scale with regard to the management and transportation of the industrial complex and to give the preferential treatment of a free industrial zone. The representative form of this is the export processing zone, which processes duty-free raw materials imported from foreign countries and exports all of the processed goods. The third, the science and technology special zone, is established to promote national competitiveness by forming a "Techno-Polis" integrating industries and universities, fostering technology-intensive and knowledge-oriented industry, and advancing the industrial structure with the hightech industry at the center.<sup>11</sup> The fourth, a multi-purpose special economic zone, is mostly based on investment promotion. Therefore, the multi-purpose type of special economic zone is open to almost any industry including manufacturing, trade, finance, science and technology, and tourism to the outside world. It is an international free trade and investment city or a large area that ensures foreign investment and free economic activity to the utmost.12

<sup>&</sup>lt;sup>10</sup> Free port, free-trade zone, export-free zone, tax-free zone and privileged-export zone are all tradtype special economic zones.

<sup>&</sup>lt;sup>11</sup> Generally, the science and technology special zone is a type of special economic zone with growing interests under the circumstances of the intensifying competition in the international market. United States built the Silicon Valley, the largest and the first-ever in the world techno-polis, near Stanford University in California in the early 1950s, going on to build about 80 science and technology zones around the country. SiliconGlen in Scotland is an international electronics and industrial technology special zone. The representative science and technology special zone of Asia is the Hsn-Chu Science-Base Industrial Park in Taiwan.

<sup>&</sup>lt;sup>12</sup> Hong Kong, Singapore, and five special economic zones in China are representatives of the multi-

Consequently, it is desirable that North Korea starts the special economic zone at first as a form of export-processing zone focusing on manufacturing and develop the zone by stages into a multi-purpose special zone embracing transportation, tourism and financial services alongside market opening. Particularly during its initial stages, it would be better for Sinuiju to become an export-processing zone concentrating on the manufacturing industry and for Gaeseong to become a combination of an export processing zone and tourist special zone. Nampo can become a science and technology special zone, coupling high-tech industry with tourism and transportation.

Even though special economic zones are classified into four areas by functional objective, they show similarity in terms of location conditions. Most special economic zones are located at strategic points of international transportation and their surrounding areas have economic potential and are connected to major economies in the world. In this respect, Nampo, Sinuiju and Gaeseong have merits and demerits as SEZs in their own way.

Nampo has many advantages in transportation as it has the biggest trade port in North Korea and is close to the only international airport (Sunan Airport) in the country. In addition, Nampo is close to Pyongyang, the capital city, and has the most developed industrial facilities and infrastructure. These raise the possibility of achieving positive results in a short period of time. Nampo is close to Incheon in South Korea and Tianjin in China along the Yellow Sea, which is favorable in terms of economic cooperation. However, its adjacency to Pyongyang places a political burden on the North Korean government if it opens Napmo as a special economic zone.

Sinuiju is at the other end of the railroad connected to Seoul; currently active economic exchanges are made with Dandong in China. Many light-industry factories are concentrated in Sinuiju and the labor force is abundant.

The success of the Gaesong Complex depends on the reconnection of the Seoul-Sinuiju railroad. If the railroad and roads reopen, the transportation conditions of the Gaesong Complex would be greatly improved and the economic connection with South Korea would increase by far. Gaesong, the former capital of the Koryo Dynasty, has many cultural and historical sites, that can boost tourism. Therefore, the outcome of connecting the road and rail links sill be a high point of Gaesong as a Special Tourism Zone because Gaesong retains many cultural relics.

purpose category of special economic zone. The Rajin-Sonbong Economic and Trade Zone in North Korea was designed become a multi-purpose special economic zone.

#### **B.** Future Tasks

In order to make its special economic zones successful, North Korea needs to develop a competitive edge to attract foreign capital. The current investment environment of North Korea is very poor compared to China and Southeast Asian countries in areas such as investment risk, infrastructure and investment-related institutions. Since the 1997 Asian financial crisis, countries like South Korea and Taiwan have promoted the sale of domestic firms to foreign countries in the process of economic restructuring. To foreign investors, M&A of these companies was more attractive than direct investment in North Korea. Therefore, North Korea will be able to attract foreign investment only when it can propose economic as well as non-economic incentives for foreign investment.

However, there has been no epochal improvement in the initial conditions that North Korea is currently facing compared to the early days of the Rajin and Sonbong development. This means that the driving force of growth cannot be generated without the supply of cheap labor or the increase of domestic market demand. Although the North Korean authorities are set on partial regime reform with an emphasis on economic efficiency, it is not pursuing a transition to a market economy like China and Vietnam. In addition, considering the country size of North Korea, it is assumed that the authorities have to further reinforce centralized control to prevent the impact of the special economic zones from spreading to other areas.

Therefore, in order to improve its investment environment in new special economic zones, North Korean authorities have to pursue the following policies. First, North Korea has to permit the special economic zones to be closely connected to the South Korean market. It is necessary for North Korean special economic zones to be closely connected with the South Korean market centering on Seoul, as in the case of the connection between Hong Kong and Shenzhen. In this case, North Korea's low-wage labor and South Korea's capital and technology can be efficiently linked together. For this, the realignment of relevant laws and the expansion of transportation networks are crucial to facilitate flows of human resources and distribution of goods and services.

Second, North Korea has to permit short-term profit-generating businesses such as tourism to promote the inflow of foreign capital. Limiting special economic zones to export processing is not desirable. North Korea needs to foster the special economic zones into multi-purpose special economic zones. Therefore, North Korea has to expand investment from the light industries into tourism, service and hightech sectors.

Third, it is important for the North Korean regime to show it is dedicated to the construction of infrastructure and the maintenance and expansion of transportation system. North Korea's active attitude toward infrastructure building can create an

environment conducive to the inducement of foreign capital. In the case of Shenzhen, the Chinese government and domestic financial institutions improved the environment for investment by investing in infrastructure building to attract foreign companies to invest in China. At that time as when the Shenzhen Special Economic Zone was established, Deng Xiaoping emphasized that as the government was not able to support the special economic zones, the special economic zones had to lure foreign investment and use foreign capital as the driving force of economic growth. The Chinese government poured development funds into the special economic zones and government investment was far larger than the foreign investment at the beginning.<sup>13</sup> In particular, the connection of the railroad between Seoul and Sinuiju is urgent for the realignment of logistics system in North Korea. The restoration and normal operation of the railroad is expected to substantially enhance the economic value of Gaesong, Nampo and Sinuiju.

Fourth, in order to improve the environment for business management, North Korea needs to provide various special treatments and preferential measures to foreign firms in the special economic zones. North Korea needs to set up the onestop service system while simplifying investment-related administrative procedures for the investors' convenience. In addition, free entry into the special economic zones is necessary and long-term stay or entry to the zones from South Korea should be made convenient. Information centers and conflict resolution centers for foreign investors also need to be established. Furthermore, North Korea's SEZs have to guarantee much better conditions than those of China and Vietnam in terms of tariff and income tax. In particular, North Korea should offer transparent and consistent laws and regulations such as the Investment Guarantee Agreement or an Agreement on Prevention of Double Taxation. North Korea has to reduce land leases and utilization fees for infrastructure to lower the cost of production, especially when compared to the special economic zones of other countries. It also needs to relax the regulation on foreign currency exchange and remittance of foreign currency in the special economic zones while permitting the opening and operation of foreign banks.

Fifth, North Korea should enhance the efficiency of the SEZ management by

<sup>&</sup>lt;sup>13</sup> In the case of the basic construction investment of Shenzhen, the proportion of investment by the central government was 26 percent and th proportion of loans from domestic financial institutions was 35 percent between 1980-1985, while the proportion of foreign investment was only 25 percent. It means that the role of government and domestic financial institutions was critical for infrastructure building at the beginning of the special economic zone development. On the other hand, the proportion of the investment by government and domestic financial institutions decreased rapidly in the 1990s since the special economic zone was developing constantly and the investment environment was fully matured.

	North Korea	China	Vietnam
Income Tax for Corporation	<ul> <li>✓ General Area 25%</li> <li>✓ Trade Area 14%</li> <li>✓ Investment Area 10%</li> </ul>	<ul> <li>✓ General Area 33%</li> <li>✓ Trade Area 15%</li> <li>✓ Investment Area 15%</li> </ul>	<ul> <li>✓ General Area 15-25%</li> <li>✓ Manufacturing Export Area 10%</li> <li>✓ Service 15%</li> <li>✓ Investment 15-50%</li> </ul>
Income Tax for Individual	Progressive tax of 4-20%, exempt under 2,000 won/ month (about \$950)	Progressive tax of 5-45%, exempt under 800 yuan/ month (about \$145)	Progressive tax of 10-50%, exempt under 3 million dong/month (about \$253)
Tariffs	Joint Ventures: No tariff for import Foreign Firms: No tariff for import of export-purpose goods	No tariff for import of export- purpose goods	No tariff for import of export- purpose goods
Tariff Exemption	<ul><li>✓ Duty free for 3 years</li><li>✓ 50% for 2 years</li></ul>	✓ Duty free for 2 years ✓ 50% for 3 years	<ul><li>✓ Duty free for 2 years</li><li>✓ 50% for 2 years</li></ul>

<Table 17.5> Comparison of Tax Exemption Benefits in North Korea, China and Vietnam

Source: Dong, Yong-Seung and Seo, Yang-Won (1995), p. 51.

introducing elements of market economy. Detailed laws and orders should be arranged so that goods can be traded at market price in the special economic zones and market mechanisms are allowed to increase the efficiency of SEZ management.

Sixth, North Korea should allow self-controlled human resources management by foreign companies. As the proportion of labor-intensive industries, mainly light industries, is expected to be large in the initial stage of SEZ development, North Korea needs to attract foreign companies that want cheap labor while giving them autonomy in human resources management. It is necessary for the government to enhance flexibility in the labor market by allowing foreign firms to employ and dismiss workers and give material incentives to workers directly. In addition, the North Korean government has to guarantee the supply of necessary labor force in the SEZs, and when the qualified labor is unavailable, North Korea needs to allow labor from China or other countries to work in North Korea.

Finally, for North Korea to raise the necessary investment capital for the SEZs and obtain desired results from foreign direct investment and foreign trade, increased international cooperation including the improvement of relations with the United States is needed. North Korea obtaining favorable development funds by joining international financial institutions is critical for the effective development of the SEZs. North Korea's economic recovery and development of special economic zones would require vast capital resources. It is impossible for South Korea alone or one neighboring country to bear the burden of assisting North Korea. Therefore, favorable loans to North Korea provided by international financial institutions like

the World Bank, IMF and ADB would help to resolve the funding problem. Nevertheless, the most urgent task for North Korea is the improvement of relations with the United States since the removal of the label on North Korea as a country supporting terrorism and the approval of fund assistance are prerequisites to make financial aid possible.

# Reference

\* In Korean

- Bae, Jong-Ryul. 1996. "Special Economic Zone in North Korea." *The Question of Unification Environment*. Seoul: Ohreum Publications.
- The Bank of Korea. 1995-2001. North Korea GDP Estimation Result
- Cho, Myung-Cheol ed. 2001. 10 Years of North Korean External Economy Policy: Evaluation and Tasks. Seoul: The Korea Institute for International Economic Policy.
- Cho, Myong-Cheol and Hong, Ik-Pyo. 1998. *The Foreign Investment Inducement Policy of North Korea and Investment Environment*. Seoul: The Korea Institute for International Economic Policy.
- Choi, Su-Young. 1994. "The Revitalization Measures of North Korean Free Economic and Trade Zones." *Tongil Nonchong*. No. 3, Vol. 1. Seoul: The Korea Unification Institute.
- Han, Jong-Baek. 1998. "The Trends and Characteristics of North Korean Foreign Capital Inducement." *Tongil-Kyongjae (The Unified Economy)*. November issue. Seoul: Hyundai Economic Research Institute.
- Hong, Ik-Pyo. 2000. "The Evaluation on Recent North Korean Economic Reform Measures and Future prospect." *KIEP Global Economic Review*. September issue. Seoul: The Korea Institute for International Economic Policy.
  - \_\_\_\_\_. 2001. *The Expansion Possibility of North Korean Special Economic Zones and the Direction of Development*. Seoul: The Korea Institute for International Economic Policy.
- Kim, Young-Su et al. 1997. *North Korea of the Kim Jong-Il Era*. Seoul: The Samsung Economic Research Institute.
- KOTRA. 2001. North Korean External Trade Trends. Seoul: KOTRA.
- \_\_\_\_\_. 2000. North Korean Newsletter. April issue.
- \_\_\_\_\_. 1998. North Korean Newsletter. October issue.
- \_\_\_\_\_. 1997. North Korean Newsletter. October issue.
- Lee, Chan-Woo. 2000. "North Korean Foreign Capital Inducement Policy and Current Affairs." *North Korea Newsletter*. May issue. Seoul: KOTRA.

- Oh, Yong-Seok. 1995. "The Types and Strategies of World Special Economic Zones and Application to Economic Integration between South and North Korea." *The Korea Association for Comparative Economics: Economic Systems of South and North Korea and Their Integration.* Seoul: Pakyoung Publications.
- Park, Jeong-Dong. 1996. The Special Economic Zones of North Korea: Comparison with China. Seoul: Korea Development Institute.
- The Korea Association for Comparative Economics. 1995. *Economic System and Integration of North and South Korea*. Seoul: Parkyoung Publications.
- Yun, Dug Ryong. 1999. "The Economic Effect on the Development of North Korean Industrial complexes and the Successful Promotion Strategy." *Tongil-Kyongjae (The Unified Economy)*, pp. 51-66
- Geumsugangsan (Land of Embroidered Rivers and Mountains). 1999 March Issue.

\*\* In English

- Noland, M. 2000. *Avoiding The Apocalypse: The Future of The Two Koreas*. Washington D.C.: The Institute for International Economy.
- UNDP Tumen Secretariat. 2000. *Tumen Update* (Issue 2). New York: United Nation Publication.

# **XVIII. Inter-Korean Economic Relations**

Jong-Seok Lee Myoung-Chul Cho Yong Seung Dong

# 1. Inter-Korean Trade

### A. Status of Inter-Korean Trade

1) The development process of inter-Korean trade

Since 1989, inter-Korean trade has continued with relative stability, despite the continuous political tension between the two Koreas. Inter-Korean economic cooperation started in 1988 with the South Korean government's July 7 Declaration and "open-economy policy toward North Korea." South Korea has attempted to make a positive atmosphere with the legislation of related laws, such as the "Guide for the Inter-Korean Exchange and Cooperation" (1989) and "Inter-Korean Exchange and Cooperation" (1989) and "Inter-Korean Exchange and Cooperation Laws" (1990). However, yearly inter-Korean trade between 1989 and 1990 has not reached \$20 million despite the geographical advantages and economic mutuality between two Koreas. It was no further than the experimental level, tapping into the possibility of Inter-Korean commercial exchange. In 1991 and 1992, inter-Korean trade rapidly magnified in the middle of the amelioration movement of relations between the two countries. As such as the UN inclusion of both countries (1991), inter-Korean summit conferences progress and the signing of the Inter-Korean Basic Agreement (1991), the \$20 million of 1990 increased to \$111.27 million in 1991 and showed further progress in 1992 with \$173.42 million.

This rapid growth slowed as the relations stagnated and inter-Korean trade hovered at just \$200 million in 1993 to 1994. This was due to the suspension of inter-Korean summit conferences, the declaration of NPT withdrawal by North Korea (1993) and the rise of North Korea's nuclear weapon problem, which constipated relations since the end of 1992. In June 1993, the South Korean government announced at the 11th Ministerial Talks on Reunification that it would temporarily postpone inter-Korean economic cooperation until North Korea returned to the NPT. North Korea, heightening conflict with the South and the United States, maintained a policy to stop all relations with the South. Under the circumstances, the inter-Korean economic cooperation was not positive.

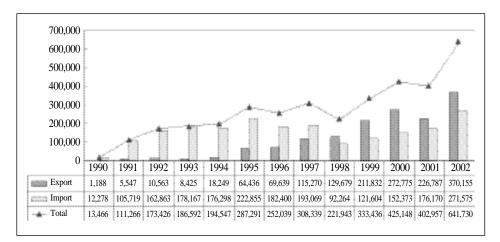
With the nuclear weapon issue between North Korea and the United States resolved in Geneva in 1994, the South Korean government announced that it would promote inter-Korean cooperation through business trips and economic cooperation, making assertive moves to promotion inter-Korean economic cooperation.

As a result, inter-Korean trade in 1995 marked \$287.29 million, a 47.7 percent increase compared to that of 1994, with the boost in processing trade and KEDO heavy oil aid. However, inter-Korean trade met a setback once again as sensitive events occurred between North and South Korea. With the hoisting of the North Korean flag in the process of giving rice aid to the North, the dissipation of Rajin investment forum by the absence of South Korean personnel in 1996 and North Korea's armed infiltration through submarines at Kangnung, inter-Korean relations became tense and showed a decrease for the first time since the inter-Korea trade started, recording \$252.04 million in 1996.

Negotiations over food support and the light-water reactor (LWR) project between KEDO and North Korea at the Inter-Korean Red Cross conference promoted inter-Korean relations. In 1997, inter-Korean trade increased to \$300 million for

	Details
The 1st inter-Korean economic cooperation promotion project	<ul> <li>Approval of business trips and mutual visits of North and South Korean economic and business people</li> <li>Activation of processing trade</li> <li>*allowed technicians from manufacturing to enter North Korea</li> <li>*allowed equipment for manufacturing trade to be exported</li> <li>Operation of pilot projects for economic cooperation</li> </ul>
The 2nd inter-Korean economic cooperation promotion project	<ul> <li>Enforcement of expanding the North Korea visits system</li> <li>Continual expansion of imported items</li> <li>Abolition of export-restrictions of production facilities for the promotion of the processing trade</li> <li>Complete abolition of investment limits</li> <li>Made negative lists of limited investment categories</li> <li>Induction of simultaneous approval system of cooperative businessmen and cooperation business</li> </ul>

<Table 18.1> Inter-Korean Economic Cooperation Promotion



<Figure 18.1> South Korea's Annual Trade with North Korea

the first time due to the increase in export of aid items to the North.

However, inter-Korean trade was struck by yet another blow when South Korea met an economic crisis in 1997, which diverted business interest from inter-Korean trade and became a burden to many businesses already participating in inter-Korean economic cooperation. The influence of South Korea's financial crisis on inter-Korean trade is well shown in commerce output. In 1998, inter-Korean trade fell to \$221.94 million and imports decreased by 52.2 percent compared from the previous year.

To activate the inter-Korean economic cooperation, the government of South Korea once again passed measures on inter-Korean economic cooperation promotion (1998), giving economic support for North Korea and a proposal for the Mount Geumgang project. Through these measures of the government, inter-Korean economic relations recovered alongside the South Korean economy, increased up to \$333.44 million in 1999. In addition, as the economy recovered, actual trade also recovered; agricultural and fishery imports from North Korea had increased and the manufacturing expanded. At the same time, the export of non-commercial items to the North increased due to the propulsion of economic cooperation such as fertilizer support to the North and the development of Mt. Geumgang tourism project.

In 2000, commercial trade such as the steadily increasing manufacturing trade expanded further and imports of agricultural and fisheries from the North increased. Along with the propulsion of economic cooperation with the North, the year 2000 saw a record \$435.15 million propelled by the increase in non-commercial export items such as food and fertilizer aid as well as LWR project. For the first time in three years, inter-Korean trade had exceeded \$300 million (see Table 18.2).

								(01111)	usanu (US\$)
Year		Import			Export			Total	
Tear	Cases	Items	Volume	Cases	Items	Volume	Cases	Items	Volume
1989	66	25	18,655	1	1	69	67	26	18,724
1990	79	23	12,278	4	3	1,188	83	26	13,466
1991	300	44	105,719	23	17	5,547	323	61	111,266
1992	510	76	162,863	62	24	10,563	572	100	173,426
1993	601	67	178,167	97	38	8,425	698	101	186,592
1994	827	73	176,298	495	92	18,249	1,322	159	194,547
1995	1,124	105	222,855	2,720	174	64,436	3,844	265	287,291
1996	1,628	122	182,400	2,980	171	69, 639	4,628	280	252,039
1997	1,806	140	193,069	2,185	274	115,270	3,991	385	308,339
1998	1,963	136	92,264	2,847	380	129, 679	4,810	486	221,943
1999	3,089	172	121,604	3,421	398	211,832	6,510	525	333,437
2000	3,952	203	153,373	3,442	505	272,775	7,394	647	425,148

(Unit: Thousand US\$)

#### <Table 18.2> Details of South Korea's Trade with North Korea

Note: In the 1995 trade volume, the export of rice aids to North Korea of \$237.213 million has been excluded. Sources: KOTRA. *North Korea's trend of foreign trade (1999~2000)*.

The total inter-Korean trade accomplishment for the decade between 1990 and 2000 recorded \$2.574 billion, showing an annual increase of 190 percent. Considering that the two countries are still under political and military tension, such accomplishments were considerable. Although the scale of inter-Korean trade only reached 0.13 percent in 2000 in South Korea's foreign trade, it occupied 21.8 percent of trade in the North during the same year, showing that North Korea's economy depends greatly on inter-Korean economic relations. During the last decade, South Korea has become North Korea's third largest economic partner and has secured second place in economic assistance.

#### 2) Evaluation of the structure of inter-Korean trade

#### A) The structure of imports

South Korea's imports from North Korea over the last decade were mainly composed of products with low processing costs such as mineral resources, processed goods of mineral resources, agricultural and fishery products and textile items. Of imports like steel and metal products from the North, zinc bars and billet are more valuable, although steel plates and pig iron are also important. However, in the last 10 years, the importance of steel and metal products has shown a decreasing tendency, with a share of 63.7 percent in 1991 and 7.7 percent in 2000. The reasons for the decrease are the aggravated foreign economic relations in the last decade, rapid fall in the production radio of steel and metal products, and the difficulty in receiving coke from china. As a result, the import of steel and metal products from the north showed a continuous decrease since 1995.

The share of the textiles, which plays a leading role in the Inter-Korean commerce, increased to 35.2 percent in 2000 compared to 2.1 percent in 1992. The share of agricultural and fisheries has a steady percentage of approximately 10 percent between 1991 and 1996, without much change. It has been showing a gradual increase since 1993 and showed a surprising increase to 23.6 percent in 1998 when all items showed a decrease, and marked 39.3 percent in 1999 and 47.2 percent in 2000.

B) The structure of exported items

South Korea's export items are mainly work-in-processes, especially textile goods for processing trade. The export of textile goods rapidly grew from 6.8 percent in 1992 to 66.2 percent in 1994 but fell gradually to 29.1 percent in 1998 and 15.9 percent in 2000. Other major export items to the North include non-metal mineral products, machinery and chemical products. Non-metal mineral products have been an important export item since 1995 when KEDO started its assistance of heavy oil.

(Unit: Thousand US\$)

Year	Agricultural and fisheries	Minerals	Chemical products	Textiles	Machineries, steel and metal products	Conveying machineries	Electric and electronic products	Other products	Others	Total
1989	2,352	1,094	104	5	15,072	24	-	4	-	48,655
1990	5,572	58	1,730		4,529	14	-	376	-	12,278
1991	10,818	21,520	5,732	—	67,303	17	-	329	-	105,719
1992	16,906	43,866	13,064	3,385	83,514	-	4	618	711	162,863
1993	12,015	87,276	1.528	8,477	64,647	-	80	931	3,213	178,167
1994	15,250	75,468	1,246	18,515	63,069	-	-	2,176	574	176,298
1995	22,319	86,276	347	28,833	81,629	9	6	3,062	88	222,855
1996	23,455	64,807	554	44,459	44,260	91	1,697	3,076	-	182,400
1997	27,326	48,313	15,677	47,091	47,946	998	3,140	2,575	3	193,069
1998	21,798	765	2,427	38,794	20,254	698	3,518	4,010	-	92,264
1999	47,868	2,462	2,494	45,513	16,120	1557	2,838	2,707	45	121,604
2000	71,934	517	517	53,693	11,747	1739	8,254	2,940	9	152,373

Source: KOTRA. North Korea's trend of foreign trade of 1999~2000.

The large change in the structure of exported items is the increase of machineries and chemical products. The export of machineries has marked 1.4 percent in 1996, 11.4 percent in 1997 and 22.3 percent in 1998. Although it decreased to 11.8 percent in 2000, this is not a rapid decrease: it is the start of a structural change in exports. In 1998, the export share of machineries rose, probably due to the exports for the Mt. Geumgang project. The export of chemical products, with its closer connection to the possibility of North Korea's agricultural recovery, was volatile. It started with 14 percent when inter-Korean trade volume was relatively small in 1990, but in 1995, as other products included, it decreased to 1.6 percent. However as fertilizer support for the North regularized, it increased to 26.4 percent in 1998, and 21 percent in 1999.

#### C) Evaluation of processing trade

Ever since the start of inter-Korean economic cooperation, processing trade has been important because it has provided an opportunity to apply the economic mutuality of the North and South. Through processing trade with South Korean companies, North Korea learned that foreign exchange transfer and technology acquisition are possible with minimized contact with the outside world. On the other hand, the processing trade with the North bears few risks for South Korea, providing an opportunity to seize knowledge of North Korea's labor quality, productive facilities, technology and operational systems; it also promotes regular investment to the North. In 1991, with Kolon Group's request to manufacture bags in North Korea, processing trade has showed sustained growth; the processing trade volume has increased from \$840,000 in 1992 to \$79.07 million in 1997, and even in the crisis year of 1998, it marked \$70.99 million. Since then, the volume continued to increase to \$99.62 million in 1999 and to \$129.2 million in 2000.

The processing trade in the inter-Korean economic cooperation has taken approximately 30 percent since 1996 and this is evaluated as the most stable form of trade. The major characteristic of the processing trade is that textile products occupy a great volume in both imports and exports. There have been changes in this characteristic; in the initial stage, most of the imported items through processing trade were textile products, but since 1998, while its importance decreased to 84.7 percent, the importance of electric and electronic products increased from almost zero to 8.3 percent.

Until 1995, processing trade mainly comprised of processing areas such as textile, needlework, bags and shoes, but from 1996, the items began to expand to areas like electric and electronic products. In the processing trade list of 2000, textile products occupied 74.3 percent, electric and electronic products 11.4 percent and bags and other chemical products too up 1.9 percent. This is evidence that the textile items are on the decrease and that processing trade diverts to electric and electronic

										(		
Year	Simple products	Chemical products	Plastic rubber	Nonmetal minerals	Textiles	Daily necessities	Steel products	Electric & electronics		Other products	Oth- ers	Total
1989	-	-	-	-	69	-	-	-	-	-	-	69
1990	-	-	-	1,392	83	-	-	-	-	-	-	1,188
1991	-	1,819	216	135	66	-	-	447	-	-	-	5,547
1992	10	5,214	2,369	1	717	85	1,957	_	22	-	-	10,563
1993	1,607	920	732	79	5,581	20	200	463	121	44	216	8,425
1994	64	1,499	152	11,363	12,077	255	274	160	56	115	264	18,249
1995	10,754	9,106	1,961	13,666	34,986	1,465	199	262	1,548	967	24	64,436
1996	6,715	2,506	3,069	30,399	36,340	1,907	290	2,172	960	1,972	41	69,639
1997	17,047	2,877	5,888	21,467	33,970	3,564	3,948	3,318	13,098	1,160	-	115,270
1998	19,944	5,054	4,717	50,542	28,543	3,707	9,475	5,495	28,923	2,355	-	129,679
1999	17,834	42,691	4,962	50,542	36,286	3,832	16,953	7,307	26,985	3484	955	211,832
2000	25,896	95,528	4,752	20,497	43,433	5,414	13,995	28,075	32,122	3,042	21	272,775
2000	23,890	75,520	т,152	20,497	+3,433	5,414	13,995	20,075	52,122	5,042	21	212

#### <Table 18.4> South Korea's Exports to North Korea

(Unit: \$thousand)

Source: KOTRA. North Korea's trend of foreign trade of 1999~2000.

products and machinery (see Table 18.4). There were about 10 participating companies in the processing trade in 1989. This number grew to 61 in 1998 and 650 in 2000. More and more companies are participating in inter-Korean economic cooperation through processing trade.

#### 3) Evaluation of inter-Korean economic cooperation

Despite the inter-Korean economic cooperation efforts over last 10 years, the result has not been satisfactory. It is a point of examining the problems that have arisen from inter-Korean economic cooperation in the last decade and has come up with active measures for the promotion of inter-Korean economic cooperation. The hindering elements in the inter-Korean economic cooperation are as follows.

First, inter-Korean economic cooperation has been hindered mostly by inefficient indirect trade. During the decade of inter-Korean economic cooperation, our companies participating were not legally and fairly treated with the institutional safety device necessary for commerce; this is due to North Korea's political intentions. Companies engaging in economic cooperation were not guaranteed passage advantages and were double taxed within North Korea. To avoid this, indirect trade was designed and performed. The inter-Korean economic cooperation based on these ideas is habitualized and is the biggest impediment to the efficacy of the interKorean economic cooperation. This form of indirect trade has impeded the expansion of economic co-operation causing many problems in process (communication, deadlines, quality and quantity), risks of payments and problems stemming from the increase in production expenses and extra expenses. In addition, most inter-Korean economic cooperation was done through foreign intermediaries; even when negotiations were carried out between North and South Korean representatives, the contracts and settlements have been completed through foreign intermediaries, causing a great deal of discomfort and inefficiency. These inefficient practices have not been addressed for the last 10 years. The greatest merit of the inter-Korean economic cooperation is the geographical advantage. However, such benefits can be gained only through direct trade, not indirect trade. Hence the primary issue for inter-Korean economic cooperation is the inefficiency of indirect trade.

Second, there is structural limitation preventing trade expansion. On the surface, inter-Korean economic cooperation seems to be increasing, but since the heavy oil assistance of the KEDO to the North started in 1995, the statistics of inter-Korean economic cooperation have included non-commercial items. The only non-commercial commerce exports were heavy oil of KEDO until 1996, but with other items added, it is generally increasing: products for the Light Water Reaetor project in 1997, products for Mt. Geumgang project in 1998, and other products of cooperation business in 1999 and 2000 were included. The total export of non-commercial items grew to \$78.2 million in 1998 from \$10.78 million in 1995, and saw a record \$113.03 million in 2000. The export of non-commercial items occupied 3.8 percent of the whole business in 1995 and grew to 50.8 percent in 2000; it occupied 16.0 percent in the total export volume in 1995 and saw rapid growth of 72.7 percent in 2000. The volume of the actual inter-Korean economic cooperation (total volume less non-transact items) has shown a gradual decrease with \$276.51 million in 1995, \$239.26 million in 1996, \$250.3 million in 1997, \$143.93 million in 1998, \$150.0 million in 1999 and \$170.0 million in 2000.

Third, the average volume of trade per company and its cases are on the decreasing trend. Although the number of participating companies has increased during the last 10 years, the average volume of trade per company has continuously decreased since 1993. The number of participants increased to 442 in 1997 from 30 in 1989 but decreased to 378 due to economic depression by 1998 and increased to 673 in 2000. The average volume of trade per participant has decreased, with 1993's \$1.47 million peak, and only achieving \$590,000 in 1998. The average volume of trade per case had a record \$340,000 in 1991 and has decreased ever since; 1998 and 1999 saw \$50,000 as a record. The average export volume per case decreased from \$350,000 in 1991 to \$40,000 in 2000; The average import volume per case decreased from \$300,000 in 1990 to \$25,000 in 1995 and 1996 but increased to a level of \$500,000. Considering the sudden increase of export of non-commercial items, the average export volume per case of the participating companies does not appear to have increased much.

On the other hand, the average trade volume of processing trade companies has decreased, with a \$28.5 million as a peak in 1994 and \$1.16 million in 1998; average import volume decreased from \$1.59 million in 1994 to \$680,000 in 1998 and the average export volume decreased from \$1.37 million in 1995 to \$470,000 in 1998. However, the participants in processing trade increased steadily and numbered 61 in 1998.

Under the present condition of inter-Korean economic cooperation promotion, it is difficult to profit unless the regular scale per company and per case expand. The average commerce volume is directly connected with production expenses, and if the regular scale per company and per affair is small, the participating companies will be charged with more production expenses. In the last 10 years, the phenomenon of adding items and increasing participating from companies has been desirable; but if the average commerce volume is insignificant, then it will counter-operate resulting in the increase of secession of participants and work as an element making new-comers hesitate.

Fourth, despite the stability of the processing trade, the rate of increase is slowing down. Processing trade has been steadily increasing since 1992 and has been evaluated as the most stable form of inter-Korean economic cooperation promotion management. However, its rate of increase is slowing down and is approaching general stagnation. The rate of increase recorded 736.3 percent in 1993 and fell to 6.3 percent in 1997 (266.2 percent in 1994, 78.8 percent in 1995, 62.1 percent in 1996); this turned over to 10.2 percent in 1998. However, with the 33.9 percent increase compared to that of 1998, 1999 saw national economic improvement and a course-changing policy. The year 2000 saw an increase of 32 percent. Nevertheless, compared to the rapid increase rate of the beginning, this rate is negligible. The reason for the slow increase attributes to the processing trade that is still mainly centered on textiles. Although processing trade is expanding with the entrance of electric and electronic products, the main import items through processing trade are still textiles.

						(Unit:	\$thousand)
	1992	1993	1994	1995	1996	1997	1998
Average trade volume	210	1,001	2,851	2,550	1,958	1,647	1,164
Average import volume	160	426	1,591	1,176	954	894	678
Average export volume	50	575	1,260	1,373	1,004	753	486
Number of participants	4	7	9	18	38	48	61

<Table 18.5> Average Volume of Processing Trade (1992~98)

Source: Ministry of Unification.

However the payability of processing trade centered around textiles is falling rapidly while payment burdens for North Korean labors are increasing. This is a result of the raise in exchange rates occurred after the economic depression.

## **B.** Obstacles to the Inter-Korean Trade

There are still many factors that obstruct the activation of the inter-Korean trade; major obstacles are summarized as follows. First, excessive logistics cost. The excessive logistics cost is one of the most direct factors that restrict the expansion and development of the inter-Korean trade. The problem is rooted in the high logistical cost of the route between Inchon and Nampo. At present, compared to the cargo transport fee (20ft containers) of \$1,000 for Inchon and Nampo route, the Inchon and Chunjin (in China) route is only about \$250~300. This excessive logistics cost drives up the production cost for most participants, lowering price competitiveness and sometimes leaving participants no other choice but to sustain losses. In the case of textile products processing trade, the logistics cost occupies 40 percent of the prime cost and 10~15 percent of sales price, thus counterbalancing the tariff-free effect and makes competitive pricing impossible. The price of electric and electronic products vary from product to product, but bulkier products like televisions have higher logistics costs.

The reasons for high logistics cost of Inter-Korean marine transport are low load factor,<sup>1</sup> longer anchorage in North Korea's ports, high fees of North Korean ports

#### <Table 18.6> Inter-Korean Transport by Sea (1998)

- Ports used in Inter-Korean transport:
  South Korea: 17 ports including Inchon, Busan, Ulsan and Mukho
  North Korea: 11 ports including Nampo, Wonsan, Hungnam, Rajin and Jangjun
  Important routes:
  Mukho~Hungnam: foreign small ships set sail for fisheries transport
  Ulsan~Jangjun: used for goods transport for Mt. Geumgang project
  Donghae~Jangjun: water transport for cruise to Mt. Geumgang
  - Inchon~Nampo: regular course for cargo, commission of ships of Hansung Group, container deportation for processing trade to the North
  - Busan-Rajin: regular course for cargo, commission of ships of Dongyong marine transportation Corporation, cargo of China's Northeast 3 pass through port Rajin takes up 70 percent
- Total transport through Inter-Korean coast is approximately 560,000 tons
  - Of this, excluding conveyance through North Korea to China, KEDO diesel oil provision and materials regarding Mt. Geumgang project, total volume of transport related with Inter-Korean processing trade and commerce products are merely 250,000 tons.
  - Of this, the total volume of transport through regular course of Inchon and Nampo is 105,000 tons, holding about 40 percent of Inter-Korean commerce.

#### <Table 18.7> Comparison of Transport Fee

(Unit: dollar/20ft)

Inchon~Nampo	Inchon~Chunjin	Inchon~Dandong	Inchon~Hong Kong
1,000	250~300	600	500

Source: Korea Institute for International Economic Policy

#### <Table 18.8> Cost Structure of Electronic Products

(Unit: %, wage of 80 dollars/month)

Product	Processing	Logistics	Profit compared with total sale
Color TV	6.67	11.2	-23.8
Monitor	5.7	6.1	-3.0
Radio players	6.4	6.2	-5.8
Telephones	6.1	3.0	-7.9

Source: Korea Institute for International Economic Policy

and the low reclaim rate for cargo. As the load factor of 37.7 percent shows, the absolute shortage in materials is the main reason. In the large amount of product flows case such as Europe courses or U.S. courses, the loading factor reaches up to 100 percent for the majority and that to China reaches to about 80 percent. The present loading factor has increased from the 24 percent of 1997, but it is considered that there has been no change since the number of trip decreased from 40–35.7 percent of cargo between Busan and Rajin are for Korea-China commerce, and considering the present amount of product flows, there is no problem in using Rajin Port, but the unpaved roads between Rajin and Wonjong-ri make it difficult for vehicle transport during the rainy summer and winter, causing logistics costly.

Although factor loading of under 50 percent is regarded as the point where shipping business should be stopped, in this case, the particular situation of North and South Korea is considered in maintaining the service. On the other hand, the logistics costs are doubled because of processing and waiting. The normal shipping days between Inchon and Nampo is six (round-trip) but take about 14-15 days; the seveneight day stay at port increases the logistics costs. The reason for the long stay is the delay caused by complicated procedures and frequent breakdowns of cranes and blackouts at Nampo port, which leaves no choice to the ships but to stay longer to unload the cargo. The unloading facilities at Nampo port are limited to a fixed-in crane that uses electricity, and to load and unload 70 containers, it takes at least three

<sup>&</sup>lt;sup>1</sup> Load Factor is the volume of container and shipped products in total volume of the ship.

	Inchon~Nampo	Busan~Rajin	
Distance	220 miles	450 miles	
Name of ship	SONA (2,928 t) + 1	CHU XING (2,283 t)	
Duration	24 hours	45 hours	
Fee	\$1,000/20ft	\$850/20ft, \$1,400/40ft	
Total cargo(round-trip)	10,500TEU (11,894TEU in 1997)	7,200TEU	
Total product flow(round-trip)	3,957TEU (2,800TEU in 1997)	3,000TEU	
Number of trips(round-trip)	35 (40 in 1997)	36	
Loading Factor	37.7% (24% in 1997)	42%	
shipping days	12 days (3 trips/month)	10 days (3 trips/month)	
Normal shipping days	6 days	7 days	
Average staying period	7 days	3 days	
North Korean port fees	\$9,500	\$9,000	
Container rental fee	\$2.0/day	-	
Container recollection days	Average 100 days	-	
Ship chartering fees	\$2,500/day	\$2,400/day	

#### <Table 18.9> Inter-Korean Marine Transport Route

Source: Ministry of Unification

days; only 20 feet containers can be unloaded and even this unloading speed is slowed down by frequent black-outs. This problem requires investment for unloading facilities by North Korea, and North Korea is asking for investment. However, the initial investment volume is top high compared to low usage rate making it hard to reach break-even point for investors. There is no sign of a solution yet. Moreover, there is a problem in Inchon port; the sign-in of ships is computerized at Inchon but must be handwritten for North Korea. This takes about one-two days and causes the ships to wait. Another reason for the prolongation of shipping days is that North Korea does not acknowledge the direct route between Koreas, only allowing routes that includes international waters.<sup>2</sup>

The high port fee in North Korea's *Nampo* port is the main reason for the increase of logistics costs. The Nampo port fee is \$9,500 for a 2,500-ton ship. This is double China's Daeryun port fee, which is around \$3,500 to \$4,000. North Korea fixed their port fee too high without considering their facilities or capabilities. This is

<sup>&</sup>lt;sup>2</sup> See Kim, Young Yoon (1998). "Situation of marine transport industry of North Korea and cooperative measures of South and North Korea on marine transport," research of Korea Institute for National Unification. Im, Jong Kwan (1995). "Problems of inter-Korean marine transport cooperation and future tasks in marine transport industry studies" Marine Transport Industry Research Center. Marine transport Industry Research Center (1995). "Policies of marine transport preparing for reunification."

probably because North Korea puts more political priority than economic on considering such issues. In addition, the fact that it takes about 100 days to recover containers and the container loss percentage of 10 percent is another reason for the increase. Generally, property owners rent containers when the volume and deal frequencies are low. When the volume and deal frequencies are high, they usually buy containers themselves; thus for cost reduction perspective, the rotation of rentable containers is most important. As the container rotation days are too long and losses are frequent, they can not be rotated sufficiently, creating extra expenses. These extra expenses do not play a big part in the whole logistics costs.

Second, the uncertainty of North Korean regime is also a barrier. After the fall of communism, North Korea has been isolated. Although it has to reduce its distinction with capitalist countries to jump into the global world, they are fortifying their closure to protect their regime. Recently, it has been difficult for South Korean companies to visit Rajin and Sunbong. North Korea's "politics-first" mindset has not changed, even when attracting foreign capital. Hence, in the inter-Korean economic cooperation, there is anxiety that North Korea may change its mind about investment, which discourages investors from laying their money out.

Third, the unsteady foreign environment is the main impediment. After the summit meeting, North Korea's environment seems to have changed, but after George W. Bush was elected, the relationship with United States became uncertain. Conflicts between North Korea and the United States after the september 11, 2001 terrorist attacks have made businesses wary of investing in North Korea. The foreign environment around North Korea improved after the missile negotiation between the North and the United States was compromised, and after the Perry report was announced. But there has been no progress in their negotiations. North Korea's relations with Japan and China are also unstable, and the missile, biochemical nuclear weapon problems with the United States are still setbacks.

Fourth, the lack of information about commerce with the North is another problem. Those who want to participate and are participating have to collect related information individually, requiring extra time, human and material resources. In addition, the use of unverified information and the investors' dependence on intermediaries are causing trouble. Due to the lack of government level information and support for investment in North Korea, direct and indirect side effects such as excessive competition and overlapping investments are increasing. Due to the lack of capital and information, small and medium-sized enterprises have little room to participate in North Korea, even when they are perfect for business.

Fifth, the insufficient commercial system in North Korea is another barrier. The need for political and institutional apparatus is necessary to separate inter-Korean economic cooperation from political and military influence. Inter-Korean economic cooperation until now had been associated with political and military confrontatiers

between the North and South. Therefore, for continuous economic cooperation that is inclined to expansion, without the influence of situations other than those of the economy, we require of a related political and institutional apparatus. Political and institutional apparatus is crucial to upgrade future economic relations because the inter-Korean economic relationship is still in its beginning state. Therefore, more concrete, realistic political and institutional apparatus in preparation for expanding commerce and the conversion to direct investment is necessary.

# 2. South Korea's Investment in the North

#### A. Development Process of Investment to North Korean

1) Searching period for economic transaction (1988-1990)

Inter-Korean economic transactions have been officially recorded since 1988, when the "Special Declaration of July 7," which permits economic relations with North Korea, was enacted. The searching period began the time when trade with North Korea has been officially permitted to 1990, when South Korean businessmen started to contact North Korean companies. The size of the trade was only \$20 million a year and there were few companies that actually ran business. Therefore, in this time period, direct investment to North Korea was almost impossible. There are three characteristics of this period.

First, both North and South Korea were not prepared. South Korea needed appeasement policies towards North Korea as part of the "Northward Policies" of the Roh government. Therefore, without agreements between the two governments, South Korea unilaterally proclaimed to approve inter-Korean economic transactions. However, as companies tried to pursue trade with the North, it was difficult to meet proper North Korean business connection. Only through Korean Chinese businessmen who were already known because of business in China could contact North Korean people in Hong Kong. *Chochongryun* businessmen living in Japan were an alternative option. In North Korea, trade workers were not yet accustomed to economic interaction based on market economy and therefore had difficulties. Most of all, they could not tell anybody that they were trading with South Korean businessmen. Therefore, the trade was more trilateral than bilateral. Indirect trade between the two Koreas still plays a major role in inter-Korean economic trade.

Second, North Korea did not find inter-Korean economic trade necessary. This was the period when North Korea did not realize the importance of trading with the outside world. As the Soviet Union and Eastern region collapsed, North Korea's trade partners decreased rapidly, but trade with traditional socialist countries was still

maintained. The collapse of the coalition made North Korea insecure, strengthening its guard against South Korea.

Third, the environment stimulated South Korean companies to change. Through the collapse of the Soviet Union and the unification of Germany, unification of the Korean Peninsula became a foreseeable goal. Businesses kept their attention on the North Korean market.

#### 2) Trade expansion period (1991-1994)

From 1991 to 1994, inter-Korean trade expanded. The total scope of annual trading recorded \$100-200 million. The motive for this turning point was the adoption of the "Inter-Korean Joint Agreement for Reconciliation, Non-aggression and Interchange and Cooperation." This agreement, which was enacted in February 19, 1992, was enough to give hope that unification was not far away and interest in the North Korean market began to skyrocket. However, it was hard to promote direct investment in North Korea because there was no legal foundation for direct investment to North Korea.<sup>3</sup> Following are the characteristics of this period.

First, inter-Korean trade began to stabilize. The mistakes of the late 1980s began to abate in this period and a certain trade pattern began to emerge. To promote indirect trade, South Korean companies started to build paper companies in Hong Kong and China and actually promoted direct trade with the North. On paper, trade passed through a third country, but actually the cargo boat, which left Nampo port changed its documents in the open sea and came directly to Inchon port in South Korea. As access to Yeonbyun, China, became relatively easy, trade goods diversified and there was more contact with North Koreans. As North Korea had the chance to learn about capitalist trading, failures also decreased.

Second, North Korea also realized the need for inter-Korean economic interchange. The North Korean economy started to realize the possibility of the collapse of communism. China and Russia required monetary payments instead of exchanging goods. This led to a 50 percent decrease in the size of trade to about \$2-3 billion annually. North Korea needed an export industry. It needed to expand its trade to developed countries. Due to these needs, North Korea proclaimed the Rajin and Sonbong area a free economic and trade zone and prepared to accept foreign capital. North Korea's Deputy Minister Kim Dal-Hyun and Cheong Mu-Won visited South Korea and asked that South Korean companies invest in North Korea. North Korea

<sup>&</sup>lt;sup>3</sup> In this period, processing on commission expanded and some companies tried to invest directly in North Korea through Chinese companies, but because these were done secretly, it is hard to follow all the cases.

needed goods to export so that it could import goods such as crude oil, food and commodities. Although it was indirect trade with South Korean companies, once started, North Korea could decrease the burden of charges and therefore North Korean companies showed a lot of interests in trading when South Korean companies were backing.

Third, South Korean companies started to become disillusioned. They thought that once the North Korean market opens, then they would gain a lot of development profits and therefore get the best effects for the least investment. However, as trade with the North expanded in quality and quantity, they realized that it was an illusion. Trading goods were limited. North Korea's best quality goods were natural resources such as gold and zinc and agricultural and marine products. Although South Korean companies wanted to heighten the trade structure, their trading partners' capacity was not up to the level of expectation. There seemed to be no solution as the unbalance of income and expenditure became severer, resulting in bad debts, which became a burden for South Korean companies. Eventually, South Korean companies chose processing on commission. It was hard to do business freely in North Korea, but a simple form of processing on commission could bring some advantages due to low labor costs and tax benefits. Currently, processing on commission is increasing rapidly, but this is not a solution. As distribution costs on North Korean products are high, they cannot remain price competitive if they are brought into the South Korean market.

In order to expand the range of products, it is necessary to derange the existing market, especially in the case of textiles; complicated subcontracting relationships had been sustained for a long time and therefore the market is quite in a mature stage, so it is very difficult to target a new breach market. As a result, there are limits in expanding the market. In addition, due to the political sensitiveness of the relationship between the two Koreas, consistent business could not persist and this discouraged South Korean companies. The emergence of the North Korean nuclear weapon problem and the following tough responses of the government and of the neighboring countries were enough to curtail the business area of South Korean companies. Diversifying trade was also unviable. Economic sanctions from the United States and restrictions of goods from our government imposed on North Korea limited trading to primary goods and processing on commission for some clothing.

#### 3) Investment-Searching Period (1994-Now)

South Korean companies started to search investment in North Korea in 1995 and this has continued until now. The size of trade exceeded \$300 million annually and the processing on commission sector expanded to an absolute size with diversifying businesses such as color TVs. These watersheds have become possible due to the "Inter-Korean Economic Cooperation Activating Act" of November 1994. The act mainly deals with permission for businessmen visiting North Korea and approval of cooperative businesses. South Korean companies were finally approved for investment in North Korea. The details of the act are as follows.

- < Inter-Korean Economic Cooperation Activating Act of 1994 >
- 1. Approval of businessmen and inter-Korean economy-related people visiting North Korea
  - Approval to visit North Korea for business meeting and market research can be allowed case by case. Visiting North Korea for investigating large scale business proprieties are approved by case.
  - Inviting North Korean business people, holding investment meetings and industry visits are allowed.
- 2. Activating processing on commission trade
  - Approval of workers to visit North Korea for processing on commission trade.
  - Application for production facilities, technology guidance, quality management etc.
  - Simplification of visiting procedures
  - Allowing to take out facility for processing on commission trade
  - Large-scale and free facilities subject to permission from the Minister of Unification, other small size facilities are subject to permission from foreign exchange banks.
- 3. Commencement of Economic Cooperation
  - Small economic cooperative business model
  - Commodities sector, which can help improving the living conditions for North Koreans
  - Manufacturing industry sector, which can show short-term economic cooperation effects
  - Establishing an office in North Korea from the civic sector allowed
  - Promotion of contact, market research and research activities for inter-Korean economic cooperation

At that time, the government took steps to allow investment in North Korea for South Korean companies. The types of industries and the size were limited, but the symbolic influence was large. Moreover, companies saw the margins in trading and manufacturing and felt the need for investment. At the end of 1994 to the beginning of 1995, dozens of South Korean companies visited areas such as Pyongyang, Nampo, Rajin and Sonbong to discuss investment. The government approved on May 17, 1995, the cooperation business applications of Kohap and Daewoo at a total of 10 companies. However, due to several political and military incidents, South Korean businessmen could not enter North Korea for investment purposes and inter-Korean contacts entered a cooling-off period. Applications for economic cooperative businesses have increased, but there were not many cases that these plans were implemented.

During this period, the first joint company appeared. The National Industry Company, which Daewoo Corporation and Samchunlee Company of the North established together. In March 1996, Daewoo Corporation and Samchunlee Company agreed to build a joint venture and started to develop the Nampo industrial complex. In June, Daewoo Corporation sent \$5 million to the North for funding of their joint company.<sup>4</sup> This is the first time South Korean company sent investment funds to North Korea. Since then, the existing upper limit of North Korea investment, which was sustained tacitly, became meaningless.

In September 1996, an investment meeting was held in the Rajin and Sonbong area, but there was disagreement in the discussions on the number of South Korean delegation members. This discouraged the participation of the South Korean delegation and investment in North Korea stopped at the end of 1997.

In March 1998 the Kim Dae-jung administration started embracing policies towards North Korea. The government announced in April the second "Inter-Korean Economic Cooperation Activating Act." In this act, the ceiling of \$5-10 million was lifted and a list of investment limitations industries was adopted. Moreover, the government introduced a new policy of approving simultaneously cooperative businessmen and businesses.

With government promotion, new companies wanted to participate in North Korea- related businesses and companies started to implement investment and receive approval for cooperative business. Companies that are still in the process of investing until now are, for example, the automobile assembly plant of Pyonghwa Motors, water business of Taechang Corporation and the Green Cross. However, North Korean business undertaken by Hyundai, such as the Mt. Gumgang tourism Project, is the most noticeable from the size of investment and also the extension. Hyundai's North Korean business consists of two sectors, that are, the Mt. Gumgang tourism Project and the Gaesung Industrial Complex. Mt. Gumgang tourism is a form of sole investment and is operating under investment.<sup>5</sup> The Mt. Gumgang tourism project has encountered difficultes due to financial problems at Hyundai and

<sup>&</sup>lt;sup>4</sup> The Joongang Daily, "Daewoo Corporation sends \$5 million to North Korea," July 13<sup>th</sup>, 1996

also the drop in tourist numbers.

Due to the continued decrease of tourists and the huge burden to pay to the North, the Mt. Gumgang project was hard to maintain. A new agreement was reached in June 2000 regarding payment per head and developing travel on land, with the Korean Tourism Affairs participating as new business partner. In addition, the government lent out cooperative funds for the Mt. Gumgang project.

The Gaesung Industrial Complex adopted an agreement related to investment with the North, but it still did not receive business approval from the government. In August 2000, it exchanged agreements with the North, and in November, it started to work on area of 1 million pyong. In January 2001, it proposed 10 new special laws and restrictions related to the industrial complex (including designation of a special zone, employment and banking) and the North agreed to designate a special zone in April, a plan that did not eventuate. In this situation the "Land Affairs" is processing the basic construction plan of the first stage for 1 million pyong of land (1 pyong =  $3.3m^2$ ).

In the meanwhile, after the inter-Korean summit held in June 2000, cooperative businesses started to develop at the governmental level of the two Koreas. The project of connecting the inter-Korean Railroad and business for preventing flood damage along the Imjin River are examples. Moreover, along with the participation of national companies in the Mt. Gumgang business and Gaesung Industrial Complex business, the business' characteristics changed into a governmental one. Until December 2000, ministerial level talks had been held and inter-Korean economic cooperation came into the stage of systemizing. Investment-related subjects were examined and another agreement about four other sectors agreed in the inter-Korean economic talks were noticeable.<sup>6</sup> On November 11, 2000, agreements on

<sup>&</sup>lt;sup>5</sup> On June 22, 1998 Hyundai reached the "Agreement on Mt. Gumgang Tourism" with the North Korea's Asia Pacific Peace Committee and Hyundai reached a new agreement dealing mainly with the sole investment of Hyundai and promotion of tourism businesses. On November 11, the Mt. Gumgang travel ship left port for the first time. Related to the Mt. Gumgang Tourism project, the agreed context with the North are following.

<sup>•</sup> Range of business: Mt. Gumgang tourism will travel by ship, developing hotels, beaches, hot springs, golf resorts and skiing fields.

<sup>•</sup> Rights: land and facilities using rights and tourism business rights given for a long term only to Hyundai.

<sup>•</sup> Price and privileges: Some \$300 for every tourist who stay four days and pay \$9.420 billion in installments to North Korea until the beginning of 2005.

Business target: sole investment.

<sup>·</sup> Amount of investment: \$1.033 billion.

<sup>•</sup> Region: districts such as Samilpo, Haegumgang and the Mt. Gumgang coast, Onjeongri, Sungbuklee, Jangjungman, Naegumgang, Tongchun and Sijungho.

investment guarantee, conflicts with senior officials, prevention of double tax and liquidation were reached and signed temporarily. These were signed at the ministerial level talks, in December but the agreement did not come into effect until now since North Korea delayed the fifth ministerial level talks that were supposed to be held in March, 2001.

39 individual companies were able to invest in North Korea and received approval. 20 companies had received cooperative business approvals until recently (Daewoo received permission in 1992).<sup>7</sup> Among these companies, only the National Industry Company of Daewoo Corporation, Pyonghwa Motors, Mt. Gumgang Spring Water of Taechang, Green Cross, Software Development of Samsung Electronics and New Corn Seed Development Business of the International Corn Foundation have investment ties with the light water reactor or the Mt. Gumgang project. However, recently, venture companies showed interest in North Korea's IT industry sector. Business talks are being held actively, but there have not been any concrete investment cases to date.

Only recently there were investment guarantee agreements implemented for investment. As one can see from the table above and the past procedures, implementations on North Korea investment were rare compared to general interests. The

<sup>&</sup>lt;sup>6</sup> Four areas of agreements are as follows;

Agreement on the investment guarantee between the two Koreas: whole context and the 12th subject. Mutual investment approval and protection, limitation and compensation on acceptance and nationalization, guarantee of free remittance such as investment returns, mutual information offer, stipulate conflict-resolving method.

<sup>-</sup> Agreement on earnings between the two Koreas and prevention of double taxation: whole context and the 28th subject.

Taking into account the taxation laws of the two Koreas, designate the location and range of taxation rights for both sides with the matter of evading double taxation, mutual discussing procedures and stipulate information exchange.

Agreement on resolving conflicts with senior offices between two Koreas: whole context and the 19th subject.

Stipulate constitution, function, resolve-proceedings of the inter-Korean joint resolution committee Inter-Korean Senior Office Mediation Committee, quality and activity of the arbitrator, efficacy of the mediation decision and approval and implementation guarantee.

<sup>-</sup> Agreement on liquidation of two Koreas: whole context and the tenth subject.

Liquidation methods will be applied on items agreed on both sides and general payments will be applied on all other items.

Stipulate liquidation items, limitations and establish credit limitations, select liquidation banks and currency (U.S. dollars).

<sup>&</sup>lt;sup>7</sup> Not all companies that received cooperative business approval from the government, promote investment in North Korea. Facilities carrying out manufacturing on commission are included, as well as various North Korea-oriented businesses such as software processing on commission production of Samsung Electronics.

Company	Business Partner	Business Areas	Location	Scalet	Date of business
Daesang Logistics (Single Investment)	"	Lajin · Sunbong International goods Developing · administration distribution center	Rajin, Sunbong (Dongmyung district)	\$4.2 million	14 OCT 97
Samcheonri Bike /LG International (Equity joint venture)	/LG International Kwangmyungsung Assembli		Rajin, Sunbong	\$8 million	14 OCT 97
*Taeyoung Marine Products/LG International	n	Raising • producing scallop	Rajin, Wonsan	\$650,000	14 OCT 97 (28 AUG 98)
*Korea Exchange Bank	Nations with light-water reactor business	Establishing banks in light-water reactor business site	Kumho		6 NOV 97 (6 NOV 97)
*Aja Communication inc. (Equity joint venture)	Mt. Kumgang International Tourism Corporation	Making printed material and TV advertisements	Pyongyang, other area	per ad. \$250,000	14 NOV 97 (18 FEB 98)
Ace Bed inc. (Join-venture)	Chungryu Trade Company	Making selling bed and furniture	Pyongyang Raklang area	\$4.25 million	9 JAN 98
Lotte Confectionary (Equity joint venture)	Kwangmyungsung Corporation	Making and selling cookies (choco-pie)	Pyongyang	\$5.75 million	9 JAN 98
Kwangin inc. (Single Investment)	Foreign Economy Cooperation Committee			\$2.5 million	18 FEB 98
Ansung Development	Development Chosun 56 Trade Company Establish sesame oil processing factory Nan		Nampo	\$0.5 million	13 MAR 98
*Doorae Community Farming Associated Corporation (Joint-venture)	Lasun Economy Cooperation Company	Operating join-venture farm and contract cultivation business in Rajin, Sunbong area	Rajin, Sunbong	\$2 million	8 APR 98 (27 JUL 98)
*International Corn Foundation (Investigation · Research)	Agriculture Science Research →Agriculture Science (25 MAR 99)	New breed's productivity examination for a license and confirmation of a suitable cultivation land	Pyongyang, other	\$3.09 billion →\$11 billion (25 MAR 99)	18 JUN 98 (18 JUN 98→ MAR 99 changed)
*Hyundai Merchant Marine Co. inc., Hyundai Engineering & Construction Co., Mt. Kumgang Development Project, Hyundai Asan (25 FEB 99)	Chosun Asia Pacific Peace Committee	Mt. Kumgang tourism business (7 SEP 98) →Mt. Kumgagn tour and developing business (15 JAN 99)	Mt. Kumgang	\$95.83 million \$100.33 million (15 JAN 99) \$148.67 million (16 APR 99)	6 AUG 98 (7 SEP 98→ 15 JAN 99 changed 16 APR 99 changed)
*Korea Land inc. (Equity joint venture)	Myohyang Economic Union	Developing real estate in North Korea (lease, sale and consulting)	Pyongyang	\$0.6 million	28 AUG 98 (28 AUG 98)
*Baeksan Industry (Equity joint venture)	Sunbonggun Greenhouse Farm	Producing mushroom growing nutri- tion fluid and popularization on domestic farmhouse, Producing · exporting pyogo, agaric, pearl and other sorts of mushroom	Rajin, Sunbong (Sunbonggu neup)	\$208,000 (North and South Korean total investment: \$810,000)	28 OCT 98 (28 OCT 98)
*Hynix Semidaondictor inc., Korea Telecom, Onse Telecom	Mt. Kumgang International Tourism Corporation	Communication supporting business for Mt. Kumgang tourism (step 1: laying communication line between Onjungri-Jangjun, constructing and operating communication line between North and South Korea via 3rd nation)	Mt. Kumgang Tourist site	\$130,000 (step 1)	11 NOV 98 (11 NOV 98)

### <Table 18.10> South Korean Investment in the North (as of August 2000)

Company	Business Partner	Business Areas	Location	Scalet	Date of business
Haeju inc. (Join-venture)	Kwangmyungsung Corporation	Producing and Selling North Korean marine products	Near West Sea	\$2.99 million	8 JAN 99
*Pyunghwa Motors inc. (Equity joint venture)	Chosunryunbong Corporation	Construct motor repairing and assembling factory	Nampo	\$300 million (step 1: \$ 6.66 million)	31 AUG 99 (7 JAN 00)
*Korea Electric Power Corporation	Chosunryunbong Corporation	Light-water reactor constructing business in North Korea Basic construction (TKC)	Kumho district	\$4.08 billion (PWC cost included)	(15 DEC 99)
*Samsung Electronics	Chosun Computer Center	South & North Korea S/W joint development	Beijing	\$727,000	13 MAR 00 (13 MAR 00)
*Hanabiz.com inc. (Equity joint venture)	-,		Dandong	\$2 million	28 APR 01 (18 JUL 01)
Entrac inc. (Equity joint venture)	Kwangmyungsung Corporation	Tentatively named Korea Technology Development Plant j for the development of a joint product	Pyongyang	\$4 million	30 APR 01 (AUG 01)

<Table 18.10> Continued

Note: Dates in parentheses are joint business approval dates. \* are companies based on joint-investment. Source : Ministry of Unification. South & North Korean Transaction. (Monthly issues).

investment sector, even after 10 years of economic cooperation, is still in its infant stage. The next chapter will analyze the reasons for the low investment in North Korea.

### **B.** Obstacles to Inter-Korean Investment Expansion

It is difficult to contact North Korean representatives to organize business projects. This attributes to the lack of internet network as well as the absence of direct phone line system between the two Koreas. To get contact with the North Korean firms, the South Korean enterprises have to go through a third country like China, incurring higher cost than regular bilateral trade. In addition, there is no foreign exchange system. Transfers between banks are processed indirectly. Recently, liquidation procedures have been agreed up, but they are not in effect yet. The only means of transport is by sea, but there is no direct line established except for a cargo ship between Inchon and Nampo three- four times per month. Despite the 10-year of North and South Korea trading, system for trade has not been established yet.

Second, North Korea does not have a comprehensive plan for its open-door policy. Companies with experience in North Korea mention that the roles and rights of participants are changed frequently. While North Korea does not suggest investment choices, investors must find investment opportunity by themselves and ask the government for review.

Third, the cost increases to an unacceptable level when comply to the North

Korea's demand. The government imposes high demands on investors because it believes it is granting permission to invest in North Korea. North Korea demands that enterprises prepare the basic SOC that is lacking in North Korea. For example, the government requires that investors bear expenses to construct roads needed to transport the products to harbor (Kumkang spring water factory) and prepare devices for unloading materials at the harbor. Investors face these issues because North Korea does not have capital to improve its SOC. When North Korea brings up such issues, investors have no choice but to accept because abandoning business would cost even more.

The fourth problem is the distortion that comes from a foreign exchange rate that does not reflect market price. North Korea's fair exchange rate (1 dollar: 2.15 North Korean won) has been decided arbitrarily by the North Korean government and is not reflective of fair market price. Presently, in the Rajin-Sunbong economic trade region (renamed Nasun City), North Korea's first free trade area, one US dollar to 200 North Korean won exchange rate is used. This is said to be reflecting the exchange rates of the black market, which is commonly used internally. For example, if a 50:50 joint investment is performed where North Korea contributes land and property according to international market conditions and a foreign country invests in equipment and capital, North Korea's investment percentage is overstated by almost 100 times when applying fair exchange rates. Ultimately, the foreign country ends up financing a much larger chunk of the investment while North Korea receives 50 percent rights in management.

A similar situation occurs even when the investing company supplies labor costs. The investing firm does not pay labor costs directly to North Korean workers. Instead, the firm forwards payments to North Korea's Labor Management Agency (administered by the treasury department of the Cabinet) in dollars and the Agency pays the workers in North Korean won. The central government designates North Korean labor cost per person as \$100 per month. The cost is reasonable when using the fair exchange rate since North Korea's labor costs per person is 100~200 North Korean won/month. However, when applying black market rates, North Korean labor costs per person comes out to less than \$1. This implies that out of the \$100 in labor costs, only \$1 ends up going to the worker while the North Korean government makes a \$99 profit. As a result, there is a concern for the investing firm of paying large excess in labor costs.

Fifth, labor management intervention does not guarantee autonomous control by the investing firm. The human resources of an investing firm are regulated and are supplied by the Labor Management Agency. This method is used by majority of socialist countries, including China. The major problem is that the North Korean government manages workers. According to Korean-Japanese investment firms, workers spend at least one ~ two days a week for studies and ideology education. In addition, because workers are replaced every three months, the period needed to acquire know-how and skills, investment firms say the cost of reeducating new workers is too high. This problem also emerged in the KEDO project. Although laborers in the KEDO project received \$180 (\$80 for welfare), they disputed with the investing firm to increase the amount to \$600. When this demand was not accepted, all the workers withdrew from the project. Besides the points given above, there are other various issues brought on by North Korea. However, the most important factor is the will of North Korea. If they really want to accept South Korean capital to actively pursue economic development, creating institutional and legal systems should not be a problem. Insufficient private investment capital can also be solved with time. If North Korea is reticent in using South Korean capital for structural stabilization, investment expansion will be hard won.

### 2) South Korean Factors

Due to structural changes in the South Korean economy, interest in business with North Korea has weakened. Ever since the 1997 financial crisis, the South Korean economy has promoted changes to conform to international standards. Not only have the reserves for foreign investment decreased in the short-term, but also the industridal management has focused more on profitability than before. Business with North Korea is no exception. Companies will not invest in North Korea as profit takes precedent of nationalism. Company performance is evaluated in the market and investor opinions are strongly reflected. It is impossible to actively pursue business investment in North Korea with only the will of the majority shareholder or the firm's owner. The only way to invest in North Korea is to gain full support from shareholders based on rational judgment.

In addition, if non-profitable North Korean business investment is pursued, foreign trust will greatly deteriorate. This has a possibility of driving away foreign capital investment. Therefore, it is imperative to be very cautious in pursuing such investments. Moreover, due to domestic economic turmoil, support for investment in North Korea from the government will hardly gain public approval, as public opinion in general follow the prevailing motto "We're hard off too."

### 3) International Factors

The strict economic sanctions placed on North Korea by the United States are an important international factor. The United States placed economic sanctions on North Korea in all areas of economic activities internationally since the Korean War, lifting some of the sanctions on two occasions: the 1994 Geneva Agreement and the 1999 Berlin Agreement. In the second instance, which was enacted right after an

inter-Korean summit meeting, arrangements to allow interchange between North Korean and American firms were included. This opened up the door for North Korean products to enter the American market, but it has not been very effective.

As North Korea has not been excluded from the United States list of terrorist support countries, they are still under sanctions by and large in the financial area and in foreign trade. Due to these financial sanctions, it is impossible for North Korea to raise capital in the international society. Countries in their early development stages usually raise capital from international financial organizations. To do so, a country must join the International Monetary Fund (IMF) and go through the process of becoming a member of the World Bank. Recently, North Korea attempted to become a member of the Asia Development Bank (ADB). However, because of opposition from the United States, Japan, and the ADB majority shareholder, North Korea was not granted membership affiliation. Although membership in international financial organizations, to become a member North Korea must sustain transparency in economic sanctions, to become a data also open up its domestic economy. However, North Korea is not in the position to accept these provisions.

Vietnam initiated a 'Doi Moi (reform)' policy in 1986. However, as Vietnam's relationship with the United States improved after troops were pulled out of Cambodia in 1989, capital procurement from the IMF became possible and foreign capital began to flow into Vietnam. Although North Korea is actively promoting improved relations with developed economies, it is difficult for other economies to supply capital to North Korea while the North Korean/U.S. relationship is sour.

The partial alleviation of trade sanctions were not effective because North Korea did not receive preferential tariff. Through the second softening of economic sanctions, the United States government allowd interchanges between American firms and North Korea. However, as general tariff was applied, North Korean products could not achieve price competitiveness in the United States market. To receive preferential tariff, North Korea must not be classed as a supporter of terrorism and must obtain most favored nation treatment. When observing North Korea's relationship with current North America, however, this seems a reality. There are many restrictions on trade with North Korea because of America's hostile trade laws that restrict the exports of strategic materials. According to the Wassenaar Agreement, which replaced the COCOM system, if a member country exports strategic materials, it must report the trade to other member countries. While South Korea could alleviate this rule by judging the trade on its own terms, in reality, tuning policy with the United States Department of Commerce is necessary.

Second is the delay of Japanese capital inflow. In the cases of China and Vietnam, Japan's ODA capital appeared to play an important role in the economic development of the two countries during the early stages of open trade. Japan's post-

war compensation and its ODA capital inflow were predicted to play a huge role in the revival of North Korea's economy. However, the improvemen of the relationship between North Korea and Japan is being delayed by the issue of Japanese abductees and the firing missiles over Japan, among others.

The third cause is the rapid development of Chinese market. As the positive result of China's reformation and open-trade policy becomes increasingly visible, the possibility of change in North Korean market is heightened as weel as the possibility of increased North Korean investments. However, due to the rapid rise of Chinese market, it is more possible that North Korean market might lose interest from foreign countries. With the same cost and condition, foreign firms will prefer Chinese market that has huge domestic market demand (\$1.3 billion) and that have favorable local production condition. On the other hand, North Korea's market condition is not up to par to the level of "emerging country." Consequently it is still incapable of attracting foreign capital except South Korean capital. This phenomenon will continue for quite some time, and firms that had North Korea in mind are likely to divert their business and capital towards to China.

### C. Policy Direction to Stimulate Inter-Korean Investment

To activate economic cooperation between the two Koreas, preparing for a unified economy, recovering from current economic hardships, and stimulation of North Korean investments is necessary. However, looking back at the causes of stagnantation in North Korean investments over the past 10 years of economic cooperation, reviving the economy will not be an easy task. First, we cannot improve the factors stemming from North Korea. Only fundamental political changes in North Korea can improve these conditions. The factors caused by South Korea are also problems. North Korean markets must change first, and then South Korean companies must set long-term investment strategies accordingly. However, it may be a long time before South Korean companies are able to raise sufficient foreign investment reserves. International factors are also problems that cannot be solved without the support of the international community.

Therefore, tasks for the government and firms to stimulate North Korean investments must be formulated by a different direction from the past. Above all, they must concentrate on creating suitable conditions for investment in the North Korean market. Even if fundamental changes in North Korean policies are not accompanied, we must take the position of creating the right conditions so that fundamental changes can take effect by arranging legal and political systems. Patience is required to take such a position. Instead of expecting North Korea to change right away, it is necessary to use only rational and reasonable policies while being patient and observing changes in North Korean market carefully. From this point of view, the following are the goals that the government and businesses need to achieve.

### 1) Tasks for the Government Sector

First, the government must establish cooperative economic policies by taking a position that protects South Korean firms and capital in the process of promoting business with North Korea. They must also negotiate with the same attitude. To make this possible, the government must make economic cooperation between North and South Korea official, while concentrating on establishment of on institutional system that meets international standards. Making cooperation official implies the establishment of a stable system through the normal operation of negotiation channels such as Minister level meetings or the North and South Korea Economic Cooperation Committee, so that economic cooperation between the two Koreas can be sustained within the framework of the relationship between two countries. Just as with the selection of economic cooperation agreements in four areas, institutionalizing entails the drawing out of various forms of agreements so that economic cooperation can be performed within a system. In addition, to induce changes in North Korea, long-term goals need to be established and achieved through direct and indirect efforts. Close discussion with the United States and other economies to improve international circumstances will also be imperative.

The second task is to establish the activities of an official inter-governmental council. The two governments already agreed to establish a North and South Korea Economic Cooperation Committee under the protection of minister level meetings and several meetings to be held under the committee. The committee must be developed into the head organization for improving factors surrounding economic cooperation.

Third, the government must concentrate on fundamentals by the establishment of logistics, communication and commerce. The two Koreas currently communicate through a third country, but the human and material exchange cannot be done on this ground. In addition, the installation of ground transportation, including the reconnection of the inter-Korean highway, must be prioritized. Meetings between entrepreneurs should be facilitated. Contact locations, which were previously Beijing, China and other areas, should be moved to Pyongyang and Seoul, and trade missions should be established in capital cities. These missions should be used as a window to mediate meetings between North and South Korean trade companies. Direct telephone lines between North and South Korea should be promoted, or, if the immediate installation of direct lines is difficult, the use of fax services between the two countries must be established.

The fourth task is to maintain a direct trade system. Discussions on creating direct marine routes are necessary at the governmental level. Even when using

marine routes, the only direct transportation path, boats must use international waters. If necessary, equipment support to modernize North Korean harbors should also be considered. In addition, a payment settlement system must be set in place swiftly, especially a general payment settlement system. Promoting investments without the permission of capital transfer is unfeasible.

The fifth task is to set up an inter-Korean economic coordination organization through both governments and non-governmental parties. Economic coordination between the Koreas cannot progress with support from the government or non-governmental organizations, therefore work and mutual help between two parties are necessary. Through this organization, governmental and non-governmental bodies need to form an understanding on the degree of change desired in the North Korean market environment, creating a goal and considering specific strategies.

The sixth task is to ease the North Korea's economic sanctions in international society. Government and non-governmental bodies need to raise this issue with the U.S. executive and congress. If necessary, activities at international organizations such as the UN should be intensified.

The last task will be to protect South Korean capital and business; the government should inform the public that the government is making legal and institutional procedures with North Korea. In addition, it is necessary to let enterprises that are entering the market know of the problem is in the North Korean market. This prevents South Korea from undertaking reckless economic exchange with North Korea and is the shortest way to effectively understand North Korea market's economic principles.

### 2) Tasks for Private Sector

Private enterprises should develop business with North Korea based on strict economic principles. Although applying economic theory to North Korea is an unreasonable practice, making North Korea understand the necessity to accord with economic theory quickly is a key to the development of inter-Korean economic cooperation in the long term. Therefore, businesses should not accept unreasonable demands of North Korea, and through this process, the two sides will come to understand each other better.

Moreover, by forming autonomous private organizations operated by the people, information exchange and coordination can be improved. Contrary to the South, North Korea is controlling inter-Korean economic coordination through one window, better enabling them to maintain negotiability. We need to have autonomous discussion in this regard.

Businesses should press North Korea to improve its market condition and system. Although North Korea wants to change, it does not know how to undertake.

We should propose areas to be improved, including detailed alternate proposals. Keeping these in mind, we need to promote businesses that are equal to those of North Korea in terms of time and patience. Since the level of North Korea's economy is close to South Korea in the 1960s, there will be conflict if South Korea tries to lower its level to that of North Korea. South Korean businesses need to consider not only profits, but also the education of North Koreans in areas such as the IT industry.

## 3. Non-Commercial Economic Relations between North and South Korea

### A. Status of Non-Commercial Economic Relations

1) The importance of non-commercial economic relations

Historically, the relation between North and South Korea has been one of hostility based on a cease-fire agreement. However, there have been moves toward ending the hostility. inter-Korean relations are not typical of relations between two states, although both have autonomous UN membership. Instead, they are considered "particular relations" that are "in the progress of reunification."<sup>8</sup> To advance the relations between the Koreas, it is not only important to activate economic exchange based on profit, but it is also critical to have the non-commercial economic relations grounded on an understanding of the particular relations between the two countries. In particular, when North Korea is under difficult economic conditions, it is much more valuable to have non-commercial than common commercial relations.

According to economic theory, non-commercial economic relations mean that a relation that does not imply exchange. Nevertheless, it is important for South Korea to have non-commercial economic relations with North Korea because helping North Korea to improve its economic circumstances will lead to the enhancement of relationship between the North and South and promot peace on the Korean peninsula. In short, economy and peace are linked.

Now non-commercial inter-Korean economic relations have become one-sided support. As the two countries are aiming for a cooperation regardless of the economic conditions in the North, it is natural that one-sided support is more prevalent than common commercial relations. At this point, non-commercial inter-Korean economic relations are remarkable at the beginning of interchanges.

<sup>&</sup>lt;sup>8</sup> Fundamental Agreements of the North and South Korea, 1991.

The effect of non-commercial relations is very strong for the two Koreas. First of all, these relations have eased tension contributing to peace on the peninsula. The expansion of non-commercial inter-Korean economic relations reduces North Korean aggression, advancing general quality of life.

Second, the extension of non-commercial economic relations between the two Koreas reforms the external circumstances of the Korean economy and contributes to national wealth. The effect from the growth of military tension on the peninsula was very limited when the world was polarized duning the Cold War, but now the tension is adversely affecting the North Korean economy. The world is becoming one single market system and the market itself is globalizing rapidly. There are many competitors for South Korean economic participants, so the tension of Korean peninsula has been negative for the South Korean economy, with market players avoiding perceived risky trade or investment. It is clear that more tension between the North and South will cause tourism to drop. The only solution to reverse these negative effects and to enlarge the positive factors is the enhancement of the inter-Korean relationships, particularly the expansion of the non-commercial economic relations, as a first step in reconciliation and cooperation.

Third, the expansion of non-commercial economic relations helps to build a foundation for economic cooperation. Inter-Korean economic cooperation represents an extension of the South, based on capitalism, and the North, based on socialism, implying fundamental restrictions because of their economic alienation. Considering this situation, to stimulate economic cooperation and to further form economic unity, both the economic systems of the North and South need to develop in a similar way. The changes to the international environment, such as the collapse of the Soviet bloc, the disappearing of the communist international market and the changes from communism to capitalism demand that North Korea change its policy. Moreover, faced with serious economic crisis, the North Korea does not have much choice but to convert to capitalism if it is to receive support from the outside world.

The serious deficiency of internal resources have caused the North to depend on external support to build a market economy. Non-commercial economic relations can encourage the chage to a market economy, reliance on the South and create economic faith between the North and South. In this section, we will examine non-commercial economic relations between the North and South and evaluate it to suggest better non-commercial economic relations.

2) Development of non-commercial economic relations

A) The start of non-commercial economic relations (1995-1997).

Non-commercial economic relations between the North and South Korea began in 1995. At that time, the North faced a regime crisis brought on by accumulated economic difficulties and natural disasters. North Korea was not capable of surviving on its own. The Soviet bloc had collapsed and North Korea's relationship with China was estranged after South Korea and China established diplomatic relationship in August 1992. China followed a pragmatic policy stance after the Cold War ended, as shown in diplomatic relations between South Korea and China.

As a matter of fact, the South Korea-China relationship deepened the diplomatic isolation of the North, bringing crisis to North Korean foreign relations. There were additional changes in the economic relations between North Korea and China when China decided to cut off its preferential friendship price system that allowed for the supply of products at half price or through barter trade. Instead, China asked the North to pay in cash,<sup>9</sup> changing the unit of transaction from the center to the region. Such policy changes heighted North Korean economic troubles.

Under the circumstances, North Korea requested Japan and other developed countries to give food support. In addition, the North unofficially asked South Korea for food support. Japan considered the request, causing South Korea to expedite the decision-making process. The South Korean government tried to reopen inter-Korean relations through rice aid, as the South did not want Japan to help the North ahead of South Korea. On March 7, 1995, President Kim Young-sam suggested the grain support at Berlin. On May 26, Lee Sung-Rok, the North Korean chief of trade committee said: "If the South has a will to support the North without any precondition or political limits, we will consider it." Na Woong-bae, the South Koran Minister of Unification, replied: "We wish to supply the grain that the North needs without any preconditions or political sub-conditions." He also suggested meeting the representatives of both North and South Korea to discuss the necessary process for the aid.<sup>10</sup>

Starting with the suggestion of the South, the first negotiations over rice, held between Lee Seok-chae, the South Korean vice minister of finance and economy and Jun Kum-chul, the North Korean representative, began June 17, 1995, leading to an agreement on the supply of 150,000 tons of rice on June 21. However, the North signed the agreement without using Jun Kum-chul's official title. Although the South promised 150,000 tons of rice without demanding compensation, the North did not use the official title of the Korean Workers' Party, serving as a poor precedent.

There were some accidents in the hurried process of sending rice aid to the North. The transportation of the rice began with "Sea Apex" brining 2,000 tons of rice on June 25. In the process of transportation, there were incidences where sailors

<sup>9</sup> Kim Il-sung. 1991, p. 11.

<sup>&</sup>lt;sup>10</sup> Jungang Ilbo, May 26, 1995

were forced to hoist the North Korean flag on Sea Apex and the South Korean crew of Sam-sun Venus were detained. These incidents turned public opinion on North Korea and brought other repercussions for the North. These two incidents were the result of miscommunication over the details of the agreement, giving a precedent of how hasty policy could be dangerous.

In fact, the South did not achieve the desired reform of inter-Korea relations with supply of the rice aid. Negotiations over rice took place twice in 1995, but there was no outcome from those because of the different goals and mutual distrust/characterizing the situation. From that point, inter-Korea relations entered a lull. Later, when there was a case of a North Korean spy submarine infiltration in the East Sea on September 1996. The support started again in December 1996 when the North made an official apology for the incident. Governmental support to the North was reduced sharply, limited to indirect support through international organizations.

Meanwhile, non-governmental support to the North was encouraged by the North Korean food shortages. Aid relations were reopened in 1995, and tourism commenced during the Kim Dae-jung administration.

When famine hit North Korea after it was hit by servere flooding, international opinion was in favor of helping North Korea. In this situation, non-government organizations asked to South Korean government for permission to allow non-governmental support to the North. The government took the position that the support would only be allowed if there was an official request from the North, but the international public opinion about supporting the North was too high and the government itself was supplying rice through the rice negotiations without an official request from North Korea. Therefore, the government announced that they allow the Korean National Red Cross to send aid to the North on September 14, 1995. Although the ruling party was strongly against this decision, this was the first moment that the government allowed private support and the setting up of an infrastructure for private exchanges, boosting trust in the inter-Korean relationship.

Aid from the Korean National Red Cross went to the North through International Red Cross because the North had not directly asked for aid. The turning point for non-governmental support was after the agreement on relief supplies was adopted by the Inter-Korean Red Cross on May 26, 1997. The agreement represents direct support between the Inter-Korean Red Cross, as before, there had only been indirect support through the International Red Cross.

### B) Activation of non-commercial economic relations (1998 - the present)

Dialogue between the North and South Korean governments controls the level of Inter-Korean cooperation. Non-governmental exchange can improve the Inter-Korean relationship, but the key to Inter-Korean relations is the decision made by each government. From this point of view, cooperation was activated under the Kim Dae-jung government, which have had wide interaction with the North. Non-commercial economic relations can be activated as well.

Since the beginning of the Kim Dae-jung government, the non-commercial economic relations spread out and enlarged. During Kim Young-sam government, governmental support was limited to rice aid, accompanied by small-scale non-governmental support. However, in the Kim Dae-jung government, governmental support enlarged from rice support to fertilizer support and the Mt. Gumgang tourism project, which consequently promoted better non-commercial relations. Direct support covertook indirect support through international organizations. For the governmental support, when the rice was sent to the North in 1995, it was not allowed to bear South Korean labelling, but the rice and fertilizer supplied by the Kim Daejung government were marked with their original labels of Company and the North Korean government did not remove them.

The inter-Korean summit talks on June 2000 and the joint declaration of June 15 were important opportunities to extend the non-commercial economic relations. The inter-Korean summit talks were a decisive opening to turn the inter-Korean relationship from hostility and antagonism into reconciliation and cooperation. It positively effected non-commercial economic relations.

Non-commercial economic relations will be the main way to step up inter-Korean relations because of the economic crisis in the North. That is to say, inter-Korean trade can be activated when the North recovers to a degree as they do not have any resources to deal at present. The growth in non-commercial economic relations from both government and non-government is a step toward reunification.

Non-commercial economic relations have been growing since the inter-Korean summit talks with new types of aid for the North, such as loans, encouraging inter-

< Table 18.11> South Korean Governmental Aid to North Korea (1998-May 2002)

(Unit: \$million)

	Direct Assistance		Indirect Assistance		Total	Remarks	
	Items	Amount			Amount	ixcillal KS	
1998			Grains (WFP)	11	11		
1999	115,000 tons of fertilizer	28.2			28.2		
2000	300,000 tons of fertilizer	78.6			78.6	Separated food loan: 88	
2001 Jan -May	168,000 tons of fertilizer/ 1,500,000 pieces of underclothes	42.4	100,000 tons of corn (WFP)/medical supplies (WHO)	12.6	55		
Total		149.2		23.6	172.8	Separated food loan: 88	

	Total Amount of Supporting Items	Numbers of Organization Channels	Remarks
1998	\$ 20.85 million		
1999	\$18.63 million	10 organizations (6.65 billion won)	Korean Red Cross 24 organizations
2000	\$ 35.13 million	13 organizations (30.74 billion won)	Korean Red Cross 16 organizations
2001 Jan~May	\$ 32.90 million	13 organizations (17.2 billion won)	
Total	\$ 107.51 million	54.59 billion won	

<Table 18.12> Government Support for Private Organizations (1998-May 2001)

Korean cooperation. The Korean government provided 300,000 tons of rice and 200,000 tons of corn bought from the international community to the North with the condition of repayment in 30 years with a 10 year grace period and 1 percent interest perannum. The status of governmental support to the North during the Kim Dae-jung government is as follows.

Non-governmental assistance has been activated since the inception of the Kim Dae-jung government. Expressly, the government set up the goal of recovering the national identity of a unified Korea; they arranged the activation of non-governmental supporting the North on four occasions – May 18/September 18 in 1998 and February 10/October 21 in 1999. In May 1998, they allowed the private visits to the North and cooperative business. In February 1999, the government let non-government groups supported the North without using the Korean National Red Cross on the condition that a group has fixed standard such as law, professionality and clearness of division. Various groups advocating support toward the North surfaced, with the government provision of organizational support to these groups.

Support for North Korea was intensified not only in scale, but also in the diversity. Aid included food, medical supplies and daily necessities that were seriously needed to mitigate the hardship of every day life in North Korea. At the same time, seed and fertilizer aid was given to help North Korean agriculture.

Since the beginning of the Kim Dae-jung government, the tourist industry has been at the core of inter-Korean cooperation. Although the tourist industry is limited to Mt. Geumgang, it had a significant influence on inter-Korean relation. The Mt. Geumgang project was sealed by Jung Joo-young, the former president of the Hyundai Group, when he visited the North Korea in 1989. However the project was delayed for 10 years for political reasons and aggravated inter-Korean relations. Discussion restarted after the launching of the Kim Dae-jung government. As a result, the first cruise sailed in November 1998; since then, 408,202 people have visited Mt. Geumgang over the two years and six months until June 7, 2001.<sup>11</sup>

The Mt. Geumgang project was welcomed all over the country because South Koreans were able to travel to the North. However, there were problems with the Hyundai Group, which lost flexibility and made excessive payments to the North (\$942 million over six years) for a small number of tourists, so at end of year 2000, the project was at risk.

To solve these problems, Hyundai and the North Korean government adopted a new agreement including, the appointment Gumgang as a special resort and cutting the payment to the North (under \$100 for one tourist).<sup>12</sup> The Mt.Gumgang business tried to final a new way to achivate tourism, for example the Korean National Tourism Organization was involved in this commerce

### **B.** Evaluation of non-commercial Inter-Korean economic relations

To evaluate the non-commercial inter-Korean economic relationship over the last decade, an evaluation guide must first be set up. The influences of non-commercial economic relations on inter-Korean relations and situation on the Korean Peninsula, North Korea's economic crisis and its influence on the North Korean and South Korean societies can be suggested as evaluation guides.

#### 1) Positive Aspects

The biggest contribution of the non-commercial inter-Korean economic relationship is that it sped up the improvement of intra-Korean relations and contributed to the stabilization of peninsula. North Koreas support for the South Korean government; the Kim Dae-jung government redeemed a degree of trust from the North Korean government helped achieve the inter-Korean summit conference. South Korea put in much effort to keep the North Korea promise of support, even transporting fertilizer over the North Limit Line (NLL) in the middle of culminating tension between the North and South caused by the West sea incident of 1999. Various inter-Korean cooperation contracts encouraged by the South Korean government's consistent promotion of its reconciliation and cooperation policy on the grounds of trust and providing North Korea acted peacefully.

The North Korea support of the private sector has broadened, contributing a great deal to broadening inter-Korean exchange. In particular, the Kim Dae-jung government promoted the expansion of support from the private sector for North

<sup>&</sup>lt;sup>11</sup> Hangyure Newspaper, June 11, 2001.

<sup>&</sup>lt;sup>12</sup> *Han-guk Ilbo*, June 11, 2001.

### Korea.

Non-commercial economic relations helped North Korea to relieve its food shortage. At present North Korea has to supplement more than 1.5 million tons of grain from outside sources; if it does not, famine will continue to spread. The North Korean food shortage has continued from the mid 1990s until now, and as the source of famine has been the deepening of internal resource restrictions, continual outside support is necessary. In this situation, non-commercial economic relations, centered on aid, has contributed greatly to assuaging the food crisis.

On the other hand, non-commercial economic relations have played greatly contributed to improving the North Korean perceptions of South Korea. As thousands of South Koreans related to aid program have visited North Korea, the negative image of South Korea as being "impoverished" and the "puppets of the United States" is changing to the perception of the South as a "rich country."

Red Cross has provided civilian aid at the outset, but many organizations have begun individual support to North Korea. North Korean contact with the South has pluralized and has increased personal contacts between North and South Koreans, thus promoting improved mutual understanding.

The North Korean government are distributing agricultural fertilizer provided by South Korea with the brand marks still attached. This means that North Korea is not concealing the fact that South Korea is supporting North Korea, unlike the past, and this suggests that North Korea and its people have changed their image of South Korea from "hostile" to "not hostile." This transition is still in its initial stages but continuous North Korea support is expected to widen these changes of perception and accelerate them.

The increase of mutual trust and the decrease of hostility brought about by inter-Korean non-commercial economic relations also strengthens the base of inter-Korean economic cooperation. North Korea is worried that South Koreans might hide behind economic cooperation to replace their regime. However, these doubts will decrease if North Korea grasps the true intentions of "peaceful coexistence and reconciliation cooperation" of South Korea through non-commercial economic relations. Assuaging doubt will help North Korean authorities to promote economic cooperation for the reconstruction of the North Korean economy, which is now suffering resource exhaustion. The aid to North Korea and the Mt. Geumgang project have strengthened the base of inter-Korean economic cooperation from this outlook.

### B) Problems

Non-commercial inter-Korean economic relations have achieved much but have also encountered problems. Here, the problems will be reviewed as a part of a preparation stage to search for future improvement. First, subjects participating in noncommercial economic relations were hard to receive support from the public. If the initial stages of non-commercial economic relationship only allow North Korean aid due to serious resource limitations of the North, it is important to to receive public support for aid as South Koreans have low tolerance for North Korean due to the long history of conflict. If North Korean aid is rushed and the South Korean government does not seek the consent of the people, it could emphasize the negative points. For example, during the initial stage of non-commercial economic cooperation in 1995, the government's rice support was carried out hastily without the consent of the people, and as a result, provoked national objection, thus causing the narrowing of policies related with North Korea.

The North Korea aid from the Kim Dae-jung government was promoted with sufficient preparation and justification, but insufficient efforts to form public opinion resulted in disputes over its legitimacy. Such occurances show us that even if North Korea policies have clear justification and benefits but without a base for the public's consent, aid will be confronted with transactions.

Second, in the process of non-commercial economic barriers, South Korea had a tendency to affect commerce negatively by acting non-contributively. In the public sector, pressure from North Korea pushed them while support was made passively. In 1995 rice aid negotiations, when the North Korean representative declined to indicate his official title on documents and erased the thought of having negotiations with South Korea, the government could not confront each other on equal ground. At that time, such irresolute negotiating attitudes raised distrust and led to negative perceptions of the intra-Korean relations.

Third, South Korea has shown impatience in its obsession of progress. The rice talks of 1995 are an excellent example of this, with aid offered with no preceding preparations nor request from North Korea. There was no trust between the two countries and South Korea's impatience must be tempered before Japan-North Korea relations can improve.

Fourth, in the case of civilian exchange, there was competition between non-governmental communities and cooperation groups, resulting in the North Korea's stance to remain unchanged, and negatively affecting inter-Korean exchange. Until now, the non-commercial economic relations regarding the public sector have been humanitarian, since economic calculations were hard to meet. Nevertheless, since the public sector had relations with the North before other groups and was able to contact the North prior to visits, North Korea exploited the competition between the groups and asked for excessive "gifts" and selected their own preference. This situation made South Korea contractors for North Korea view the inter-Korean exchange from non-market perspective.

Fifth, in the case of tourism, South Korea has progressed through trial and error, having rushed in without enough viability calculation. For inter-Korean joint projects to succeed, they must develop in a way that both countries could profit. Inter-Korean projects are viewed from two opposite directions: the need for national reconciliation and distrust for North Korea. When projects succeed, they will boost national reconciliation, but if they fail, they amplify the distrust and negative influence of inter-Korean relations. Recently, the negative influence of the problems associated with the Mt. Gumgang project on the intra-Korean relations displays this failure.

### C. Future Tasks

Future tasks to fortify advantages and to correct problems of the non-commercial economic relations are as follows: first, national consensus about the necessity and importance of non-commercial economic relations has to be attained. The security of national consent is very important for the smooth progress of North Korean policy, as public opinion greatly influence policy decisions. To secure national support, the government and sectors promoting non-commercial economic relations must try to make the public understand what is being done. It is necessary to lead more sectors and people to participate in the projects. Raising the transparency of North Korea projects can also be an important way to make the people understand. However, there is a need to develop ways for the North to provide products, regularly though not symmetricly, as payment for aid it received in the non-commercial economic relationship to South Korea. Even if North Korea only provides 10 percent of what South Korea gives them, it will make the public understand and influence greatly in expanding national support.

Second, exchanges that generate mutual profits must be pursued. The present inter-Korean relations have been conducted in a way where South Korea gives economic aid to the North and the North attends peace talks. However, as inter-Korean relations make progress, there is a need for everything, including economy, society and security, to be converted into an area where mutual profits are made. For example Short-term fishing permits for South Korean fishing ships to use North Korean fishing grounds, or the development of Mt. Gumgang and Mt. Sorak jointours. From a long-term perspective, we can construct an atomic power station near the 38<sup>th</sup> parallel in North Korean territory and use the electricity together. North Korea provides the land and work force and South Korea inputs technology and funds; together, they construct the station and share the electricity when it is completed.

Third, we have to contribute to non-commercial economic relations, that are directly connected to the activation of inter-Korean economic cooperation. Although this is a non-commercial economic relationship, it has to develop so as to accelerate an economic relationship that gives both countries profit in the long run. The contents of the government's North Korea support are very important at this point. For the time being, food aid is the main support to the North to solve the famine, but there is a need for future cooperation talks and future infrastructure construction of North Korea. These basic constructions could become a sturdy base for South Korean businesses making inroads into the North Korea market.

Fourth, there is a need to fortify support in the area where North Korea can promote market economy. North Korea, because of the exhaustion of internal resources and the collapse of socialism, has no choice but to accept the market economy system. However, considering the North's economic structure and the values and norms that it has been pursuing, the conversion to a market economy would take a long period of time. Thus we do not have to impatiently push for this systemic conversion. Keeping in mind that North Korea has no other choice, and that North Korean economic authorities also have this in mind, we should support the North Koreans so as to promote their market economy. There is a need to look for measures to support commercial networks and the expansion of transportation networks that can accelerate the expansion of the market economy.

Fifth, if we promote North Korea tourism, we should refer to the case of the Mt. Gumgang project and promote it only after cautions examination. For the successful tourism business, the south should negotiate with the north on conditions that guarantee profits. The success of the tourism projects connecting the two Koreas would mean that many people would step over the long-separated line, a significant move for national reconciliation. However, if these projects fall into deficit, it is likely to diffuse negative public opinion opposing inter-Korean cooperation and "unlimited donations to the North." Therefore, the tourism projects have to be promoted with success in mind, with success directly connected with the improvement of intra-Korean relations.

Sixth, there has to be a clear objective in the case of assisting North Korea for a fundamental prescription. Support centered on food and daily necessities is necessary because North Koreans are starving; however we have to find measures to raise agricultural productivity and enlarge the production of daily necessities. In this perspective, there is a need of cooperation projects for reforming the agricultural laws and plant breeding.

Seventh, we must not exclude related official institutes from the negotiations. In particular, in official contacts between North and South Korea, official institutes should stand as representatives. In other words, inter-Korean conversation through official means is very important. The talks on South Korea's humanitarian assistance to the North in 1995 are a good example of emphasizing the important role of government. At that time, inter-Korean negotiations were not operated through the normal means with North Korea, but through the staff of the Blue House, governmental institutions and special groups. Reunification-related authorities were left

### **530** | Part V. International Economic Relations

powerless in selecting policies. This is an example where accumulating achievements while experiencing difficulties in negotiations.

## Part VI

# Strategies for North Korea's Economic Reconstruction and Future Tasks

### XIX. North Korea's Tasks for Economic Reconstruction

### Jae Bong Ro and Choong Yong Ahn

North Korea lost its economic dominance over the South in the early 1970s, when the inefficiencies of the socialist economic system and the damage arising from concentration on military and heavy industry began to appear. With its continued structural problems, the North Korean economy declined rapidly, followed by aggravated international political and economic situations that included economic sanctions from the United States, the collapse of the Eastern bloc and natural disasters in the 1990s. The lack of domestic food production and foreign exchange shortages caused serious famine, and economic collapse was anticipated. However, as food shortage problems improved and North Korea started to open up to international communities, economic efficiencies began to improve. Movements such as these from the North Korea have changed the skeptical views held by the international community to expectations of economic reform and opening. Optimism has been voiced on the probability of the North's economic improvement through economic reform.

This chapter will review imperatives and suggest strategies for improving North Korea's economy. To do so, it will briefly examine problems in the North Korean economy, drawing on some basic principles for economic improvement and suggest a conceptual background for adopting economic incentives and price mechanisms. Furthermore, this chapter will review specific alternatives such as privatization, liberalization of the economic system, reforming external windows and restructuring, as well as infrastructural and legal reform.

### 1. Tasks for the North Korean Economy

Socialist economies such as the Soviet Union and Eastern Europe went through rapid reform and opening during the 1990s. Consequently, socialism in the Eastern bloc dissolved and was replaced by a capitalist regime. Although economies are still unsettled, the efficiency of capitalism is evident in these economies.

Despite changes in the world economy, North Korea has maintained its socialist economic regime.<sup>1</sup> Although the North Korean economy was efficient during its early stages of development, the inefficiencies of a socialist structure accumulated and caused economic conditions to worsen. To rebuild the North Korean economy, significant changes will be inevitable, the most important of which will be to introduce capitalism. Of course, not all of North Korea's economy problems can be resolved by adopting capitalism. Even if capitalism is introduced, some features of socialism should be maintained. Capitalism can only be used as a tool to address inefficiencies in the North Korean economy; concrete groundwork has to be set in place before a new economic system is established.

The weakest point in the North Korean economy is the the lethargic economic activity. This lethargy is partly due to the lack of capital and technology but is fundamentally due to the absence of economic incentives. During the early stages of economic development, it was possible for national solidarity to form under the mutual goal of establishing a socialist state, but as economies developed and society matured, the absence of economic incentives limited the extent to which productivity could increase. Pertinent economic incentives are needed for the North Korean economy to start to improve, and economic incentives are closely related to ownership and privatized production systems. Radical changes to the socialist regime are needed, including privatization.

The inaccuracy of economic plans developed by the central government also has to be addressed. Economic difficulties have worsened due to discrepancies between these plans and reality. The solution to this problem will be introducing price mechanisms, as the price flexibility found in a capitalist economy causes the economy to balance.

The North Korean economy has to be liberalized both domestically and internationally. Price mechanisms will weaken government control automatically, thus allowing the economic system to be liberalized. In addition, revising the legal system will be necessary for the economy to adjust to market mechanisms. Moreover, public sentiment will be important - the system must encourage entrepreneurship and creativity instead of guaranteeing employment.

<sup>&</sup>lt;sup>1</sup> China, which maintains a socialist economic structure on the surface, is ardently pursuing market economy, making North Korea and Cuba the only two countries to keep a true socialistic economic structure. The North Korea socialist regime shows both the universal characteristics of socialism along with a unique structure based on the Juche ideology. For example, North Korea manages its economy through central planning, like other socialistic regimes, but the emphasis on economical independence has restricted foreign trade more stringently than other socialist countries.

Infrastructure construction and industrial restructuring will be essential for the North Korean economy to improve. Currently, North Korea's infrastructure is obsolete because there have not been any large-scale investments made in the sector for the past 20 years, and by focusing on heavy industry, the country has bypassed development of sophisticated technology. Infrastructural restructuring would be relatively easy considering that such a change would not require a regime change. However, choosing priority, obtaining capital and technology, and establishing a management system will be difficult.

### 2. Guidelines for Economic Improvement

For nearly six decades, the North Korean economy has been based on socialist economic principles. Economic performance varied due to the development stage and external conditions – while performance was favorable in the 1970s, it was not good in the 1980s and 1990s. North Korea's economic planning and operation have been exclusively based on socialism for the whole period, and a capitalist approach would only be adopted if it were deemed temporary or harmless to socialism. However, socialism is so deeply ingrained for North Koreans that such capitalist concepts as market and price are foreign even to economic experts there.<sup>2</sup>

Consequently, there is a high possibility that an attempt to introduce capitalist efficiency to the North's economy without preparing for the change would result in failure. A system that neither the public nor the government understands cannot be effective, so educating the people should precede the actual implementation of a new system. Specifically, economic officials should be educated on the principles, characteristics and operation of capitalism, including the government's role. Adopting a new economic system requires broad reform in economic areas and policy measures should consider political, social and cultural factors, among others. Abrupt changes in the ownership structure and the behavior of economic participants would require capable officials to coordinate conflicts of interest. Educating the government and the public on both the advantages and disadvantages of capitalism will make it clear that capitalism is not a magic remedy to all of the country's

<sup>&</sup>lt;sup>2</sup> The author was able to talk with high-rank officials during a visit to Pyongyang in 2001. They were interested in capitalism rather than displaying hostility. However, they were skeptical about capitalism's proficiency, confident that there would be disequilibrium if the economy were left to market mechanisms. They accepted that socialism has its weaknesses but were sure that capitalism would be more flawed. That their argument focused on economic efficiency has important implications for our future approach. To convince the North of the value of capitalism, we need to educate economists on capitalist economic principles as well as prove that economic efficiency can best be gained by adopting a capitalist approach.

economic problems.

In China, the introduction of a market economy changed the economic environment powerfully and swiftly; however, this should not be expected in North Korea in the near future. North Korea has long kept its closed system, making it difficult for it to progress to the position from where China started. Therefore, the detailed framework supported by a long-term plan will be crucial, and a steady and progressive approach should be deployed.

Studies remain unclear whether a steady or a radical approach is more effective in leading changes to an economic system. Experts who believe in the capability of autogenous markets advocate a radical approach. Alternatively, experts who believe the market should be operated carefully prefer a continual approach. In North Korea, the latter approach would appear more suitable; the economy has long been closed and thus will not have a strong capacity to absorb radical change.

The advantages of existing structures have to be preserved in the plans to improve the North Korean economy, such as the medical treatment and education that North Korea provides at no cost to its people. In Russia, living standards have fallen significantly since the move to capitalism, causing some people to long for the past. In driving change in North Korea, we should be aware that such an abrupt decline in living standards would cause difficulties in adopting a new system.<sup>3</sup>

North Korea aims to build an "equal society," but the reality of an upper class is inevitable. Members of the upper class (including party leaders, bureaucrats and officials from the foreign sector) take a leadership role in North Korea and are most likely to lead economic reform. A reform that takes away the vested rights of the leading group will meet great resistance and therefore will have less chance of success. To some extent, vested rights will have to be protected to alleviate the shocks of the reform.

### **3. Economic Concept Change**

Before adopting new policies or measures, concepts and philosophies must be adjusted to avoid superficial reform. The most striking feature of the North Korean economy is that it prohibits private ownership of production, with major production facilities owned by government or public institutions. With the lack of private ownership, individuals are not motivated to increase productivity and accumulate capital.

<sup>&</sup>lt;sup>3</sup> Propaganda referring to the North as an earthly paradise alludes to ideology rather than perceived reality. However, North Koreans are familiar with the merits of a socialist structure, and even if introduction of the market economy will improve living standards for many, people will express their dissatisfaction if those factors reduce the benefits of the past.

Incentives provided by North Korean society are limited to recognition of an individual's personal accomplishments or contribution to their region or country. Allowing the sale of privately produced agricultural products has proved successful because it provides the economic incentives necessary for economic reform.

Changing the concept of price must also be addressed. Although prices exist in North Korea, they differ from the notion of price in a capitalist economy, where production, consumption and supply and demand reach equilibrium and provide price. To compensate for labor, salary is not determined by price mechanisms but by the centrally planned distribution of major necessities and limited assistance.<sup>4</sup> The sale of products is very limited, making it difficult for a suitable price to be established. Introducing price mechanisms will serve as a prime starting point for reforming the planned economy.

Establishing prices for all goods and services in a short time would be impossible. It is important that price mechanisms are expanded gradually and payment structures improve in line with changes to price, resulting in the introduction of market mechanisms. Without sufficient purchasing power, adopting market mechanisms will only lead to economic confusion. Wage levels must be increased to provide people with sufficient purchasing power to buy necessities at market price.

The concept of the government's role would also have to change. The idea of government playing a critical role in production and distribution would discourage economic activity, and bureaucracy would hamper the creativity needed to diversify society. Many of the roles held by the government must be delegated to the private sector, with the exception of the role of 'coach.'

### 4. The Direction of Economic Reform

### A. The Institutionalization of Private Production Ownership

The institutionalization of private production ownership will be one of the most important transitions to be made in changing North Korea's economic system. The creation and distribution of ownership was the first policy move after German unification and the liberalization of Eastern Europe. The concept of private ownership is already part of the North's current structure, so the institutionalization of the ownership of private production should be pursued in the process of creating capitalistic ownership. This means not only the transfer of ownership from the government to

<sup>&</sup>lt;sup>4</sup> Labor income has been only auxiliary since the government provided major living necessities. Labor income was used for personal services such as food, haircuts and hygiene, among others.

the people, but also an expansion of the private sector characterized by creativity and efficiency. In addition, institutionalizing private ownership may alter the monopolistic system in the North by introducing competition among production units. If ownership reforms are made to incorporate the extension of an enterprise's autonomous management, innovation, cost reduction and product diversification could be achieved, allowing efficient resource allocation.

Institutionalization must be carried out more carefully in private ownership than for other areas.<sup>5</sup> The process must be recognized as a means to clarify accountability in economic activities and enhance efficiencies, though not as a means to disturb the foundation of socialism. Changing from collective ownership to private ownership with the government retaining ownership of the major means of production will be preferable. It will be necessary to take a cautious approach to privatization, as private ownership inevitably creates 'capitalist inequality.'

There are two types of privatization: paid privatization and free distribution. The latter has the advantage of speed, but determining the beneficiaries would be problematic. In most of Eastern Europe, assets from enterprises were distributed to employees of specific enterprises, while the Czech Republic distributed its assets to everybody. However, free distribution does not enhance economic efficiency. In transition economies, there were cases where transferred ownership also included liabilities, rendering little or no wealth to beneficiaries. Furthermore, because owners did not exercise responsibility, the operation of the distributed enterprises encountered difficulties.

Paid privatization, that is, privatization through the sale of assets enhances the efficiency of enterprises, yet extensive preparation and technical support is needed to value the enterprises or assets.

These two types of privatization both have their merits and demerits, so creating a hybrid that incorporates both methods would be advisable. For enterprises that are easier to value, paid privatization is more appropriate. In this case, employees of the specific enterprises would be the beneficiaries. On the other hand, free distribution can be adopted if quick settlement of ownership is necessary. Selling ownership to employees at a price below that of the market is also considered free distribution.

If institutionalizing private ownership reaches a certain level, a consumer market is created quickly through competition between production units or commercial units. At this stage, economic efficiency can be gained by guaranteeing autonomous management. In addition, inefficient state-owned enterprises can be restructured by

<sup>&</sup>lt;sup>5</sup> The Eastern European countries transferred the ownership of public enterprises, the principle means of production, in a short period of time, immobilizing existing management groups and returning the wealth to the people. This process, which may meet opposition in North Korea, has to be undertaken gradually but consistently.

promoting competition between non-state ownership under private management and state ownership. If autonomous management is settled and consumer pressure increases, an enterprise will reduce inefficiency by downsizing and adopting other methods.

Private ownership, defined as the exclusive right of an individual or a group, will enhance the competitiveness of the North Korean economy. However, many political constraints will emerge - let alone the required time for people to adjust to a new environment. In addition, because sudden institutionalization of private ownership can produce ill effects such as overheating of the economy, private ownership should be introduced experimentally and within a limited range. A gradual approach could minimize negative impacts on the economy while achieving the desired results.

Allowing foreign ownership of production would be essential in promoting privatization; approving establishment of foreign investment companies will diversify the ownership. Foreign investment companies will not only lend North Korea advanced technology and management techniques, but also help North Korea enter the international market by providing information and experience from the international market.

Since most of the North Korea's organizations are state-owned, maximized resource distribution efficiency can be achieved by enlarging the private sector and reducing state-ownership. The privatization of North Korea's state-owned enterprises should help relieve the monopolization of the economic structure and improve management efficiency by making executives responsible for their firms' performance. To be specific, combined business-operation outfits should be separated first to create management autonomy. Large essential enterprises may remain under the control of central or local governments, though others should be privatized. Furthermore, separating ownership and management should be considered for management efficiency.

Second, autonomous management should be guaranteed, even for large stateowned enterprises. Profits should be created at an enterprise's own discretion while impractically set goals should be rationalized. Enterprises should be able to exercise production, sales, purchasing and hiring autonomously.

Third, enterprises should be able to make decisions on their investment activities, a crucial part of enterprise management. Enterprises should be held responsible for investment decisions while the government should provide a financial system to reinforce investment.

Fourth, enacting related laws should precede privatization and government organizations must be established to supervise privatization to ensure that it is fair. For privatization to be a smooth process, commercial laws for establishment, bankruptcy and liquidation should be set in place along with appropriate accounting system.

### **B.** Liberalization of the Economic System

North Korea's highly centralized economy means that core economic activities are under the control of the government. However, because the central government cannot realistically exert full control over the economy, imbalances and inefficiencies arise.

To promote efficient liberalization, the government must stimulate the economy. Capitalist markets do not exist in North Korea, and although some shops are open to foreigners for the purpose of generating profit, they do not coordinate supply and demand. The farmers markets, open to residents, have nothing to do with the setting of the equilibrium price, only playing a passive role by supporting a socialist distribution function.

The market brings equilibrium to the economy much more efficiently than the government. To establish market mechanisms, market rules must be introduced along with supporting policies. In North Korea in particular, where the only markets are the small farming market and the black market, people have limited exposure to the market system, therefore policy support for market functions is crucial. The prices of services and products, wages, interest and exchange rates can be rationally determined only when markets are functioning properly.

Radical changes will occur as economic liberalization proceeds. The government's role in overseeing the quantity and type of production that occurs will no longer be in place, and government subsidies will be discontinued. The price of goods, the establishment of businesses and commercial transactions will be liberalized. Eastern Europe countries were the first to conduct price liberalization as well as the most extensive. North Korea should be no different, and thus should start with price liberalization.

Price liberalization in North Korea should include the normalization of infrastructure such as energy and transportation; the gradual liberalization of the price of consumer goods; and the expansion of market price application. The normalization of energy and transportation prices will entail higher prices and increased profits. Increased profits will increase equipment investment and relieve bottlenecks in these sectors. Liberalizing consumer prices will decrease flow of goods into the black market, boosting official market activity. It will also motivate productivity and bring illegal markets into the open. Therefore, the risk from the black market will decrease, the excess liquidity of the black market will be relieved and the price difference between the black and open markets will also decrease, thus preventing inflation. Expanding the application of market price by liberalizing consumer prices and then gradually liberalizing the prices of durable goods will have a preventative spillover effect on the economy, hence contributing to overall price liberalization.

Sound financial sector growth will be needed to prevent macroeconomic side-

effects such as inflation and over-production. Reformation of the real economy without proper financial support is almost impossible under North Korea's centralized and exclusive industrial structure. An organization that supervises and prevents monopoly and speculation will also be required. Moreover, the government should check over-production caused by the pursuit of excess profits by completing bank-ruptcy procedures for inefficient businesses. One of the challenges the North Korean economy will face is removing factors hindering economic efficiency such as unproductive rent-seeking activities in the bureaucracy.

### C. The Reform of the External Economy

North Korea has to liberalize foreign transactions as well as the domestic economy. Although North Korea has been known to pursue self-sufficiency for a long time, it has been relying on imports and support in the form of oil and industrial materials from the former Soviet Union, China and Japan. Considering the inefficiency and low productivity caused by technological setbacks as well as the poor supply of raw material, adopting technology and importing raw materials will be essential. Economic resource allocation should be improved through international trade while technology should be adopted through direct and indirect investment.

The Rajin-Sonbong Free Economic and Trade Zone attracted little foreign capital and its export-oriented trade companies saw few results because of the poor coordination between domestic reform objectives and market opening objectives. Partial opening without coordinated domestic reform cannot improve economic efficiency because of the structure of the North Korean economy. To open the North successfully, trade regulation reform along with investment inducement policy should be adopted.

The essence of North Korea's foreign trade reform is delegating trade authorities. Merely increasing the number of trading companies, as was done in the 1990s, would only worsen economic inefficiency. Reform of the international trading organizations should be executed simultaneously with the introduction of the market system and the delegation of authority to trading companies. Under a system of state monopoly, trading companies will not be able to contribute to adjusting the resource allocation structure to attain comparative advantage. The producers should operate directly and have close access to the international market in order to attain comparative advantage.

For North Korean trade to have a positive effect on economic efficiency, bureaucracy, the communist party and military influence should ultimately be removed. Political intervention hinders stable trade relations and distorts trading items to benefit an individual or an organization rather than the whole economy, resulting in a loss of international competitiveness. To stimulate trade, the North Korean currency should be gradually devaluated. Eastern European countries maintained their currency value while promoting price liberalization in their domestic economies. By restricting the external sector rather than the domestic sector, they were able to stabilize their currency and retained foreign reserves. North Korea should also adopt gradual devaluation of the currency and reach normal international market exchange rates before stimulating international trade.<sup>6</sup>

Devaluating the North Korean currency will prevent foreign currency and products from flowing onto the black market by removing the motive of smuggling and promoting officially approved exports. In addition, it will attract foreign capital and help North Korea find comparative advantages by increasing the connectivity between domestic prices and international price.

Since North Korea's imports are focused on oil, grain and industrial raw materials, the price of imported goods will fluctuate and subsidies will have to increase when there are radical changes to exchange rates. For these reasons and more, domestic price restructuring should be considered when devaluing the currency.

Applying different exchange rates by industries - for example, applying an undervalued rate to export industries - could be an alternative strategy in the transition period. However, this would cause several problems, including friction with international organizations and trading countries, negatively affecting comparative advantage. Applying different exchange rates might be considered on a short - term basis, but a single exchange rate should be maintained in the long term. Applying a single exchange rate will be inevitable for the external economy to evaluate objectively.

In the meantime, incentives such as allowing producers to use a desginated amount of foreign currency liberally should be considered to attract producers to exporting. Moreover, devaluating the currency could act as an incentive and the organization in charge of external businesses could purchase export goods for a high price. Information on international market demand and price changes would be important to this process.

Linking the price of imported goods to the international market price would be difficult because the North Korean economy is currently facing a serious shortage of commodities. Price adjustments can only be made after the commodity deficiency has been addressed, but controlling import prices indirectly by imposing duties would increase the efficiency of the economy. Even when import prices are deter-

<sup>&</sup>lt;sup>6</sup> North Korea has fixed the exchange rate much lower than the market exchange rate to uphold its national dignity, just as other socialism countries had done in the past. There is a huge difference between the black market rate and the official exchange rate. Therefore, a sharp raise in the exchange rate would be unavoidable.

mined by supply and demand, it would be better for the government to adjust external changes in prices to provide a better environment for comparative advantage.

Considering China's success in attracting foreign capital through its special economic zone, North Korea should also strive to develop such a zone. The special economic zone could function as a path to bring in advanced technology, reform and a buffer zone for new systems, leading to attraction of foreign capitals and maximizing the efficiency of the reform policies. Linking North Korea's domestic economy with the world economy based on the accumulated experiences of attracting foreign capital in the special economic zone would realize economies of scale and improve the distribution efficiency of economic resources.

However, the failure of the Rajin-Sonbong Free Economic and Trade Zone points to the difficulties in setting up a free trade zone using foreign capital, especially in a politically and economically unstable area like North Korea. A special economic zone it should have a better investment environment than other areas in competition, and the North Korean government should show that it is working to decrease uncertainties related to foreign investment.

In consideration of Rajin-Sonbong's failure, a number of problems must be addressed. First, investment firms must be guaranteed a free and autonomous management environment. As seen in the Rajin-Sonbong Free Economic and Trade Zone and investment from South Korea, the North Korean government frequently intervenes in management and business activities. Regulations and government support should be assured and the North Korean government should assure liberalization of the labor sector and enhance labor market flexibility. In the past, the government controlled human resources for foreign companies and managed labor conditions, wage levels and other related procedures. This would seriously hinder attracting foreign capital because one of the incentives for investment in North Korea is it low labor cost. The North Korean government should allow autonomy for the management of foreign firms along with financing, communication and travel.

Second, the area must have a viable investment advantage over other areas and these advantages must be sustained for North Korea to compete with Southeast Asia and China. The government should lower taxes, rent and SOC-related fees to competitive levels.

Third, the North Korean government should modernize and expand infrastructure, hence providing incentives such as long-term ownership and business rights to foreign investors in infrastructure. In addition, an adequate living environment (including housing, workplaces and cultural activities) should be secured.

Moreover, the restrictions on foreign exchange and remittance should be minimized and investment-related regulations should be reduced. It is common knowledge that regulations in Rajin-Sonbong area were too complicated and time consuming, leading to conflict between investors and the North Korean government. Reducing regulations would reduce the administrative expenses of the incoming companies as well as production and delivery times. Providing administrative facilities such as 'one-stop-services' and operating field offices for the investment authority would be preferable.

### **D. Building Infrastructure**

To carry out economic development effectively, a certain level of development in infrastructure will be required.<sup>7</sup> The infrastructure in North Korea was well developed in the 1970s, however, as further development in the 1980s and 1990s was hampered by economic difficulties. Investment did not follow. Therefore, extensive investments in refurbishing old roads, bridges, harbors and airports as well as investment in new facilities are required.

Besides expanding tangible infrastructure, market infrastructure will be essential for the operation of a capitalist economy. The financial and capital market should be the first to be adopted in the structural reform. In a socialist system, one central bank is sufficient, but in a capitalist system, the central bank coexists with commercial banks. In particular, the commercial bank's role of linking savings to investment and controlling the flow of capital is essential. Therefore, establishing the commercial banking system should carry out the economic liberalization and privatization of state-owned companies.

Introducing a knowledge-based economy will also be necessary to improve North Korea's situation. To do this, knowledge and information will be crucial-currently, North Korea's system is incapable of managing and distributing knowledge as it is.<sup>8</sup> In particular, North Korea lags behind in information technology, the essential basis for a knowledge-based economy. Although related technology is known to be at a sophisticated level, the application and distribution of this technology are inferior. The North Korean government is promoting its consolidation, however, the lack of experience and capital is making this process difficult.

In constructing infrastructure, a socialist and planned economy is more efficient than capitalism, and seeing that North Korea is a planned economy, it can retain this experience in the future when constructing a development plan. One drawback is that the prolonged period of isolation could have made it insensible to structural changes. To overcome this, North Korea should refer to the experiences of other

<sup>&</sup>lt;sup>7</sup> Infrastructure is tangible (roads, bridges, harbors and airports), market based (financial and capital markets) and knowledge based (knowledge and information).

<sup>&</sup>lt;sup>8</sup> North Korea restricts the flow of information, resulting in the lack of access to the Internet and mass media.

countries while adopting technology and capital from South Korea or other foreign countries as well.

### E. Adjusting the Industrial Structure

North Korea's industrial development has primarily been limited to the heavy industry, focusing on the defense industry. The abnormally skewed investment in heavy industry has distorted the allocation of resources. Light industry, which is directly connected to the livelihood of the people, producing the consumer goods such as fiber, clothing and electronic appliances, is very weak. Activating light industry would supply consumer goods to the people and improve the standard of living, pushing people to work harder and increase productivity. From a capitalist viewpoint, North Korea should take advantage of its relatively low cost of labor and develop the labor-intensive light industry to give it competitiveness in the international market. Promoting light industry will improve domestic consumption levels and boost the export.

North Korea's heavy industry will not raise domestic consumption and will have trouble being profitable in the over-supplied international market. However, considering North Korea's industrial structure, only reforming light industry and ignoring the public sector and the military-industry system would have little positive affect on the economy. Moreover, if heavy industry (which consists of a vertically integrated system) is not reformed, bringing competitiveness to the light industry will be difficult. Therefore, the reform of the light industry should be prioritized.

Giving heavy industry a comparative advantage in the international market is pressing due to its current economic inefficiency. However, changing the industrial structure of heavy industry to a balanced level will require considerable time and effort. North Korea should aggressively accept foreign investment and promote an industrial policy based on innovation. In particular, minimizing the distortion of resource allocation will be important, such as the concentration of weapons industry development. In addition, the government should acknowledge that quality of life is important in economic development.

### F. Reforming Laws Related to the Economy

North Korea should protect enterprise profits by reforming laws related to the economy and enhancing production efficiency. Assuring private ownership will be essential for reform; it will assure liberty of economic activity and motivate creative thinking. Laws to protect contracting parties are also essential; economic activities would extend in an environment where contracts between economic participants can be made without government intervention.

In North Korea, economical regulations only occupy a small part of the legal system compared to those concerned with political activities. Consequently, new regulations should be made if capitalistic factors are introduced. Regulations on corporate establishment, liquidation and bankruptcy are required in addition to rules and systems for maintaining fair-trading and corporate governance.

### 5. Prospects for Changes in the North Korean Economy

Opposition is expected from inside the government during economic reform. The officials in charge of managing the economy are used to the socialist system and lack confidence in capitalism. North Korea's upper class will be afraid of losing their vested rights and wealth, and the public may worry that the introduction of capitalism and competition could lead to inequality.<sup>9</sup> The success of the proposed changes will be determined by how well the opposition from the people of each class is alleviated. For this reason, gradual reform in economic management will be important.

There is also a possibility that the officials could show incompetence in propelling and adopting policies. As they are used to a socialist planned economy, they might not be able to derive actual change in a new environment and continue to interfere into the private sector or offer poor supervision. It is obvious that time is required for a new system to settle so advance preparation will be inevitable to shorten this period. Keeping open the possibility of returning to the old system will remove the chance of escalating damage from change. Capitalism is not a panacea, and there is no assurance that methods generally applied in other societies will also apply to North Korea.

<sup>&</sup>lt;sup>9</sup> Relative poverty may be more painful than absolute poverty. Performance-based distribution of wealth could cause dissatisfaction in North Korea, where at least formal equality has existed for a long period. The people might reject the notion of expanding the pie first and then distributing wealth because it would cause inequality.

### XX. The Roles of the International Community in North Korea's Economic Reconstruction

### Jong-Woon Lee

As shown in previous chapters, North Korea has been caught in a vicious circle of low material input and energy shortages, declining industrial production and an aggravated economic situation. When considering North Korea's current economic hardship, it becomes clear that the reform and structural adjustment of the North Korean economy are not only strategic choices - they are inevitable. To reverse low levels of industrial production and productivity, the systemic reform of state-owned enterprises and an appropriate incentive system for workers must be introduced. It is also imperative for North Korea to implement far-reaching structural reforms in its agricultural sector in order to overcome the food shortage. At the same time, it is necessary to reform the banking system and decentralize the rigid trade management system.

Along with such internal tasks for the recovery of the North Korean economy, there are problems that have to be resolved with the international community under the framework of multilateral cooperation. Considering North Korea's present economic capability, its economic rehabilitation seems unfeasible without international assistance. In an effort to revive its stagnant economy, North Korea should improve its relations with South Korea and other developed countries, while creating conditions favorable for the expansion of technical and financial assistance from the international community.

On the other hand, if North Korea indicates that it is willing to integrate with the international economic system, neighboring countries and international organizations need to put more efforts to bring about North Korea's economic rehabilitation and a soft landing. Although it is difficult to expect radical economic reform and political changes, including the introduction of a market-economy, in the near future, international assistance under the framework of multilateral cooperation would help to lead North Korea into transforming its internal system and adopting an open-door

policy as it would facilitate North Korea's exposure to the outside world. Indeed, North Korea's improved foreign relation and economic situation would contribute to increasing the degree of stability on the Korean peninsula and building a peace system in Northeast Asia.

In light of this, it seems necessary to examine what preconditions should be satisfied to provide economic assistance to and cooperate with North Korea. Even further, what measures need to be taken to encourage North Korea to integrate with the international community also needs to be studied. This chapter discusses the current status regarding economic assistance from the international community to North Korea and the roles of international communities in facilitating the country's economic recovery. The diversity of foreign aid sources include United Nations agencies, international nongovernmental organizations and individual economies such as the United States, Japan, South Korea, Russia and European states. Thus, this chapter explores the tasks and roles of neighboring countries surrounding the Korean peninsula and international organizations. By examining problems that surfaced in the process of providing humanitarian aid from the international community since the mid-1990s, this chapter also endeavors to present some policy measures for increasing the efficiency of international assistance to alleviate North Korea's current economic hardship.

# 1. The United States

Immediately following the outbreak of the Korean War, the United States imposed its first economic sanction against North Korea on June 28, 1950, prohibiting all forms of trade with "the war culprit" based on the Export Control Act. Since then, the United States, with its foreign policy and national security reason, has exercised broad and strict economic sanctions toward North Korea.<sup>1</sup> There is little doubt that North Korea's decision-making in pursuing a self-reliant development strategy and its economic trajectory has been heavily influenced by U.S. sanctions. In other words, the foreign policy of the United States has been one of the most critical factors in shaping North Korea's foreign relations and international economic activities. Consequently, critics argue that North Korea should focus on improving its

<sup>&</sup>lt;sup>1</sup> The socialists' takeover of the Chinese mainland in 1949 and the outbreak of the Korean War in 1950 caused a change in American policy toward East Asia. The United States pursued a containment policy to stop the expansion of the socialist sphere of influence, while increasing economic/military aid to its East Asian allies. Under the circumstance, the United States strictly controlled economic sanctions against North Korea during the Cold-War period to prevent North Korea from establishing/extending economic relations with Western countries.

relationship with the United States. It is clear that as the degree of confrontation with the United States escalates due to current nuclear concerns, not only inter-Korean relations but also North Korea's economic relations with other Western countries are likely to be jeopardized. To solve this, North Korea needs to carry out progressive measures to ease political and military tensions with the United States, assuring the U.S. government of the country's shift in foreign policy direction.

#### A. U.S. Sanctions and Their Impacts on the North Korean Economy

The U.S. economic sanctions against North Korea are broadly classified by four measures; the prohibition of bilateral economic transactions including trade, investment and finance, the restriction of bilateral financial aid for North Korea, exercise of a veto against proposals for economic assistance from international institutions such as the World Bank and the IMF, and the maintenance of multilateral trade regulations like the Wassenaar Agreement. The United States has used economic sanctions on North Korea as a part of integrated framework of its foreign and national security policies.<sup>2</sup> Several departments and administrative organizations, such as the Department of State, the Treasury Department and the Department of Commerce, regulate specific subjects of economic sanctions according to their authority.

With respect to the U.S. regulations on bilateral economic transactions, North Korea has been subject to severe export controls by such legal measures as the Export Control Act, the Jackson-Vanik Amendment Act and the Foreign Assistance Act (K.R. Kim 2000, 7). Indeed, the United States refused the normal trade relationship with North Korea after dropping the country from the list of most-favored-nations (rankings are based upon the Trade Agreement Extension Act of 1951). North Korea was also dropped out from the GSP (General System of Preferences), which was originally introduced to promote exports of developing countries to the U.S. market.

Financial aid to North Korea has been also regulated. Although the United States has provided a number of developing countries with foreign aid since the late 1940s, the global superpower heavily restricted economic assistance to North Korea under the 1961 Foreign Assistance Act, which included regulation provisions to the Communist states. North Korea was also included on the U.S. list of states sponsoring terrorism due to its implication in the bombing of a KAL airplane in November

<sup>&</sup>lt;sup>2</sup> For useful discussion on legal background of the U.S. sanctions on North Korea, see the following references: Niksch, Larry and Raphael Perl. 2001. *North Korea: Terrorism List Removal?* (CRS Report RL 30613) and Kim, Kyu-Run. 2000. *Approaches to Relieve the U.S. Economic Sanctions on North Korea and to Build an Economic Community between Two Korea*. Seoul: Korea Institute for National Unification (in Korean)

1987 (Niksch and Perl 2001, 8). Thus, financial aid from U.S. Agency for International Development has been continuously prohibited.

Combined with the aforementioned unilateral economic sanctions, the United States oppose the financial assistance for North Korea from international institutions such as the IMF, the World Bank and the ADB. Seeing that the United States is the largest stakeholder of these international institutions, its influence on these institutions' decision-making has been critical. The United States has opposed not only

Date	Legal Basis	Contents
1950. 6. 28	The Export Control Act	- Prohibition of trade with North Korea
1950. 0. 20	The Export Control Act	- Effective due to North Korea's invasion of South Korea
1950. 12.17	The Trading with the Enemy Act	- Overall prohibition of trade and financial transactions
1930. 12.17	The Hading with the Enemy Act	- Freezing of North Korean property in the United States
1951.9.1	The Trade Agreement Extension Act	- Refusal of normal trade relations status
1955. 8. 26	Int'l Arms Trading Regulations	- Prohibition of trading military equipments with North Korea
1962. 8. 1	The Foreign Assistance Act of 1961	- Prohibition of foreign aid to North Korea
1975. 1. 3	Trade Act of 1974	- Dropping of North Korea from objects of the GSP
1975. 5. 16	The Export Control Act	- Including North Korea in Z-group for extensive export controls
1986. 10. 5	Act on Export- Import Bank	- Restriction of export credits to North Korea through the Export-Import Bank
1988. 1. 20	The Export Control Act	- Being included on the U.S. list of states that sponsor terrorism after the
1988. 1. 20	The Export Control Act	bombing of a KAL airplane in November 1987
		- Concluding North Korea as providing missile developing technology
1002 2 6	Munitions Control Items	to Iran and Syria, the United States prohibited import and export of
1992. 3. 6,	Wulliuons Control nems	controlled military supplies (including electronics, space aviation and
		aircraft)
		- Permission for telecommunications with North Korea
	The Agreed Framework in Geneva	- Permission for U.S. media organizations to establish corresponding
1995. 1. 20	(the first relaxation of	offices in North Korea
	economic sanctions)	- Permission for U.S. banking institutions for financial transactions
		between North Korea and other country
		- Permission for import of magnesite from North Korea
		- Permission for import of raw materials and industrial products from
	The Berlin Agreement	North Korea
2000. 6. 19	(the second relaxation of	- Permission for U.S. export of general goods to North Korea
2000. 0. 19	economic sanctions)	- Permission for U.S. investment in North Korea
	economic sancuons)	- Permission for financial remittance to relatives in North Korea
		- Permission for transportation of general goods by U.S. ships

<Table 20.1> U.S. Economic Sanctions Against North Korea

Source: Yeonchul Kim et al. 2001. Inter-Korean Economic Cooperation Guideline (Seoul: Samsung Economic Research Institute), p. 145-146; and Nicholas Eberstadt. 1999. The End of North Korea (Washington, D. C.: The AEI Press), p. 87. North Korea's membership in these institutions but also exercised a veto against economic assistance to North Korea. Hence, North Korea at present has neither received concessionary development funds nor technical assistance from the IMF and the World Bank.

# **B.** Relaxation of Economic Sanctions and Humanitarian Assistance since the Mid-1990s

U.S. strategy toward North Korea until the 1980s was based on the policy of "containment and deterrence." However, with the end of the global Cold-War confrontation, the Clinton Administration began to facilitate contacts and talks with North Korea following the advent of "engagement and enlargement" as a new foreign policy stance. The main objective was to break off the Cold-War conflict structure that remained in the Korean peninsula and to reduce the regional instability caused by North Korea's economic crisis and nuclear weapons program. From the long-term perspective, the United States also aimed to reform North Korea's political and economic system while normalizing diplomatic relations with North Korea.

With the "engagement policy" toward North Korea, the Clinton Administration reached a bilateral Agreed Framework with North Korea in October 1994 and decided to relax its economic sanctions in the process of diplomatic talks halting North Korea's nuclear weapons program in the early 1990s (Niksch 2001, 6-9). The relaxation of the U.S. economic embargo on North Korea was initiated in four areas; North Korea was permitted to use U.S. banking institutions for financial transactions with other countries. In the trade area, U.S. steel companies were allowed to import magnesite from North Korea with the permission of the Office of Foreign Assets Control in the Treasury Department. Combined with permission for telecommunications with North Korea, participation of U.S. firms in business projects related to the provision of light water reactors and shipments of heavy fuel oil was permitted.<sup>3</sup>

After the easing of trade restrictions, the Clinton Administration began providing food assistance in response to North Korea's serious food crisis in the mid-1990s. As shown in Table 20.2, U.S. food aid, which began in late 1995, reached over 1.9 million metric tons valued at US\$615 million until 2002 (Manyin and Jun 2003, 2; Smith 2002, 4). In 1998 and 1999, when U.S. food aid was active, the United States accounted for almost 80 percent of total food assistance from international communi-

<sup>&</sup>lt;sup>3</sup> For more on the 1994 Agreed Framework and the relaxation of U.S. economic sanction on North Korea, see Larry A. Niksch. 2001. *North Korea's Nuclear Weapons Program* (CRS Report IB 91141); and Hak Soon Paik and Chang Soo Jin, eds. 1999. *International Issues over the North Korean Problems* (Seoul: The Sejong Institute, in Korean).

ties. As the Agreed Framework specified that the United States annually supplies 500,000 metric tons of heavy fuel oil until the construction of light-water reactors are completed, the United States financed over \$370 million to the Korean Peninsula Energy Development Organization (KEDO) for the heavy oil shipments to North Korea between 1996 and 2002 (Manyin and Jun 2003, 2).

Table 20.2 illustrates that the U.S. humanitarian assistance to North Korea, including food aid and medical supplies, continued in spite of unstable political and military relationship with North Korea during the late 1990s. During the U.S.-North Korean negotiations in September 1999 in Berlin, the United States decided to further ease its economic sanctions in return to North Korea's freezing of missile development program. The relaxation of the U.S. economic embargo on North Korea became effective after the determination of the U.S. government was published in *Federal Register* in June 2000. Subsequently, the United States eased most economic restrictions through such measures as granting permission for the import of raw materials and products from North Korea, permission for sales of U.S. products except dual-use goods to North Korea, permission for direct investment of U.S. companies in agriculture, mining, oil, timber, transportation and tourism, and permission for the transportation of goods by U.S. ships or airplanes.<sup>4</sup>

However, despite the easing of economic sanctions in 2000, other forms of economic restrictions remain and political relations have not improved. As North Korea remains one of several countries on the U.S. list of "state sponsoring terrorism," it is subject to effective trade controls from the U.S. government (Niksch and Perl 2001,

(Unit: \$ million)

				(Ont. \$ minon
Food Aid	l (per FY)	KEDO	Medical Supplies	Total
Metric Tons	Commodity Value	Assistance	(per FY)	Total
0	\$0.0	\$9.5	\$0.2	\$9.7
19,500	\$8.3	\$22.0	\$0.0	\$30.3
177,000	\$52.4	\$25.0	\$5.0	\$82.4
200,000	\$72.9	\$50.0	\$0.0	\$122.9
695,194	\$222.1	\$65.1	\$0.0	\$287.2
265,000	\$74.3	\$64.4	\$0.0	\$138.7
350,000	\$102.8	\$74.9	\$0.0	\$177.6
207,000	\$82.4	\$90.5	\$0.0	\$172.9
1,913,694	\$615.2	\$401.4	\$5.2	\$1,021.7
	Metric Tons           0           19,500           177,000           200,000           695,194           265,000           350,000           207,000	0         \$0.0           19,500         \$8.3           177,000         \$52.4           200,000         \$72.9           695,194         \$222.1           265,000         \$74.3           350,000         \$102.8           207,000         \$82.4	Metric Tons         Commodity Value         Assistance           0         \$0.0         \$9.5           19,500         \$8.3         \$22.0           177,000         \$52.4         \$25.0           200,000         \$72.9         \$50.0           695,194         \$222.1         \$65.1           265,000         \$74.3         \$64.4           350,000         \$102.8         \$74.9           207,000         \$82.4         \$90.5	Metric Tons         Commodity Value         Assistance         (per FY)           0         \$0.0         \$9.5         \$0.2           19,500         \$8.3         \$22.0         \$0.0           177,000         \$52.4         \$25.0         \$5.0           200,000         \$72.9         \$50.0         \$0.0           695,194         \$222.1         \$65.1         \$0.0           265,000         \$74.3         \$64.4         \$0.0           350,000         \$102.8         \$74.9         \$0.0           207,000         \$82.4         \$90.5         \$0.0

<Table 20.2> U.S. Humanitarian Assistance to North Korea

Source: Manyin, Mark E. and Ryun Jun (2003). p. 1.

<sup>&</sup>lt;sup>4</sup> For detailed information on the easing of U.S. economic sanctions in June 2000 and humanitarian assistance, see Niksch (2001), K.R. Kim (2000), Y.C. Kim (2001) and Manyin and Jun (2003).

6; Y. C. Kim 2001, 149). For instance, North Korea has not been granted the normal trade relations status and the GSP. Indeed, North Korean exports to the U.S. market could be continuously restricted since U.S. firms that want to trade with North Korea are required to have permission from the government. In addition, few regulations managed by the executive branches are still valid. U.S. companies are also unable to receive export credit from the Export-Import Bank for shipments to North Korea.

### C. Potential Contributions of the United States

Observations have shown that North Korea's lack of export competitiveness and poor investment environment, paired with a broad range of U.S. economic sanctions, have heavily impeded economic interaction between the two countries. The trade volume between the two countries is negligent. There is no U.S. foreign investment in North Korea except for an oil refinery project by Stanton Group and telecommunications services by AT&T.

After the inception of the Bush Administration, the relations between two countries have rapidly deteriorated, retreating from the diplomatic progress made by the engagement policy of the Clinton Administration. The possibility of the further relaxation of economic sanctions and normalization of diplomatic relations seems very low in the near future. The current U.S.-North Korean relations are in a deadlock that is likely to continue unless issues surrounding North Korea's nuclear program are resolved. Nonetheless, it is necessary to discuss additional relaxation of U.S. economic sanctions because it will be quintessential to North Korea's economic recovery and its integration into the international economic system. Undoubtedly, the additional easing of economic restrictions will be possible only after North Korea takes positive actions to overcome its label of "rogue state" and shows its willingness to change.

The additional relaxation of economic sanctions would facilitate economic interaction between North Korea and the United States. Providing normal trade relations status and the GSP to North Korea will increase the country's exports to the U.S. market. While increase in the export of industrial products cannot be expected soon due to obsolete technology and facilities, natural and mineral resources of North Korea can have competitiveness in foreign markets if its commercialization skills are improved. North Korea is ranked within top 10 for reserves of seven major minerals. For instance, it has about 650,000 tons of magnesite deposit, about a half of the world's total reserves. It is reported that North Korean mineral resources, steel products and nonferrous metals are continuously exported to Europe and Southeast Asia.

Labor-intensive industries, including textiles, footwear and clothing manufactur-

ing, have development potential if foreign capital and technology are introduced. With the lifting of U.S. economic sanctions, labor-intensive products manufactured by South Korean or other foreign companies in North Korea could be exported to the United States and other Western markets. Investment from South Korean and foreign companies will accompany the transfer of technology as well as providing marketing techniques for North Korean enterprises. For example, footwear manufacturing, a major export industry of South Korea until the 1980s, could gain international competitiveness by combining the North's low-priced skilled human resources and the South's technology, capital and market access. Currently, because of the U.S. economic restriction, South Korean footwear companies focus on process-on-commission of product parts in North Korea, assembling footwear products in South Korea for exporting. When the U.S. sanction is lifted, the process would be simplified, and thus manufacturing of labor-intensive products in North Korea could be facilitated.

The normalization of U.S.-North Korean economic relations would increase not only trade, but also foreign direct investment from U.S. companies to North Korea. Although a favorable investment environment must be created to induce foreign companies,<sup>5</sup> the easing of U.S. economic sanctions would lead U.S. investors to become interested in such industries with development potential as the telecommunication, energy and transportation sectors. Indeed, when investment risks in North Korea decrease, construction business and service industries including hotels, restaurants and tourism will attract foreign investment from U.S. companies.

Along with the increase of bilateral economic interaction, the U.S. relaxation of economic sanctions on North Korea could help to induce financial/technical assistance from international institutions and neighboring countries such as Japan and South Korea. The relationship between North Korea and the United States at present time is at a pivot point for alleviating the uncertainties in the North Korean issues

<sup>&</sup>lt;sup>5</sup> The high degree of investment risk caused by North Korea's political and economic system would make it difficult to induce foreign capital for economic development. Along with improved political and economic relations with the West, North Korea needs to improve its investment environment to attract foreign investors and remove impediments to foreign capital flow. First, autonomous management and business activities of foreign companies must be guaranteed, as North Korea has been interfering too much in the management of foreign companies. North Korean authorities must guarantee autonomy of investors' labor management and enhance labor market flexibility. Without labor market flexibility, the labor cost advantage of North Korea, one of the major incentives for foreign investment to North Korea, cannot be fulfilled. Current workforce management by state organs in North Korea needs to provide pragmatic incentive packages. They should be more investor-friendly and incentive measures must be guaranteed legally and institutionally. Third, North Korea needs to put more efforts in modernizing infrastructure and industrial facilities. Favorable institutional arrangements such as permission for business inheritance and long-term ownership for foreign investors need to be set up.

and increasing stability on the Korean peninsula and in East Asia. When the U.S.-North Korean relations improve, it is expected that North Korea's foreign relations with other Western countries will subsequently improve. Countries whose policy direction toward North Korea has been influenced by U.S. foreign policy would increase economic support to North Korea after U.S.-North Korean rapprochement. Likewise, North Korea is likely to accelerate an open-door policy and economic reform as its dependence on foreign assistance increases. Moreover, as its foreign relationship with the United States improves, North Korea will have the opportunity to use concessionary development funds from international financial institutions for the recovery of industrial and agricultural sectors.

# 2. Japan

Modernization of industrial infrastructures and facilities such as roads, railways, harbors, telecommunication and power plants are an urgent task for North Korea's economic recovery. However, with the severe economic recession since the late 1980s, North Korea is not in a position to use domestic capital and technologies for the modernization of its infrastructure and industrial facilities. Upgrading its existing industrial infrastructure will require large scale investment capital, which forcing North Korea to consider economic assistance from outside. North Korea's sources of economic assistance from outside are mainly economic cooperation with South Korea, concessionary development funds from international financial institutions after gaining membership, and financial and technical support from Japan through diplomatic normalization. In particular, the Japan-North Korea normalization agreement would lead Japan to provide North Korea with a economic aid package as the monetary compensation for Japan's occupation of the Korean peninsula from 1910 to 1945 (Manyin 2001; J. H. Shin 2000; C. U. Lee 2002). In this regard, this section discusses recent developments in the Japan-North Korea normalization talks and the potential roles of Japan in North Korea's economic rehabilitation.

### A. The Recent Development in The Japan-North Korean Relations

Three rounds of normalization talks were hold in 2000 to improve diplomatic relations, but almost no progress was made because of disagreements over North Korea's missile and nuclear weapons issues, the Japanese abduction cases by North Korean agents and the level of Japan's apology and compensations (Manyin 2001, 2-4; Akaha 2002, 83-84). However, the summit meeting between the Japanese Prime Minister Koizumi and Kim Jung-il in Pyongyang on September 17, 2002 resulted in an agreement on four issues: resumption of Japan-North Korea normal-

ization talks (which had stopped in October 2000), Tokyo's apology for its occupation of the Korean peninsula and provision of an economic aid package, Pyongyang's apology for the kidnapping of Japanese citizens in the past and the freezing of North Korea's long-range missile testing after 2003. With a regret for Japan's past actions, quoting 1995 statement by former Prime Minister Tomiichi Murayama, Koizumi offered to provide Pyongyang with an economic aid package based on grants and long-term loans with low interest after diplomatic normalization and to continue humanitarian assistance through international organizations. In response, Chairman Kim Jung-il officially admitted that the regime has participated in the kidnapping of 11 Japanese citizens, while promising to take proper action to prevent a recurrence.

When considering the deadlock in Japan-North Korea normalization talks seen over the last decade, the visit of the Japanese Prime Minister Koizumi to Pyongyang was a turning point. The summit meeting in September 2002 narrowed disagreement over several important issues. It can be said that although the path toward diplomatic normalization between North Korea and Japan is full of hurdles,<sup>6</sup> the summit has greatly contributed to opening the door to diplomatic relations and economic cooperation between the two countries.

## **B. Japan's Potential Roles in the Recovery of the North Korean** Economy

Since 1995, Japan has provided North Korea with large amount of food assistance and medical supplies,<sup>7</sup> while sharing the bulk of funding for building two light-water reactors in North Korea. Nonetheless, Japan's economic support has not been in the form of development funding, as Japan does not have official diplomatic relations with North Korea. When considering the low level of economic cooperation between the two countries, establishing official diplomatic relations seems critical to improving economic interaction and Japan's economic assistance to North Korea. Currently, North Korea is the only Asian country that does not have normal

<sup>&</sup>lt;sup>6</sup> Currently, the issue surrounding the abduction of Japanese citizens by North Korea in the 1970s and the 1980s has been an obstacle to the normalization talks. As North Korea admitted to have kidnapped 11 Japanese, eight of whom have already passed away, Japanese public opinion on North Korea has fallen. The issues regarding causes of death, kidnapping processes and return of remaining Japanese and their families are emerging as new hindrances to the normalization process.

<sup>&</sup>lt;sup>7</sup> In 1995, the Japanese government decided to provide North Korea with humanitarian aid of 350,000 tons of rice by credit-based aid and 150,000 tons through free assistance. Japan also donated \$956.6 million in 2000 and \$148.9 million in 2001. Economic aid of Japan in 2001 included 500,000 tons of rice (Y. C. Kim 2000, 44; Manyin 2001, 4).

trade relations and preferred tariffs treatment from Japan (J.H. Shin 2000, 40). In this regard, it is said that some North Korean products will gain competitiveness in the Japanese market if the agreement on bilateral preferred customs and investment are concluded during the normalization process.

Indeed, Japan's large-scale economic aid package (which is should follow after diplomatic normalization) can be used to restore industrial facilities and SOC investment projects that are urgently needed for the rehabilitation of the North Korean economy.8 Regarding Japan's economic settlement package to South Korea and several Southeast Asian countries in the 1960s, it is expected that Japan will provide North Korea with monetary compensation based on grants and low-interest longterm government loans (Manyin 2001, 4-6). North Korea would use these concessionary funds from Japan to restore industrial production and implement the construction projects of infrastructure. Table 20.3 illustrates that Japanese economic assistance can be used in various areas, including food aid, agricultural rehabilitation, restoration of power facilities, development of the export industry, technology education in the IT sector and improvement of medical facilities. In particular, Japan's aid in the form of grants would be helpful in restoring transportation infrastructure, including railways, roads, harbors and airports, and modernizing telecommunication sector, including the expansion of a fiber-optical cable network and mobile communications services.

Along with improved trade relations and increased economic assistance, a Japan-North Korea normalization agreement would bring the deduction of a \$1 billion debt that North Korea owes Japanese financial institutions. North Korea's excessive purchase of industrial products from Japan in the 1970s generated a large trade deficit and foreign debt problems. From the late 1970s, North Korea suffered from the burden of repaying Japanese loans with their additional interest. In the early 1980s, North Korea failed to pay its loan commitments to Japan and other developed economies; a fact that would lead North Korea's Western commercial bank creditors to declare that the country was in formal default on its debts. North Korea's unpaid debts have been an obstacle to the improvement of Japan-North Korea economic

<sup>&</sup>lt;sup>8</sup> Some North Korea observers consider that Japan's monetary compensation would be settled in the \$8-10 billion range. This estimate is based on a rough calculation of the 1965 Japan-South Korean settlement to the present value. After normalizing diplomatic relations, Japan provided South Korea with a total amount of \$800 million, which composed of a grant of \$300 million, a low-interest loan of \$200 million and private credit of \$300 million. For detailed discussion on the subject, see Mark E. Manyin. 2001. North Korea-Japan Relations: The Normalization Talks and the Compensation/Reparations Issue (CRS Report RS20526); Jung Sik Kim. 2000. A study on the Use of the Fund of the claim to Japan in Asian Countries (Seoul: KIEP); and Ji Ho Shin. 2000. Prospects for Japan-North Korean Economic Cooperation (Seoul: KIEP)

Areas				Forms of Economic Assistance		
				Food aid, fertilizer supply, expansion and modernization of		
Food aid/	Agriculture Livestock Fishery		iculture	fertilizer plants, flood control, water conservation for agricultural		
Technical support for				use, mechanization of farming		
agricultural and fishery			restock	Breeding technology, construction of livestock food factories		
sector			- <b>1</b>	Restoration and modernization of fishing boats, improvement of		
			snery	fishery equipment, construction of fishery processing factories		
	D	No	rmal operation	Improvement of power transmission and distribution facilities		
	Power	Expansion of power capabiliti	Expansion of	Construction of small power plants		
	plants		ver capabilities			
	Supply	Mining	Mining	Modernization of mining equipments, expansion of transportation		
Normalization of	of indus-		facilities			
industrial production	trial	Metals/ Machinery		Technical assistance		
	goods		Chemistry	Restoration and expansion of petrochemical equipment		
	Supply	of raw materials to		Supply of construction materials, support of raw materials for		
	the textile, metal and/or		·	petrochemical industry, supply of plastics, steel, paper and		
	constr	construction industries		machinery parts		
Support for export	Development of the		ment of the	Provision of the refining equipments and processing equipments,		
activities	ex	por	t industry	supply of raw materials and parts		
Davalonment of t	ho IT ind	hat	mond	Support of IT equipments and facilities, provision of fiber-optic		
Development of t telecommun				cable, technology assistance for wireless and international		
terecommun				communication		
		oorta- and nuni- on	Railway	Modernization of railway facilities, maintenance of railroad		
	Transno			stations, computerization of railway system		
	tion ar		Roads	Pavement of roads, construction of new roads		
Restoration of	commu		Harbor/Airport	Maintenance of harbors, modernization of cargo facilities		
infrastructure	cation		Telecom	Expansion of cable communication, support of wireless		
minasudetare				communication		
	Н	Hydroelectric		Restoration of hydroelectric dams		
	Indu	Industrial complex		Developing the Sinuiju area as a special economic zone, building		
	mousurar complex		arcomplex	of basic facilities in the Gaesung Industrial Complex		
	<ul> <li>Training of high-tech sector</li> <li>Economic research activity</li> </ul>		of high tooh	Technology education in the IT sector, establishment of		
Education of work force/				vocational schools, supplies of technical and scientific equipment		
Increase in labor				to schools		
productivity				Founding of economic research institutes, increasing international		
			tivity	exchange programs.		
Expansion of various medical facilities and				Maintenance of water supply facilities and drainage, expansion o		
improvement of		-		medical facilities, assistance for environment protection program		
Source: Developed from	Chan_I	II.	ee 2002 The	Measures for Japan-North Korea Economic Cooperation		

#### <Table 20.3> Potential Contributions through Japan's Settlement Package

Source: Developed from Chan-U Lee. 2002. *The Measures for Japan-North Korea Economic Cooperation*, (Niigata: ERINA, in Japanese), p. 77

relations. Thus, when the matter regarding North Korea's unpaid debts is resolved in the wake of diplomatic normalization, a positive effect of a substantial rise in trade volume and Japanese investment toward North Korea can be expected.

Improvement of North Korea-Japan relations will also contributes to regional economic cooperation involving North Korea, particularly in the area of transportation and energy cooperation. In spite of its geographical advantages and high development potential, multilateral economic cooperation in the Northeast Asian region has not actively taken place due to political conflict around the Korean peninsular and the relevant countries' passive position toward regional economic cooperation. For instance, the Tumen River Area Development Program ended up in failur; although Japan's participation in the Tumen River project was considered essential to its success, Japan shied away from the many obstacles faced by the project, such as different development priorities among the participating countries and security instability (Akaha 2002, 84-85). When considering the disappointing results of the Tumen River project in the 1990s, Japan's active participation in several multilateral economic projects, including the connection of the Trans-Korea Railway and the Trans-Siberia Railway, become much more important. Energy cooperation in the East Asian region also relies heavily on the level of Japanese participation. There is little doubt a that normalization agreement between Japan and North Korea will encourage Japanese private investment and multinational participation in regional cooperation projects. In this regard, North Korea should put more effort into promoting security stability in Northeast Asia and improving its relationship with Japan. North Korea's improved partnership with Japan, a source of capital and technology, will become a sound basis on which the economy can be rehabilitated. Japan also need to take bold approaches to the normalization negotiations with North Korea so as to increase stability in East Asia and facilitate North Korea's economic openness.

## 3. Russia

With the collapse of the Soviet Union in December 1991, North Korea's relations with Russia deteriorated rapidly in all bilateral areas including political, economic, military and cultural cooperation. In fact, a hostile atmosphere was created in the North Korean-Russian relations during the Yeltin era of the 1990s. It was observed that the sudden disruption of North Korea's trade relations with Russia largely contributed to serious economic problems of North Korea. On the other hand, the termination of economic and military assistance led Moscow to lose its political influence of the Cold-War period in North Korea.

However, since the end of 1990s, Moscow has endeavored to regain its traditional influence on the Korean peninsula and Northeast Asia through implementing a balanced diplomatic policy toward the two Koreas. In particular, Russian President Putin's visit to Pyongyang in June 2000 served as a chance to end the abnormal bilateral relations of the last decade (J. N. Ko 2000). Moscow and Pyongyang reaffirmed their rapprochement during the summit talks held in Moscow in August 2001 and in Vladivostok, a Far Eastern city of Russia, in August 2002. Faced with the deterioration of the U.S-North Korean relations since the inception of the Bush Administration, North Korea has pushed to improve its relations with Russia to prevent a recurrence of the diplomatic isolation from the international community experienced at the beginning of the 1990s. Russia also shows greater interest in economic cooperation with North Korea for not only increasing its political influence over the Korean peninsula but also improving the economic conditions in Far Eastern Russia and Siberia.

Under the circumstances, although the level of economic exchange and cooperation between Russia and North Korea has not reached the level of the late 1980s, the two former Cold War allies have taken steps to expand economic relations. In particular, Russia and North Korea recently reached several agreements to cooperate in such areas as energy, transportation, forestry development and scientific research. They are also working to facilitate the rehabilitation of North Korea's industrial facilities constructed with Soviet assistance (J. N. Ko 2000). This section examines Russia's roles in the recovery of the North Korean economy and the prospective projects for the Russia-North Korean economic cooperation, including the TSR (Trans-Siberian Railways)-TKR (Trans-Korea Railways) linkage, energy support, the modernization of North Korea's industrial facilities and joint development of natural resources in Far Eastern Russia.

#### A. Russia's Assistance in Modernizing of North Koreas Railroads

In pursuing the connection of Russia's Trans-Siberia Railway and South Korea's railroad system since the mid-1990s, Russia has shown interest in the issues regarding railroad transportation cooperation with North Korea and the TSR-TKR linkage. During the three Russia-North Korea summit meetings between 2000 and 2002, the railway transportation cooperation received extensive attention and the two countries reached an agreement on the subject. Russia expects Far Eastern Russia could become a major logistical hub of Northeast Asia, with increases in cargo being sent to Europe from Japan and South Korea when land routes between Russia and South Korea are opened. Indeed, it is considered that the TSR-TKR linkage would facilitate the development of Siberia and Far Eastern Russia, which are endowed with rich natural resources.

Given the importance of North Korea's geographical position in the TSR-TKR connection, Russia plans to assist in the modernization of the northern part of the

Trans-Korea Railway to encourage the full participation of North Korea in the project.<sup>9</sup> Russia's plan may include financial and technical assistance for the establishment of a double tracking system, repair and renewal of obsolete facilities and the training of technicians. As an initial step for railroad transportation cooperation, Russia established a representative office of its National Railways in Pyongyang in 2001 and finished field research on the status of the North Korean railroads.<sup>10</sup>

For North Korea, the TSR-TKR linkage project considered as one of the most important area of economic cooperation with Russia. With respect to the fact that the transportation bottlenecks contributed to the decline in industrial production from the early 1990s, Russia's assistance for the modernization of the North Korean railways help to increase the efficiency of the North Korean economy. Since railroad system occupies about 60 percent of the total passenger transport and about 90 percent of freight, modernization of railway transportation clearly will have a farreaching effect on the country's economy. In addition, North Korea could expect to earn transit dues from international freight passing through the northern part of the TKR, which would help to reduce the foreign currency shortage.

## **B.** Rehabilitation of North Korean Industrial Facilities

Along with the aforementioned TSR-TKR linkage project, the restoration and modernization of North Korea's core industrial facilities that were built with the help of the Soviet Union will be an issue critical for the development of Russia-North Korea economic cooperation. During the economic crisis of the 1990s, the operation rate of the industrial facilities in North Korea did not exceed half capacity. The decline in industrial production consequently resulted in reduced investment and a lack of raw materials, further aggravating North Korea's constraints in maintaining industrial operation. As a result of poor investment, industrial facilities and infrastructure in North Korea have worn out and a large portion of them became obsolete in recent years. Thus, modernization of these industrial facilities will be essential to vitalizing the North Korean industrial sector.

As demonstrated in Table 20.4, the Soviet Union was responsible for building various industrial plants and infrastructure such as Sopung power station, Kimchaek steel mill and Seungri chemical factory, while providing raw materials and equip-

<sup>&</sup>lt;sup>9</sup> For information on the TSR-TKR linkage, see Yeo-cheon Chong. 2001. *Railroad Cooperation between South and North Korea and Russia: Current Issues and Policy Tasks* (Seoul: KIEP, in Korean)

<sup>&</sup>lt;sup>10</sup> The delegation from Russia's National Railways conducted field research on the North Korean railway facilities related to the TSR connection during the summer of 2001 by examining 700 kilometers of railway from the Russian border to the southern limit of the North Korean railroad.

ment to North Korea's core industrial plants. According to Alexander Timonin (1996, 120), North Korean industrial facilities constructed with Soviet technical and financial assistance account for 65 percent of total industrial output, 40 percent of iron mine production, 50 percent of petrochemical production, 13 percent of chemical fertilizer production and 20 percent of textile goods. These figures clearly show the importance of Russia's role in the rehabilitation of North Korea's industry. When considering the poor performance of the country's economy and its declining annual growth rate since the early 1990s, it seems unrealistic to expect North Korea to upgrade its existing industrial infrastructure and facilities without outside assistance. Consequently, North Korea has recently shown interest in increasing industrial cooperation with Russia in its effort to restoring Soviet-sponsored facilities, particularly in the area of electricity.<sup>11</sup>

Since the early 1980s, North Korean workers have been dispatched to Far Eastern Russia to earn foreign currency. Russia used North Korean laborers during the unstable political situation of the 1990s because, it is argued, the complementary roles of each side served the mutual interests of both countries. Far Eastern Russia needed use of the low-wage, skilled North Korean workforce for the logging industry. Meanwhile, Pyongyang attempted to take advantage of labor dispatch to the region to earn desperately needed foreign exchange. Recently, North Korean workers have been found in Far Eastern Russia working in various fields, such as construction, mining and farming. It is reported that Russia and North Korea reached an agreement on reinforcing cooperation projects in forestry, farming and construction that was initiated in the 1980s as well as expanding the scope of economic cooperation to new fields such as the joint development of natural resources, the upgrading of the telecommunication network between the two regions and the fishery-processing industry.<sup>12</sup> With respect to the development potential of Russia-North Korea cooperation, Pyongyang and Moscow need to carry out appropriate measures to ensure economic cooperation, including the promotion of Russia's technical assistance and the development of the TSR-TKR connection.

## 4. European Union (EU)

<sup>&</sup>lt;sup>11</sup> Since the early 1990s, energy shortages largely caused by transportation bottlenecks and the reduction in coal production prevented North Korean manufacturers from increasing its operational ratio. Therefore, the North Korean regime expressed great interest in energy cooperation, particularly the restoration of power stations through Russian technical assistance and electricity supply from Far Eastern Russia. These issues were reportedly discussed during Russia-North Korea summit meetings. In addition, the Chairman of the North Korean Supreme People's Assembly, Choi Tae-Bok, officially requested Russia's active assistance in restoring Soviet-sponsored power stations during the meeting with the Russian Minister of Industrial Science & Technology in March 2002.

<sup>&</sup>lt;sup>12</sup> For instance, during his visit to Far Eastern Russia in April 2002, North Korea's Vice-Prime Minister Cho Chang-Duk discussed the following issues in detail with the Russian authority: joint

Assistance					
	Industrial Facilities				
	* Sopung hydro-electric power station: 0.7 million kW				
	* Pyongyang thermal power station: 0.5 million kW				
	* Bukchang thermal power station: 0.16 million kW				
	* Najin Sunbong thermal power station: 0.1 million kW				
Power Station	* East Pyongyang thermal power station: 0.05 million kW (planned 0.2 million kW, construction suspended)				
	* Sunbong thermal power station: 0.2 million kW				
	* Chungjin thermal power station: 0.15 million kW				
	* East Sea nuclear power station: 76 million kW (halt of construction)				
	*Restoration of Heungnam chemical fertilizer plant after the Korean War: 1.1 million tons/year				
Chemical/Petro	*Woongki petro plant: 2 million tons of oil refining/year				
	*Bongoong hydrochloric acid factory: 0.01 million tons/year				
industry	*Aoji chemical plant: 0.05 million tons ammonia production/year				
	*Seungri chemical factory				
Coal mines	*Youngheung coal mine: 1.5 million tons/year				
Coal mines	*Anju coal mine: 4 million tons/year				
Cement	*Madong cement factory: 0.4 million tons/year				
Cement	*Slate unit factory of Chunnaeri cement plant				
	*Kimchek steel mill				
Metal	*Chungjin steel mill				
	*Sungjin iron mill (steel 0.05 million tons/year, rolling iron plate 0.12 million tons/year)				
Non-iron metal	*Nampo non-iron metal plant (construction completed in 1983)				
Non-iron metai	*Bukchang Aluminum plant (construction suspended)				
Fabric	*Pyongyang silk factory: 10 million m/year				
Fablic	*Pyongyang dyeing factory: 45 million m/year				
	*Pyongyang enameled wires factory				
	*Several small-sized electric engine factories: 1 million units/year				
Etc.	*Daedonggang auto-electric condenser factory: 1.1 million tons/year				
	*Pyongyang bearing factory: 10 million ea/year				
	*Pyongyang bearing factory: 10 million ea/year				

## <Table 20.4> Major North Korean Industrial Facilities Being Constructed with Soviet Assistance

Source: Timonin (1996), p.121-124 (in Korean).

Until the early 1990s, the United States, Japan, China and Russia engaged in the dynamics of conflict structure on the Korean peninsula and heavily influenced the regional order of East Asia. The Korean peninsula received only little attention from

forestry logging at the maritime provinces of Far Eastern Russia; development of Russia's Yakutia coal mines; joint wheat cultivation; Russia's investment in North Korean mineral resources; and Russia's assistance to the linkage of fiber-optical cable lines between Vladivostok and Nasun city (Refer to Yonhap News, April 13, 2002)

the European community because of its geographical distance and its dependence on U.S. policies toward North Korea (Drifte 2002, 158). However, the European Union's relations with North Korea have widened rapidly after diplomatic normalization with most of its member states.<sup>13</sup> The EU has continuously provided considerable humanitarian aid to North Korea since 1995, joining the KEDO as a board member in 1997. By establishing diplomatic relations with European states in 2000 and 2001, North Korea has also shown great interest in improving its partnership with the EU states due to the need to overcome its economic crisis and to enhance its outside profile for entry into the international community. While the Bush Administration has a hardline policy on North Korean missile and nuclear weapon issues, EU-North Korea relations have become more important because North Korea needs to prevent international isolation through maintaining economic and diplomatic ties with Europe. In this regard, it is said that although the EU's influence on the Korean peninsula is not as decisive as those of the four neighboring powers, the EU states could play a role in reducing current tensions on the Korean peninsula and contributing to alleviating North Korea's economic hardship (Drifte 2002, 169).14

Since the late 1990s, trade between North Korea and European countries has continuously increased and, Europe has accounted for about 15 percent of North Korea's total trade volume in recent years. For instance, the volume of trade between two regions rose from \$254 million in 2000 to \$311 million in 2001. According to data from KOTRA (2002, 9), North Korea's exports to the EU region in 2001 decreased by 10.4 percent from the previous year, while imports increased by as much as 40.3 percent to \$213 million during the same period. A significant share of imports from Europe is made up of machinery, electronic appliances and transport equipment, the kind of industrial items that are vital for the reconstruction of the economy. A major proportion of North Korea's export to Europe is composed of clothing items, raw materials and primary manufactures of metals, items whose comparative advantage is found in labor and natural resources. Given that North Korea is unable to access the U.S. market, the opening of the European markets for North Korea products has contributed to the expansion of foreign trade and its inte-

<sup>&</sup>lt;sup>13</sup> Formal diplomatic relations were established between North Korea and EU countries in the following order: Italy (January 4, 2000), United Kingdom (December 12, 2000), Netherlands (January 15, 2001), Belgium (January 24, 2001), Spain (February 7, 2001), Germany (March 1, 2001), Luxemburg (March 5, 2001) and Greece (March 8, 2001). The EU commission also established formal diplomatic ties with North Korea in 2001. Thus, North Korea has normalized its diplomatic relations with all EU member states except for France and Ireland.

<sup>&</sup>lt;sup>14</sup> The humanitarian approach of the EU toward North Korea is well outlined in *The EC-DPRK Country Strategy Paper for 2001-2004*.

	Food aid	Humanitarian assistance	Supports on training and educational programs	KEDO energy project
European Communities	106 million Euros by bilateral aid/ 50 million Euros via WFP	38 million Euros for medicines, winter clothes and facilities for water sanitation		75 million Euros
Germany	6.5 million DM			\$1 million
Netherlands	793,000 NLG via WFP and UN	1,175,000 NLG for medical and health care		\$790,192
Italy	13 billion lires via WFP and AGEA	11 billion lires via UN agencies	10 scholarships for North Korean university students	\$1,821,429
Portugal		3 million escudes for medicines		
United Kingdom			Training program and scholarships on international economics	\$1 million
Denmark	46 million Danish crown via WFP	20 million crowns via UNICEF/ 21 million crowns via NGOs	Agricultural scholarships	
Sweden		168,250,000 Krona		
Greece				\$25,000
France		250,000 francs via UN	Language and educational programs for North Korean diplomats	\$503,778
Finland				\$569,424
Switzerland	Food aid		Training for North Korean diplomats	\$118,148

<table 20.5=""> Economic Assistance from Europe to North Korea (1995-20</table>
---------------------------------------------------------------------------------

Source: European Commission. 2002. The EC-DPRK Country Strategy Paper for 2001-2004, p. 25

gration into the international economic system.

Reportedly, North Korea is actively seeking to attract foreign investment from European companies, particularly in the areas of natural resource development, infrastructure building and improvement of industrial facilities. A good example of European investment is the opening of branch office of ABB (Asea Brown Boveri), a Switzerland based-multinational corporation, in Pyongyang in June 2001. It is reported that ABB consider several business projects under the agreement with Pyongyang in the establishment of electronic factories, the repair of power station and supply of industrial equipment. About 10 European MNCs - including Alcatel, a French telecommunications company, and Alstom, a French energy company - have expressed interest in setting up business in North Korea. Recently, the North Korean

regime put more effort into maintain economic ties with European countries. For example, more frequent economic delegations at the governmental level have been exchanged. North Korea seemingly uses improved relations with the EU to curb tensions with the United States and increase the humanitarian aid from the international community(Drifte 2002, 165; D. R. Yoon 2001).

# 5. International Organizations

UN humanitarian agencies have been assisting North Korea from 1995, when the North Korean government officially appealed to the UN Department of Humanitarian Affairs (UNDHA) for urgent assistance.<sup>15</sup> Based on the FAO/WFP food and crop assessment in North Korea, the UNDHA made The UN Consolidated Inter-Agency Appeal for DPRK in September 12, 1995 in conjunction with UN humanitarian agencies such as the World Food Program (WFP) and the World Health Organization (WHO). Since then, UN agencies have carried out active humanitarian assistance, including food relief, agricultural rehabilitation, public health improvement, medical support and educational aid. The UN consolidated appeal for North Korea was implemented nine times leading up to 2003. Although it has not achieved the targeted amounts, the appeal raised a total \$1.2 billion between late 1995 and 2002. As shown in Table 20.6, the UN humanitarian agencies reportedly supported North Korea with \$9.27 million in 1996, \$157 million in 1997 and \$215 million in 1998. The declining trend of UN assistance in 1999-2000 reversed to increase in 2001, recording \$250 million. The eighth joint UN appeal in 2002 raised nearly 90 percent of the planned \$246 million.

More than 90 percent of humanitarian assistance from UN agencies has been used for relief food supplies and most of the remaining funds were spent on public health programs, including the supply of medicine and medical facilities. Relief from the UN agencies in North Korea has been mostly financed by UN member states, particularly North Korea's neighbors. For instance, the UN consolidated appeal in 2001 raised about \$250 million – a sum primarily composed of Japan's \$105 million, the United States' \$103 million, South Korea's \$18 million and Italy's \$7 million. The United States donated about 1.9 million metric tons of food assistance valued at over \$600 million between 1995 and 2002, (Manyin and Jun 2003,

<sup>&</sup>lt;sup>15</sup> This section of the paper is largely drawn and developed from the author's previous works: "Rehabilitating North Korea: The Role of International Organization" in *East Asian Review* (forthcoming) and "The Status of Economic Assistance from International Organizations to North Korea and Future Tasks" in *KIEP Global Economic Review* (2003, in Korean).

Appeal (Period)	Target	Achievement	Participants	Accomplishment Rate (%)
1st (1995.9~1996.6)	20.32	9.27	U.S. 2.2 Japan 0.5 EU 0.4	45.6
2 <sup>nd</sup> (1996.7~1997.3)	43.64	347	U.S. 7.2 EU 8.6 Japan 6.0 Korea 3.4	79.5
3 <sup>rd</sup> (1997.4~1997.12)	184.39	157.81	U.S. 45.4 EU 27.5 Japan 27.0 Korea 26.3	85.3
4 <sup>th</sup> (1998.1~1998.12)	383.24	215.87	U.S. 171.9 EU 13.8 Korea 11.0 Canada 3.9 Egypt 2.8 Norway 2.4 Australia 1.3 Czech 0.1	56.3
5 <sup>th</sup> (1999.1~1999.12)	292.08	189.8	U.S. 175.0 EU 7.9 Sweden 3.8 Canada 3.4 Australia 2.7 Denmark 1.9 Ireland 0.3	53.6
6 <sup>th</sup> (2000.1~2000.12)	313.76	153.1	Japan 95.7 U.S. 29.2 Korea 17.6 Australia 6.7 EU 4.8 Sweden 2.8 Norway 2.3 Denmark 1.5 Finland 1.1	48.6
7 <sup>th</sup> (2001.1~2001.12)	383.98	250.3	Japan 104.9 U.S. 102.7 Korea 17.7 Italy 7.9 Australia 2.9 Germany 2.9 Sweden 2.5 Norway 1.8 Canada 1.7 New Zealand 0.1	65.2
8 <sup>th</sup> (2002.1~2002.12)	246.84	221.12	Japan, U.S., Korea, Sweden, U.K, Norway, etc.	89.5
Total		1,231.97		

#### <Table 20.6> Humanitarian Assistance through the UN Consolidated Appeal for North Korea (1995. 9~2002. 12) (Unit: \$ million)

Source: The above figures are drawn from several reports from the Korean Ministry of Unification

2). South Korea and Japan have also provided North Korea with large amounts of food aid not only in the form of direct assistance, but also via participating UN agencies' relief activities in North Korea.<sup>16</sup>

Although the food shortage is not completely resolved in North Korea, many observers feel that the famine and the worst economic period abated around the end of 1990s thanks to consistent international assistance (Manyin and Jun 2003, 2). However, the economic outlook of North Korea is still pessimistic since the country has been unable to reverse the downward economic trend. Indeed, as the humanitarian activities of international agencies in North Korea have been prolonged, the problems embedded in its relief assistance, including symptoms of "donor fatigue," are on the rise.

A major problem is the North Korean regime's restrictions on the activities of international relief agencies to operate in the country, particularly with regard to monitoring food distribution to intended recipients (Manyin and Jun 2003, 12-14; Smith 2002, 13). For instance, besides preventing access to farmers' markets, the government prohibits donor agencies from conducting random checks. The lack of reliable data prevents humanitarian agencies from evaluating living conditions accurately, including data on food availability and health care (Smith 2002, 8). Another problem is found in the type of assistance. Reflecting North Korea's food shortage and economic deterioration, the humanitarian efforts by international agencies are based on food aid and medical services. As emergency relief programs are implemented on a short-term basis, they could not systemically influence the economic and development policies that could help facilitate the recovery of the North Korean economy. Information sharing and mutual cooperation among international agencies have not been effective yet. A large-scale rehabilitation project through the coopera-

<sup>&</sup>lt;sup>16</sup> Along with humanitarian organizations under the umbrella of the United Nations, multilateral governmental agencies and NGOs have assisted North Korea since 1995. For example, the International Federation of the Red Cross (IFRC) established an office in 1997 to engage in emergency relief activities. The IFRC provided over \$40 million from 1995 to 1998, when the food crisis reached a peak, and contributed about \$4 million in 2001. NGOs are involved in various humanitarian activities from food relief to rehabilitation of certain socio-economic sectors. However, due to restrictions imposed by the government on humanitarian activities, several international NGOs, including MSF (Médicins sans Frontières) and the British agency Oxfam, pulled out of North Korea. Nonetheless, most of international NGOs continue to work in North Korea. Accordingly, because of their continuous negotiation and improved relationship with the North Korean regime, international NGOs feel some improvements have been made to their working conditions in recent years, (G. S. Lee 2000, 41; Y. H. Hong 2001, 25; Smith 2002, 13-14). For details on the current activities of international NGOs involved in humanitarian activities in North Korea, see Hazel Smith, 2002. *Overcoming Humanitarian Dilemmas in the DPRK* (Washington, D. C.: The United States Institute of Peace).

tion of the humanitarian community has not been implemented in North Korea. In this respect, there is a growing opinion, among international agencies involved in the North Korean relief effort, that emergency aid needs to be combined with long-term development assistance projects(G. S. Lee 2000, 93; Smith 2002, 15-16).

In addition, to rebuild the industrial base and facilitate economic recovery, North Korea needs to create a partnership with the international financial institutions (IFIs). However, North Korea has not joined any international financial institutions, including the IMF, the World Bank and the Asian Development Bank (ADB), so it is unable to utilize concessionary development funds from these institutions. Although the UN humanitarian agencies such as WFP, FAO and WHO have recently undertaken pilot projects on agricultural rehabilitation and environment issues in North Korea, these humanitarian agencies have limited ability to mobilize investment funds and technical support and therefore pursue small-scale development projects. Consequently, the beneficiary regions and groups are bound to be limited. Moreover, the development programs under the control of UN humanitarian agencies are largely focused on agricultural recovery, sanitation improvement and environment, which leaves North Korea with the task of obtaining the bulk of resources for rebuilding infrastructure and future industrial recovery. With respect to the financial sources for rehabilitating the North Korean economy, it is imperative for the North Korean regime improve its relationship with international financial institutions. In this context, it is necessary to examine potential contribution of IFIs to North Korea's economic recovery.

More foreign direct investment through improving the business environment, together with industrial sector restructuring and the efficient management of trade system, is expected to contribute to rebuilding North Korea's industrial base and facilitating economic recovery. North Korea has no choice but to accelerate the opening of its economy, reflecting the strong trend in the world economy in which increasing international trade and capital mobility encourages the globalization process. In September 2002, the North Korean regime established a special economic zone in Sinuiju in order to attract foreign capital and technology. However, its attempt to induce foreign investment seemingly failed. Several factors, such as heavy regulations on foreign private enterprises, poor infrastructure and a bad reputation for its handling of foreign debt, have been considered obstacles to the entry of foreign investors. In particular, North Korea's poor international credit ratings and high sovereign risks are largely responsible for the low level of foreign investment. Taking this into consideration, North Korea must rectify these problems, which act as hindrances to the influx of foreign capital. At this juncture, a major adjustment in North Korea's relationship with IFIs is urgently needed to obtain concessionary development funds from these institutions. If North Korea joins the IFIs,<sup>17</sup> they would become a critical basis for financial and technical assistance to the country.

First, if North Korea meets entry requirements and is formally admitted to IFIs, it will have access to official loans at these institutions, funds that are needed to rehabilitate agriculture, industrial facilities and infrastructure. IMF loans are not appropriate due to strict credit worthiness criteria and conditionality, but North Korea could be eligible for International Development Association (IDA) Credits and the Asian Development Fund (ADF) loans provided by the World Bank and the ADB respectively (Babson 2001, 466).<sup>18</sup>

The concessionary development funds provided by IDA Credits at the World Bank and ADF loans from the ADB are designed to help poor developing countries that lack the financial ability to borrow from normal lending sources of these banks. Since the IDA currently lends to member states with a 2002 per capita income of less than \$875, North Korea will likely qualify. Similar to highly concessionary terms of IDA Credits, ADF loans of the ADB run at zero interest rate with 40 years repayment. ADF loans are allocated to the poor Asian countries in relation to their income level (\$925 GDP/per capita in 2001) and the borrowing country's commitment to sound economic management and success in ADF projects. The ADB supports various development projects, especially those that address basic human needs and those that build needed infrastructure and improve institutional capacity to effectively manage the economy. In this regard, North Korea's access to ADF loans is considered critical for using financial sources for its economic rehabilitation.

Second, North Korea's membership in the IFIs will bring the positive effect of not only accessing the concessionary funds of these institutions, but also mobilizing the private capital in the international market. Indeed, it will contribute to alleviating North Korea's serious foreign debt problems that are considered as an obstacle to the entry of foreign investors. Since the late 1970s, North Korea has been in formal default on its debts to Western commercial bank creditors and, consequently, its international credit standing remains at the lowest level. There is no exact figure on

<sup>&</sup>lt;sup>17</sup> North Korea officially expressed its willingness to join the Asian Development Bank in 1997 and 2000. As well, the country invited a research group from the IMF in 1997 and the Word Bank in 1998 respectively. However, North Korea could not obtain member status in these institutions, which would effectively require U.S. approval. At the annual meeting of the ADB held in Hawaii in May 2001, there was a possibility that the country would attend the conference under the observer status. However North Korea's participation in the conference was nullified because of strong objections from Japan and the United States as confrontation with North Korea intensified.

<sup>&</sup>lt;sup>18</sup> The information of IDA Credits and ADF loans in this paper is developed from the following references: Zang, Hyoungsoo and Yong-Gon Park. 2000. *Agenda for International Cooperation on Mobilizing Development Assistance for North Korea* (Seoul: Korea Institute for International Economic Policy); Babson, Bradley. 2001. "Integrating North Korea with the World Economy: Role of International Financial Institutions and Private Capital." (Seoul: Yonsei University Press); and homepages of the World Bank and the Asian Development Bank.

North Korea's foreign debt since the government has not released details on the use of foreign credits. Nonetheless, it is said that the total amount of the country's debt, including debt to China and the former Soviet Union, is at approximately \$12 billion. This poor credit rating has, to a certain extent, caused North Korea difficulties in accessing commercial loans from the international financial market at present.

Consequently, it is argued that efficient strategy for foreign debt restructuring and reduction is needed to improve North Korea's credit status enough to attract foreign capital. If North Korea is admitted to the IMF and the World Bank, these financial institutions may work toward creating an environment conducive to the country's debt restructuring. The IMF has been involved in the negotiation on official debt restructuring through the Paris Club, while coordinating private debt restructuring with Western commercial banks through the London Club. The World Bank has also participated in debt restructuring negotiations through the London Club at the request of the developing countries suffering from the burden of repaying foreign loans (Babson 2001, 466). When considering it, external debt restructuring with help of the IMF and the World Bank could contribute to facilitating the inflow of foreign capital. Thus, membership in the IFIs would be an impetus for mobilizing private financial sources.

Third, although this paper discusses the utilization of concessional development funds and private capital at the forefront, the policy dialogue on macroeconomic stability and technical assistance for undertaking appropriate development strategy are considered as important in the process of rebuilding North Korean economy(H. S. Zang et al 1998, 84; Babson 2001, 460-462). Based on their socio-economic assessments, the IFIs provided the member states with policy recommendations. The member states are required to provide statistical data drawn under international standard so as to enable the IFIs to conduct accurate evaluations. They discuss overall economic development strategies and structural adjustment of the economic sector, including trade and finance. By adopting international standards regarding economic statistics, the member state could improve the quality of economic management and policy making.

The IFIs also play critical roles in bring technical assistance that contributes to the economic development of the member states. Technical assistance from the IMF is mainly focused on the institutional building of the member state in order to increase the managing capability in the field of currency, budget, foreign exchange and finance. The World Bank and the ADB are involved in various technical programs, including financial reform, environment protection, natural resources management and improvement of transportation and energy sector. They also work on the policy inquiry and the technical assistance on various parts of development projects from planning to administration level. The IFIs not only provide direct technical assistance through development projects, but they also enhance the ability of government agencies and professionals through education and training programs. Educational programs at IFIs have mainly been conducted in universities, institutions and vocational schools with the cooperation of multinational corporations, policy seminars and conferences in either local areas or foreign countries (Babson 2001, 462; M. C. Cho 2001, 60-62).

In this respect, if North Korea improves its relationships with such IFIs, the government officials and professionals of the economic field may participate in various education and training programs, which improve their professional knowledge and skills related to development policies.<sup>19</sup> In North Korea, where the educational level of international economics is very low, the IFIs could initiate education programs to introduce principals of international economies. In addition, through training government officials and professional in various economic fields, the IFIs could transfer international commercial laws and international financial system to facilitate the opening of the North Korean economy.

Ultimately, North Korea could benefit from joining the IFIs through various supports for economic recovery. The IFIs will play positive role in leading changes of economic policy and help to bring economic reform in North Korea. Thus, for the economic reconstruction of North Korea, membership in the IFIs must be gain without hesitance. North Korea needs to show its willingness and attitude changes in which the international community could satisfy. Since the mid-1990s, North Korea has pursued economic support from the IFIs, but it has not shown any effort to fulfill the entry conditions of these IFIs. It still feels heavy political burdens with the IFIs' conditionalities. However, in order to promote the country's economic rehabilitation, economic assistance from the IFIs is essential. In addition to fundamental economic reform and economic openness, North Korea must improve its relationship with the United States and Japan, as assistance from IFIs effectively requires approvals of these countries. The IFIs also need to consider the fact that rehabilitation of the North Korean economy contributes not only to the economic developments of East Asian region but also to alleviating political conflict around the Korean peninsular.

<sup>&</sup>lt;sup>19</sup> Currently, North Korea has not joined any IFIs. Thus, it is hard for international financial institutions such as the IMF and World Bank to utilize their own funds to operate education programs for North Korea officially. In this case, the suggestion is that these institutions could collect funds from countries that are interested in supporting North Korea and form a trust fund to operate education and training programs. For details on establishing a trust fund to support North Korea, see Zang, Hyoungsoo and Yong-Gon Park, *op. cit.* 

# Reference

\* In Korean

- Cho, Myung-Chul ed. 2001. North Korea's Foreign Economic Policy: Evaluation and Problems. Seoul: Korea Institute for International Economic Policy.
- Cho, Myung-chul. 2001. *The Current Status of Market Economy Education in North Korea and thd Possible Measures of Inter-Korean Cooperation*. Seoul: Korea Institute for International Economic Policy.
- Chong, Yeo-cheon. 2001. *Railroad Cooperation between South and North Korea and Russia: Current Issues and Policy Tasks*. Seoul: Korea Institute for International Economic Policy.
- Chung, Ok-Im. 2000. "Understand the Foreign Policy of the New U.S. Administration toward the Korean Peninsula." *The Unified Economy*. December Issue. Seoul: Hyundai Economic Research Institute.
- Chung, Sung-Jang. 2002. *The Current Status of North Korea and Inter-Korean Relations*. Seoul: The Sejong Institute.
- Im, Gang-Taek. 2001. "Characteristics and Problems of North Korea's Foreign Economic Cooperation." *The Unified Economy.* November Issue. Seoul: Hyundai Economic Research Institute.
- Kim, Kyu-Ryun. 2000. *Approaches to Relieve the U.S. Economic Sanction on North Korea and to Build An Economic Community between Two Korea.* Seoul: Korea Institute for National Unification.
- Kim, Yeonchul, *et al.* 2001. *Inter-Korean Economic Cooperation Guideline*. Seoul: Samsung Economic Research Institute.
- Kim, Young-Chun. 2000. Japan's Diplomatic Policy: Focusing on Japan-North Korea Diplomatic Normalization. Seoul: Korea Institute for National Unification.
- Kim, Jung Sik. 2000. A Study on the Use of the Fund of the Claim to Japan in Asian Countries. Seoul: Korea Institute for International Economic Policy.
- KOTRA (Korea Trade-Investment Promotion Agency). 2002. "The Present Conditions and Future Direction of the U.S.-North Korea Economic Relations." *North Korea Newsletter* (April 2000).

\_. 2001. North Korea's Foreign Trade 1990-2000. Seoul: KOTRA.

- Lee, Gum-Soon. 2000. Enhancing Humanitarian Aid to North Korea: With A Focus of Development Assistance. Seoul: Korea Institute for National Unification.
- Lee, Jang-Hie. ed. 2001. Normalization of Relations Between North Korea & the U.S. and its Impact on Peace Structure on the Korean Peninsula. Seoul: Asian Social Science Research Institute.
- Namgung, Young. 2001. "Evaluation and Prediction of the U.S.-North Korea Economic Relation," in Cho, Myung-chul. ed. North Korea's Foreign

*Economic Policy: Evaluation and Problems.* Seoul: Korea Institute for International Economic Policy: 185-216.

- Paik, Hak Soon and Chang Soo Jin. eds. 1999. *International Issues over the North Korean Problems*. Seoul: The Sejong Institute.
- Shin, Ji Ho. 2000. *Prospects for Japan-North Korean Economic Cooperation*. Seoul: Korea Institute for International Economic Policy.
- Shin, Sang-Jin, et al. 1999. Breaking the Cold-War Structures of Korean Peninsular: Measures for Inducing Multinational Cooperation. Seoul: Korea Institute for National Unification.
- Timonin, Alexander. 1996. "Prospects for Economic Cooperation between Russia and Koreas." *The Unified Economy*. Seoul: Hyundai Research Institute (January).
- Yang, Woon-chul. 2000. Relaxation of U.S. Economic Sanctions on North Korea: Changes and Prospects. Seoul: The Sejong Institute (Policy Briefing 2000-04).
- Yoon, Duk-ryong. 2001. "Evaluation and Prediction of the Europe-North Korea Economic Relations," in Cho, Myung-Chul, ed. North Korea's Foreign Economic Policy: Evaluation and Problems. Seoul: Korea Institute for International Economic Policy, pp. 217-233.
- Zang, Hyoungsoo, et al. 1998. Preparing for Korean Unification: Agenda for International Cooperation with a Focus on International Financial Institutions. Seoul: Korea Institute for International Economic Policy.
- Zang, Hyoungsoo and Yong-Gon Park. 2000. *Agenda for International Cooperation on Mobilizing Development Assistance for North Korea*. Seoul: Korea Institute for International Economic Policy.

\*\* In Japanese

Lee, Chan-U. 2002. *The Measures for Japan-North Korea Economic Cooperation*. Niigata, Japan: Economic Research Institute for Northeast Asia.

\*\*\* In English

- Akaha, Tsuneo. 2002. "Japan's Policy Toward North Korea: Interests and Options." Akaha, Tsuneo. ed. *The Future of North Korea*. London: Routledge.
- Babson, Bradley. 2001. "Integration North Korea with the World Economy: Role of International Financial Institutions and Private Capital." Moon, Chung-in, Odd Arne Westad and Gyoo-hyoung Kahng, eds. *Ending the Cold War in Korea*. Seoul: Yonsei University Press.
- Drifte, Reinhard. 2002. "The European Union and North Korea." Akaha, Tsuneo. ed. *The Future of North Korea.* p. 157-170. London: Routledge.

XX. The Roles of the International Community in North Korea's Economic Reconstruction | 575

- European Commission. 2002. *The EC-DPRK Country Strategy Paper for 2001-2004*. [http://europa.eu.int/comm/external\_relations/north\_korea/csp/index.htm]
- Fukagawa, Yukiko. 2000. "Japan's Economic Assistance for the Democratic People's Republic of Korea: The Expected Policy and the Tasks for the Coordination with the Republic of Korea." *The Role of Neighboring power in the North-South Economic Cooperation.* Seoul: Korea Institute for National Unification.
- Hong, Yang-ho. 2001. "Humanitarian Aid toward North Korea: A Global Peace-Building Process." *East Asian Review*. Vol.13, No. 4: 21-40.
- Ko, Jae-nam. 2000. "The Russia-North Korea Summit and Beyond: The Role of Russia on the Korean Peninsula." *East Asian Review*. Vol. 12, No. 3.
- Lee, Jong-Woon. 2002. "North Korea's Trade Expansion with Western Countries in the Early 1970's and Its Implications on North Korea's Current Attempts at Economic Rehabilitation." *Journal of International Economic Studies*. Vol. 6, No. 2: 93-121.
  - \_\_\_\_ 2003. "Rehabilitating North Korea: The Role of International Organizations." East Asian Review. forthcoming.
- Mack, Andrew. 1993. "The Nuclear Crisis in the Korean Peninsula." *Asian Survey*. Vol. 33, No. 4.
- Manyin, Mark E. 2001. North Korea-Japan Relations: The Normalization Talks and the Compensation/Reparations Issue. Washington D.C.: Congressional Research Service (CRS Report R520526).
- Manyin, Mark E. and Ryun Jun. 2003. U.S. Assistance to North Korea. Washington D.C.: Congressional Research Service. (CRS Report RL 31785).
- Niksch, Larry. 2001. North Korea's Nuclear Weapons Program. Washington D.C.: Congressional Research Service. (CRS Report IB 91141).
- Niksch, Larry and Raphael Perl. 2001. *North Korea: Terrorism List Removal?* Washington D.C.: Congressional Research Service.
- Smith, Hazel. 2002. *Overcoming Humanitarian Dilemmas in the DPRK (North Korea)*. Washington. D.C.: The United States Institute of Peace.
- Snyder, Scott. 1999. *Negotiating on the Edge: North Korean Negotiating Behavior*. Washingtion D.C.: US Institute of Peace Press.
- Yoon, Chang-Ho and Lawrence J. Lau. eds. 2001. North Korea in Transition: Prospects for Economic and Social Reform. Cheltenham, UK: Edward Elgar Publishing Limited.
- Zhebin, Alexander. 1995. "Russia and North Korea." Asian Survey, Vol. 35, No. 8:726-739.