

A Semantic Network Analysis of Changes in North Korea's Economic Policy

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To shed light on the inner workings of policymaking in North Korea, this study examined the process behind economic policy change through an analysis of the official state economics journal. Semantic networks are used to trace the introduction and evolution of policies during four distinct economic periods in North Korean history between 1986 and 2009. Although reform is catalyzed by political and economic crises, the emergence of new policy topics occurs incrementally prior to change. Specifically, new policy discourse tends to emerge in gradual and cautious ways but policy change occurs swiftly in periods of crisis. During periods of stability, the state retreats to the centralized socialist economic system, often through coercion and force. This view of the policy process suggests that foundations of economic reforms in North Korea are yet weak and unstable, and policy reform will continue to be vulnerable to the political influence of conservatives.

Introduction

“Living in our own way”—this is the strategic slogan our party is strongly advocating. . . . We should continue to [pursue our socialist principles] no matter what the others do.¹

Comrade Kim Jong Il pointed out that “we need to move toward pragmatism in the economic operation. . . . In other words, producing maximum economic outcomes with minimum expense.”²

There is no guarantee for pragmatism and profit without the socialist principles. The deviation from the socialist principles while emphasizing pragmatism and profit not only prevents the exaltation of the superiority of the socialist economy based on collectivism, but also brings a detrimental result to the country, economy and people's livelihood.³

The previous three statements are quoted from official Democratic People's Republic of Korea (DPRK, or North Korea) documents published in Pyongyang in 1978, 2002, and 2005, respectively. Taken together, they are somewhat puzzling. The first quote by Kim Jong Il stresses a self-reliant socialist economy for North Korea. The second quote emphasizes pragmatism and economic efficiency, concepts with capitalist undertones. The

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third warns of the detrimental consequences of pursuing pragmatism and profits, returning to socialist ideals. What made Kim Jong Il and the elite members of North Korea change from a centrist socialist economy to one based on pragmatism and then retreat once again to core socialist principles? To what extent have the decision makers in Pyongyang modified state policies to respond to or resist changes in the political environment? And most importantly, how can we explain state reactions more systematically and theoretically?

In this article, we argue that policy changes initiated by the state have been abrupt and drastic following periods of political instability. The policy discourse, however, has been somewhat incremental as ideas have appeared prior to periods of reform. We offer new data derived from official state policy journals that offer insight into the internal policy process and political contexts of continuity and discontinuity of economic policies of the DPRK.

Political Reform in the DPRK

Starting with a great famine in the 1990s, North Korea has experienced several periods of economic and political crisis. The problem was exacerbated by natural disasters and a significant reduction in economic assistance from the former communist bloc following the breakup of the Soviet Union (Food and Agriculture Organization 2010). The collapse of public distribution systems has led to continual food shortages and political unrest (Haggard and Noland 2007; Natsios 2001; World Food Programme 2008).

During these periods, the North Korean economy has vacillated between a strong pro-state, isolationist economy and a more “pragmatic” socialist system (Cha 2009; Chung 2004; Han 2009; Yim 2008). Famines and political unrest after the sudden death of Kim Il Sung in 1994 forced the state to introduce pro-market reforms, but these were soon tempered in favor of policies that privileged the socialist ideology (Han 2009; Park 2009, 2010). Again, moderate economic liberalization was introduced as part of the July 1, 2002 reforms (known as the “7-1 Measures”), a focal point for economic policy change in the country. But there was a backlash of sorts and a return to stronger state planning mechanisms.

The secrecy of the North Korean government and a shortage of information about deliberations prior to political change have made it difficult to characterize the policy process during these periods of unrest. Admittedly, the lack of reliable socioeconomic and macroeconomic data makes it difficult to determine the extent of economic changes in general, and thus, there exist many “conflicting views and speculations from the international community” about the economic condition of the country (Cho 2007, 34–38). Nevertheless, numerous empirical studies by scholars and field observations by international experts and nongovernmental organization (NGO) workers have highlighted economic changes in North

Korea since the hardships of the 1990s. There have also been notable changes in their perception of the way that the state interacts with society (Choi 2011; Haggard and Noland 2010; Lankov 2009; Myers 2010). The objective of this article is to highlight features of internal policy deliberations that have led North Korea to its current system. Specifically, the oscillation between pro-socialist and pro-market discourse can be traced through archival analysis of economic documents.

The process of policy change has been characterized in various ways by different scholars. Some define the oscillation between market reform and return to socialist ideals as indicative of a policy strategy of incrementalism or “muddling through” (Lindblom 1959). Others characterize it as a “dual strategy” where both have always existed but political discourse favors one over the other at different periods (Cha 2009; Y. Lee 2008). Yet others might characterize periods of rapid policy change as punctuated equilibrium—a sudden shift in policy direction caused by crisis as described by Baumgartner and Jones (1993). It is the claim of the authors that North Korea has allowed for a certain degree of policy innovation during periods of unrest but has continually consolidated power during periods of economic stability and regressed to the core state ideology. The policies adopted during periods of crisis have been foreshadowed by policy discourse prior to adoption. The present study tests these arguments through analysis of official economic policy documents.

Some Background of Economic Reforms. As a result of the cycles of economic crises experienced by North Korea, citizens have learned to rely on modest entrepreneurial endeavors whether they are officially sanctioned market activities or nonsanctioned enterprises (Chung 2004; Lankov 2009; Yim 2008). The North Korean government has been generally hostile to capitalist institutions but has become more lenient to market activities through several so-called “reform” measures known as *Kaesŏn Chochi*.⁴ These reforms included changes to the wage system, restructuring of the state distribution system, the adjustment of the exchange rate, the partial liberalization of private enterprises, and adoption of incentives to encourage productivity in state corporations. The degree of reforms can be measured by the level of decentralized planning and production, the adoption of price mechanisms, loosened labor controls and use of workplace incentives, the establishment of new organizations managing “markets,” the enactment of market-relevant state regulations, and the growth of participation in markets and availability of diverse commercial items. The state has not gone as far as embracing tenants of capitalism but did allow for some of these “pseudo-market,” or “protomarket” policies to be enacted, meaning that markets in North Korea have been in nascent stages but have not yet emerged (J. Lee 2009, 197–203).

During this period, the state has clashed with elite interests over the direction of state policy (Park 2009; Yang 2008, 2009, Yim 2008). The coexistence of two sets of actors generates more tension and conflict than

when power was monopolized by the state (Choi and Choi 2008; Hahm and Koo 2008; Han 2009). The current policy process in the DPRK, therefore, is not just about economic reforms. Rather, it represents a shift from a total absence of compromise between the state and interest groups in society (strict authoritarianism/dictatorship) to a tenuous compromise (some political openness) between state actors and other elites that is necessary for the survival of the regime. This compromise between conservatives and reformists serves to prevent the implosion of the ruling party in North Korea (Choi 2011). The policy process that was once driven by a highly centralized authoritarian regime and based on obsolete socialist principles has become more decentralized and influenced by diverse interests.

Many protomarket policies emerged as part of the “July 1st Economic Reform Measures” of 2002 (known as the “7-1 Measures”). But this period has been tumultuous and has resulted in a power struggle over the direction of state policy (Frank 2005; Han 2009; McEachern 2009). There was initially strong support for the reforms, but it lost momentum as a result of retaliation from conservatives groups including the military and special agencies of the communist party. Without Kim Jong Il’s political support, the state returned to a highly centralized economic system (Han 2009, 160–215).

In short, the DPRK has modified institutional formats that rely primarily on coercion, force, and state ideology. Previously, the socialist state exclusively monopolized a whole range of economic activities through a highly centralized governing system and inflexible socialist ideology. Under a tenuous compromise, the state has loosened its control over economic activities with an emphasis on autonomy of local authorities and factories, material incentive systems, and tolerance of limited private market activities. In this regard, the last two decades have created political space for significant changes to the North Korean socialist system leading to “marketization from the bottom.” But it is not clear whether these modifications will lead to a more open and globally integrated economic system or whether the arrangement is unstable (Choi 2011; Frank 2010; Han 2009; Lankov 2009). A better understanding of the policy process behind reforms could potentially shed insight into the likelihood of future shifts and motivates the research in this study.

The article proceeds as follows. The next section introduces the data used for the study—a set of North Korean policy journals published by the state between the years 1986 and 2009. These journals capture the evolution of the economic policy discourse over these two decades. We examine four periods of the country’s history, each representing a distinct period of economic policy. Semantic network analysis is applied to the policy journals in each of these time periods in order to extract a compact representation of the policy discourse. Statistical techniques are used to identify which discourse is unique to each time period so that it is possible to see how it evolves over time. In this way, we paint a picture of a policy

process that is fluid during periods of crisis but state-centric during periods of economic stability. We use this evidence to support the claim that the state economic system has evolved according to a punctuated equilibrium model with sudden shifts in policy occurring during periods of crisis or ideological contraction but that innovations to the policy discourse are introduced incrementally.

Data and Research Methodology

The Data Source: *Journal of Economic Research (Kyŏngje Yŏn'gu)*

The secrecy of the North Korean state proves to be a huge challenge for any analysis of the policy process, in particular during the reform period (McEachern 2009; Park 2009, 2010). Most of the work done in the area relies on analysis of official press releases, interview from dissenters, or speculation. This article makes a unique contribution to the literature by utilizing a set of state-sanctioned North Korean policy documents, the economic journal *Journal of Economic Research (Kyŏngje Yŏn'gu)*. The journal is the only pure economics journal published by Pyongyang and one of the leading professional journals in North Korea. It thus provides a window into the political process and the evolution of economic strategies of the state (Yang 2009). The archive of the *Kyŏngje Yŏn'gu* journal was made available through the Institute for Far Eastern Studies, a Seoul-based research institution, and the documents have been transcribed and analyzed by the authors.

The journal contains economic articles written by state-employed economists and technocrats who have been trained both in North Korea and abroad. The articles represent original work, but intellectual freedom is extremely curtailed and any critique of the state agenda is dangerous. There is some room for dissent, but it must be cloaked in conciliatory phrases and obtuse language. As a result, it is our assertion that policy discourse in the journal does not proactively motivate or drive the state to adopt policy changes. Rather, the journal reflects state economic policies and serves the function of being the state's means of disseminating orders/ideas/concepts to its citizens. As an example, the Fall edition in 2009 was published just before the currency reform in November of that year. The journal included an article entitled "The Currency and the Currency Circulation Is a Supplementary Measure to the Planned Economic Management," written by Lee Wonkyung, a leading economist in the country, forewarning that there would soon be changes to monetary policy.

In contrast to titles of articles in some Western academic journals, which use catchy phrases and colorful language, the titles in the *Kyŏngje Yŏn'gu* are very literal descriptions of the article content including the key concepts emphasized in the text. This form of "socialist realism" is predominant in North Korean society (Myers 2010), and thus, the journal titles are straightforward and reflect the substance of the articles. Appearance and

TABLE 1
Number of Articles Published in the Journal Each Year

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Count	18	34	35	47	63	60	63	59	63	61	60	57	58
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total	
Count	62	65	70	71	85	79	84	86	88	89	101	1,558	

disappearance of core concepts in the titles reflects the appearance and disappearance of the concepts in the policy discourse. As such, it is possible to use the journal titles to conduct an archeology of the policy process. Access was gained to all 1,558 journal articles between the years 1986 and 2009. A summary of journal articles is presented in Table 1. A specific type of content analysis called semantic network analysis has been performed on all 1,558 article titles in order to generate a broad overview of the discourse.

Historical Periods of Economic Reform

The following analysis utilizes a scheme with four distinct policy periods between 1986 and 2009. Each period corresponds to a major economic initiative or policy agenda of the North Korean government, such as key slogans and goals of the state, main sources of economic extraction, economic measures and institutions, level of citizen livelihood, and external factors.

There is no scholarly consensus on proper number of distinct economic periods during these years. Most researchers agree that there are two very distinct periods before and after the “7-1 Measures of 2002.” For instance, Yim (2008) distinguished between the “economic hardship and expansion of the secondary economy” before 2002 and the “7-1 Measures and adoption of the secondary economy” after 2002. Yang (2009) emphasized the structure of corporate governance, independent accounting system and labor incentives before and after the 7-1 Measures. The two periods are subdivided by some other researchers. Cha (2009) argued suppression of the market in North Korea has a cycle of five years and divides the time frame into 1997–2002, 2002–2007, and after 2007. Park (2009) also largely subdivided the period into three periods: 1994–1997, 1998–2005, and after 2006. He characterized the period of *Arduous March* from 1994 to 1997 as a time in which the centralized system weakened or collapsed, from 1998 to 2005 as a period when the ruler and the central authority attempted to reorganize the economic system and strengthen central regulations, and after 2006 as a period where the ruling group once again strengthens control over enterprises, middle and lower officials, and the market economy.

We prefer a historic schema that recognizes four periods. This kind of framework has been adopted by several prominent scholars. For example, Park (2010) divided the periods into collapse of the traditional regime (1990–1994), establishment of new social order (1994–1998), reconsolidation of the regime (1999–2000), the reform experiment (2000–2004), and retaliation of the conservatives (2005–present). Han (2009) suggested four similar stages: groping for reform (1998–2000), initiation of reform (2000–2003), expansion of the reform (2004), and retreat of the reform (2005–2009). These studies share a common characteristic in that they adopt the introduction and implementation of the “reform” policies as a turning point, and also recognize a counterreform movement.

The four periods utilized in this study are summarized in Table 2. Analysis of the variation in policy discourse across the different policy periods provides insight into the evolution of policy and the internal mechanisms at play. Sensitivity analysis was conducted on the four time periods that are utilized here to ensure that results would remain consistent if alternative frameworks were used, and although slight differences emerge, the main trends and the primary conclusions do not change.

Analysis and Results

We analyze the 1,558 titles in the journal database to gain insight into the evolution of the policy process throughout the four periods. Applying traditional content analysis via word counts (or concept/phrase count) is one possible means of tracking changes, but this method can be misleading because words are used in a variety of different contexts with different intended meaning. We instead employed a technique called semantic network analysis that accounts for the association between concepts and thus captures the context of the discourse and allows for analysis of change over time.

Semantic Network Analysis

Semantic network analysis is a method of extracting meaning from texts by building networks of concepts that occur in close proximity (Diesner and Carley 2011; Doerfel 1998; Rice and Danowski 1993). The theoretical foundation of the methodology relies on assumptions about the cognitive processes, which are captured by word associations. Collins and Quillian (1969) conceptualized memory as a hierarchical ordering of words with proximity playing an important role. Woelfel and Fink (1980) suggested that concepts have meaning only with relationship to other concepts and through their work have demonstrated the importance of concept networks. Palmer and Barnett (1984) showed that spatial models that depend on word proximity accurately reflect a natural human notion of meaning. Carley (1993) had used these relationships to develop mental models of experts by mapping concepts through webs of meaning or

TABLE 2
Four Periods of North Korean Policymaking

	T-1 (-1993)	T-2 (1994-2001)	T-3 (2002-2005)	T-4 (2005/2006-)
Key slogan	<i>Juche</i> (self-reliance) economy	"Arduous March"	"Military-first politics"	"Military-first economy in the era of military-first politics"
State's goal	Achievement of self-reliance economy	Regime survival	Completion of socialist economic management system; ("socialist economic strong state")	"Strong and prosperous state by 2012"
Main sources of economic extraction	By sector: agriculture and light industry; by production factor: land and labor	Collapsed; slightly recovered from 2000	Markets; the military as core labor forces; systematic bribery, diversion, and corruption	"150-day battle"; mass mobilization; markets; military labor forces; systematic bribery, diversion, and corruption
Institutions and economic measures	"Daean management system"; "unified and detailed plan system"	"Revolutionary economic strategy"; "war-time economy"	"7-1 economic management reform measures" in 2002	Suppression of market activities; currency reform in 2009
Degree of livelihood	Public distribution system (PDS) and social service provision worked modestly	Minimum survival; social security and PDS collapsed	Improved but still suffering from the economy of shortage	Improved but PDS is yet normalized; suppression of market activities but failed to enforce
External factor (humanitarian aid, investment, industrial complex, tourism, etc.)	Socialist bloc; barter trade	Humanitarian aid; oil, energy, and consumption goods from China	South Korea and China; Kaesung Industrial Complex; Keumgang mountain tourism; inter-Korean economic cooperation	No serious policy from Seoul and Washington; establishment of "National Development Bank" in 2010

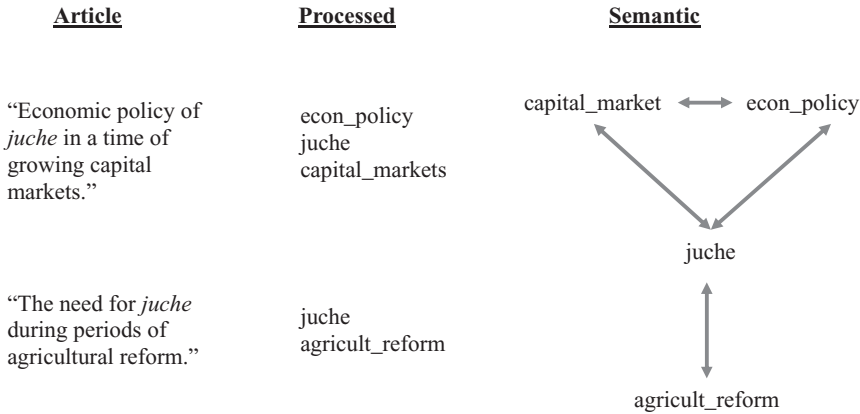
semantic networks. Diesner and Carley (2004) had greatly extended the scope of semantic network methods, including the development of the *Automap* software package (Kathleen M. Carley, Center for Computational Analysis of Social and Organizational Systems, Institute for Software Research International, School of Computer Science, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA, USA) that automates parts of the mapping process.

Semantic networks are generated by establishing links between all concepts that occur within close proximity. The term "concept" is used here instead of "word" because concepts can be compound words or whole phrases that have a unique meaning. The concept "military-first politics," for instance, is composed of three words: "military," "first," and "politics." The three words themselves, if separated, have distinct meanings. But once they are combined as "military-first politics," a new concept emerges. The replacement of word strings with single concepts is done as part of a preprocessing step, as well as removing words that are not central to the analysis. Prepositions such as "the," "a," and "to" are disregarded as they provide no content themselves, for example. Concept frequency follows a power law distribution, meaning that a few concepts occur many times in a text while most occur only one or two. As a result, a small set of concepts can capture a large portion of the conceptual linkages in a text. The analysis was limited to 120 key concepts that were selected by the authors and verified through consultation with domain experts (for the whole list of 120 concepts, see the Appendix). This kind of preprocessing step is common in semantic network analysis (Diesner and Carley 2004, 2005).

Semantic network analysis relies on a notion of concept proximity within a text. The notion of proximity is idiosyncratic to each application of semantic text analysis, but researchers generally choose a cutoff distance of n words apart (Rice and Danowski 1993). If two concepts occur within n words of each other in a text, then they are related in a meaningful way. If they are farther away, then no relationship is noted. Because a title of each journal article is a natural unit of analysis in this domain, all relationships were considered between any concepts that occurred with the same title. Relationships are recorded as a dyadic tie between two concepts, which is referred to as a "statement" (Diesner and Carley 2004; Diesner, Kumaraguru, and Carley 2005). The statements collectively constitute a semantic network (see Figure 1). The network can have valued (weighted) ties because a conceptual dyad can occur multiple times in a corpus of texts.

All article titles were translated from Korean to English by the authors. The titles were preprocessed with all prepositions and nonrelevant words removed. There were a total of 3,101 concepts remaining or approximately two or three concepts per title. The semantic network was extracted using the *Automap* software package (Diesner and Carley 2004) and was composed of 15,290 statements. The data had been split into the four separate periods to highlight the changes in policy discourse over the periods.

FIGURE 1
Example of Creating a Semantic Network from Journal Titles



Conceptual Maps of Policy Change

Due to the nature of the economic discourse present in the journals, there will be many statements that occur consistently across all time periods. In order to examine policy change, there is specific interest in the concept dyads that are unique within each time period. Statements have been filtered using statistical decision theory so that only those that differ from the general pool of statements are retained. Consequently, the semantic networks presented in the next section represent maps of the policy discourse that are distinct from the other periods.

From a technical viewpoint, the way that we formulated the hypotheses actually provides a strong measure of policy discontinuity. The null set is the collection of all “statements” (concept dyads) that are contained within the corpus of journal titles. The set that is analyzed within each time period is only the set of “statements” that are distinct to that time period. The term “distinct” means specifically the *statements* that occur in that time period at a higher frequency than in other time periods at a rate other than would be expected by chance, that is, the definition of statistical significance. So in statistical terms, the set of statements that we examine is the set of discontinuous “statements”—“statements” that occur at a rate that is different from other time periods. This gives us the ability to focus on what is unique to the policy discourse of a time period by controlling for the discourse that has continuity throughout all time periods or appears sporadically in a few. In this way, we are measuring the discontinuity to provide empirical evidence for how the discourse changed through the different periods.

The period-specific semantic networks are generated through a Monte Carlo method of bootstrapping the frequency of statements (concept dyads) within a time period in order to calculate the probability of the observed intraperiod frequency. The null hypothesis represents a random

TABLE 3
Distinct Policy Discourse Networks by Time

Period	Unique Concepts	Statement Count	Network Density
T-1 (1986–1993)	56	178	0.0578
T-2 (1994–2001)	70	185	0.0383
T-3 (2002–2005)	45	111	0.0561
T-4 (2006–2009)	47	121	0.0560

draw from the pool of all 15,290 statements. The first time period has 1,444 statements, for example. With a draw of size 1,444 from the pooled data, there is probability distribution associated with observing the frequency that each statement occurs. If the observed frequency has a lower probability than expected given a random draw from the pooled data—below 0.05 by convention—then the statement is considered distinct to that time period as opposed to being common to all time periods. These statements represent the unique policy discourse of the periods. The Monte Carlo approach to generating the distribution of statement frequencies is a prudent way to avoid the confusion that results from the theoretical discussion about whether sampling with replacement is necessary when calculating the probability of an observed frequency. The Monte Carlo method of drawing many samples from the general pool was repeated 10,000 times to tabulate the *P*-values associated with observed frequencies.

Limiting the data to statements that are statistically distinct within each time period allows for a reduction of data from extremely dense networks that are quite intractable to smaller networks that can be easily interpreted. It also accounts for the fact that the time periods that are used for the analysis are of different lengths and contain different numbers of journal articles. The filtered networks of distinct policy discourses are summarized in Table 3. All of the concepts presented in subsequent analysis belong to this subset of data—the *statements* that are common to all time periods are disregarded.

Results

Three important features of the compact networks shed light on the policy discourse—the presence or absence of certain concepts within a time period, the prominence of a concept (measured by network centrality), and the distinct clustering of groups of concepts. These patterns can be observed in the intraperiod graphs of the filtered networks.

Centrality is used as a measure of the import of a concept within a time period. Centrality in network analysis is a “measure of the contribution of network position to the importance, influence, prominence” of nodes in the network (Borgatti et al. 2009). Two measures of centrality were utilized

in the analysis—degree centrality and eigenvector centrality. Degree centrality calculates the number of statements in which a concept appears. Eigenvector centrality recognizes that not all ties are equal so it weights each connection by the centrality of the other concept in the statement (Bonacich 1987; Leydesdorff 2007; Ruhnau 2000).

There are formal clustering methods that can be applied to network data (Hoff, Raftery, and Handcock 2002; Newman and Girvan 2004), but these methods require strong assumptions about network ties and results that add complexity without insight given the small size of the networks in our analysis. The clear patterns in grouping that we observe allow for a discussion of clustering in a loose sense while avoiding a more technical discussion of clustering algorithms. The term “clusters” should therefore be interpreted in an intuitive sense rather than a technical one in subsequent discussion.

Efforts were made to corroborate results from the analysis with insights from other primary sources, but the present study still has some limitations. In particular, the study has not established continuity or discontinuity of economic policies in North Korea with economic data because of their reliability issue with economic data on North Korea. Second, due to the extremely limited accessibility to policymakers, economists, and government bureaucrats, the study could not verify in each case the relationship between the appearance of new policy in the journals and decisions made by the central government. As a result, the findings from this study should be viewed in their proper light as archival analysis of policy documents to highlight general trends, but many characteristics of the policy process still remain opaque.

Analysis of Policy Attention

Traditional Socialist Economic Management (1986–1993). The first time period in the data contains two main themes (clusters) in the semantic network as shown in Figure 2 and Table 4. The largest cluster of the graph is organized around the concepts of North Korean style socialism (known as *Juche*) and central management. It is very densely interconnected with “socialism” and “management” serving as the core hubs that connect other smaller hubs such as “economic development,” “agriculture,” “collectivism,” “party,” “leadership,” “instruction,” “management,” and “centralized planning.”

The second largest hub, “management” is linked to the “*Dae-an* management system,” “allied enterprise,” and “*Bunjo* system,” all which were traditionally emphasized by the North Korean authorities, while “party,” “leadership,” and “instruction” are connected with “unified and detailed planning system.”⁵ The centralized character of this discourse reflects the historical roots of North Korean socialism. Following the Korean War (1950–1953), the transition from a colonial economy to a socialist economic

cost," "corporate governance," and "autonomy" as well as "independent accounting system" began to emerge, concepts that had not been highlighted in the traditional socialist economic management system.

Analysis of the official documents including *Kyŏngje Yŏn'gu* in time 2 shows that Kim Jong Il implemented three strategies—mobilization of the wartime economic system; consolidation of the party's political leadership and the centralized and unified leadership of the state, and strengthening the ideological consciousness and forcing poverty to the residents—to break through the economic crisis for the era of *Arduous March*. Primarily, he introduced the historical reminiscence and restoration strategy of "wartime economy" employed during the struggle against Japanese colonialism and the Korean War in an effort to secure justification for economic mobilization, connecting the new economic crisis in the 1990s to the "wartime economic system."

For instance, an article published in the third issue of the *Kyŏngje Yŏn'gu* in 1994, when the *Arduous March* began, quoted Kim Il Sung's statement that "the party, state and economic organizations should reorganize all the operations on a war footing, and mobilize all efforts for victory in the war" and claimed that "the civilian economy should be reorganized into a wartime economy in the distribution of resources, the overall economic plans should be adjusted to cope with the wartime conditions, peacetime industries should be transformed into defense industries, and efforts should be concentrated to meet demands from the front and the rear."⁶

By reviving the survival strategy of a "wartime economy," North Korean authorities mobilized human and physical resources and swiftly reorganizing production, transportation, basic construction, and placement of the labor force to quickly realize economic gains. Politically, "the ability to maintain economic production during a period of crisis" was propagated as "an expression of superiority of the planned economy established in our country, which is only possible in our own system of the people's economy." The Kim Jong Il regime developed the wartime economic system as a national discourse and rationalized mass mobilization and poverty among the residents by explaining the economic crisis through political, economical and ideological justification for the socialist planned economy (Cha 2009). In this context, scarce resources were primarily invested in the military and defense sectors rather than people's livelihood, and the strict control and direction of the party and the state were justified in the name of the "wartime economic system."

During time 2, Pyongyang confronted economic crisis through centralization of the party, strong state planning, and solidarity based on the high level of ideological consciousness of the people. This allowed for the mobilization of labor rather than other kinds of reforms such as readjusting investment priorities, open-door trade policies, or more flexible systems of economic management. Accordingly, North Korea emphasized the "excellence of the planned economy" again so that the priority of

distribution and investment of resources returned to the heavy industry-oriented strategy from the “three primary sectors of agriculture, light industry and trade,” which was a focal point of the *Revolutionary Economic Strategy* (Yim 2008, 69–71).

However, as seen in a small cluster on the left, new concepts such as “demand,” “commodity,” “value,” “price,” and “consumption goods” emerge. This suggests that Pyongyang sought new ways to rehabilitate the economy in a challenging environment, even while it emphasized the traditional socialist economic management system. The emergence of these market economy concepts in time 2 implies that the reform measures undertaken in time 3 were not adopted spontaneously but rather implemented several years after they had emerged in the discourse of lower policy levels. These concepts in time 2 foreshadow the shift toward market economy principles that we see in time 3.

These signs of change become clearer if we examine the global finance cluster on the right. Although the negative aspects of capitalism are still highlighted in time 2, many articles during this period began to introduce various new concepts such as “market,” “market economy,” “globalization,” “financial,” and “money,” which are core elements of the capitalist market economic system. The country also began a process of monetization in this period, which was a significant development. In practice, themes such as “pricing on commercial goods,” “monetary circulation,” and the “role of the central bank” had been discussed by North Korean authorities since the late 1990s. Kornai and Martos (1973, 509–510, 1988, 97; see also Kornai and Martos 1973) pointed out that a transition from a socialist economy to a market economy is indicated by a shift to “pricing mechanisms” from “directive mechanisms,” which are directly and entirely controlled by bureaucratic organizations, or “bureaucratic coordination,” based on state monopolistic authority and political power over the production facilities. Admittedly, adopting a pricing mechanism itself does not imply that the country has transformed its centralized economic system to a liberalized economy because many other socialist countries had also adopted the pricing mechanism. Nevertheless, the appearance of concepts related to “price” and “money” in the journal is noteworthy. Pyongyang also explored plans for economic cooperation with other developing countries in this period. Examples include regional economic cooperation among Asian countries, financial markets in Southeast Asia, Malaysia’s industrial development strategy, case studies of Singapore as a financial center in Asia, and their successful industrialization stories.

The term “communism” appeared 12 times in period 1, but only three times in period 2 and disappeared from the titles in the *Kyōngje Yōn’gu* after 2002.⁷ Since then, North Korean authorities have more often used the expression of the “completion of socialist society” rather than “communism,” and many official documents replaced the terms “communism” and “Marxist–Leninism” with “previous theories.” North Korea’s own

TABLE 6
Reformative Phase (2002–2005)

	Concept Abbreviation	Concept Meaning	Degree Centrality	Eigenvector Centrality
1	cap	Capitalism	27.3	52.2
2	mfirst	Military first (<i>Songun</i>)	25.0	51.9
3	socialism	Socialism	27.3	47.5
4	profit	Profit	22.7	45.6
5	econdevelop	Economic development	15.9	43.8
6	kis	Kim Il Sung	11.4	32.1
7	principle	(Socialist) principle	11.4	29.9
8	mgt	Management	15.9	27.3
9	imperial	Imperialism	11.4	26.2
10	kjl	Kim Jong Il	11.4	21.7

connects the traditional socialist economic management system and pro-market economy initiatives that Pyongyang adopted.

Also noteworthy in time 3 is a group of concepts forming a cluster of “information,” “science and technology,” “statistics,” “simulation,” and “mathematical economics.” The growing interests of the DPRK in the fields of information technologies and incentive systems appear to be a trend. Articles employing econometric models and mathematical economics appeared more frequently in this period, where previously traditional political economy approaches had dominated North Korea’s economic theories. For example, studies of “leasing industry,” “bond market,” and “international commodity markets” used mathematical models to explain the process of generating profits. Three articles explaining “microeconomics,” which had been criticized as a “bourgeois economics” in the past, were first published in time 3. This change suggests that those trained in classical economic theories were making their way into the technocrat and policymaking circles.

Articles introducing “free trade,” “free trade zones,” and “tourism industry” were also published, and the projects of Kaesong Industrial Complex and Kumgang mountain tourism were introduced in this period. As a result, the number of articles dealing with “corporate management strategy” and “commercial accounting,” and “auditing” increased. Those articles specifically emphasized the technical competencies of technocrats in the accounting sector, the simplification of accounting/audit cycles and the utilization of computers for accounting tasks, as well as the responsibility of each unit’s accounting staff. In contrast, concepts such as “party,” “instruction,” “unified plan,” “collectivism,” and “self-reliance,” which occupied the core of the socialist theme, are marginalized.

To justify the shift toward pseudomarket policies, North Korea asserts that the country had a “capitalist market economy” in the 17–18th centuries and argues that the history of capitalism in Korea was disrupted by

the Japanese colonialism. For example, *Kyŏngje Yŏn'gu* published articles of the "flourishing of *Jangsi* (market)" and the "development of *Hyangsi* (rural market) in the *Chosŏn* dynasty" with some historical evidence of their origins, progresses and their socioeconomic impacts on class structures. These articles claim that since Korean society had developed capitalism *even before* the Japanese colonialism, switching to a market economy enforced by "illegitimate pressure" from the outside is not "historical progress"; it is "historical retreat" precisely because the progression of history, to them, is the "completion of the socialist society" evolving from the capitalist society in which there still exists class exploitation and selfishness.

On the other hand, even though there are some negative concepts such as "imperialism," "reactionism," and "crisis" connected to capitalist concepts, the core capitalist nodes have taken on a prominent role in the network during this time period. The emergence of market-friendly concepts suggests that there might have some internal conflicts and confusion among the elite groups concerning the "distortion" of socialist economic principles and "contamination" by the capitalist economic measures reflected into the 7-1 Measures represented by decentralization, price actualization, independent accounting systems, and material incentives (Han 2009, 160–215). In addition, five articles criticizing (U.S.) economic sanctions and blockage appeared in this period. Given the fact that there was no article mentioning the issue before, at least in the title of the *Kyŏngje Yŏn'gu*, it seems that Pyongyang tried to make excuses for the economic crisis by blaming the economic sanctions for hindering its economic development and cooperation with other countries.⁹ This pattern will repeat when North Korea suffers from food shortages again in 2007–2008 as they blame the capitalist countries' monopolistic exploitation, which allegedly led to the hike of food prices and famine in the world.

In summary, time 3 can be defined as a period of adoption of "proto-market" policies via a process of muddling through reform initiatives. We will see that the traditional socialist principles that had shifted to the periphery in time 3 will reemerge as central in time 4. This finding confirms that Pyongyang's ultimate goal is the implementation of the unique North Korean style of socialist economic management by strengthening the centralized and unified economic management system.

Centralization and Mobilization Phase (2006–Present). In 2005, the last year of time 3, North Korea achieved a 3.8% rate of economic growth according to the Bank of Korea, which is the highest growth rate recorded since North Korea began to recover from severe economic hardship. However, the fundamental cause of the crisis, low production due to a state-owned production system, was not addressed. As a result, North Korea experienced high unemployment, high inflation, and the devaluation of North Korean Won due to wage increases and "price normalization." At the same time, the country became reliant on China for food,

energy, fuel, and consumer goods (Cho et al. 2005; Haggard and Noland 2007). Consequently, the expansion of illegal market activities and nonsocialist “deviant behaviors” provided justification for the authorities to restore their central planned economic system through harsh measures (M. Lee 2009; Park 2009, 2010).

As a result of economic reforms, relations between the political elites were delicate. Up until November 2004, Kim Jong Il demanded that “everyone in every unit should follow the Premier’s direction in regard to the economy.” Due to Kim Jong Il’s support for the cabinet, the conflict between the reformists and the conservatives was below the surface (Han 2009, 161–180). However, the plan for economic improvement diminished the influence of the party, strengthened the cabinet’s authority over human resources, reduced social security benefits for the military generals, and most importantly, reduced the number of paid party members in enterprises. The plan transferred laid-off party members to enterprises and organizations with independent accounting systems. It also integrated military or party-owned trade foreign exchange operations into the Department of Trade to give the cabinet more discretion. The party and military reached a point where they became intolerant to these economic measures anymore (Han 2009, 190–213; Park 2010).

Although supply shortages and failure of state systems were ostensibly the causes of the economic troubles, conservatives’ dissatisfaction was ultimately the product of the reduced political influence as a result of reform. The conservatives went on the attack by pointing out that the reformists were selecting certain enterprises and production units and supporting them selectively to exaggerate achievements. Their counterattack soon expanded to more political tactics when they argued that the political and ideological control of the party was seriously threatened.

While conflict grew in the political sphere, economic reforms were not well-received at the production sites either (Yang 2009, 135–180). Although planning was disaggregated to lower levels under the banner of autonomous management of enterprises, the production quota did not reflect reality and discontent among managers and workers escalated. The lower units still waited for directions from the upper units or exaggerated their reports rather than acting autonomously to solve production problems (Choi 2011).

Eventually, the lack of tangible accomplishments and the confusion at the production sites led to revolt by the conservatives. The conservatives began a full-fledged counterreform, mobilizing various oppressive mechanisms such as regulation and police brutality. They responded to criticism with charges of being “antisocialist,” “antinational,” and “anti-party,” endangering the foundation of the “socialist principles.” In July 2005, Kim Jong Il established the Planning and Financial Department of the Central Committee of the Workers’ Party to unify the party and reconsolidate economic decision making in a central authority (Park 2010).

TABLE 7
Centralization and Mobilization Phase (2006–Present)

	Concept Abbreviation	Concept Meaning	Degree Centrality	Eigenvector Centrality
1	improv	Improvement	23.9	63.6
2	econdevelop	Economic development	17.4	55.4
3	ess	Economic strong state	17.4	52.2
4	peopleecon	People's economy (Inmin Kyongje)	10.9	41.8
5	socialism	Socialism	10.9	40.3
6	ourown	Our own way (<i>Urisik</i>)	6.5	27.9
7	snt	Science and technology	6.5	27.7
8	mfirst	Military first (<i>Songun</i>)	8.7	27.4
9	party	KWP	8.7	26.8
10	modern	Modernization	6.5	22.7

of “party” suggests gain of political power and influence not just over political issues but also economic affairs. Nevertheless, concepts “light industry,” “information,” and “modernization” emphasized during the reformative phase of time 3 converge into the “improvement of people’s life,” which is the largest hub in time 4.

In 2006, the journal *Kyŏngje Yŏn’gu* established a separate section of “Common Knowledge” (*Sangsik*) to introduce terminology of the capitalist market economy. Concepts that appear in this time period (but not the semantic network) include “prime cost,” “currency transactions,” “dumping,” “balance of international payments,” “tariffs,” “credit crisis,” “foreign exchange markets,” and “government bond market.” The Common Knowledge section, in contrast to most articles that criticize the capitalist economy, explains terminology in an objective way without biased judgment. Taken together, these patterns suggest that Pyongyang appears to take a so-called “dual strategy”; it has been trying hard to both the centrally planned economy represented by a “military-first economic strategy,” on the one hand, and on the other hand, achieve a “crucial transition of economic life” by improving the productivity of the light industry, agriculture, and science and technology.

Conclusion

In this study, we have explored economic policy changes of North Korea through the analysis of official policy archives. We argue changes to the economic system of the state follow a pattern of punctuated equilibrium catalyzed by political crisis but that the changes are foreshadowed in the policy discourse as evidenced by the economic journal of the state. Following periods of reform, however, the state struggles to maintain control over the steering of policies and attempts to consolidate power during

periods of economic stability. The state will allow for a certain degree of policy innovation but will continually regress to the core state ideology. That is, the state allows policy discourse to emerge gradually, but during periods of stability it swiftly retreats to the centralized socialist economic system, often through coercion and force. This view of the policy process suggests that foundations of deep economic reforms are yet weak and instable, and policy reform will continue to be vulnerable to the political influence of the conservatives.

The transition from the highly centralized phase of socialist economic management to the "protomarket" phase in time 3 did not take place rapidly. Rather, the changes appeared incrementally over five to six years from 1997–1998 to 2001–2002. During these years, various capitalist market economy concepts were introduced as this study has shown. This finding implies that even though Pyongyang stresses the principles of socialist economic management system politically and ideologically, it makes efforts internally to explore opportunities for "profit" and "pragmatism" on the other hand. In particular, the growing number of introductions in official documents regarding the market-oriented economic system indicates that the DPRK regime has started to accommodate a certain degree of the changes caused by the shifts in the outlook of the population.

Most outside observers claim that recent reform measures in North Korea have only extended the fuse of a time bomb, which will eventually explode unless the fundamental issue of national economic capacity is resolved. North Korea faces the dilemma that the other socialist countries confronted between preservation of a socialist planned economy and reform through the adoption of market mechanisms. The major question is how will the North Korean government respond to the challenges ahead. Will reforms be led by the state, whether it be through oppression or tolerance? And what role will the underground economy play in the process? It is difficult to anticipate whether it will be a subversive force as seen in the Eastern European countries during their regime changes.

It should, however, be noted that the North Korean state and society were beginning to establish a low level of compromise on economic policy. Some of the economic reform measures in early 2002 and the counterattack by conservatives to restore the planned economy after 2005 demonstrate that the division of the ruling groups may lead to a "compromise-resistance politics" which could thwart future reform measures. The analysis of the official state policy documents was meant to offer some insight into the policy process throughout the past two decades and during important periods of reform so that experts can better interpret changes that are observed in the future.

Notes

1. Kim Jong Il. 1995. "Let Us Arouse a New Transition in the Construction of Socialism by Increasing the Strength of the Party" in the *Works of Kim Jong Il*,

- vol. 6 (December 25, 1978). Pyongyang: The Korean Workers' Party Press, 203–204.
2. Materials for Learning and Lecture for Leaders, Party Members and Workers. 2002. *About the Party's Policy in Securing Pragmatism and Profit*. North Korea: Korean Workers' Party Press.
 3. Hong Young-ui. 2005. "Strictly Maintaining the Socialist Principles While Maximizing Profits is a Crucial Principle Which Should Be Kept in the Economic Organization Operation." *Kyŏngje Yŏn'gu* 4.
 4. There are three different discourses of "change" in Korean language: "*kaehyŏk*" (reform), "*kaesŏn*" (modification or rearrangement of institutions), and "*kaegŏn*" (renovation of infrastructure). North Korean authorities have never mentioned "reform" (or *kaehyŏk*) of its systems; rather, they consistently pursue "*kaesŏn*" or "*kaegŏn*" at best. Western observers have mistranslated the "7-1 Measures" as the "7-1 Reform Measures," but the original North Korean language of the measure is "7-1 Economic *kaesŏn* Measures," not "7-1 Economic *Kaehyŏk* Chochi." Nevertheless, this article follows the convention in North Korean studies and refers to it as reform.
 5. "Daean management system" is a "unique economic management system of the DPRK," which combines the unified leadership of the Party and the centrally planned guidance of the state with the mass line in economic management. "Bunjo" is a basic unit of the collective farm, which is originally composed of 10–25 farmers. The "new Bunjo system" adopted in 1999 has only seven to eight farmers and lowered the target amount of food production. Under the new system, farmers are permitted to sell food stuffs at the market if they produced more than their target amounts.
 6. Park Young-cho. 1994. "Widaehan Kim Il Sung Suryongui jeonsi kyongjecheje hwakrip" (The Wartime Economic System Established under the Wise Leadership of the Great Leader Kim Il Sung During the Korean War and Its Ability to Maintain People's Livelihoods in Korean), *Kyŏngje Yŏn'gu* 3.
 7. The last article in *Kyŏngje Yŏn'gu* with the title of "communism" appeared in 2001. It is known to the outside world that the DPRK has officially abolished the term "communism" in 2009 in its amended constitution.
 8. North Korean authority officially announced the end of *Arduous March* in 2000, celebrating the 55th anniversary of the establishment of the Korean Workers' Party (KWP). The country takes advantage of the anniversary event, in particular every 5th and tenth year for significant political announcement. The DPRK officially introduced Kim Jong Un, a third son of Kim Jong Il, to the world at the 65th anniversary of the KWP on October 10, 2010.
 9. In particular, the journal published three articles criticizing the "economic sanctions" in 2005, the year when Bush administration began its second term and U.S. State Secretary Rice labeled North Korea as an "outpost of tyranny." Responding these external circumstances, North Korea removed 8,000 spent fuel rods from the 5-MW reactor on May 11, 2005 and announced that it has completed the reprocessing of 8,000 spent fuel rods, which led the U.S. government to designate Banco Delta Asia (BDA) to be of "primary money laundering concern." The BDA then has been accused of its connection with North Korea, engaging in money laundering. The bank froze about 50 BDA bank accounts opened by North Korea in September 2005 (Y.J. Lee 2010, 160–164).
 10. Lee Young Nam, "Adhering to the Socialist Principles is a Crucial Principle in the Economic Management," *Kyŏngje Yŏn'gu* 2006 (4).

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Appendix

Whole List of 120 Concepts

Concept	Abbreviation	Concept	Abbreviation
accounting	ACCT	intervention	INTERVN
agriculture	AGRI	invasion	INVASION
allied corporate	ALLIED	investment	INVEST
autonomy	AUTO	joint venture	JOINT_VEN
bank	BANK	juche	JUCHE
blockade	BLOC	Kim Il Sung	KIS
bourgeois	BOUR	Kim Jong Il	KJL
Bunjo	BUNJO	labor force	LABOR
capitalism	CAP	leadership	LDRSHIP
centralized	CENT	leading sector	LDR_SECTOR
collective	COLLEC	light industry	LIGHT
collectivism	COLTVSM	local	LOCAL
colonization	COLON	management	MGT
commercial	COMMERCE	market	MKT
commodity	COMDITY	market economy	MKT_ECON
communism	COMMUN	military first	M_FIRST
compensation	COMP	modernization	MODERN
conflict	CONFLCT	monetary	MONTRY
consumption	CONSUMPTION	money	MONEY
consumption goods	CONSMP_GD	monopoly	MONOPOLY
contradiction	CONTRAD	normalization	NORM
corporate business management	COR_BIZ_MGT	our own	OUR_OWN
corruption	CORRUPT	ownership	OWNERSHIP
creativity	CREATVT	party	PARTY
crisis	CRISIS	peoples economy	PEOPLE_ECON
Daean	DAEAN	peoples life	PEOPLE_LIFE
deceitfulness	DECEIT	plan	PLAN
defense industry	DEFENSE	price	PRICE
demand	DEMAND	prime cost	PRIME_COST

(Continued)

Appendix

Continued

Concept	Abbreviation	Concept	Abbreviation
depreddation	DEPREDD	principle	PRINCIPLE
depression	DEPRESS	productivity	PRODTVTY
developing countries	DEVELOPING	profit	PROFIT
discipline	DISCIPLINE	public finance	PUB_FIN
diversification	DIVERSIFY	quality	QUALITY
dominance	DOMINANCE	rationalization	RATION
econometrics	ECONMET	reactionism	REACT
economic development	ECON_DEVELOP	revolution economic strategy	REV_ECON_STGY
economic strong state	ESS	rural	RURAL
effectiveness	EFFECT	sanction	SANCTION
efficiency	EFFIC	science and technology	SnT
era of information industry	INFO_ERA	scientification	SCIENCE
expansion	EXPANS	self reliance	SELF_RELIANCE
exploitation	EXPLOIT	service	SERVICE
farm	FARM	socialism	SOCIALISM
finance	FINANCE	socialist economic management	SOC_ECON_MGT
global	GLOBAL	state owned	STATE_OWN
globalization	GLOBZTION	statistics	STATISTICS
guhñ	GUHN	strong and prosperous state	SPS
heavy industry	HEAVY	subordination	SUBORD
imperialism	IMPERIAL	superiority	SUPERIORITY
improvement	IMPROV	supply	SUPPLY
incentive	INCENTV	tax	TAX
income inequality	INCOME_INEQ	third seven year plan	THIRD_SEVEN_PLAN
independent accounting system	IAS	trade	TRADE
inflation	INFLA	unemployment	UNEMPLOY
information	INFO	unified	UNIFIED
informatization	INFOTZTION	unified and detailed plan system	UnD_PLAN
inhumanity	INHUMAN	value	VALUE
instruction	INSTRUCT	victory	VICTORY
insurance	INSURANCE	wartime	WARTIME