

The Attraction of Korean Unification

Inter-Korean and International Costs and Benefits

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Printed December 2013
Published December 2013

Published by Korea Institute for National Unification(KINU)
Publisher President, Korea Institute for National Unification
Editor Center for International Relations Studies

Registration Number No.2-02361 (April 23, 1997)
Address 123, 4.19-ro (Suyudong), Gangbuk-gu, Seoul 142-728, Korea
Telephone (82-2) 900-4300; (82-2) 901-2521
Fax (82-2) 901-2541
Homepage <http://www.kinu.or.kr>
Design·Print
ISBN 978-89-8479-751-2 93340

Price ₩15,500

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All KINU publications are available for purchase at all major book store in Korea. Also available at Government Printing Office Sales Center.
Store (82-2) 734-6818; Office (82-2) 394-0337

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The analyses, comments and other opinions contained in this book are those of the authors and do not necessarily represent the views of the Korea Institute for National Unification.

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Preface

Korea Institute for National Unification (KINU) has made every effort to enhance understanding about the future shape of unification between the two Koreas since its foundation in 1991. To meet the recent quest for new approaches in the unification studies, KINU launched five year-long research project in 2011 under the theme of the Comprehensive Research on the Costs and Benefits of Korean Unification. As the word 'comprehensive' indicates, this research aims at the complete investigation about the potential effects of the unification in the Korean peninsula.

For the purpose of building a strong foundation for the multi-year research project, we identified the most contested questions and figured out solutions to the problematic issues related with the research on the costs and benefits of the Korean unification during the first year of the research project. We also built a comprehensive architecture for the research as briefly explained in the introduction. Based upon this research framework, we constructed a systematic analytical model and tried to find out related factors as much as possible during the second year of the research. We also delineated a plausible path named as "Guiding Type of Unification" in order to present more detailed explanation and to offer more realistic description about the future unification.

We, then, decided to share our research efforts with the international community in 2013. Our preceding researches indicated that it was necessary for us to consider dual dimensions of the Korean unification:

inter-Korean and international aspects. A research on the effects of the unification about the inter-Korean factors has been carried out using computer simulation based upon the conditions suggested by our previous research. International aspects were analyzed by the international experts from the four neighboring countries, i.e., the United States, China, Russia and Japan.

Professor Kerk Phillips and Professor Scott Bradford from Brigham Young University performed the research related to the inter-Korean dimensional effects. Dr. Kongdan Oh and Ralph Hassig elucidated the United States' interests and attitudes, and the study of Dr. Keyu Gong showed Chinese viewpoints. Dr. Alexander Fedorovskiy and Dr. Natalia Toganova contributed to Russian perspectives. Dr. Sachio Nakato's study explicates Japanese concerns and expectations.

We would like to express appreciation for the research assistants, who devoted their times and efforts to complete the current research. Ryne Belliston of Brigham Young University assisted in running computer simulations and Soohwan Hwang and Junyoung Kim at KINU made great efforts in running the research project and in publishing this book.

During the course of running this year's research project, we have closely maintained communication among the participated experts throughout the year of 2013. Especially, we had intensive discussion sessions during July and August regarding the potential effects of the unification on the economies of the North and the South for the purpose of specifying conditions to be used in the computer simulation. Another important brainstorming seminar was held to iron out costs and benefits

of the four neighboring countries with sincere participation of the international co-authors and domestic commentators, who stimulated our new thoughts on the international aspects of the Korean unification. We also offered an open seminar to the audiences in Korea under the title of “Future of Korean Unification: Costs and Benefits of the U.S., China, Russia and Japan,” on November 3rd, 2013.

We hope this book could help the peoples to better understand the Korean question and to broaden knowledge about the potential effects of the unification between the two Koreas. We would like to note that the views expressed in this book do not necessarily reflect the views of any organization with which the participating experts are affiliated.

Abstract

The Attraction of Korean Unification: Inter-Korean and International Costs and Benefits

Kyuryoon Kim *et al.*

In purposes to overcome the negative publicity toward the Korean unification and to provide a more feasible and practical unification preparation, the Korea Institute for National Unification has conducted a five-year research project to build a comprehensive architecture for the unification costs and benefits. The project, through several brainstorming sessions and seminars with a variety of experts, has developed a scenario and a model: the Guiding Type of Unification and the Three-Stage-Three-Area Costs and Benefits Model. The Guiding type scenario suggests a gradual and asymmetrical unification process that describes a South Korea-led unification under an agreement by all parties, including South and North Korea and the international community. The Three-Stage-Three-Area Costs and Benefits Model is an analytical tool to reveal and examine major factors of the process. For the first time in this area of research, the model includes political and social areas. It divides the unification and integration process into three stages - Division Dissolving, System Integration and Nation Building.

For the third phase of the five-year project, this study expands its focus to international research cooperation: A quantitative model-based approach to the economic changes in the Korean peninsula, and the

costs and benefits of the Korean unification for neighboring powers. Accordingly, this book consists of three major parts: first, Chapters I and II briefly review our scenario and analytic model. The structure and process of unification depicted in these chapters function as the basic premises and assumptions of the studies in the following inter-Korean and international dimensions chapters. Second, Part 1 calculates the major macroeconomic unification variables using a general equilibrium model. The study adopts the dynamic stochastic general equilibrium (DSGE) model because the model is a proper device to estimate overall costs and benefits during the unification process. Especially, it captures the developments of various economic values by year during unification process.

The DSGE model covers three main periods: the Unification Preparation period (2014-2028), the Unification Process period (2028-2050), and the Unified Nation period (2050-2060). The Unification Process period is again divided into the Division Dissolving stage (2028-2030), the System Integration stage (2031-2040), and the Nation Building stage (2041-2050).

During the two-year Division Dissolving stage, South Koreans pay an extra 0.5% tax on their income, while the North gets a big boost to consumption by 37%. A dramatic growth begins after the System Integration stage. North Korean GDP and wages increase by 10 times, while consumption rises by 13 times over the decade between 2030-2040 period. Since the gains from free markets and trade are not a zero sum, South Korea would continue its steady growth even while providing

the North with massive aid, and opening up labor and capital flows between the two sides. The model implies that Southern part's GDP, consumption, and wages would grow by a solid 1-2% per year in real terms. The pattern of rapid growth in the North and steady growth in the South continues during the Nation Building stage.

Throughout the unification process, Northern part completely transforms from one of the most impoverished to one that achieves middle class status. All indicators of North Korea increase more than 25 times, including GDP, consumption, and wages. Its private capital stock would also strengthen, increasing more than 15 times in value. These gains are made possible in large part because of substantial aid from the South, but it continues to experience steady growth, even after that aid ends. The levels of GDP, consumption, wages and private capital do not actually drop in the South, but steadily grow. The South will enjoy the fruits of its investments in the North.

Part 2 analyzes the costs and benefits of the four powers during the unification process. The future of the Korea-U.S. relation is the biggest concern for both the U.S. and China. It has a huge impact on whether each side perceives unification as a cost or benefit. For the U.S., vulnerable alliance with Korea and the relocation of the U.S. troops in the South during the unification process would be a cost, while China worries about bordering with Korea or the U.S.-Korea alliance after losing its long-time buffer zone, North Korea.

All four powers expect that the Korean unification would lessen the security vulnerability caused by the North Korean regime. This would

be one of the biggest benefit to them. They all agree that controlling and finally dismantling WMD from the Korean Peninsula would be a great benefit. Even China perceives North Korean WMD as a cost, especially after the third nuclear test by North Korea, and it will continue to benefit from WMD control over all unification stages. Russia also wants to end the instability in the Northeast Asia, so the economy of the Russian Far East can prosper. During the System Integration and Nation Building stages, a unified Korea would socially and economically be benefit both the Far East and Northern areas. In Japan's case, finding solutions of the Japanese abductee issues is the highest priority.

In sum, this study could be useful for the policy makers in Korea and the neighboring four powers. It should also be noted here that the efforts for achieving the unification were begun when the Korea were divided against its will by the international arrangements. It is necessary for the two Koreas and international actors to continue making every effort to solve the problems stemming from the division of the Korean peninsula in a peaceful manner.

Keywords: DSGE Model, U.S., China, Russia, Japan, Unification Costs, Unification Benefits, Economic, Non-economic

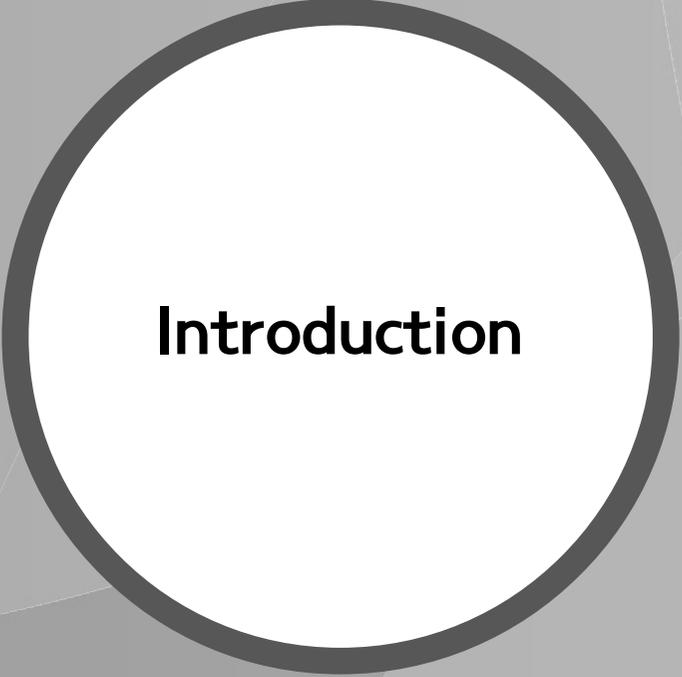
요 약

본 연구는 '선도형 통일의 경로와 과제와 통일비용·편익 분석모형 구축을 통해 도출된 통일의 시나리오와 모형을 바탕으로 다음과 같은 두가지 과제를 수행하였다. 첫째는 통일과정을 수행하는 과정에서 남북이 얻게 될 비용편익을 거시경제적인 차원에서 분석하는 것이다. 둘째는 한반도의 통일에 따라 영향을 받게 되는 주변국들이 인식하는 비용과 편익의 요인을 밝히는 것이다.

본 연구의 제 1부에서는 통일비용·편익의 거시경제적 분석을 목표로 제시된 시나리오 안에서 주요 지표의 총량적 변화과정을 파악할 수 있는 동태확률적 일반균형(DSGE) 모형을 도입하여 통일 한국의 경제가 맞게 될 변화를 추정하였다. 제 2부에서는 한반도와 밀접한 이해관계를 갖는 미국, 중국, 러시아, 일본 4개국의 입장에서 발생하는 각 단계별 통일비용·편익을 경제·비경제 부문으로 파악하였다.

본 연구는 통일 후 맞게 될 경제적 변화를 객관적인 시각을 통해 예측하여 긍정적 미래의 가능성을 조명한다는 점에서 바람직한 통일정책 마련에 기여할 수 있다. 연구를 통해 얻어진 각국의 공통된 이익과 입장 차이에 대한 이해는 향후 한국이 주도적이고 협력적인 통일 환경을 조성하기 위한 정책적 자료로 활용할 수 있다.

검색어: DSGE 모형, 미국, 중국, 러시아, 일본, 통일비용, 통일편익, 경제, 비경제



Introduction

Since the fall of Berlin Wall, numerous studies on Korean unification have been conducted by both Korean and foreign scholars. A few studies have concentrated on the unification processes of the two Koreas; in most cases, the focus has been on the economic aspects or merely on the costs, and estimates have been based on one or two macro variables. Still, there is a need to scrutinize and articulate what will be necessary to prepare, what will likely happen, and what should be done to witness that silver lining—a successful and prosperous unified Korea—remains to be studied. Thus, the main purpose of this five-year project of the Korea Institute for National Unification (KINU) is to build a comprehensive architecture for unification costs and benefits during the entire unification process.

During the two years of research, we have conducted various sub-studies including: identifying major debates on unification, various case studies, and categorizing major factors. Especially, in order to balance against pessimism caused by cost-oriented unification studies, we have borrowed cost and benefit concepts and re-identified them. While adopting the generally used cost and benefit terms from economics, we extended conceptual denotation of the two concepts. In our analysis, the term cost contains burden, anxiety, efforts, and tasks, while benefit covers expectations, favor and effects. The reason for this conceptual stretch is our study comprehensively covers the entire unification process. To apply political and social factors that will significantly influence unification losses, gains, and the unification process itself, these non-economic factors be must taken into consideration. Based on this,

we have developed an analytical tool to identify, gauge and evaluate costs and benefits during the unification process: the Three-Stage-Three-Area Costs and Benefits Model. While sharing the basic premises composed in the model, we also produced a scenario after engaging in a long debate with experts in various areas. After reviewing preceding studies on the unification processes, the experts have reached a provisional conclusion regarding a path of unification—The Guiding Type of Unification. It consists of pre-unification conditions, three stages of unification, and the main objectives of each stage and each area.

Unification and integration consist of a multi-faceted and complex process influenced by domestic inter-Korean relations and the international environment. For the third phase of the five year project, this study expands its focus on to international research cooperation: A quantitative model-based approach to the economic changes in the Korean peninsula, and the costs and benefits of the Korean unification for neighboring powers. Accordingly, this has three parts. First, Chapters I and II briefly review our scenario and analytic model. The structure and process of unification depicted these chapters are the basic premises and assumptions to analyze, followed by the inter-Korean and international dimensions chapters. Distinctive features of the scenario and model: include, among various unification scenarios, the study illustrating the process under the principles of desirability, feasibility and probability. The analytic model also has unique characteristics. It has three stages of the unification processes—Division Dissolving, System

Integration and Nation Building, and three costs and benefits areas— political, social and economic. The designing of the scenario and the model necessarily includes a periodic time line at each stage. Both the scenario and the model share basic concepts and stages. Among them, political and social areas are substantially considered in the analyses.

In this study, we have assumed two years for the Division Dissolving stage, and ten years each for the System Integration stage and the Nation Building stage. During the previous studies, we have intentionally omitted the starting year of the unification process, in other words, the year triggering the Division Dissolving stage. However, we have found that we need to assume a provisional starting year to calculate and compare costs and benefits in both inter-Korean and international dimensions. The Division Dissolving stage begins in 2028 and lasts two years; other two stages each have ten-year periods; and all unification processes end in 2050. Each chapter of this book is written in accordance with this guideline.

Guiding Type of Unification and the Three-Stage-Three-Area Costs and Benefits Model

The Guiding Type scenario is the most plausible scenario examined under the principles of desirability, feasibility and probability. It assumes a gradual and asymmetrical unification process in a circumstance where North Korea begins to admit South Korea's economic achievements and embarks on asymmetrical unification conversations, based on a consensus by both parties.

Considering unification cost-benefit factors have periodical attributes, the analytical model consists of eighteen sub-models, with the model dividing the unification and integration process into three stages—the Division Dissolving, the System Integration, and the Nation Building. In addition, for the first time in this area of research, the model includes political and social factors into the model frame. Rather than calculate the unification costs and benefits by macro-level, a unit-cost and a unit-benefit approach has been adopted.

The Three-Stage-Three-Area analytic model is a micro approach based on unit-cost and unit-benefit. The eighteen sub-models have various advantages: One can individually review a specific stage and a specific area's costs or benefits by purpose. All indicators can be re-sorted by cost payers and beneficiaries, and each government department of the unified Korea can identify its tasks and achievements using the model's categories.¹⁾ During the conceptualization and estimation process,

¹⁾-Kyuryoon Kim, et al., *Analytical Model for Unification Cost and Benefit* (in Korean) (Seoul: Korea Institute for National Unification, 2012), p. viii.

however, we found some factors cannot be calculated into dollar units. Those qualitative factors are the price of democracy, making a new community between those who have different contemporary histories, fears of war—just to name a few. those factors make up another task that we will need to solve next year.

Costs and Benefits of Korean Unification: Inter-Korean Dimension

Part I calculates the major macroeconomic unification variables using a general equilibrium model. Chapter III describes a model of each Korea's economy, which is used in the following chapters' simulations. Chapter IV evaluates North Korea's reform effects during the Division Dissolving and System Integration stages. Chapter V, the most important stage in this macroeconomic analysis, deals with various variable changes during the System Integration period. Economics of the Nation Building stage and a unified Korea that finishes the unification process will be described in Chapter VI. Chapter VII summarizes the economic effects over all stages. During two face-to-face meetings with additional communications, the process of unification and economic policy changes by stages were keenly discussed. Due to the characteristics of this book, we separated out the model formulae and model descriptions into the Technical Appendix.

In the inter-Korean dimension, this study analyzes the unification and integration process by using the dynamic stochastic general equilibrium (DSGE) model. DSGE modeling is widely accepted as an

influential macroeconomic tool to explain aggregate economic phenomena, such as economic growth and the effects of monetary and fiscal policy. The model is useful to predict an economy that is affected by random shocks, such as technological change. It is a useful device to understand North Korea's impact on the South Korean economy as well as growth on the Northern part.

Costs and Benefits of Korean Unification: International Dimension

Part 2 analyzes the costs and benefits of neighboring states during the Korean unification and integration process. Chapters VIII through XI examine the concerns and expectations of Korea's four neighboring states—the U.S., China, Russia, and Japan—as well as the economic and non-economic (political and social) factors that the four powers will bear and acquire during the three stages.

During the long division of Korea, the four powers have experienced both tangible and intangible costs and benefits. After the unification of the Korean Peninsula, some gains and losses will be maintained and new cost-benefit factors will appear. Furthermore, they will depend on the process of Korean unification and integration. To avoid confusion, we proposed the scope and process of unification as explained in Chapters I and II. Scholars of the four states examined their countries' costs and benefits of Korean unification during the stages of Division Dissolving, System Integration, Nation Building.

I

Guiding Type of Unification²⁾

The purpose of this scenario is to draw a rational and future-oriented policy solution for Korean unification on the basis of positive perspectives, while recognizing previous studies on unification have long been emphasized on the negative scenarios. With that purpose in mind, we collected experts from their respective fields of study, each has long been engaged in the study of unification. During the expert panel's several brainstorming sessions, various subjects are given by areas and stages and all idea has consecutively been accumulated. The most important orientation of this scenario is that unification is considered as the birth of a new unified Korea rather than a return back to the past.³⁾

Before building the scenario, various types of unification have been reviewed by the criteria of speed and relative responsibilities. By speed, most unification scenarios are divided into being gradual or radical. Gradual process refers to a gradual South-North unification negotiation after successful internal reform in North Korea, while radical process supposes a speedy unification process after unexpected sudden change

²⁾-The following explanation on the Guiding type in this chapter is summarized from Kyuryoon Kim, *et al.*, *Guiding Type of Unification: The Route and Tasks* (in Korean) (Seoul: Korea Institute for National Unification, 2012).

³⁾-*Ibid.*, p. xxiv.

in the North. Meanwhile, the process again merges into symmetrical and asymmetrical relative efforts by each side. The symmetrical assumes the South and the North enter a unification process under the equal weight of efforts, while the asymmetrical presumes that unification is led by one side. By two criteria, four types of unification are identified: Equivocal type, Abrupt type, Guiding type and Absorptive type (see Table 1).

Table 1 Types of Unification

| | Gradual | Radical |
|--------------|----------------|-----------------|
| Symmetrical | Equivocal type | Abrupt type |
| Asymmetrical | Guiding type | Absorptive type |

After identifying four types of unification, each type has been discussed by panel experts: the basic evaluation principles are desirability, feasibility and probability. The two symmetrical types have been rejected due to their infeasibility and improbability, while the absorptive type has denied, considering the international favor of the situation. The panel concludes that the Guiding type of unification is expected to be the most desirable, feasible and probable path toward unification.

The Guiding type is hypothetical, yet it is the most plausible scenario which describes a situation where North Korea starts to acknowledge South Korea's economic success and begins asymmetrical unification talks according to a consensus agreed by both parties. The leading role of South Korea in North Korea's reform process would be positively

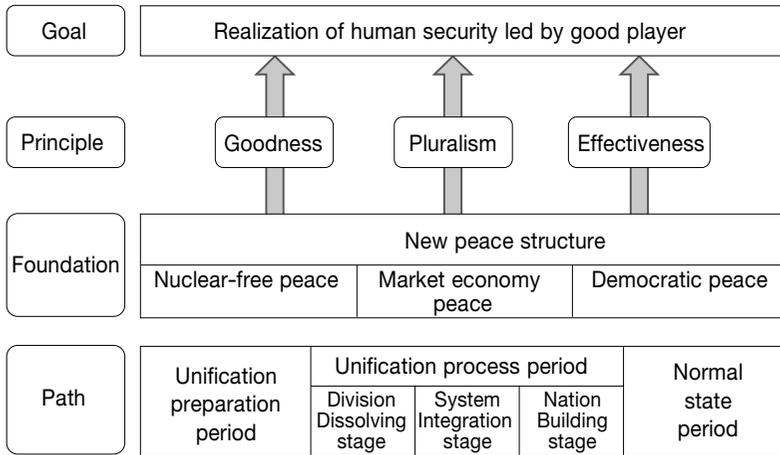
acknowledged by North Koreans. Since the world witnessed the economic achievements of South Korea, its modern and liberal economic reform can be an alternative system for the North. North Korea's positive perspective towards the South Korean system could effectively promote the idea and need for a transformation of its current system.⁴⁾

In line with the Three-Stage-Three-Area Costs and Benefits model which is described in Chapter II, it adopts spatial and periodical dimensions suggested by the model: first, it includes the political and the social areas as well as the economic area. Also, considering that unification has periodical attributes, the unification process is divided into a Unification Preparation period, a Unification Process period, and a Normal State period. The Unification Process period again is divided into three stages—Division Dissolving, System Integration, and Nation Building.

Three major actors will engage in the Unification Process—South Korea, North Korea, and the neighboring powers including the U.S. and China. The Guiding type unification will not begin unless pre-conditions are satisfied during the unification preparation period. The first condition assumes that North Korea starts a process of internal economic reform and pro-unification policy. The second condition is the South Korean people's consensus towards unification. And finally, international support for the Guiding type scenario is needed.

⁴⁾-*Ibid.*, p. xxviii.

Figure I-1 Conceptual Diagram: the Guiding Type of Unification



As shown in Figure I-1, the Guiding type of unification includes goals, principles, foundation, and path. First, the word “Guiding,” translated from Korean language, “seon-do,” does not only carries the meaning of “leading” but also connotes “leading to the right direction.” The ultimate goal of the Guiding type of unification is the realization of human security led by the leadership of respectable international actors. As the most advanced concept in international relations of the 21st century, human security provides fundamental conditions for living. This type of unification guarantees that it is not only the strong superpowers domination that exercise control over the weaker states, but rather the process assures that middle and small powers can also equally participate in the unification process. Also, nontraditional concepts of security, such as health and environmental issues, are linked

together with the traditional concept of security.⁵⁾

There are three pillars in the Guiding type of unification: **goodness** means that unification does not aim to return back to the time of division, but rather pursues a future-oriented policy and the creation of a brand new, unified Korea. **Pluralism** means a convergence of diverse opinions, derived from cooperation and mutual understanding, from the citizens of both Koreas, as well as their governments, throughout the unification process. **Effectiveness** implies that by proceeding to the gradual path of unification, the South Korean people will be given adequate time to evaluate the expected costs and benefits through various steps and stages toward unification. As a result, the potential costs of unification would be minimized.⁶⁾ In order to achieve these three pillars, each stage needs an essential foundation: a nuclear-free peace, a market economy peace, and a democratic peace. Thus, to guarantee each stage's foundation and principle, political efforts would be highlighted during the Division Dissolving stage while economic and social tasks would play central roles in the System Integration and Nation Building stages, respectively.

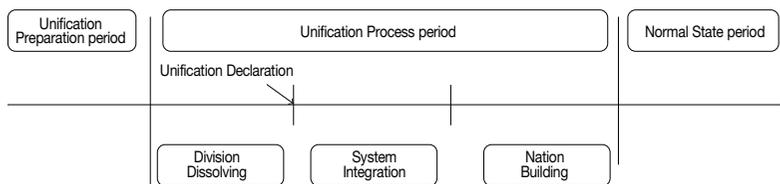
The Guiding type scenario identifies major policy objectives and issues that will occur during the three stages. In order to calculate and compare costs and benefits by inter-Korean and international dimensions, we suggest the duration of each stage. Deciding the triggering year of Division Dissolving stage is not meaning we are expecting the

⁵⁾- *Ibid.*, p. xxx.

⁶⁾- *Ibid.*, p. xxxi.

process begins at that moment. We have intentionally ignored the exact starting point or unification declaration day. We assume Division Dissolving stage begins in 2028 and lasts two years; while other two stages have ten-year periods each. That is, the range of unification process is 2028-2050. Each area's objectives at each stage are listed below.

Figure I-2 Unification Process



a. Division Dissolving Stage

The Division Dissolving stage is a period when South Korea attempts to stabilize chaos in the North before official unification is declared. This stage is from the beginning of the actual unification process until just before institutional integration begins. The starting point of this stage is the moment when our government takes the initiative in the actual unification process, with both governments politically consenting on unification, and the South's government starts to implement unification plans with full commitment: de facto unification starts.

Table 2 Main Objectives and Tasks of Division
Dissolving Stage

| Area | Main Objectives and Tasks |
|----------------|---|
| Political Area | Objective: Establish a unification committee and begin political dialogue for a unified Korea · Agree on building a unified political system and power structure · Unify on the establishment of a Constitution · Build a unification-friendly international environment · Minimize anti-unification movements and internal turmoil · Declare national unification |
| Social Area | Objective: Support to build a civil society in North Korea and begin inter-Korean citizen integration · Promote a pro-unification public opinion in the North · Establish inter-Korean civil joint meetings · Support building a civil society in North Korea |
| Economic Area | Objective: Secure support for unification of North Korean citizens and elites, and prepare a North Korean economic reform program · Prepare and supply emergency aid to guarantee North Korean citizens' basic livelihood security which would induce unification-friendly public opinion in North Korea. · Prepare North Korean economic reconstruction plan, budget support, and monetary union · Budget support towards the North |

b. System Integration Stage

The starting point of the System Integration stage is the end of the Division Dissolving stage at the moment of the official declaration of unification. This stage finishes when the two countries' political, social, and economic systems are completely unified. The System Integration stage would begin with a legal proclamation and end with political, administrative, and economic integration—de jure unification. We

consider completion of this integration as realization of the actual unification process. The System Integration stage requires the biggest economic efforts compared to those of the other stages.

Table 3 Main Objectives and Tasks of System Integration Stage

| Area | Main Objectives and Tasks |
|----------------|---|
| Political Area | <p>Objective: Establish a unified Korean government based on a liberal democracy</p> <ul style="list-style-type: none"> · Build an amicable international environment in Northeast Asia · Democratize in North Korea: Plural party system, general election · Dismantle North Korea party-government and military system with abolition of WMD |
| Social Area | <p>Objective: Build a civil society based on pluralism, integrated social welfare, and stabilize population mobilization</p> <ul style="list-style-type: none"> · Integrate public education · Stabilize real income to prevent massive mobilization, and achieve labor market integration · Establish nation-wide NGOs |
| Economic Area | <p>Objective: Stabilize a macro economy in North Korea, liberalization, and privatization</p> <ul style="list-style-type: none"> · Achieve economic integration between South and North Korea, economic reconstruction, and promoting production capability · Stabilize the North Korean economy and marketize · Mitigate international anxiety regarding early unification costs · Secure available international funds, including IMF, World Bank and IBRD, and expanding currency swaps with the U.S., China and Japan · Announce the succession of North Korean debt · Privatize state-owned properties in North Korea by stages · Train and educate North Korean people |

c. Nation Building Stage

This stage is a situation where the North Korean people are no longer discriminated legally or institutionally. In this stage, the political, social, and economic integration process conducted through the System Integration stage would be completed. This stage internalizes the social norms of unification that people in both Koreas do not want to return to the past or repeat the way it was. The Nation Building stage will require a great deal of social measurement as a social and psychological identity integration stage takes place. Policy towards a unified civil society (Lebenswelt) will take place to complete the creation of a unified civil society.

Table 4 Main Objectives and Tasks of Nation Building Stage

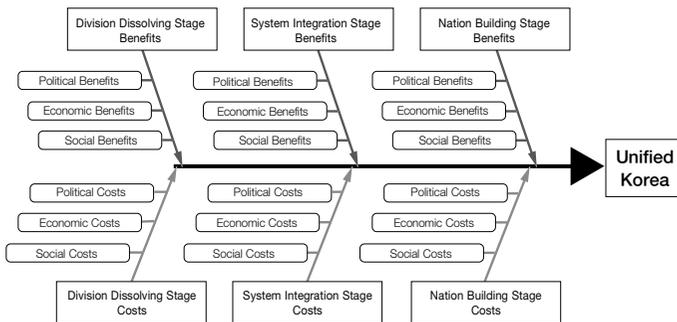
| Area | Main Objectives and Tasks |
|----------------|---|
| Political Area | Objective: Establish and settle upon a democratic and effective political-administrational system, and become an international peace-leading country <ul style="list-style-type: none"> • Integrate political parties and induce moderate multi-party system • Build an effective integrated administration-judicial system • Adopt a local democracy • Enlarge a unified Korea's international role • Introduce ODA, peace-keeping operation, NE Asian collective security organization |
| Social Area | Objective: A unified civil society (Lebenswelt) <ul style="list-style-type: none"> • Integrate a substantially equivalent welfare system • Create a socially and culturally justified unified Korea—where pro-division discourse becomes a socially deviant behavior • Lebenswelt/Lebensraum (unified living space) |
| Economic Area | Objective: Stable and sustainable development based on substantial economic integration <ul style="list-style-type: none"> • Build sustainable economic capability in the North • Build infrastructure continuously • Stabilize labor mobility |

II

Three-Stage-Three-Area Costs and Benefits Model⁷⁾

The purpose of the Three-Stage-Three-Area Costs and Benefits model is to build a more synthetic and comprehensive model for unification costs and benefits. As per the Guiding type scenario in Chapter I, the unification process is divided into three stages. The starting point of the Division Dissolving stage is shared with this scenario. All relevant parties—South and North Korea, and the international environment—are prepared and agree with the start of the unification process. All three stages consist of political, social and economic areas, and all areas are divided into the costs and benefits factors.

Figure II-1 Three-Stage-Three-Area Costs and Benefits Model



⁷⁾The following explanation on the Three-Stage-Three-Area Costs and Benefits Model in this chapter is summarized from Kyuryoon Kim, *et al.*, *Analytical Model for Unification Cost and Benefit* (in Korean).

As of Figure II-1, the Three-Stage-Three-Area Costs and Benefits model consists of eighteen sub-models divided into three stages, three areas, and costs and benefits. The 18 sub-models have various advantages: each sub-model can be combined with other sub-models so that one can easily review specific stages and specific each area's costs or benefits by purpose. For instance, one can look at the social benefits by stages or all costs in that stage. It also has a practical function that relevant government departments can identify their tasks and gains by using the model's categories before and during unification.

The model adopts a unit-cost and unit-benefit approach rather than calculate the costs and benefits by macro-level analysis. While macro-level analysis provides major variables of the overall trend, it has limits to project what is needed and what is expected at each stage and area during the long unification and integration process. From the initial process of model building, this study borrowed the well-known economic costs and benefits dichotomy. The concept, however, has been conceptually stretched from its economic term to be available in the following political and social areas: Cost, in our study, connotes burden, anxiety, efforts and tasks, while benefit implies expectation, favor and effects. The unit-approach also premises that all sub-models have mutually exclusive and exhaustive attributes; that is, all costs and benefits factors in the sub-model should be estimated separately. Under this premise, modularized eighteen sub-models have their own justification. For example, the total sum of the unit-costs of each variable will be the total cost of unification. Clearer conceptualization and identifying factors

of each sub-models and converting all factors into countable amounts are the most challenging tasks that next year's study should bear. Major factors of each sub-model are listed below.

1. Cost and Benefit Factors of Political Area

The political area requires intensive government efforts in the Division Dissolving stage for loosening the existing tension between the two states. If we carry out those political tasks successfully, it would provide an economically and socially stable unification process. The political purpose of the Division Dissolving stage is to secure future political integration and control possible chaos in North Korea. In this stage, numerous political policies and measurements for relieving the tension and other related problems would take place.

The political area, especially in the System Integration stage, aims for democratic nation building as well as legal and institutional integration. Also, legal and institutional foundations will be realized, such as the creation of elections and a unified legislature. With these political efforts and their results, we can expect to see a regime transformation towards democracy and a resolution of the North-South conflict. Based on unification talks conducted during the Division Dissolving stage, a unified government will be created with administrative measures for future nation building. Lastly, during the System Integration stage, lustration policy would be exercised with related costs and benefits being incurred.

Finally, the political purpose of the Nation Building stage is

stabilization of the unified administrative system and democracy. Political and administrative measures for democratic Nation- Building will be conducted. In the security and democratic perspectives, additional costs can occur by operating new unified security and military systems. We can also expect benefits from alleviating security anxiety, the denuclearization of the Korean Peninsula, and improving diplomatic influence and national branding value.

a. Cost and Benefit Factors of Political Sector

Political sector costs consist of unification talks, establishing a unified government, legislature/electoral system building and party system operation, and unified political system promotion. Benefits of political sector costs will result in conflict resolution and democratization.

Among costs, Establishing a Unified Government refers to all costs that make up the political system and power structure of a united Korea and the drafting of a unification declaration. Building and reorganizing the basic political and administrative system, holding general elections after planning and educating North Korean citizens follow the unification declaration.

Unified Political System Promotion will be costly during Nation Building stage. The new government may establish a new capitol, a new unified National Assembly, or a new power structure, including parliamentary democracy.

One of the major benefits expected in the entire process is Conflict Resolution. Peaceful unification process in the political as well as the

security sectors will directly affect the peaceful politico-security environment during whole unification stages. The democratization process also has positive effects during the second and third stages.

b. Cost and Benefit Factors of Administrative Sector

The administrative sector consists of public security and unified administration costs. The public security cost is highlighted due to possible increased cost during the first and early second stages. During the second stage, public security costs will merge into administration costs (police costs). Public security costs includes public order and protection of important facilities and personage. The unified administration costs include organization of the unified administration system, human resource management, and administration of the C4I installation. Local governance will start in the third stage. Both public security and unified administration costs will directly affect public safety and stability.

c. Cost and Benefit Factors of Security Sector

WMD control, military reorganization, and contingency planning will be major security sector costs. All three costs will continue from the first stage to the third stage. Denuclearization, relocation, and contaminated area control will take place with consultation of the UN and neighboring powers. Disbanding the North Korean military, military facility transformation and re-education of discharged soldiers will take place during the second stage. Conscription in the North Korean area

will be limited in the second stage, and will be eased in the third stage. New security systems under an integrated military organization will be operated in the third stage. The military, with help of administration (police), will take part in border control and public safety during first and early second stages.

Along with the political area conflict resolution, the same effect will be demonstrated by the WMD problem being solved. Stable and firm military readiness and its role on civil-military operation will guarantee public safety and border control.

d. Cost and Benefit Factors of Diplomatic Sector

During Division Dissolving stage, diplomatic efforts to create and maintain a unification-friendly environment will begin. Special diplomatic efforts toward neighboring states, including the U.S. and China, will be a pivotal part at all stages. Successful diplomatic efforts will guarantee improved international status and Northeast Asian tension reduction. A unified Korea will also guarantee internationally dispersed Koreans, both physically and emotionally.

2. Cost and Benefit Factors of Social Area

The social area consists of a civil social policy, the welfare sector, health and medical care, education, the culture/sports/tourism sector, and a humanitarian policy. As a humanitarian measure, emergency aid

will widely take place during the Division Dissolving stage. Also, institutional integration and its operation among the welfare, education, and health and medical care sectors will be focused during the System Integration stage. Especially, a policy towards a unified civil society (*Lebenswelt*) will take place in order to complete the creation of a unified civil society. Moreover, the Nation Building stage will require a great deal of social measurement at the social and psychological identity integration stage.

Various social costs are identified, including civil and public education, welfare, health, culture protection, sports exchanges and infrastructure building, and humanitarian measures. For benefits, social stabilization, improvements in the quality of education and social welfare, such as health and medic services, are expected.

3. Cost and Benefit Factors of Economic Area

In the economic area, economic measurements for correcting the distorted North Korean economic system will begin first. After that, the rest of the other measures will follow, such as economic stabilization, System Integration policies, and so forth. The System Integration stage requires the biggest economic efforts compared to the other stages. In the Nation Building stage, numerous policies conducted during the System Integration stage will become the groundwork for the North and South co-development policy. Through this process, the North and South would expect to enjoy the fruits of economic development together.

Major governmental expenditures for System Integration economic policy and infrastructure investments are counted as costs, but private investments targeting North Korea's relative advantage are not counted. Compare to the non-economic area, net benefits of the economic area will be realized earlier and the cost-benefit gap will be gradually greater over time.

a. Cost and Benefit Factors of Economic Policy Sector

In order to manage various unification costs, the government must set and implement an economic policy, and evaluate the results by its standards. We assume each stage needs primary targets and gains: First, the Economic Stabilization Policy refers to emergency expenditures and subsidies to the North Korean government, expanding special economic areas, including major transportation junctions and natural resource areas, plus North Korean economy investigation. Second, a System Transformation and Integration policy refers to market economy transformation, privatization, monetary union, gradual labor market opening, and gradual price liberalization. Finally, during the Nation Building stage, a unified Korea will pursue South-North synergic growth and balanced local development through the following targets: almost the same marketization and liberalization levels compared to the South and conditional investment to vulnerable areas. A successful policy implementation will guarantee economic vitalization and balanced development.

b. Cost and Benefit Factors of Industrial Sector

Development of the industrial sector will be led by private companies and capital, with the government taking a supporting position. However, the structure of the North Korean industrial sector has been distorted by the party-state government for decades: agriculture/forestry—21.6%, mining/manufacturing—34.8%, and services 43.9%. A unified Korea will support strategically vulnerable industries.

c. Cost and Benefit Factors of Economic Infrastructure Sector

The highest portion of governmental expenditures will be infrastructure costs. This area is divided into construction and housing, transportation, communications, energy, and environmental costs. Most infrastructure costs are not merely costs; the result of this sector's costs will enormously affect not only the Northern economy but also the unified Korea as a whole. Considering the current level of the North Korean economy, planned input of infrastructure costs will immediately increase production inducements and employment. These costs will be the major backbone of the Korean unification through rapid economic growth.

Part 1

**Costs and Benefits of
Korean Unification**
Inter-Korean Dimension

III

Overview of the Economic Model

In this chapter, we describe a model of the North and South Korean economies. We use this model in all subsequent simulations. The full details of the model are laid out in the technical appendix.

We seek to build a model that can accurately mimic the behavior of the economies of North and South Korea as unification is gradually implemented over the course of two decades. We adopt the Korean Institute for National Unification's (KINU) suggested timing, which includes three key phases: a Division Dissolving stage lasting for two years, a System Integration stage lasting a decade, and a Nation Building stage lasting another decade. This is preceded by a continuation of the current status quo, and followed by a period of full unification. Hence, we will be analyzing five stages or periods of time, each with different assumptions about the set up and behavior of the North and South Korean economies.

1. Model Building Strategy

This model has three main characteristics: it is nationwide (also known as economywide or general equilibrium), it is dynamic, and it is stochastic. We describe each of these in turn.

a. Nationwide

We seek to estimate the overall costs and benefits to North and South Korea assuming unification. This requires that we develop a model of each nation's overall economy. In economics, this means that we need to use what is called a nationwide model. Other terms used in the literature that mean the same thing in this context are "economywide" and "general equilibrium." Such models take account of production, consumption, investing, government spending, and international economic activity for the whole economy. Thus, it is nationwide. Also, the model must take account of interactions among these various activities. In doing so, the model describes how all of these markets reach equilibrium at the same time, thus the term "general equilibrium": equilibrium everywhere or in all of the economy's markets.

In constructing such models, economists use equations to capture producer and consumer behavior, as well as government activity, at home and abroad. We assume that producers seek to maximize profits as they produce today and invest in the future. Consumer behavior includes maximizing well-being as they balance work and leisure and purchases of various goods. The model requires that quantities supplied equal quantities demanded for goods that consumers buy and for the labor and capital that producers buy. The equations describing such behavior allow one to plug data into the model that can be used to capture current conditions: the status quo. A model using such initial data is called the baseline model. Then, starting from the status quo, researchers can change certain variables to simulate, or estimate,

nationwide economic effects should policies change. This can be done for one nation at a time or for multiple nations. Thus, for this study, we will specify baseline models for North and South Korea and then simulate the nationwide economic effects of having the North introduce market reforms and then having the two nations work toward economic unification over time.

b. Dynamic

Some nationwide models are static: they only capture economic activity within a given time period; these models do not consider the evolution of prices and quantities over time. Indeed, the common feature of all static models is that they have no time dimension at all. Dynamic models do analyze how the economy changes over time as a result of policy changes. Static models can be simpler and clearer. Dynamic models, though, allow researchers to capture forward-looking behavior as consumers and producers look to maximize well-being into the future. In doing so, such models can capture changes to the economy year-by-year.

We choose to use such a dynamic framework for this analysis because we believe that properly assessing Korean unification requires simulating the paths that the economies will follow over time. So, in our model, consumers are forward looking concerning their savings decisions. They form expectations of future income and seek to follow an optimal consumption path over time. Such household savings heavily influence the national capital stock, which, in turn, influences GDP. Government behavior in the model is also dynamic, though we do not model it

in detail. Instead, we specify simple rules that the government follows as it taxes and spends. These rules result in the dynamic evolution of key public capital stocks: military and infrastructure.

All of this dynamic modeling allows us to report two key types of results from our analysis: the new steady state for the economy after the policy change and the transition path to that steady state. By “steady state” we mean the new equilibrium—the new long-run values of key variables such as GDP, consumer welfare, wages, and capital stocks, among others, with all the values of these variables compatible with each other and with assumed economic behavior. The transition paths show values for each variable for each time period that is between the baseline and the new steady state.

Although it is dynamic, the model also includes static decisions, as households decide how much to work within each time period, and firms decide how much labor and capital to use each time period.

c. Stochastic

A stochastic model captures the fact that economies are subject to unforeseeable shocks. Thus, such a model will include movements in key variables that agents in the model view as essentially random. Nonstochastic, or deterministic, models do not allow for such unpredictability but are generally simpler and clearer and can be useful in certain contexts. At the same time, it is not too difficult to add stochastic elements to models like the one that we use in this study. So, we include stochastic elements in the interest of greater realism.

In particular, we assume stochastic processes for three variables: the nationwide productivity level, the real exchange rate,⁸⁾ and the rate of return on foreign investment. While our modeling includes long-run trends for these variables, there are also shocks that push the variables away from their trends for a time. These shocks are random.

Such unpredictability means that the model cannot make precise predictions of how policy changes today will affect key variables in the future. Instead, we can only use this modeling to specify probable ranges for them. These are known as confidence bands. We will follow convention and use 95% confidence bands, meaning that, if the model is accurate, we are 95% sure that variable in question falls in that range in that year.

d. Rational Expectations

Our model is subject to the Lucas critique⁹⁾ The Lucas critique points out that, when modeling economic policies, the model should allow agents to anticipate the possibility of policy changes and act accordingly. A model that relies on unanticipated “surprise” changes in policy may miss key features of real world behavior because such a model does not take account of how agents change their behavior in anticipation of policies that they know will be put in place in the future. For tractability, we do not assume agents anticipate the changes

⁸⁾-The real exchange rate is the amount of home nation goods that must be foregone in order to buy a unit of foreign goods.

⁹⁾-See Robert Lucas, “Econometric Policy Evaluation: A Critique,” *Carnegie- Rochester Conference Series on Public Policy*, Vol. 1 (1976), pp. 19-46.

that occur, which means that our model will misstate some behavior, though not all. For example, one policy change that we simulate below is the opening of capital flows from South Korea to North Korea. If agents in the model know that this change is coming, they may wish to save more prior to the relaxation of capital controls. Our model, though, assumes that they do not, because that policy change is unanticipated. However, the restriction on Southern investment in the North still binds whether the policy is anticipated or not.

2. Key Elements of the Model

With the general model characteristics described above in mind, we now give more detail on the model by specifying briefly its key features. As with the characteristics above, the details below apply to the both the North Korean and South Korean model and to the unified model.

There is a single, privately produced, non-tradable output good that is produced using three factor inputs: capital, labor, and publicly provided infrastructure. The amount of output depends on the amounts of these three factors used and on the nationwide productivity level. There is one other good/service: national defense produced by the government. Producing this military service requires labor and the same infrastructure that is used in private production, as well as military capital that is distinct from private capital. The government imposes taxes and uses the proceeds to pay for military capital and infrastructure. The government also conscripts labor for military service.

Domestic agents may buy ownership in foreign output. When they repatriate foreign assets back home, though, they pay a cost. This cost captures the transactions costs and risk connected with investing overseas. This cost also prevents unrealistically large flows of capital across international borders.

As mentioned above, the domestic productivity level, the rate of return on foreign investment, and the real exchange rate evolve randomly over time in ways that are essentially unpredictable.

Within this overall economic structure—again within both the North and the South—agents make decisions designed to maximize their well-being as follows.

Households strive to maximize utility over their entire lives and in the face of uncertainty. They do this by deciding how much to work, how much to save, and how much to spend on private output. These decisions generate a demand for private consumption, a supply of savings, and a supply of labor. Firms strive to maximize profits. Their decisions as they strive to reach this goal generate a supply of capital, which is combined with labor and infrastructure to generate a supply of the private good.

The interaction of all of these behaviors, combined with the requirement that the quantity supplied equals the quantity demanded in each market, generate domestic prices of output, capital, and labor. International prices are taken as given by domestic agents. This allows us to skip explicit modeling of the rest of the world, which would needlessly complicate the analysis.

We now proceed to describe in more detail the setup for key agents and sectors of the economy.

a. Consumers

Consumers are organized into households that maximize utility, or well-being, over an infinite horizon. This is a standard setup for many dynamic macroeconomic models. It helps to think of the household as an infinitely-lived dynasty where the current generation of workers cares about the well-being of their descendants. Households collectively supply their labor to the market in exchange for wages with which they purchase consumption goods and savings. The household's problem at each period of time is to choose the amount of savings that will balance well-being from consumption today against well-being from all future periods. An optimal amount of savings is one that is not so large as to leave the household with too little to consume today and not so small that it leaves it with too little in the future, either.

Households can choose to save by purchasing final capital goods, which they rent out each period, or by depositing funds in a financial intermediary. Hence, households maintain two stocks: a stock of physical capital, which is rented out each period, and a stock of savings, which is invested with a financial intermediary each period.

Households also interact with the government in at least two ways. First, some of their labor is conscripted by the government to serve in the military. Secondly, the household is also subject to taxation.

We assume that all households are identical, so that solving the problem for the representative household gives the solution for all other households as well. Hence, all households surrender the same proportion of their labor to conscription and pay the same tax bill. We also assume that all taxes levied are lump-sum and hence non-distortionary, for purposes of simplicity. This lump-sum assumption is standard in models such as ours, because we are not focused on the details of tax policy. While taxes do have to change as part of the unification process that we simulate, such changes do not play a central role in the analysis. Since modeling taxes more realistically adds significantly to the complexity of the model and does not undermine the main results, we have concluded that the benefits of assuming lump-sum taxes exceed the costs.

In summary, households generate a supply of labor, a supply of capital, and a supply of savings, along with a demand for final goods in the form of private consumption. They also supply labor for military service and tax revenues to the government.

b. Firms

We assume that firms maximize profits, which are the value of goods produced less the cost of hiring the factors that produce those goods. We assume that goods are produced with labor and capital as factors. Productivity of firms is influenced by the amount of infrastructure in place, with higher amounts yielding greater productivity. We imagine firms as springing into existence spontaneously each period, hiring labor and renting capital and then producing. When production is completed,

the firm uses its revenues to wages to workers rents to capital. Anything left over after these payments are profits. Firms thus have no dynamic decisions to make. They do, however, make static hiring and production decisions each period.

In summary, firms are demanders of labor and capital services, and suppliers of output goods.

c. Government

The government in our model engages in two important tasks: it provides national defense and also maintains public infrastructure.

National defense is provided by combining conscripted labor with military capital to produce a level of national defense, readiness, or deterrence. We model this as a production function that is very similar to the one that firms face. The government maintains a stock of military capital that depreciates over time and must be replenished. To do so, the government levies lump sum taxes on households.

Infrastructure is also a capital stock that is maintained by the government. It also depreciates over time and must also be replenished with new investment each period. Hence, government taxes are used to buy final goods which are added to the stocks of military capital and infrastructure.

We assume the government runs a balanced budget each period and therefore accumulates no debt or assets over time.

d. Financial Markets

We assume that financial intermediaries accept savings deposits from the households and invest them in foreign capital. This capital earns a world market return, which has a random component from the point of view of domestic investors. To replicate the sluggishness of international investment observed in real economies, we assume that average returns on foreign investment are negatively related to the total amount of foreign investment the country does. We set the elasticity of this return high enough to generate realistic international capital flows in our model.

e. Exogenous Processes

The level of technology used in the production of goods and defense is assumed to have a trend growth rate. However, growth in technology is not smooth over time but fluctuates randomly from period to period. We specify an exogenous stochastic process for the level of technology; this process has a high degree of persistence. This means that when technology is above its trend value in the current period, it is likely to remain above trend in the next period. Nonetheless, technology does in the long-run revert to the trend value.

We make similar assumptions about the return on foreign capital and the real exchange rate.

3. Unification Simulations

We will now describe the model simulations that we will use to estimate the key effects of unification steps that the two Koreas might take. Trying to project the actual steps that the two Koreas might take as they strive to unify and the timing of those steps is highly speculative. Some regimes can change greatly and without warning, while others can persist long beyond what most experts predict. Still, these simulations—conceived in consultation with our colleagues at KINU—are designed to reflect steps and timing that are not unrealistic and which were previously determined to be the mostly likely to occur should unification actually become a possibility.

As mentioned before, our modeling will cover five main periods:

- ① The unification preparation period, covering the years from 2014 to 2028. During this stage, the Northern economy reforms to become a market economy, while no change occurs in the South, except trend growth, which also occurs in the North. There are no efforts to unify during this stage.
- ② Stage 1 of unification, a two-year Division Dissolving stage, in which efforts to unify begin. In this stage, the South sends aid transfers to the North.
- ③ Stage 2 of unification, the System Integration stage, running from 2030 until 2040. This is the stage in which most of the economics work of unification takes place.
- ④ Stage 3 of unification, the Nation Building stage, which runs from 2040 till 2050. The South phases out aid transfers to the North as both economies continue to become more unified.
- ⑤ The unified nation period, 2050 and beyond. In this stage, unification is complete; the North and South economies are fully integrated.

We now describe each these periods in more detail, shedding light on the actual policy changes introduced into the model for each nation.

a. Unification Preparation Period, 2014-2028

There is no movement toward unification in this stage, but we do assume that one important change takes place: the North Korean economy reforms so that it becomes a market economy, rather than a planned or command economy run by the government. Thus, we assume that, by the end of this time period, the same private economic behavior that drives the South economy does so in the North as well: households seek to maximize well-being by working and saving and spending, while firms seek to maximize profits.

We also assume that something else occurs during this stage: each economy grows with a constant trend rate of 1.7%. This is the same trend growth rate that we assume for all of the simulations in this paper and is consistent with the growth of technology worldwide. During subsequent simulations, policy changes in addition to this trend growth will affect key variables. During this first stage, though, this trend growth represents the only change within the model, besides the presumed reform in the North. This does not mean that the economy will necessarily grow at 1.7% in any given year because of the random shocks built into the model. Imposing this trend, albeit with shocks, allows us to project the model forward 14 years, at which point we allow unification to begin. We use this number for the growth rate because this has been average annual real growth rate in South Korea for the past 14

years. It is hard to know what the rate has been in North Korea and even harder to predict what it will be going forward. So, we assume that South Korean growth has been driven by forces outside of the economy and that those same forces will drive North Korean growth over the next 14 years. While one could debate which average growth rates are most likely to result, since no one knows what will happen, we do not seek to wade into such a debate and simply go with these numbers.

b. Stage 1: Division Dissolving Stage, 2028-2030

During this brief stage, economic integration between the two Koreas begins. The South significantly steps up its aid to the North in preparation for formal unification. This aid comes in the form of humanitarian transfers and comes out of South tax revenue. The amount of the transfer is assumed to be 0.5% of South Korean GDP each year, which, based on the projected size of the South Korean economy in 2028, works out to about eight trillion won.

c. Stage 2: System Integration Stage, 2030-2040

This is the most important and extensive stage. The KINU scenario associates the beginning of this stage with formal political unification of North and South Korea. We assume that a number of policy changes take place and that, by the end of the stage, economics unification is mostly complete. There are four main types of changes: increased

aid flows from the South to the North, military restructuring in both nations, a freer flow of capital between them, and a freer flow of labor between them.

(1) Aid

We assume that the humanitarian transfers that began during Stage 2 continue throughout this stage. These transfers are designed to help all North Koreans emerge from life-threatening poverty, an important precursor for full unification.

We also assume that, during this stage, the South begins sending two more types of aid: infrastructure aid and unskilled wage subsidies. The rationale for the former is that the economies would not be able to integrate successfully unless the North's productivity, which would likely remain far below the South's in 2030, converges toward the South's. Bolstering infrastructure in the North would play a crucial role in this process. We assume that the amount of this transfer is 1% of South Korean GDP each year, which translates to about 17 trillion won. This aid comes at the cost of lost investment in Southern infrastructure. The total amount of infrastructure investment in the South is 6.5% of GDP and remains at this level throughout our simulations. However, in this phase 5.5% of GDP is invested in the South's infrastructure and 1% is sent to the North to be used to build up infrastructure there. This leads to slightly slower growth in the South during this stage of unification, but very high rates of growth in the North.

In addition to the aid described above, we assume that the South

sends wage subsidies to North Korean workers. The rationale for this type of aid is that it should help poor North Koreans who are striving to better themselves. Also, subsidizing wages is often thought to be superior to straight cash transfers, because wage subsidies encourage people to work and because wage subsidies are not subject to being skimmed by the government, as is the case with cash transfers. In our simulations, it turns out that these subsidies are not large: just 1% of the South Korean wage, though, since the South Korean wage is projected to be about 15 times higher than the North Korean wage in 2030, that 1% subsidy from Southern wages represents 15% of Northern wages. By the end of the decade, as North Korean wages trend up, the subsidy amounts to four trillion won. That is a tiny piece of South Korean GDP but would play a significant role in boosting North Korean living standards, even after the progress that we expect the North Korean economy to make by 2040.

This three-pronged aid strategy—humanitarian transfers, infrastructure aid, and wage subsidies—would help the North to transition more easily to a well-functioning market economy, which is a needed prerequisite for viable unification.

(2) Military Restructuring

We assume that, during the System Integration stage, the North and South militaries merge. All soldiers come under a joint command, and the military capital in each nation combines into a single military capital stock for both nations combined. The conscription rates are

equalized in the two nations, and that rate is chosen so that the total military personnel shrinks to 500,000 over the long run. It turns out that this requires that 0.067% of the North and South labor forces are drafted. The military investment rate for each nation is assumed to be equal and is set to a level that results in the final military output for unified Korea being equal to the South's military output before unification.¹⁰⁾

Also, as part of this military restructuring, we assume that military production is phased out in the North and that the military workers and capital there move to the private sector. As the two armies and military capital stocks merge, there is no need to for the military in the North to be in the business of producing goods and services. We assume that private provision is more efficient than military provision of final goods. Gradually reducing military production in the North boosts productivity there so that, by the end of this stage, the North and South are equally productive.

(3) South to North Capital Flows

We also assume that, during the System Integration stage, there is an increase of capital flows from the South to the North. The North has a much smaller capital stock than the South, so returns to capital are much higher in the North. We do not assume that capital is suddenly allowed to flow freely into the North during Integration. In reality,

¹⁰⁾-This means the total level of defense services for the entire Korean Peninsula is roughly half what it was prior to unification.

that would be quite disruptive. Also, when large amounts of capital move at once, it makes it difficult to find the new equilibrium in the model. Instead, we assume that the amount of capital that is allowed to move into the North is set by an annual quota system. The quota gradually expands over the course of the 2030s until the quota is not binding by the start of the 2040s. At this point, which marks the end of the System Integration stage, capital markets in the two nations fully merge and the quotas are removed.

(4) North to South Labor Flows

We also assume that labor movements become freer during this decade. Northern workers want to move to the South to get higher wages but cannot before this stage. During this stage, a quota of 200,000 workers is allowed to migrate each year. This results in 2 million North Koreans moving into the South over the course of the decade. While this is a significant influx of labor, it is only 4% of the South Korean population. Given that this occurs during a time of significant efforts to reunify and that all of these immigrants are ethnic Korean, it seems like such immigration would be assimilated without undue difficulty.

d. Stage 3: Nation Building Stage, 2040-2050

Two key changes occur during this stage. First, the South ends its aid to the North. So, the South retains the humanitarian and infrastructure funds and the wage subsidies it had been sending. Second, to replace the lost aid from the South, the North undertakes significant

infrastructure investment. Currently, the North, with its backward, subsistence economy, has devoted almost no resources to infrastructure. In fact, our modeling implies that, currently, only 0.1% of North Korean GDP goes toward infrastructure. We posit that the major changes projected to occur in the 2030s finally make it possible for the North to build up its own infrastructure. More specifically, we assume that, starting in 2040, they, like the South, devote 6.5% of GDP to infrastructure investment. This change, along with the free flow of capital into the North, allows it to grow significantly on its own during this decade.

As noted above, by the start of this stage, capital flows freely from the South to the North. Such free flows allow returns to labor to equalize in the two nations in the long-run. Thus, starting with this stage, wages begin to equalize, and the incentive for labor to move from the North to the South falls. In other words, during the 30s, with restricted capital flows, labor went to where the capital was; during the 40s, with free capital flows, the capital comes to labor, so that it need not move.

e. Unified Nation Period, 2050 and Beyond

Starting with 2050, we assume that the North and South Korean economies function almost as a single economy. One key aspect of the economy, however, is still not fully integrated: infrastructure. Infrastructure in the two nations remains distinct so that North Koreans do not have access to South Korean infrastructure, and vice-versa. Infrastructure grows more rapidly in the North than the South, and eventually the amount of infrastructure per capita become the same in both regions. This is

a long-run result, however, and in the short run the effects of unequal infrastructure linger to the end of our simulations in 2060.

Table 5 summarizes each of the five stages of Korean unification that we will analyze in the subsequent chapters of this study.

Table 5 Summary of Economic Policy Changes

| Period | | Policies |
|-------------------------|-----------|---|
| Unification preparation | 2014–2028 | <ol style="list-style-type: none"> 1) Largely maintain the current status quo. 2) South and North both grow at an average annual rate of 1.7%. 3) South is an open economy, North is a closed economy. North has a market system, but low levels of investment in infrastructure and high levels of defense. |
| Division Dissolving | 2028–2030 | Humanitarian aid transfers from the South to the North begin. |
| System Integration | 2030–2040 | <ol style="list-style-type: none"> 1) Humanitarian aid transfers from the South to the North continue. 2) Infrastructure transfers from the South to the North begin. 3) Wage subsidies for North workers, paid by the South, begin. 4) All military personnel come under joint command. North army is phased out via natural attrition. North's military capital merges with South's in a unified military. 5) New army conscripts come from both the North and South. 6) The conscription rate is set to generate 500,000 military personnel in the long run. 7) Investment in military capital rises to a level that ensures a steady state level of defense that is the same for unified Korea as South alone had prior to unification. 8) Labor is allowed to migrate from the North to the South under a quota system that allows 200,000 migrants per year. 9) Capital is allowed to flow from the South to the North under a quota system as well. 10) Production by the military in the North is phased out. |

| Period | | Policies |
|-----------------|-----------|--|
| Nation Building | 2040-2050 | <ol style="list-style-type: none"> 1) Humanitarian aid transfers, infrastructure transfers, and wage subsidies to the North are phased out. 2) Labor is free to migrate so that the wage is the same in the North as the South in the long run. 3) North begins to pay for its own infrastructure. Conscription and tax rates in the two regions are fully equalized. |
| Unified Nation | 2050- | <ol style="list-style-type: none"> 1) Korea is a single economy. 2) Regional differences persist, but slowly disappear. |

IV

Economic Effects of the Unification Preparation Period and the Division Dissolving Stage

In this chapter and the three that follow it, we present the economic results of our model simulations for each of the stages. Following the Korean Institute for National Unification's (KINU) most likely unification case and assuming formal unification begins in the year 2030, we consider a short Division Dissolving stage that lasts for two years. Prior to this, however, we must consider the evolution of the North and South economies over time under some status quo. We consider a case where the North has engaged in some moderate set of market reforms that allow for competitive pricing of labor and capital. We also assume free accumulation of private capital. However, investment by the government in infrastructure and military capital are kept at the same percentage of GDP as today. Conscription rates are also maintained at current levels.

We report and discuss the projected time path of key variables through the relevant years—we call these paths “baselines”—without random shocks in the economy, as well as 95% confidence bands around those paths. The confidence bands result from allowing random shocks to productivity, the return on foreign investment, and the real exchange rate. These three variables are notoriously hard to model and predict. Thus, macroeconomists commonly assume that they follow random processes. We adopt the same procedure in this study. To avoid reliance

on a particular set of random draws, we generate one-thousand artificial histories, each with a separate set of randomly drawn shocks to productivity, foreign return, and the real exchange rate. As these three variables are allowed to vary randomly in the model, they generate a range of possible values, instead of a single baseline for each year of the simulation. This range generates the confidence band for each variable. We report the range where 95% of the simulated values for each variable lie within, with 2.5% above the range and 2.5% below. Key variables that we focus on include GDP, consumption, wages, capital stocks, the infrastructure level, interest rates, the trade balance, and productivity levels. We also discuss the implications of the results. In this chapter, we present and discuss the results from both the first, preliminary, stage and the second stage.

1. Unification Preparation Period, 2014-2028

As mentioned above, this first stage, from now until 2028, does not involve simulating any unification policies. We assume that, during this time, the North and South grow at a constant trend rate, allowing for random productivity shocks, and that, by the end of this time, the North has reformed into a market economy. The market reform assumption does not generate any modeling results. It simply allows us to use the market-based model that we have developed and described in Chapter III to simulate unification policies starting with Stage 1, Division Dissolving. So, this stage serves the purpose of preparing the

groundwork for the first steps toward unification that occur during that next stage. Thus, in this section, we report on what happens to key variables as both economies grow from 2014 till 2028. The final values of these variables become the initial values for a free market North Korea and for South Korea in 2028.

Table 6 shows the starting and ending baseline (nonrandom) values for GDP, consumption, wages, the private capital stock, the military capital stock, infrastructure, and interest rates, as well as the upper and lower 95% confidence limits for each. The table also shows the percentage changes in the baselines and the 95% confidence limits for the percentages.

Table 6 Unification Preparation Period (2014-2028)

Won Values (in trillions unless otherwise noted)

| | North | | | South | | |
|------------------------|--------|--------|------------------|--------|--------|------------------|
| | 2014 | 2028 | 95% C.I. | 2014 | 2028 | 95% C.I. |
| GDP | 36.6 | 46.4 | [45.8, 47] | 1270 | 1610 | [1590, 1630] |
| Consumption | 19.4 | 24.6 | [23.5, 25.7] | 1040 | 1320 | [1260, 1380] |
| Annual Wage (millions) | 2.37 | 3.01 | [2.97, 3.04] | 39.3 | 49.9 | [49.1, 50.5] |
| Private Capital | 68.6 | 87 | [82.5, 91.8] | 2140 | 2710 | [2570, 2860] |
| Military Capital | 224 | 285 | [278, 291] | 200 | 253 | [247, 259] |
| Public Infrastructure | 0.0641 | 0.0813 | [0.0794, 0.0832] | 1300 | 1650 | [1610, 1690] |
| Interest Rate (%) | 0.0814 | 0.0814 | [0.0784, 0.0843] | 0.0908 | 0.0908 | [0.0872, 0.0944] |

Percent Change

| | North | | South | |
|-----------------------|-------|-----------------|-------|----------------|
| | | 95% C.I. | | 95% C.I. |
| GDP | 26.8% | [25.1%, 28.4%] | 26.8% | [25%, 28.4%] |
| Consumption | 26.8% | [25.3%, 28.0%] | 26.9% | [26.2%, 27.4%] |
| Annual Wage | 27.0% | [25.1%, 28.4%] | 27.0% | [25%, 28.4%] |
| Private Capital | 26.8% | [20.3%, 33.8%] | 26.6% | [20%, 34%] |
| Military Capital | 27.2% | [23.9%, 29.8%] | 26.5% | [23.9%, 29.9%] |
| Public Infrastructure | 26.8% | [23.9%, 29.8%] | 26.9% | [23.9%, 29.9%] |
| Interest Rate | 0.0% | [-3.67%, 3.51%] | 0.0% | [-4%, 3.93%] |

In this stage, with its constant growth trend, the baseline paths for GDP in both nations simply follow a linear trend with 1.7% growth. At the end of the 14-year period, the baseline GDP in each nation is $(1.017)^{14} \times 100 = 27\%$ higher in 2028 than in 2014. With no other policy changes simulated, several other key variables also increase by this same 27%, again just looking at the baseline with no random shocks. The other variables that increase by this same amount include consumption, wages, the value of the private and military capital stocks, and the value of infrastructure. With the whole economy expanding at a steady rate and no reallocation of resources within the economy, all major variables expand at that same steady rate. The steady growth and lack of policy changes during this stage cause the interest rates to stay at their equilibrium levels. The South gets a higher return on investment but not much higher. While the investment climate in the South is far superior, the North's interest rate is propped up by the small amount of capital there.

When we allow for random shocks to productivity, this creates ranges of possible values for these variables. These ranges differ somewhat across the main variables but are the same for both the North and the South. This is because both nations experience the same type of change in the model: Constant trend growth with random shocks to productivity, returns on foreign investment, and the exchange rate. For each nation, the 95% confidence bands around the 27% baseline increase for GDP and wages are 25.1% on the low end and 28.4% on the high end. The range is somewhat narrower for consumption: 25.3% to 28.0% in the North and 26.2% to 27.4% in the South. This is not surprising since we expect consumers to smooth consumption in the midst of random shocks. Capital and infrastructure, though, have wider ranges. These variables are more sensitive to the productivity and foreign investments shocks built into the model. The range for infrastructure and for military capital is 23.9% to 29.8%. The private capital stock has the widest range of all: 20.3% to 33.8%. One reason that the capital stock has a wider range is that it is determined by market forces, while infrastructure military capital levels are determined by the government and held constant over this time period, thus making these less volatile in the model.

Figures IV-1 through IV-5 show the paths of these key variables during the unification preparation period. As discussed above, with steady growth and no policy changes, these variables follow steady paths, as is seen in the graphs. Figure IV-1 presents the paths for GDP and consumption in the North and the South. One can see the steady trend

of these variables, as well as the starting and ending values. These graphs also capture visually the large gap in development and living standards between the North and the South.

Figure IV-1 Non-Random Time Paths for GDP and Consumption

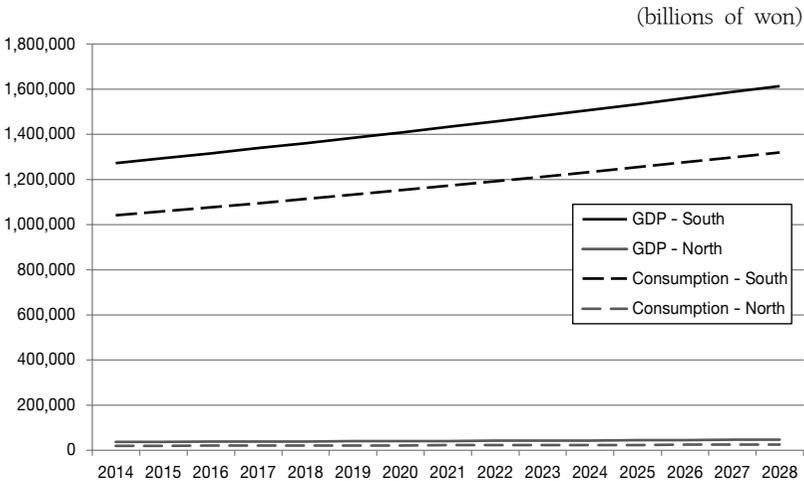


Figure IV-2 shows the wage trends and also visually underscores the large gap in economic welfare between the two nations. While the Northern wage line looks flat, it does, in fact, increase by 27% over the 14 years, as described above. The wage level is so low, though, that it is hard to discern the growth in the graph.

Figure IV-2 Non-Random Time Paths for Wages

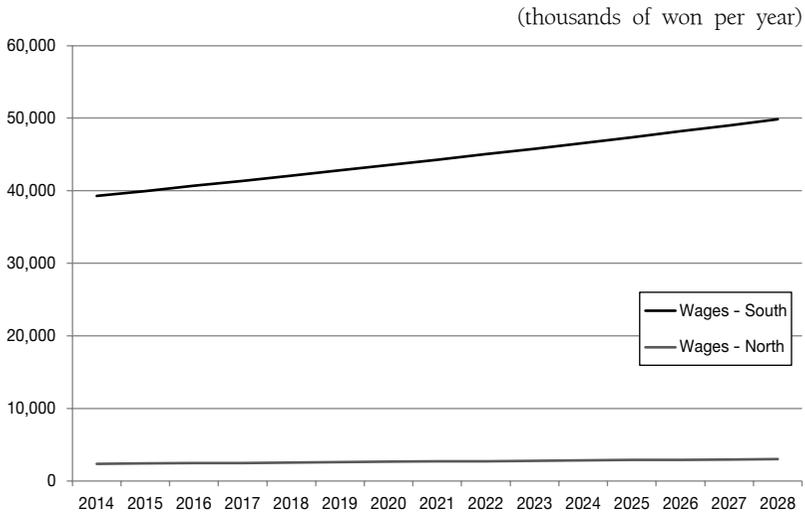


Figure IV-3 presents the data for both capital stocks, private and military, as well as infrastructure. Again, there is a large gap between the North and the South for private capital stocks and for infrastructure. The value of the North Korean infrastructure, in fact, is miniscule, which is a major factor in the North's extremely low level of development. Note, though, that military capital plays a much larger role in the Northern economy; in fact, the North has a somewhat larger military capital stock than the South.

Figure IV-3 Non-Random Time Paths for Various Capital Stocks

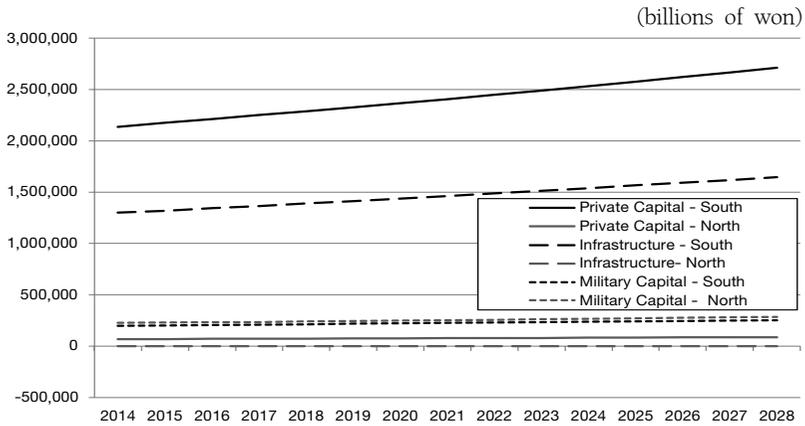


Figure IV-4 shows the interest rates for the two nations. As mentioned above, these rates remain steady throughout this period of trend growth, and the rate is higher in the North than the South.

Figure IV-4 Non-Random Time Paths for Interest Rates

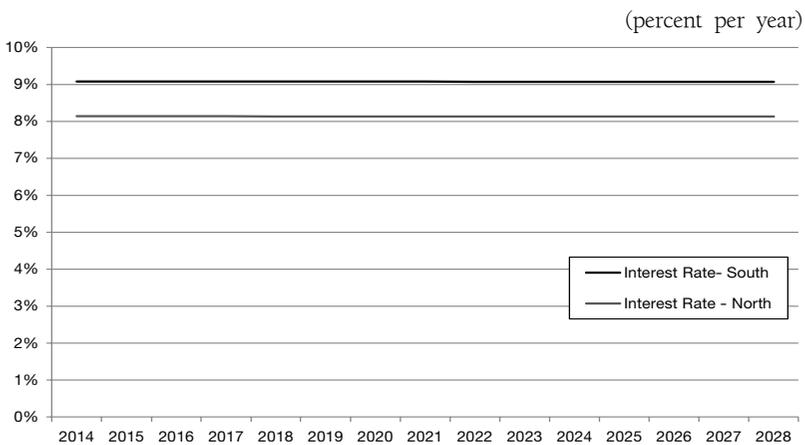
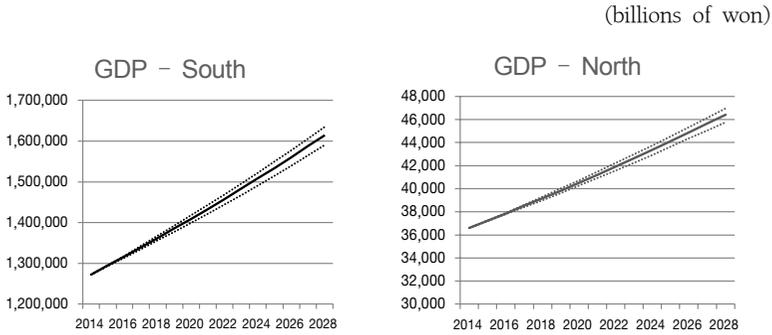
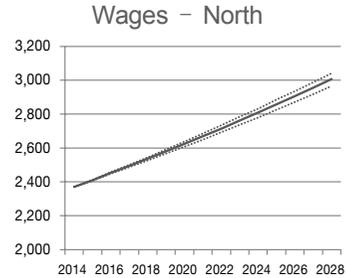
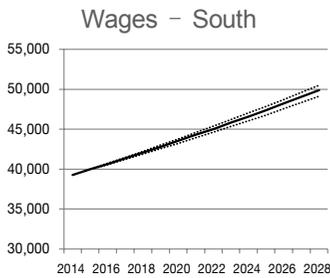
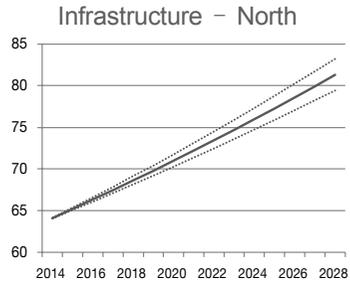
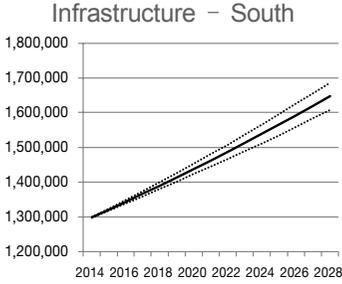
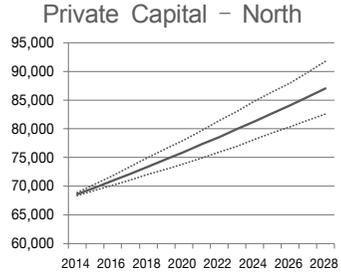
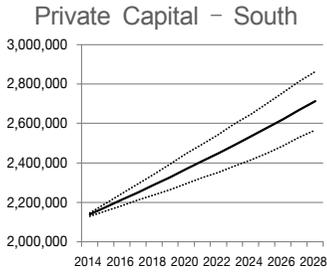
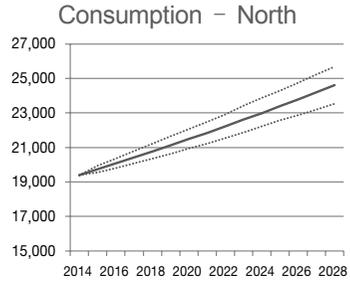
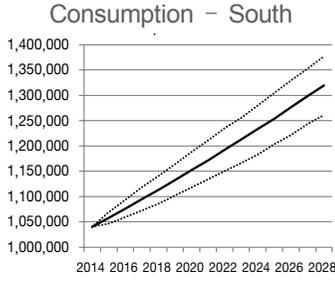


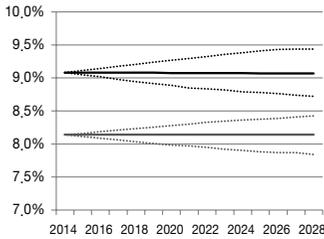
Figure IV-5 shows the confidence bands for most of the key variables. These bands indicate that there is not much uncertainty in the model surrounding these variables, as discussed above and as shown in Table 1 above. The uncertainty does increase, though, the further into the future we project, as one would expect. The last two panels of Figure IV-5 show the interest rates and military capital stocks for each nation. Note that the bands for these two variables do not overlap. So, given the model, we conclude that, throughout the unification preparation period, we are 95% sure that the South Korean interest rate always remains above the North Korean interest rate and that the North Korean military capital stock remains above that of the South. Thus, within the model, shocks to productivity, the return on foreign investment, and the real exchange rate are not large enough to cause the ordering of the interest rate and military capital to flip.

Figure IV-5 Time Paths with Confidence Bands for Key Variables

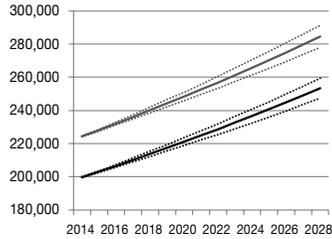




Interest Rates – South & North



Military Capital – South & North



These projections provide starting points for Stage 1, the Division Dissolving stage. Our analysis below of how unification affects key economic variables in North and South Korea does not depend on the particular starting values that we end up with for Stage 1. This is why we have not invested too much energy in projecting the states of the North and South Korean economies in 2028. We don't need precise projections for the subsequent analysis; we only need reasonable ones.

Another point is worth noting here. As mentioned, we assume that the North Korean economy reforms over these 14 years. Given the high rates of growth observed in other reformed and reforming economies, it is quite possible that such reform would boost North Korean growth by more than the assumed 1.7% per year. So, these North Korean starting values for the Division Dissolving stage are likely on the low end. This means that the subsequent simulations—Stage 1 and beyond—will likely provide conservative estimates of the ultimate gains to North Korea of complete unification over the next several decades, since starting the unification process at a higher level of economic development would likely lead to higher subsequent gains for the North Korean economy.

2. Stage 1: Division Dissolving Stage, 2028-2030

As mentioned above, this brief stage involves the South sending humanitarian aid to the North. This takes the form of a simple transfer of money. The amount of this aid is 0.5% of the South GDP in 2029 and 2030. Based on our projected size of the South Korean economy in 2029, this amounts to about eight trillion won. This aid comes on top of the growth trends in place in the model from the beginning. So, the same variables that grew with an average trend of 1.7% per year in the unification preparation period continue those trends. For these two years, in addition to those trends, South Koreans have to pay an extra 0.5% tax on their income, which reduces their consumption by a similar amount,¹¹⁾ while North Koreans get a big boost to consumption in percentage terms, since their consumption level is much lower than the South's. The model's baseline prediction, in fact, is that this aid would boost North Korean consumption by 35% in 2029, the first year of the aid, while South Korean consumption would increase by 1.1%, somewhat below the 1.7% trend growth in consumption. In the next year, 2030, consumption in both the North and the South increase by the trend amount of 1.7%. For the North, this trend growth comes on top of the 35% boost generated by the aid. The second year of aid does not result in an additional 35% boost; it simply allows North consumption to expand by 1.7% on top of that 35%

¹¹⁾-As discussed in Chapter III, we assume a non-distortionary flat tax. If we were to assume that taxes were imposed on income, property, sales or in some other distortionary way, this would lead to additional decreases in South Korean consumption beyond what our simulations indicate. We are quite confident, though, that putting distortionary taxation in the model would not change any of the main conclusions of our analysis.

higher level. Without the second year of aid, North consumption would drop by about 35% back to the original baseline. By a similar logic, in the South, its consumption gets bumped down by about 0.5% in 2029 and stays at that slightly lower level in 2030 as it continues to send 0.5% of GDP to the North. Consumption in both the North and South grow by the trend amount of 1.7% in 2030 but on different baselines: 35% higher in the North and 0.5% lower in the South.

GDP in the North during this stage does not receive the huge boost that consumption does: Northern GDP continues at its 1.7% trend growth. The aid from the South does not boost production in the North; that aid is assumed simply to go to consumers, who then are able to boost to their meager spending to a large degree. Noting what happens to North consumption in won helps to provide perspective on what is happening. The model implies that Northern consumption in 2028 is 24.6 trillion won. This is only 2% of Southern consumption. Since the North is assumed to have half the population of the South, this means that Southern per capita consumption in 2028, before the aid infusion from the South, is 4% of the South's. The 35% boost in Northern consumption that comes from the aid translates to a 8.6 trillion won boost, up to 33.2 trillion won in 2029 from the 24.6 trillion value in 2028. This value of 33.2 trillion won in 2029 is still only 2.5% the South's projected consumption amount in 2029 (1.36 quadrillion won), or about 5% on a per capita basis. So, the aid does bring large gains to Northern consumption, but they are starting from such an abject level that they still end up well below what Southern consumers have.

For the two years of this Division Dissolving Stage, the model predicts that, in the baseline, consumption expands by 37% in the North and 3% in the South, as shown in Table 2. These are not shown in the table, but this burst of aid to the North requires large percentage changes in taxes. South taxes increase by 11%. The North, with this influx of funds, can cut back its taxes. Since its tax base is much lower, the eight trillion won infusion leads to a 43% reduction in their tax bill. GDP, wages, private capital, and military capital in both nations increase by amounts close to the trend growth rate of 3.4% over the two years. Infrastructure in the North increases by the same trend amount, too, but infrastructure in the South does not grow by as much. The shift of tax funds to the North leaves less money for South infrastructure, so that it expands by only 3% over the two years. As in the unification preparation period, the interest rates in both nations remain steady without random shocks. While Stage 1 has a policy change that the unification preparation period does not have, the change—a simple transfer of money—does not affect interest rates.

Those are the baseline, nonrandom predictions. Taking account of random shocks to the economy, the 95% confidence bands around GDP and wages are 1.8% to 4.8% in both nations. These are neither very wide nor very narrow. So, the model implies that we can be fairly certain about GDP and wages during this Division Dissolving stage. Military capital and infrastructure, which are more sensitive to the model's productivity shocks than are output or wages, have wider ranges: [0.7%, 6.3%] in the North and [0.7%, 6.1%] in the South.

Table 7 Division Dissolving Stage (2028-2030)

Won Values (in trillions unless otherwise noted)

| | North | | | South | | |
|------------------------|--------|--------|------------------|--------|--------|------------------|
| | 2028 | 2030 | 95% C.I. | 2028 | 2030 | 95% C.I. |
| GDP | 46.4 | 48 | [47.3, 48.7] | 1610 | 1670 | [1640, 1690] |
| Consumption | 24.6 | 33.8 | [32.6, 35] | 1320 | 1360 | [1290, 1420] |
| Annual Wage (millions) | 3.01 | 3.11 | [3.06, 3.15] | 49.9 | 51.6 | [50.7, 52.2] |
| Private Capital | 87 | 90 | [85.1, 95] | 2710 | 2810 | [2640, 2970] |
| Military Capital | 285 | 294 | [287, 303] | 253 | 262 | [255, 269] |
| Public Infrastructure | 0.0813 | 0.0841 | [0.0819, 0.0864] | 1650 | 1700 | [1660, 1750] |
| Interest Rate(%) | 0.0814 | 0.0814 | [0.0782, 0.0847] | 0.0908 | 0.0908 | [0.0871, 0.0946] |

Percent Change

| | North | | South | |
|-----------------------|-------|-----------------|-------|-----------------|
| | | 95% C.I. | | 95% C.I. |
| GDP | 3.5% | [1.8%, 4.81%] | 3.7% | [1.79%, 4.8%] |
| Consumption | 37.4% | [32.3%, 42.4%] | 3.0% | [-2.35%, 7.64%] |
| Annual Wage | 3.3% | [1.8%, 4.81%] | 3.4% | [1.79%, 4.8%] |
| Private Capital | 3.5% | [-2.27%, 9.18%] | 3.7% | [-2.68%, 9.51%] |
| Military Capital | 3.2% | [0.727%, 6.3%] | 3.6% | [0.726%, 6.13%] |
| Public Infrastructure | 3.4% | [0.727%, 6.3%] | 3.0% | [0.726%, 6.13%] |
| Interest Rate | 0.0% | [-3.95%, 4.05%] | 0.0% | [-4.08%, 4.21%] |

The model implies that there is a fair amount of uncertainty concerning consumption during this brief stage. This is a common feature in models such as this one in which we do not model the choice between labor and leisure. In reality, consumers can smooth consumption by working more when income declines and taking more leisure time when income increases. In this model, though, to preserve clarity, the working hours are fixed, and we abstract from the labor-leisure choice. Thus,

consumption has more volatility surrounding it than is likely to be the case in the real world. The 95% confidence ranges for the percentage change in consumption are [32%, 42%] for the North and [-2.4%, 7.6%] for the South. Thus we see about five percentage points of uncertainty above and below the baseline predictions. In fact, this implies that South consumption could actually decrease over these two years, should there be significant negative shocks to the economy each year.

The path for the capital stock through this stage has the most uncertainty. The 95% confidence band for the capital stock is [-2.3%, 9.2%] in the North and [-2.7%, 9.5%] in the South. The random paths of the return on foreign investment and, especially, productivity can induce a wide range of possible outcomes for the capital stock. The modeling implies that the capital stock, like consumption in the South, could even shrink some during this two-year period if there are negative shocks in both years.

Figures IV-6 through IV-9 show the nonrandom paths of the same key variables as in Figures IV-1 through IV-4 above. There are no surprises here. All variables trend up, as expected. As discussed above, North Korean consumption jumps 35% in 2029 due to the large aid infusion from the South. While that is a huge change, it is hard to discern in Figure IV-6 because the North consumption starts at such a low level. The large percentage change translates to a small change in actual won and thus is hard to see on the graph. The other variables increase at close to their trend rates. These graphs, like Figures IV-1 through IV-4 above, show the huge gap in living standards, private capital, and infrastructure between the two Koreas that we highlighted above.

Figure IV-6 Non-Random Time Paths for GDP and Consumption

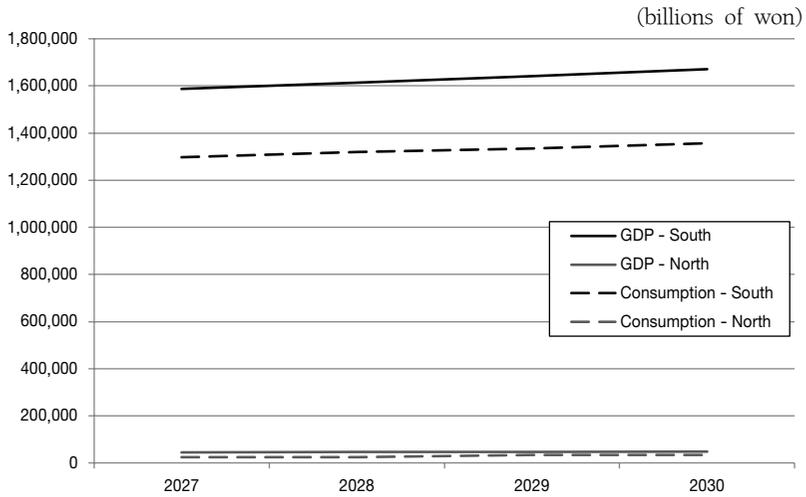


Figure IV-7 shows the continued progress of wages in the North and South. There is no meaningful change in these during the short Division Dissolving stage because there is no movement in labor or capital, no addition accumulation of infrastructure, and no reduction in military conscription.

Figure IV-7 Non-Random Time Paths for Wages

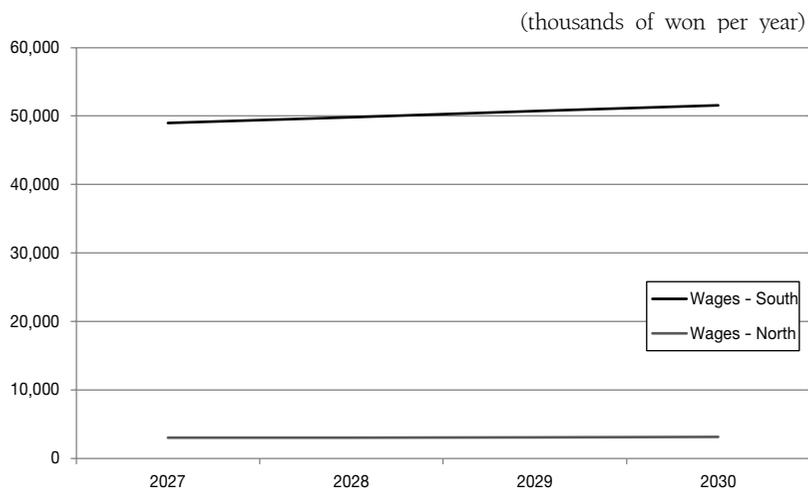


Figure IV-8 shows that the same is true for capital stocks. Military capital and infrastructure are set by government policy which does not change. The humanitarian aid transfer increases household income in the North, but very little of this income is used to build up private capital. Most is consumed instead.

Figure IV-8 Non-Random Time Paths for Various Capital Stocks

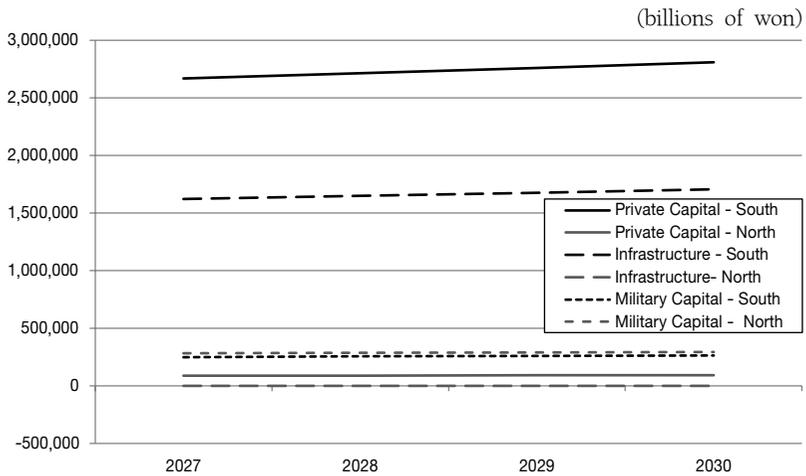


Figure IV-9 shows that, as in the unification preparation period, the interest rates remain constant with the rate in the South being slightly higher than that in the North. This is for the same reasons that the growth rate of wages remains constant.

Figure IV-10 tracks the aid from the South to the North. This large amount of assistance kicks in during 2029 as the South channels its first significant assistance to the North. The aid increases the next year since South GDP increases. The aid amount of 0.5% of GDP is a higher number in 2030 with the higher 2030 GDP.

Figure IV-9 Non-Random Time Paths for Interest Rates

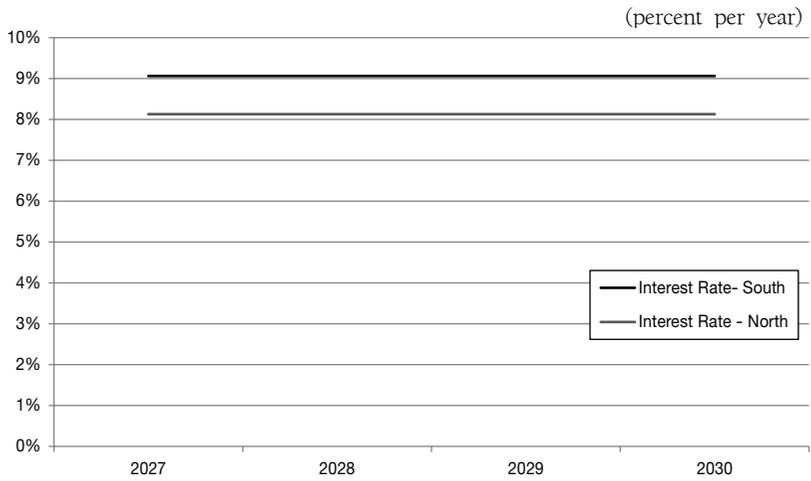


Figure IV-10 Time Path for Humanitarian Aid

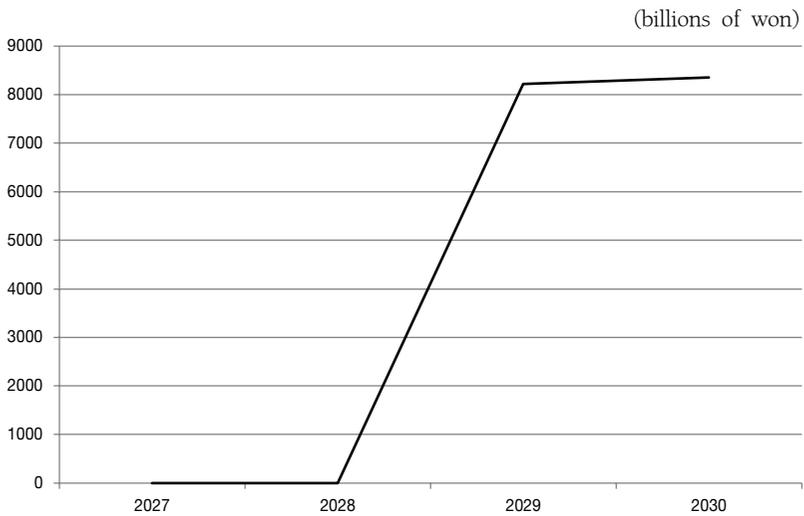


Table IV-3 provides a comparison of ratios of key variables between the two nations during Stage 1. As mentioned, the interest rates are close together and unchanging. It turns out that, overall, technology levels are fairly close to each other in the model. Thus, the data imply that the potential of North Korea to generate output from its resources is not abysmally low, more than 80% of the South Korean level. The problem is that Northern infrastructure and private capital stock are extremely low, meaning that their economy can only muster small amounts of GDP, consumption, and wages. Thus, the ratios of those variables are very low in the table, close to zero. The infrastructure ratio, in fact, is so low that it is barely distinguishable from zero.

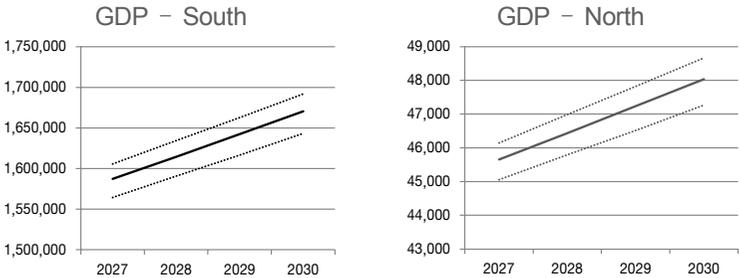
Table 8 Non-Random Values of Ratios of Key Per Capita Variables

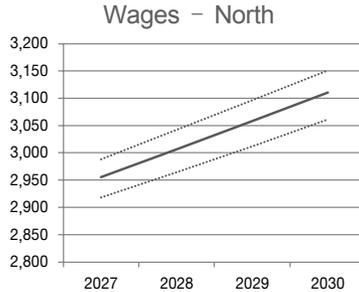
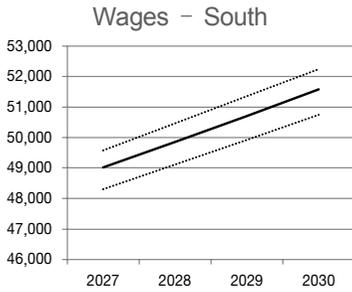
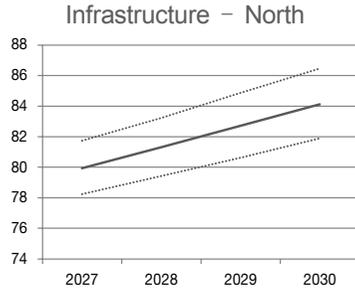
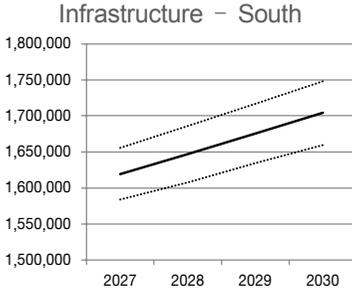
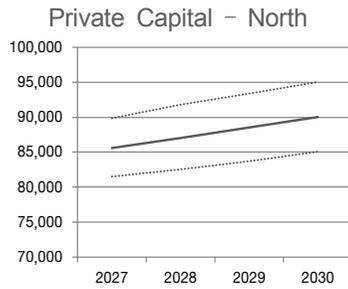
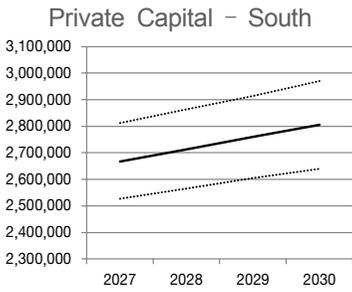
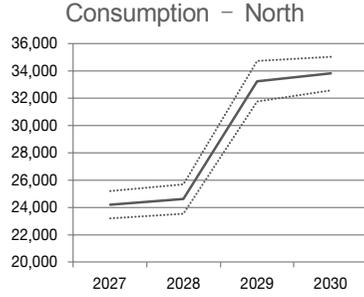
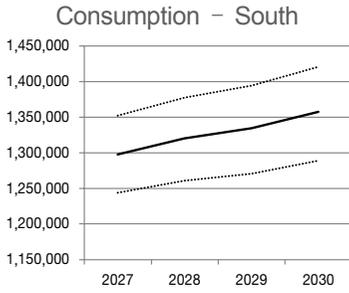
| | Averages | |
|-----------------|----------|---------|
| | 2014-28 | 2029-30 |
| Interest Rate | 0.8963 | 0.8963 |
| Technology | 0.8332 | 0.8332 |
| Private Capital | 0.0652 | 0.0655 |
| Wages | 0.0603 | 0.0603 |
| GDP | 0.0584 | 0.0587 |
| Consumption | 0.0387 | 0.0509 |
| Infrastructure | 0.0001 | 0.0001 |

Figure IV-11 shows the confidence bands for the key variables during this stage. Again, what is most notable in these graphs is the large jump in North Korean consumption as a result of the aid. We also see that consumption in the South and the capital stocks in both regions may decline during this stage. For each of these three variables, the lower band in 2030 is below the initial value in 2028, meaning that we cannot say with 95% confidence that these variables will be higher in 2030 than they were in 2028. We also see in that last two panels that we are 95% sure that the Southern interest rate will remain above the Northern interest rate and the Northern military capital will remain above its Southern counterpart. As shown in those last two panels, for both of these pairs of variables, the lower band of the higher variable remains above the upper band of the lower variable in 2030.

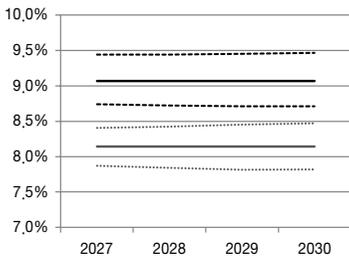
Figure IV-11 Time Paths with Confidence Bands for Key Variables

(billions of won)

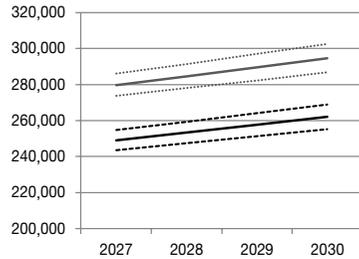




Interest Rates – South & North



Military Capital – South & North



This brief stage illustrates the large impact that aid which reaches its target can have in very poor nations. Our modeling implies that a donation of 0.5% of national income in the developed South could boost consumption for its Northern brothers and sisters by about one third. This result depends on assuming that all the aid in fact reaches the North Korean people. In reality, of course, much official (government-to-government) aid gets siphoned off by the elites in poor, receiving nations. Poor nations generally have oppressive rulers who will aggrandize wealth to themselves. Indeed, such oppression is likely a key reason for those nations' poverty, and nowhere is this more likely to be true than in North Korea. It makes sense to presume that the South, as a condition of giving this aid, would require oversight and a minimum of skimming. Still, it would be naïve to assume that the North Korean leadership would not siphon some of it to help maintain the comfortable situations to which they are accustomed. Even if the North Korean leaders took 10% of the South Korean aid for themselves, though, it would boost Northern consumption by a huge amount, in percentage terms. Such aid would also boost good will in the North

toward the South and likely reduce military tensions. Thus, such a Division Dissolving stage would be a wise first step in the unification process.

V

Economic Effects of the System Integration Stage

As mentioned previously, this is the most important stage, involving a number of steps that go a long way toward economic unification of North and South Korea. These steps have been described in detail in Chapter III, but, as a reminder, they are, in a nutshell: three-pronged aid, with infrastructure aid and wage subsidies being added to the humanitarian aid that began in 2028; military restructuring in which the militaries merge and the North phases out military production; capital flows from the South to the North; and labor flows from the North to the South.

Our modeling implies that all of these changes, coming on top of the substantial aid from the South during the Division Dissolving stage, would bring huge gains to the North Korean economy. We find that, were these two nations to undertake a program like the one outlined in this stage, North Korean GDP and wages would increase by 10 times, while consumption would rise by 13 times over the decade from 2030 to 2040. After decades of darkness, the North Korean economy would finally emerge into sunshine. To be sure, GDP and consumption would still be only a fraction of the South's after the 10-year period envisioned by this stage, but North Koreans would no longer live on the edge of subsistence. They would have reached a level of development that

would enable them to follow their southern brothers and sisters on a growth path that would lead, finally, to the prosperity that has so far been denied them by a government that refuses to harness the power of markets, insists on a high level of military spending, and which cannot afford to spend meaningful amounts on public infrastructure. Since the gains from free markets and trade are not zero sum, South Korea would continue its steady growth even while providing the North with massive aid and opening up labor and capital flows between the two nations. Our model implies with 95% confidence that South Korea GDP, consumption, and wages would grow by a solid 1% to 2% per year in real terms. This growth would come on top of an already high standard of living.

Table 9 summarizes the key changes in levels and in percentage terms. Taking the presumed ending values from Stage 1 as the starting points for Stage 2, we see that the model implies that North Korean GDP would grow from 48 trillion won to 483 trillion won by the end of the decade. Wages also grow by more than 10-fold: from 3.1 million per year to 33 million per year. While such growth may seem unrealistic, it actually is quite possible given all the significant changes simulated by the model. Also, it may help to note that, for a variable to increase 10 times over 10 years, its annual growth rate just needs to be 25%. This seems quite feasible for the North Korean economy since it would be starting from a very low level and would be implementing hugely significant policy changes with regard to infrastructure and military expenditures.

Table 9 System Integration Stage (2030-2040)

Won Values (in trillions unless otherwise noted)

| | North | | | South | | |
|--------------------------|--------|-------|----------------|--------|--------|------------------|
| | 2030 | 2040 | 95% C.I. | 2030 | 2040 | 95% C.I. |
| GDP | 48 | 483 | [468, 494] | 1670 | 2010 | [1970, 2050] |
| Consumption | 33.8 | 444 | [423, 466] | 1360 | 1620 | [1530, 1710] |
| Annual Wage (millions) | 3.11 | 33.1 | [32, 33.8] | 51.6 | 59.3 | [58, 60.3] |
| Private Capital | 90 | 372 | [327, 419] | 2810 | 3590 | [3360, 3850] |
| Military Capital | 294 | 215 | [209, 222] | 262 | 314 | [303, 326] |
| Public Infrastructure | 0.0841 | 154 | [145, 163] | 1700 | 1890 | [1820, 1960] |
| Bond Holdings (billions) | 0.0912 | -3160 | [-3560, -2780] | 6.85 | -432 | [-1800, 941] |
| Rental Rate (%) | 0.0814 | 0.142 | [0.133, 0.15] | 0.0908 | 0.0901 | [0.0853, 0.0946] |

Percent Change

| | North | | South | |
|-----------------------|-------------|------------------------|----------|-------------------|
| | | 95% C.I. | | 95% C.I. |
| GDP | 906.0% | [874%, 928%] | 20.4% | [17.8%, 22.5%] |
| Consumption | 1210.0% | [1150%, 1280%] | 19.1% | [12.8%, 25.8%] |
| Annual Wage | 964.0% | [928%, 986%] | 14.9% | [12.5%, 17%] |
| Private Capital | 313.0% | [263%, 366%] | 27.8% | [19.7%, 37.1%] |
| Military Capital | -26.9% | [-28.9%, -24.8%] | 19.8% | [15.4%, 24.5%] |
| Public Infrastructure | 183000.0% | [172000%, 193000%] | 11.2% | [6.85%, 15%] |
| Bond Holdings | -3470000.0% | [-3900000%, -3050000%] | -6410.0% | [-26300%, 13600%] |
| Rental Rate | 74.4% | [63.8%, 84.3%] | -0.8% | [-6.02%, 4.17%] |

Before examining the impact of the various policies in more detail, it will be worthwhile to examine a policy that plays an important role, even though it does not contribute directly to the very high growth rates for GDP, consumption, and wages. This policy is the 0.5% of GDP humanitarian aid from the South to the North. This aid continues

through Stage 2, but, as explained in Chapter III, continuing this significant aid does not boost growth; it simply enables the North Koreans to consume at the new level, which starts 35% higher than the abjectly low starting point in 2028. The effect of this humanitarian aid is to put the North Koreans on a 1.7% trend growth path that is 35% higher than the path before the aid started in 2028. Continuing the aid enables the North Koreans to grow along that higher path, instead of falling back. Thus, this continued aid provides a needed foundation for accelerated growth in the North without actually causing that acceleration.

A policy that does contribute greatly to the stronger growth is the infrastructure aid from the South to the North. Recall that Stage 2 calls for the South to boost North Korean infrastructure with funds amounting to 1% of South Korean GDP. This aid is not costless and must come from higher taxes in the South or decreased government spending on other budget items. We choose to model it as coming at the expense of Southern infrastructure, so that 5.5% of GDP rather than 6.5% of GDP is spend on infrastructure in the South. In 2030, we project that infrastructure aid going to the North would amount to about 17 trillion won, with that annual amount trending up through the decade as the South Korean GDP trends up. As discussed in Chapter III, North Korea has extremely weak, almost nonexistent, infrastructure.

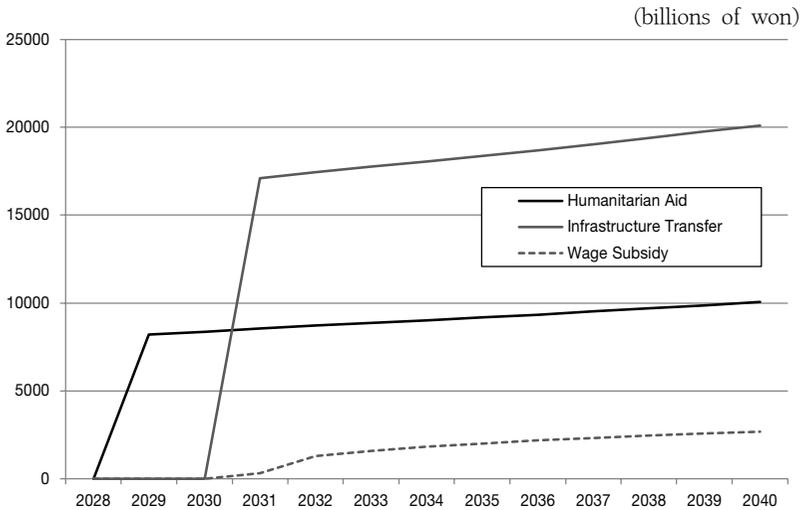
As shown in Table 9, by the time these economies get to 2030, the value of South Korean infrastructure is 20,000 times greater than that of the North. This may sound implausibly high, but it is a level which produces the relative GDPs per capita we actually observe given

the relative levels of capital stocks and workforces in the North and South. Anecdotal evidence on the state of roads, telephone systems, electrical grids and other forms of infrastructure outside of the capital of Pyongyang and the Kaesong economic zone confirm that this number is not unreasonable. Poor infrastructure greatly limits the ability of any economy to generate output and thus wages for its people. Even though humanitarian aid can pull people from the edge of starvation and create goodwill, the economy cannot start sustained growth without adequate infrastructure. Thus, this infrastructure aid plays a crucial role in jumpstarting the North Korean economy.

In addition to this aid, wage subsidies would also help to boost growth. As described in Chapter III, the wage subsidy from the South to the North is about 15% of North wages. This clearly allows wages to grow significantly, but higher wages also enable consumption and GDP to increase by more than they would.

Figure V-1 summarizes the various aid amounts given to the North during Stage 2. The infrastructure transfer is the most important, followed by humanitarian aid. Wage subsidies are relatively small because large subsidies turn out to be unnecessary to raise Northern wages substantially. Significant wage gains are accomplished by increases in infrastructure stocks alone.

Figure V-1 Non-Random Time Path for Various Transfer Payments

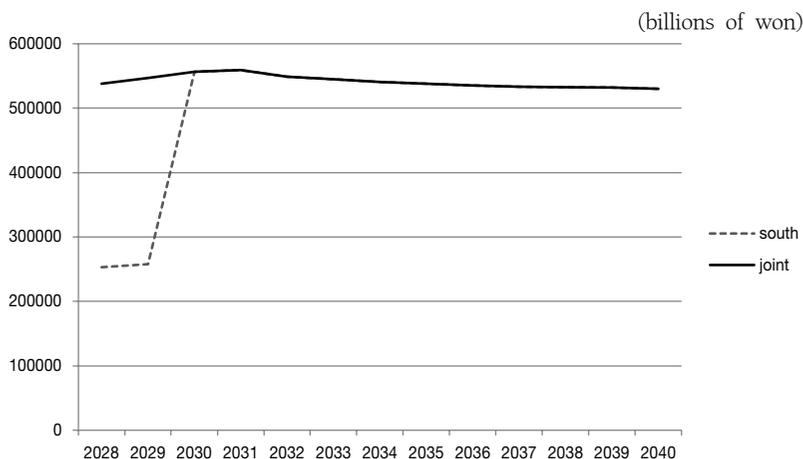


The proposed military restructuring would contribute further to the North Korean growth shown in Table 9. As noted in Chapter III, the two militaries merge and come under joint command. This implies that the two military capital stocks merge into one. Along with this, each region adjusts its investment in military capital so that it invests the same fraction of GDP and, by 2040, military output for both nations combined declines to military output achieved by the South alone in 2030. It turns out that this requires that each nation invest 1% of GDP in military capital during this stage. Before this restructuring, the North was investing 35% of GDP in military capital. So, in Stage 2, the North reaps a huge windfall by reducing military capital investments by over 90%. This allows the North to concentrate much more investment on private capital, which provides a substantial

boost to Northern GDP, consumption, and wages. As shown in Table 9, it turns out that North's military capital declines by 27% over the course of Stage 2. Thus, its reduced investment is not enough to maintain military capital at the previous level, but, with merged militaries, this does not matter. All that matters is the amount of combined military capital across the two nations, and the 1% of GDP investment throughout the Korean peninsula is enough to maintain total military capital at the desired level. Figure V-2 illustrates the movements in total military capital on the Korean peninsula. Prior to Stage 2 each country has its own stock. Beginning in 2030, however, they are combined into a single unified stock of military capital administered by a unified military authority.

In addition, as part of military reform, all conscripted military personnel are returned to the labor force in the North. A new conscription rate of 0.7% replaces the old rate of 4.5%, freeing up in net close to a million workers (960,000) for private employment or home production in the North. In the South, the conscription rate drops from 1.3% to 0.7%, and this frees up over 350,000 workers there.

Figure V-2 Non-Random Time Path for Military Capital



Allowing capital and labor flows between the two nations also contributes greatly to raising North Korean living standards. Stage 2 involves capital moving from the South into the North. Now, this raises a bit of a puzzle because, coming into Stage 2, the North Korean interest rate, which is the price of capital, is lower than the South's. (The North has a very small capital stock, but North Korea also has pathetic infrastructure, as discussed above. While the small capital stock pushes up the price of capital, the weak infrastructure pushes the price of capital down. It turns out that this latter effect is strong enough to make the North Korean price of capital, which is the interest rate, lower than the South's.) We would not expect capital to move from the high price nation to the low price nation. The reason capital moves into the North is because of the boost to North infrastructure. This raises the return to capital there above that of the South, creating the incentive

for capital to move north. With the infrastructure expansion in the North, its interest rate jumps to twice the level of the South's: 18%. This interest rate remains above the South's throughout Stage 2 but trickles back down as capital moves into the North. See Figure V-3, which tracks these rates over time. Note that there are small movements in interest rates in the South as well, driven by capital leaving the country for the North, but that these movements are miniscule in comparison to the movements we see in the North. Figure V-4 tracks the movement of capital from the South to the North. These northward capital flows contribute much to the expansion of the North economy during Stage 2. We assume that capital flows are restricted in Stage 2, which explains why interest rates do not equalize between the North and South. We allow for a government administered quota system that determines how much capital and what type of capital may move from the South to the North. This policy is intended to reduce the sudden impact of large capital flows.

If capital were allowed to move freely, interest rates in the South would rise to a greater degree and those in the North to a lesser degree so that both were equal. There would be much larger capital flows and greater economic growth in the North. Economic growth in the South would be less rapid, since productive capital would be substantially reduced.

Figure V-3 Non-Random Time Paths for Interest Rates

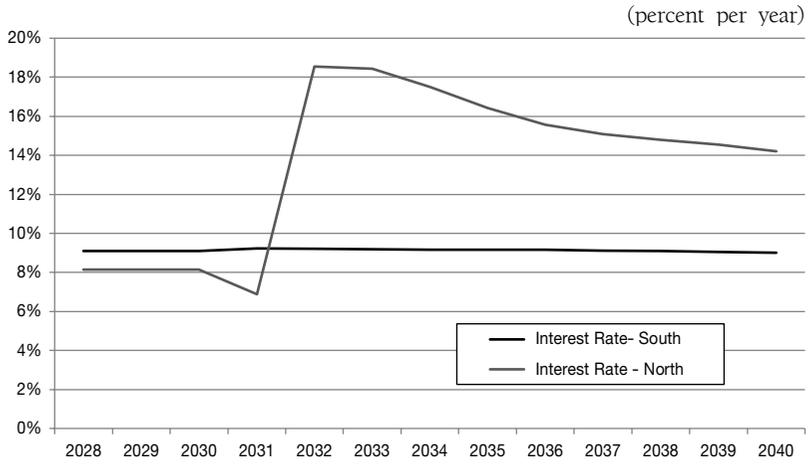
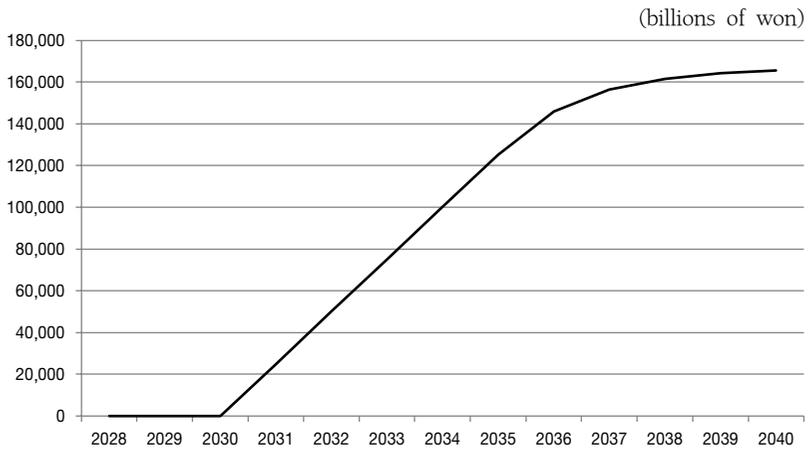


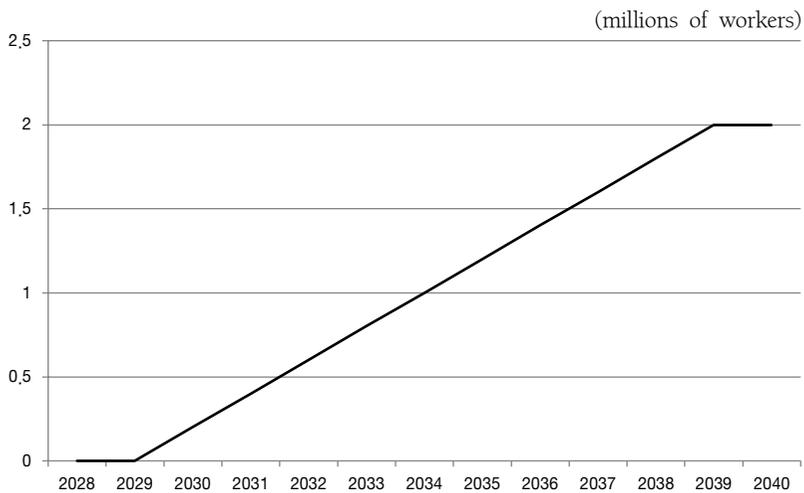
Figure V-4 Time Path for Capital Migration from South to North



Coming into Stage 2, Southern wages are about 17 times higher than in the North: 51 million won per year to 3 million won. Such

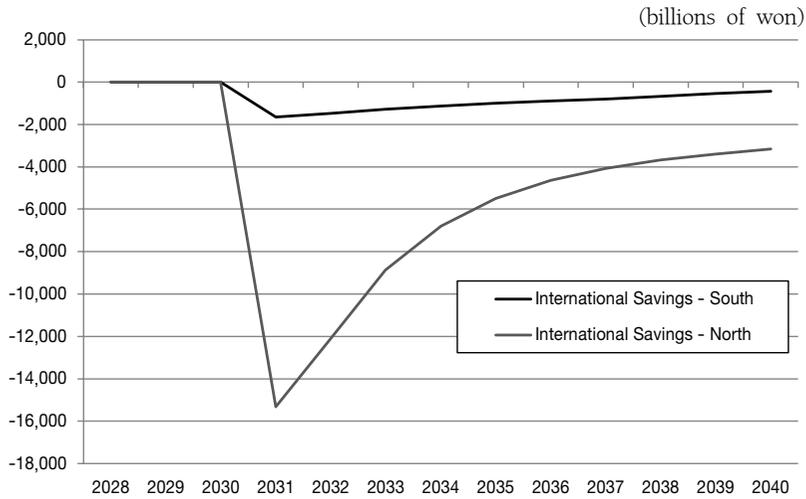
large wage gaps mean that migration from the low-wage nation to the high-wage nation will bring great gains, and this is exactly what happens during Stage 2. As described in Chapter III, 200,000 North Koreans are allowed into the South each year during this stage. This allows the migrants to earn much more than they would at home and provides yet another boost to wages back in the North as migrants leave. Figure V-5 illustrates this flow of migrants as the number of Northern workers living in the South rises over time.

Figure V-5 Time Path for Labor Migration from North to South



One more interesting thing to note from Table 9 is that North Korea borrows internationally during this stage. This is to be expected. As the North starts to grow, it not only attracts capital from the South but from the rest of the world as well. Fast-growing nations that do

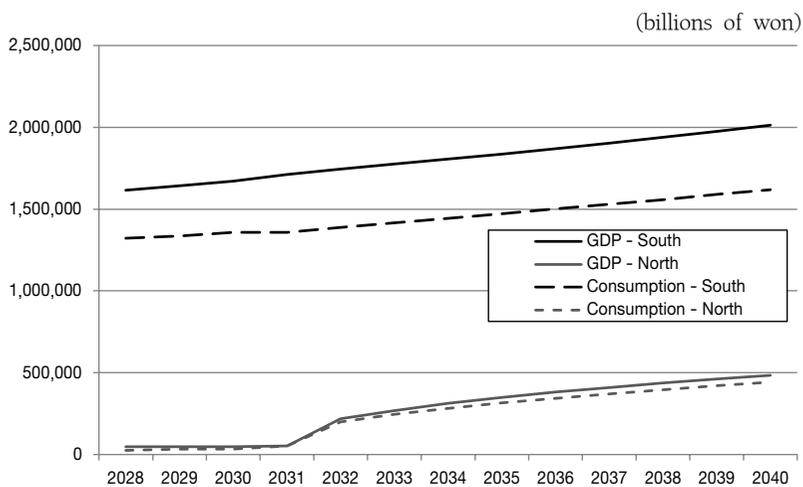
Figure V-6 Non-Random Time Paths for International Savings



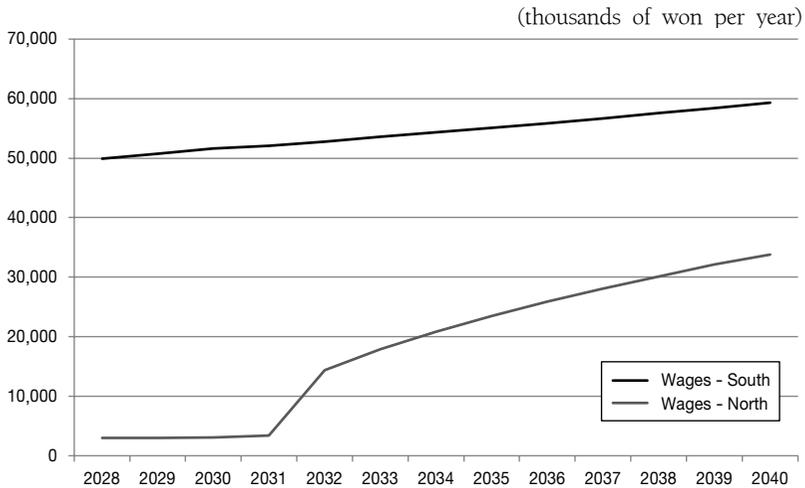
not have a large pool of domestic savings need to borrow from the rest of the world to help finance that growth; the rest of the world is happy to lend because of the high growth potential and thus high rates of return. This is the story that would play out in North Korea as part of the policy package implemented in Stage 2. While Table 9 shows the beginning and ending values of this borrowing (bond holdings), Figure V-6 shows the path of this borrowing throughout the decade. The initial borrowing is relatively large. As North Korea starts to grow from its very impoverished state, its future growth potential is huge. Foreigners happily lend because of the promise of high returns to that lending. Then, as North Korea develops over time, its future growth potential and its need to borrow decline. This gradually reduces bond holdings, though North Korea remains a net borrower.

Figures V-7 and V-8 show the nonrandom time paths for GDP, consumption, and wages in each nation. The story for South Korea is much the same: continued steady growth. The paths for the North show significant gains, and, while North GDP, consumption, and wages remain quite a bit below the South's, we can start to see significant convergence during this decade. We also see large jumps in the levels of these three variables in 2032 as the infrastructure aid, as well as capital investment and inward capital flows from abroad, start to boost the capital stock and overall output. From there, the three variables continue their significant upward trends along a much higher base. By the end of this stage, North Korean GDP and consumptions are about 25% of the South's, while the North wage is more than half the South's. This is a much different situation from when this stage started.

Figure V-7 Non-Random Time Paths for GDP and Consumption



● Figure V-8 Non-Random Time Paths for Wages



We can also track convergence on a per capita basis. Figure V-9 illustrates this. Wages are already expressed on a per capita basis, but this figure shows us that, by 2040 in this scenario, GDP and consumption per capita in the North are quite close to those of the South: about 60% for GDP and 70% for consumption. The per capita capital stock and the value of infrastructure remain further below the South's, but they, too, end up at much higher levels than when Stage 2 began. Thus, by the end of the decade, the North has started to become an economic peer of the South, making full unification that much easier.

Figure V-9 Non-Random Time Paths for North-to-South Ratios of Key Variables

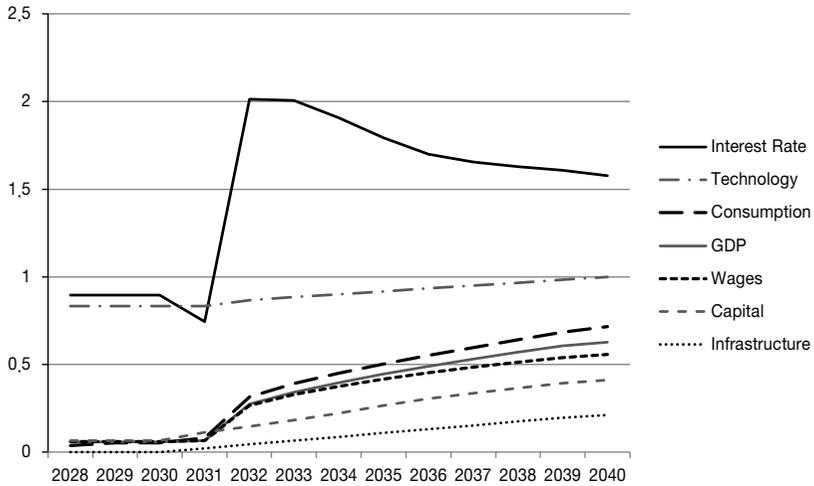


Figure V-10 Non-Random Time Paths for Various Capital Stocks

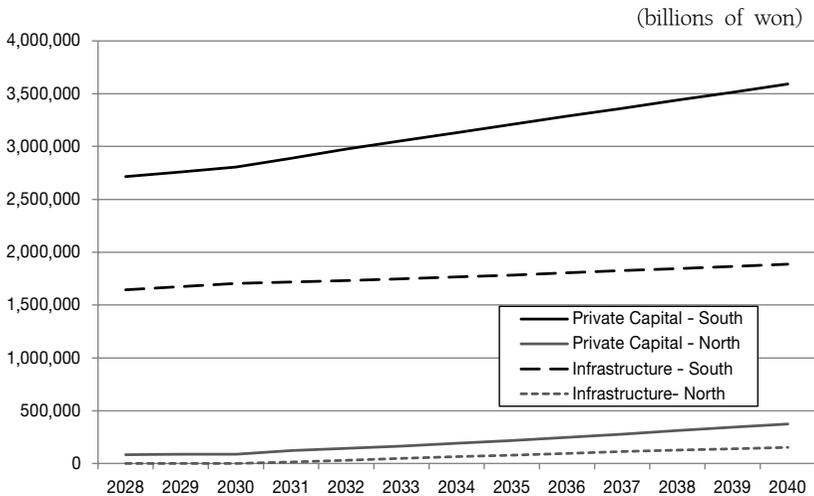
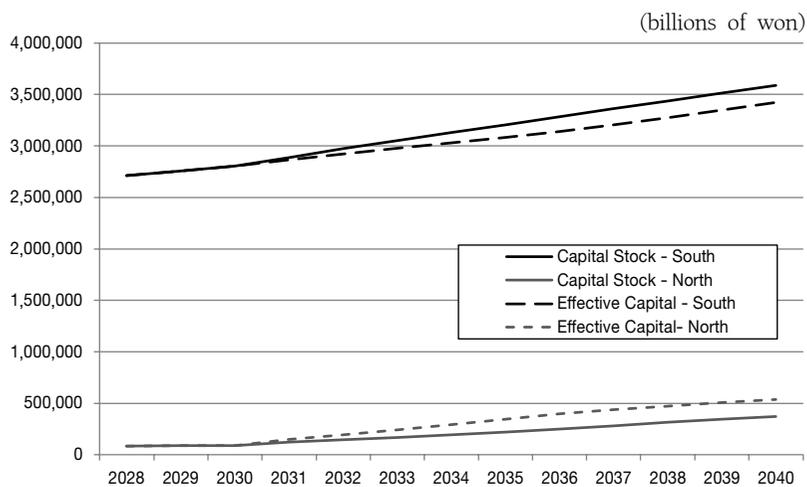


Figure V-10 shows the path for the capital stocks and infrastructure. While the North's remain quite a bit below the South's, we see here as well the beginning of significant convergence toward their southern brothers. Now, with the capital flows from South to North during this stage, some of the capital that is in place in the North is actually owned by the South. The solid lines in Figure V-10 show how much capital is owned by Southerners and Northerners, no matter where it is located. In particular, some fraction of Southern capital, shown by the blue line in Figure V-10, is actually located in the North contributing to the Northern economy. So, it may be more accurate to show the amount of capital actually located in each nation; we refer to this as the effective private capital stock. Figure V-11 illustrates this distinction. As South Koreans acquire Northern capital, this reduces the amount of capital actually in

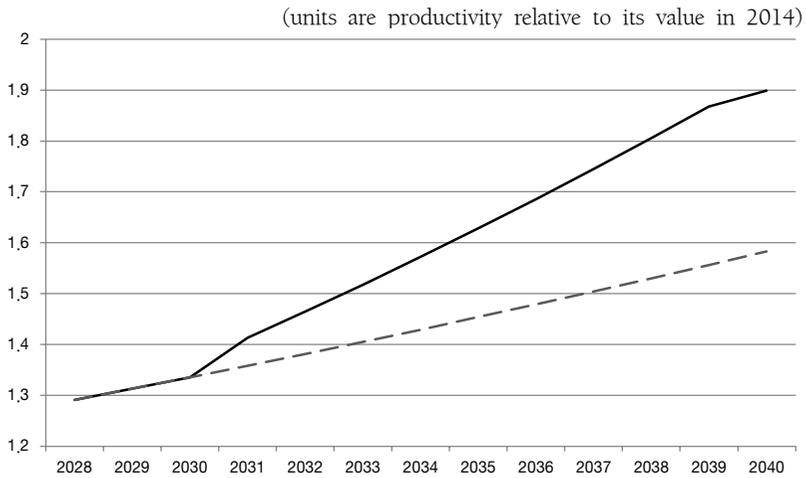
Figure V-11 Time Paths for Owned Capital vs. Effective Capital



place in the South and increases the amount of capital actually in place in the North. Figure V-11 shows how the amount of capital actually in place in each nation compares to the amount owned by each nation's citizens.

One of the key effects of the policies implemented in Stage 2 is that the North Korean economy becomes more productive. This is an additional gain beyond that due to higher private capital and public infrastructure. This productivity boost is driven by the switch in the North from inefficient production in military-run facilities to private production of goods and services. We assume that the military sector is 50% as efficient as the private sector and that it currently produces one-third of GDP. A gradual phase-out of such production over this stage of unification yields the productivity gains we impose. Figure V-12 shows this boost to productivity over the course of Stage 2. By

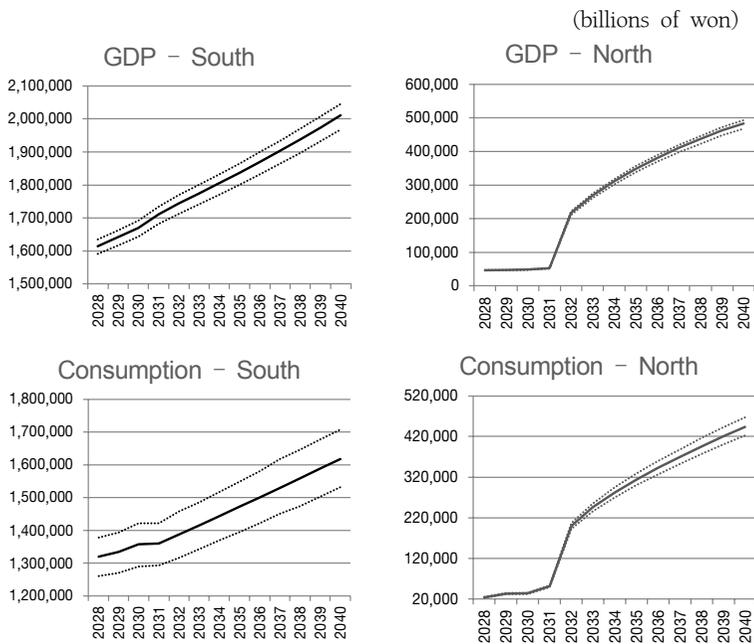
Figure V-12 Time Path for Productivity in the North Relative to a 1.7% Growth Trend

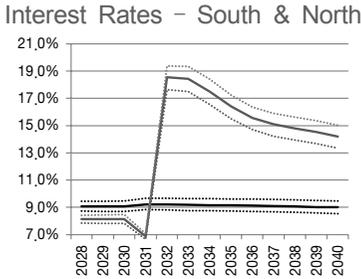
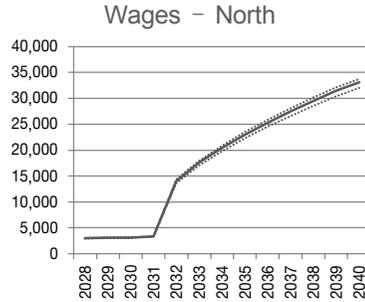
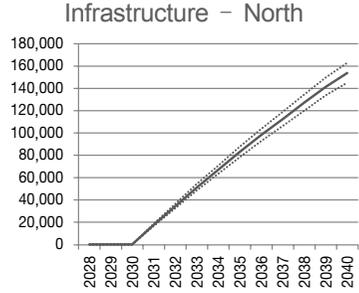
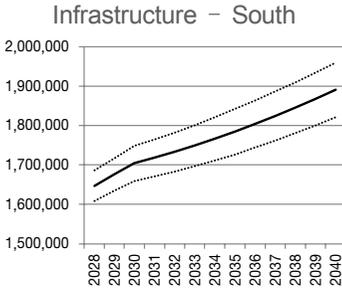
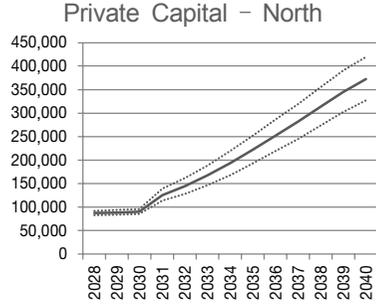
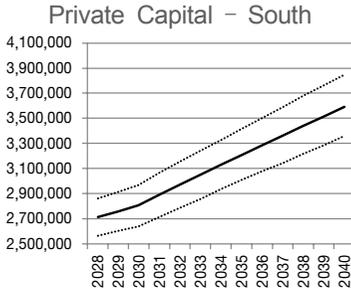


2040, Northern productivity is more than 20% higher than it would have been without the policy changes. This not only raises North Korean income during this decade but enables that income to be higher into the future, thus permanently raising living standards in North Korea.

Figure V-13 presents confidence bands for most of the variables that we have been analyzing in this chapter. There are no surprises here. Most variables have fairly tight bands, indicating that the random shocks that we allow in the model do not affect things enough to change the story told by the nonrandom results above.

Figure V-13 Time Paths with Confidence Bands for Key Variables





Our analysis of the scenario for Stage 2 in this chapter helps us to see that a variety of policies that draw the North and South closer to economic unification also work together to greatly energize the North Korean economy and start it on the path to real development. At the same time, the South Korean economy is not hurt: it continues to increase its already high standard of living. While the modeling implies huge economics gains to the Korean peninsula, we have not captured the substantial social and political gains that would come from reducing tensions between these two nations and from fostering good will between them. Taking account of these gains, which of course lies outside the scope of this particular study, would strengthen the case for working to help the two Koreas to unify.

VI

Economic Effects of the Nation Building Stage and the Unified Nation Period

In this chapter, we analyze the effects of both of the final two stages, which, according to the scenarios we have designed, bring to completion the economic unification of North and South Korea. We combine the analysis of both into a single chapter because neither is nearly as wide-ranging as Stage 2, though each plays a crucial role in making real economic unification possible.

1. Stage 3: Nation Building, 2040-2050

This is the stage in which the South withdraws its aid to the North and allows it to move under its own power along the development path toward rich nation status. In an economic sense the North becomes self-sufficient; and by this we mean “not receiving aid,” rather than “pursing a policy of economic autarky.” In a global economy, nations must embrace interdependence through international trade and investment, as South Korea’s success and North Korea’s economic struggles demonstrate. This withdrawal of aid means that the North will need to reorient its economy to maintain its much-improved infrastructure, as well as consumption, wages, and longer term growth. Another key difference between this stage and the previous one is that

capital, after being allowed to move from the South into the North under an expanding quota system in Stage 2, can move freely in this stage. Such free capital movements will cause wages in the two nations to draw together more quickly, thus reducing migration pressures into the North. Because of migration costs, wages never fully equalize, even by the end of our simulations, but they do converge in the very long run, and free capital flows hasten this convergence.

Table 10 summarizes the effects of Stage 3. Naturally, the changes in this stage are not as dramatic as those in Stage 2, but we do see continued robust growth and development in North Korea. In percentage terms, GDP, consumption, and wages there grow much more quickly than they do in the South, meaning that the North continues to converge toward the South to a substantial degree. Over the decade, the model projects that, with the presumed changes in Stage 3 and building on the foundation laid in the previous stages, GDP and wages in the North would expand by about two-thirds. Consumption would not grow as much, though it would still be a solid 44% larger in 2050 than in 2040. It grows by less because of the North paying for its infrastructure expansion.

This is a pattern seen in many developing nations in modern times: consumption is suppressed while the nation invests in infrastructure and capital, in order to sustain robust long-term growth. This focus on investment and growth into the future shows up in the results for private capital and infrastructure. Both of these experience great expansions during this stage. The North Korean capital stock increases from 372 trillion won to 787 trillion won, while the value of infrastructure grows from 154 trillion won to 475 trillion won. Since the former

Table 10 Nation Building Stage (2040-2050)

Won Values (in trillions unless otherwise noted)

| | North | | | South | | |
|--------------------------|-------|--------|-----------------|--------|--------|-----------------|
| | 2040 | 2050 | 95% C.I. | 2040 | 2050 | 95% C.I. |
| GDP | 483 | 815 | [791, 828] | 2010 | 2380 | [2320, 2430] |
| Consumption | 444 | 637 | [599, 675] | 1620 | 1960 | [1850, 2080] |
| Annual Wage (millions) | 33.1 | 55.2 | [53.5, 56.1] | 59.3 | 70.3 | [68.5, 71.6] |
| Private Capital | 372 | 787 | [702, 872] | 3590 | 4290 | [3990, 4610] |
| Military Capital | 215 | 191 | [185, 197] | 314 | 377 | [360, 394] |
| Public Infrastructure | 154 | 475 | [453, 497] | 1890 | 2360 | [2250, 2460] |
| Bond Holdings (billions) | -3160 | -3740 | [-4380, -3150] | -432 | -740 | [-2560, 942] |
| Rental Rate (%) | 0.142 | 0.0968 | [0.0916, 0.102] | 0.0901 | 0.0967 | [0.0914, 0.102] |

Percent Change

| | North | | South | |
|-----------------------|--------|------------------|-------|----------------|
| | | 95% C.I. | | 95% C.I. |
| GDP | 68.7% | [63.6%, 71.3%] | 18.4% | [15.5%, 20.8%] |
| Consumption | 43.5% | [35%, 52.1%] | 21.0% | [14.3%, 28.7%] |
| Annual Wage | 66.8% | [62%, 69.6%] | 18.5% | [15.5%, 20.8%] |
| Private Capital | 112.0% | [88.5%, 134%] | 19.5% | [11.2%, 28.5%] |
| Military Capital | -11.2% | [-14.2%, -8.69%] | 20.1% | [14.6%, 25.3%] |
| Public Infrastructure | 208.0% | [195%, 223%] | 24.9% | [19.2%, 30.3%] |
| Bond Holdings | -18.4% | [-38.6%, 0.157%] | 71.3% | [-494%, 318%] |
| Rental Rate | -31.8% | [-35.5%, -28.1%] | 7.3% | [1.44%, 13.1%] |

more than doubles, while the latter more than triples, the absolute expansions of each are clearly larger than in Stage 2, though the percentage gains are not nearly as large. We see in these numbers how Stage 2 would pull North Korea out of an economic abyss and make possible the type of growth South Korea experienced in the 60s and 70s.

South Korea is projected to enjoy continued steady growth in the 2040s. All key variables grow at rates near trend, with consumption growing more because of the South retaining in this stage aid funds that it was sending north in the previous stage.

Both nations continue to be net borrowers from overseas, indicating that the rest of the world believes that the two Koreas have better growth environments than elsewhere.

Figures VI-1 and VI-2, as in previous chapters, show the time paths for GDP, consumption, and wages in each nation. We see strong growth in the North and steady growth in the South, as well as the economic convergence of the former toward the latter. We also see that Northern consumption takes a temporary hit as North Korea adjusts to the withdrawal of aid: consumption there is slightly lower in 2041 than in 2040. After this brief dip, though, it continues to grow consistently again.

Figure VI-1 Non-Random Time Paths for GDP and Consumption

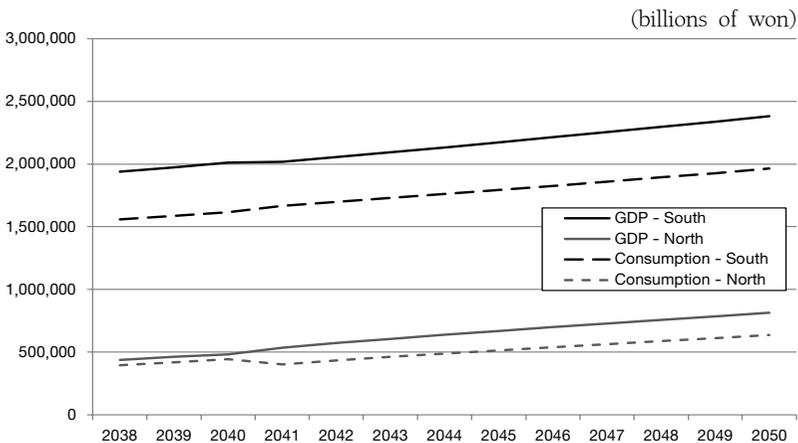


Figure VI-2 Non-Random Time Paths for Wages

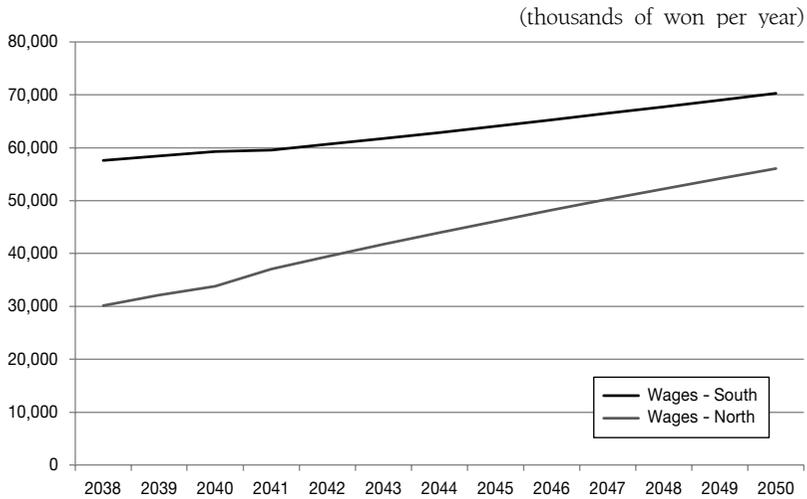


Figure VI-3 presents per capita convergence for this stage. The trends that began in Stage 2 continue in Stage 3 as the North Korean economy keeps developing. By 2050, per capita GDP in the North is projected to be more than 90% of the South's, with per capita consumption over the 80% threshold. The wage ratio approaches 80%. The infrastructure ratio, which is barely above zero in the present day, would, under the scenarios considered within this model, be more than 50% by 2050. That is a major transformation. Also, note that the overall technology levels in the two nations achieve equality by the end of Stage 2. The interest rates also equalize with the free movement of capital. See Figure VI-4 for a plot of both rates over time. Upon allowing free mobility of capital, rates fall in the North and rise in the South.

Figure VI-3 Non-Random Time Paths for North-to-South Ratios of Key Per Capita Variables

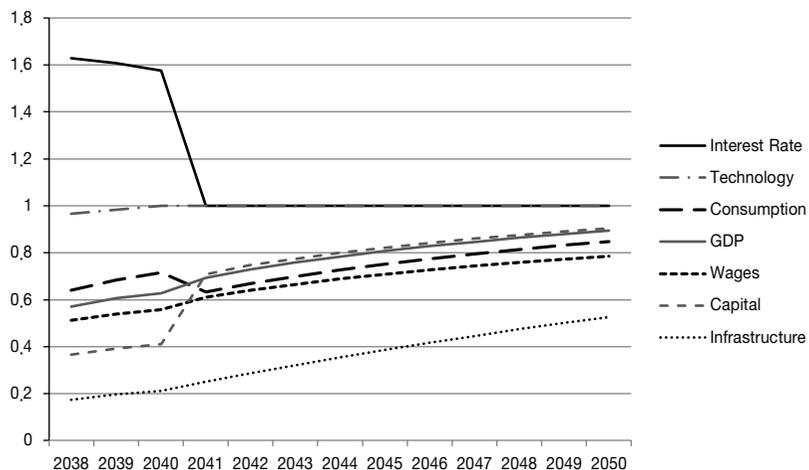


Figure VI-4 Non-Random Time Paths for Interest Rates

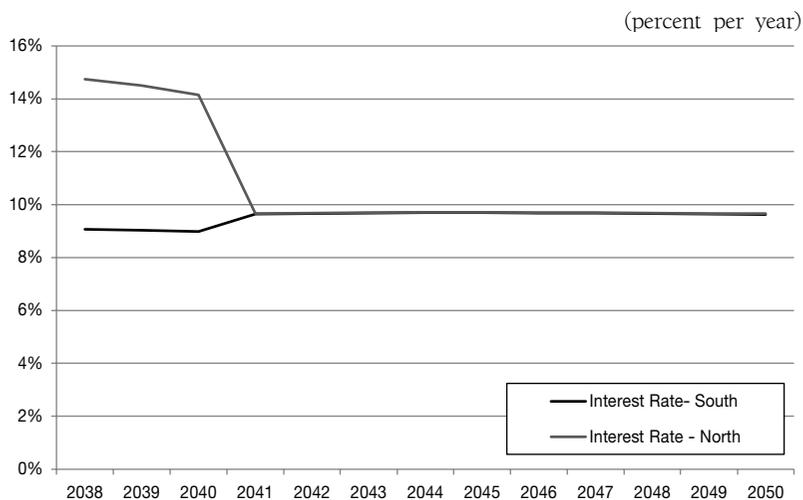


Figure VI-5 shows the paths for the capital stocks and infrastructures. Abstracting from random shocks implies that economic forces result in steady growth of these variables, with the Northern capital stock and infrastructure gradually approaching those of the South.

Figure VI-5 Non-Random Time Paths for Various Capital Stocks

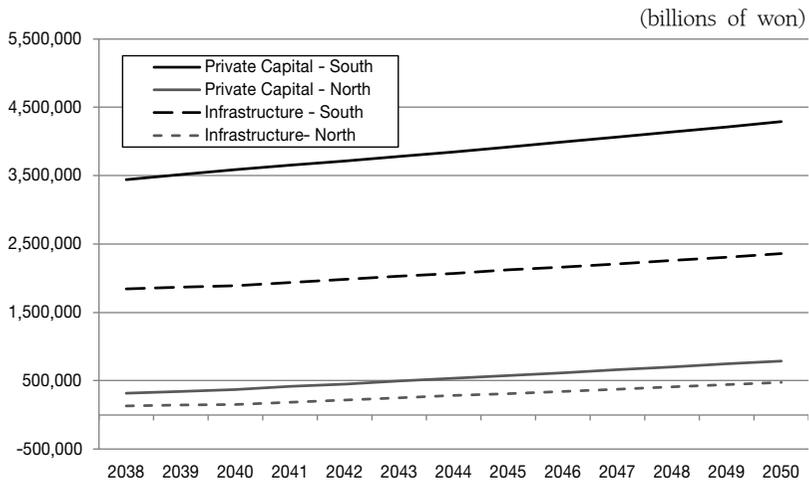
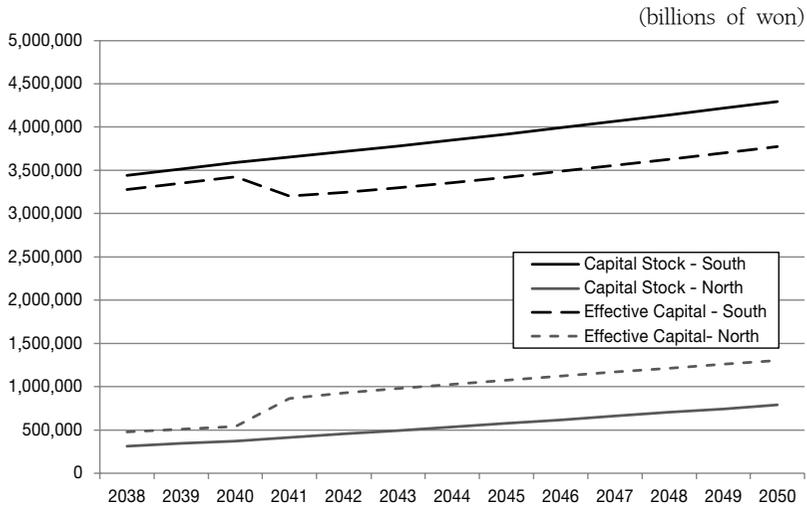


Figure VI-6 shows for both regions the corresponding capital jumps that drive this convergence in interest rates. As discussed in Chapter V, much of the Southern capital is actually employed in the North, and Figure VI-6 highlights this distinction. That figure shows that there is a burst of capital migration from the South to the North as Stage 3 begins and all capital controls are lifted.

Figure VI-6 Time Paths for Owned Capital vs. Effective Capital



We see the effects of the capital flows into the North in Figure VI-7, which shows the stock of Southern-owned capital physically located in the North. Along with these capital flows within the peninsula, both nations continue to be net debtors, as shown in Figure VI-8, though the North makes significant paydowns on its debt during this stage.

Figure VI-9 shows the confidence bands around the key variables. As in the previous stages, these bands are fairly narrow, meaning that the results without random shocks are robust to those shocks.

Figure VI-7 Non-Random Time Path for Capital Migration from South to North

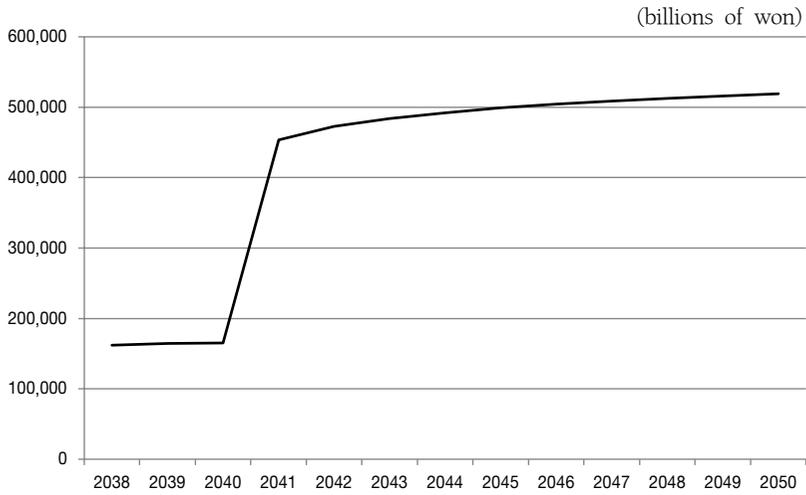


Figure VI-8 Non-Random Time Paths for International Savings

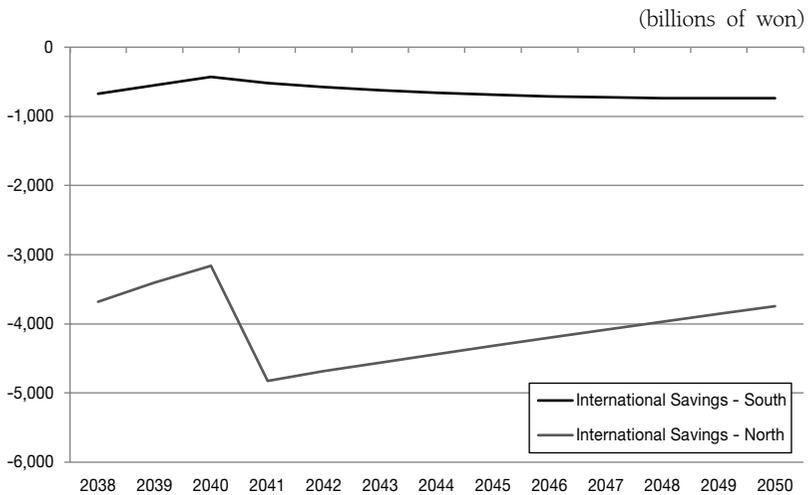
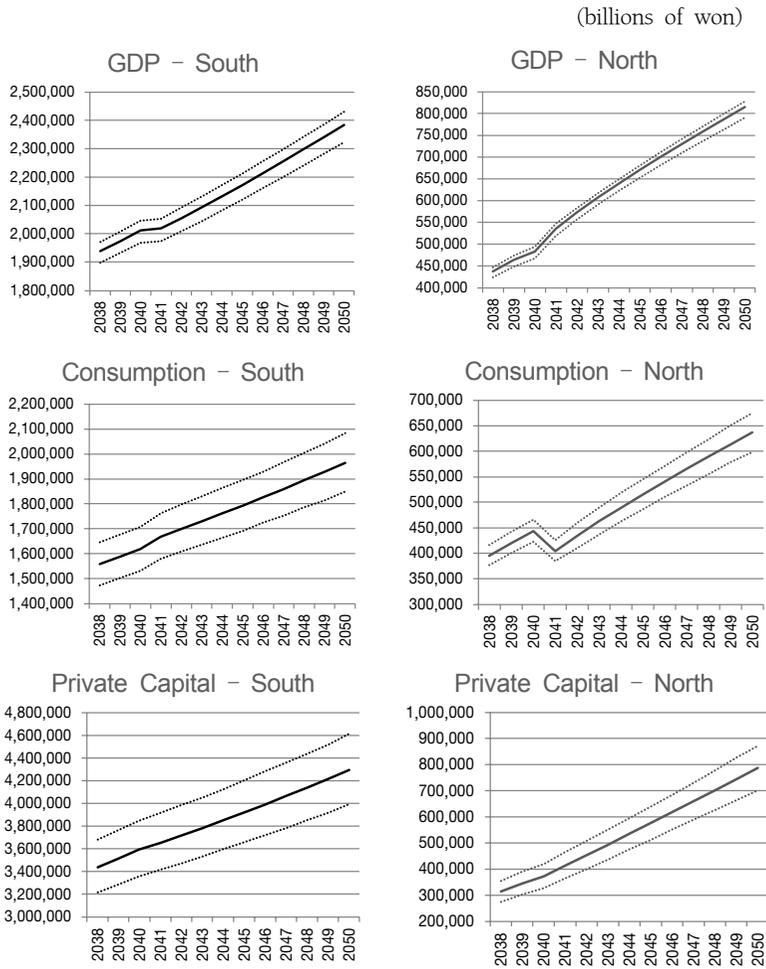
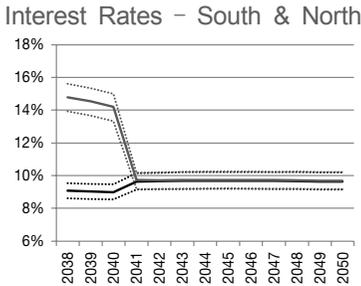
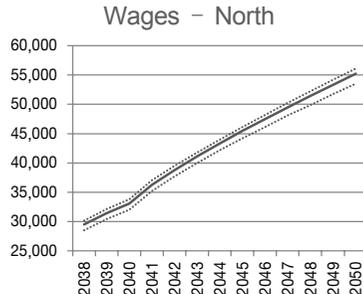
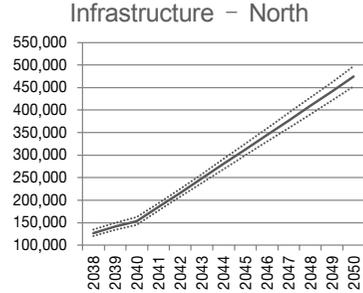
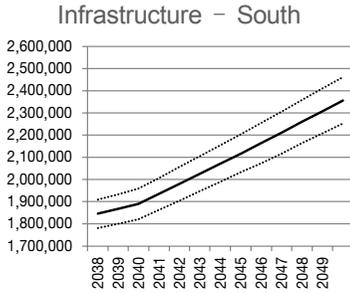


Figure VI-9 Time Paths with Confidence Bands for Key Variables





Stage 3 is a decade in which the North Korean economy finally comes into its own. Building on the foundation established in Stage 2, during this decade, we project that a reformed and healthy North Korean economy would be able to follow the path that its southern neighbor took in the decades after the Korean War: A path that leads

to robust growth and substantially improved living standards over the course of 10 years.

2. Unified Nation Period, 2050-2060

As with the unification preparation period, this really is not stage of policy initiatives. We use this stage to see how the two economies evolve after having removed all policy barriers. Since we do not assume any more policy changes, the trends that apply to the variables starting in 2050 can be thought of as continuing into the indefinite future. We only present results up until 2060, though.

We call this stage Full Unification, but regional differences remain nonetheless. We assume that infrastructure has a strong local component. Hence, the productivity of capital and labor in the South is enhanced by the South's infrastructure only. The same logic applies to the North. Since economic policy is identical in both regions in this final stage, this implies that each region adds the same percentage of its own regional GDP to its own regional infrastructure stock. Since the North starts off this stage with less infrastructure per capita than the South, these differences persist throughout this stage, though they are in the process of slowly disappearing.

It is likely that regional equality may be a policy goal. It is also possible that the government may choose to allocate new infrastructure based upon maximum effectiveness, rather than our assumed policy of equal regional investment. If so, a better policy would be to build

more new infrastructure in the North and less in the South. This would cause the observed infrastructure gap to close more rapidly and lead to faster convergence between the two regions. Effectively, this is a continuation of the earlier policy of infrastructure transfers, but it is motivated by economic efficiency arguments rather than humanitarian ones.

In effect then, our chosen policy should be viewed as a worst case scenario or lower bound. Regional convergence in standards of living will be no slower than our simulation, and would likely be significantly faster. If infrastructure is more national than regional in its effects, then actual convergence would be faster still.¹²⁾

Table 11 presents overall changes in key variables in the 2050s, as both economies evolve according to forces set in motion by the previous stages. There really is not much new action in this stage. Variables in the North and in the South trend up at basically the same rates that they did at the close of Stage 3. The percentage gains for the North are lower than before, which is inevitable for any economy that grows; the absolute changes are also lower but remain large. In the North, GDP, consumption, and wages all expand by about one

¹²⁾-Note that if this view is correct, an economic modeler needs to take a stand on how infrastructure interacts with national borders. This is particularly true in our case where national borders suddenly disappear at the beginning of the System Integration stage. If all effects are national, this would imply a huge drop in the South's productivity in 2030 since the average stock of infrastructure for the nation (North and South) would suddenly become lower. This is clearly not a realistic result. The whole issue is not an easy one for economists, as it requires a fairly detailed understanding of how politics and economics interact in a particular situation. We therefore make the easier modeling assumption that all infrastructure effects are local.

third over the course of the decade. In the South, these variables grow at trend rates, as in Stage 3. The North continues to expand its capital stock and infrastructure at rates that exceed GDP growth, again in keeping with the pattern of most developing nations. With the North's continued robust growth path, they find it worthwhile to keep investing substantially. We note that the average growth of GDP in the South is higher in this period than the previous one. This is due to the one-time increase in efficiency that occurs at the beginning of this period when capital is allowed to freely flow to the location of its highest productivity.

Table 11 The Unified Nation Period (2050-2060)

Won Values (in trillions unless otherwise noted)

| | North | | | South | | |
|--------------------------|--------|--------|----------------|--------|--------|------------------|
| | 2050 | 2060 | 95% C.I. | 2050 | 2060 | 95% C.I. |
| GDP | 815 | 1090 | [1050, 1110] | 2380 | 2860 | [2780, 2920] |
| Consumption | 637 | 868 | [810, 924] | 1960 | 2350 | [2210, 2480] |
| Annual Wage (millions) | 55.2 | 73.6 | [71.2, 74.9] | 70.3 | 84.4 | [82.1, 86.1] |
| Private Capital | 787 | 1220 | [1080, 1350] | 4290 | 5160 | [4790, 5550] |
| Military Capital | 191 | 197 | [189, 204] | 377 | 452 | [431, 475] |
| Public Infrastructure | 475 | 810 | [765, 853] | 2360 | 2880 | [2740, 3030] |
| Bond Holdings (billions) | -3740 | -2770 | [-3560, -1970] | -740 | -645 | [-2840, 1610] |
| Rental Rate (%) | 0.0968 | 0.0954 | [0.0896, 0.1] | 0.0967 | 0.0947 | [0.0894, 0.0999] |

Percent Change

| | North | | South | |
|-----------------------|-------|------------------|--------|-----------------|
| | | 95% C.I. | | 95% C.I. |
| GDP | 33.7% | [29%, 35.8%] | 20.2% | [16.8%, 22.5%] |
| Consumption | 36.3% | [27.2%, 45%] | 19.9% | [12.8%, 26.5%] |
| Annual Wage | 33.3% | [29%, 35.8%] | 20.1% | [16.8%, 22.5%] |
| Private Capital | 55.0% | [37.8%, 71.4%] | 20.3% | [11.5%, 29.2%] |
| Military Capital | 3.1% | [-0.919%, 7.06%] | 19.9% | [14.3%, 25.9%] |
| Public Infrastructure | 70.5% | [61.3%, 79.8%] | 22.0% | [16.5%, 28.5%] |
| Bond Holdings | 25.9% | [4.85%, 47.5%] | -12.8% | [-284%, 317%] |
| Rental Rate | -1.5% | [-7.37%, 3.54%] | -2.1% | [-7.57%, 3.34%] |

Figures VI-10 and VI-11 show the paths for GDP, consumption, and wages, as with the discussion of previous stages. In Figure VI-10, the linear trends are similar for the North and the South, but it remains that case that the North's GDP and consumption continue to approach the South's in percentage terms. Thus, convergence continues despite the fact that it may not be obvious from the graphs. The convergence in wages is more apparent in Figure VI-11. And then, on a per capita basis, in Figure VI-12, we see the continuing fruits of the policies designed to resuscitate the North Korean economy and to reunify the Koreans. By the end of all the stages considered in this study, in 2060, the two Koreas have achieved near parity in living standards—as captured by GDP, consumption, and wages—and in the sophistication of their economies, as reflected in the capital stock. The modeling predicts that infrastructure in the North at that time will still lag behind, but the strong convergence trend persists.

Figure VI-10 Non-Random Time Paths for GDP and Consumption

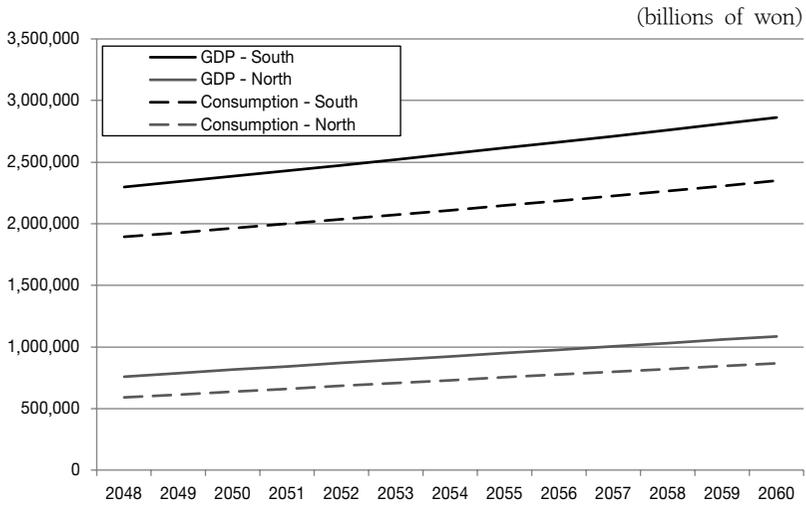


Figure VI-11 Non-Random Time Paths for Wages

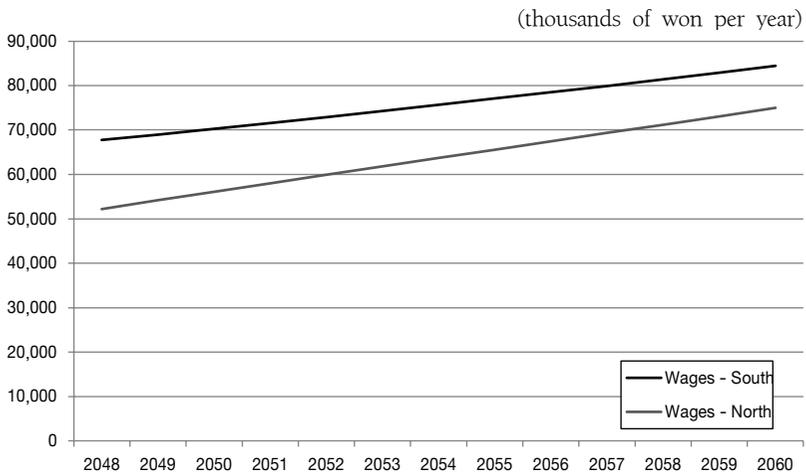
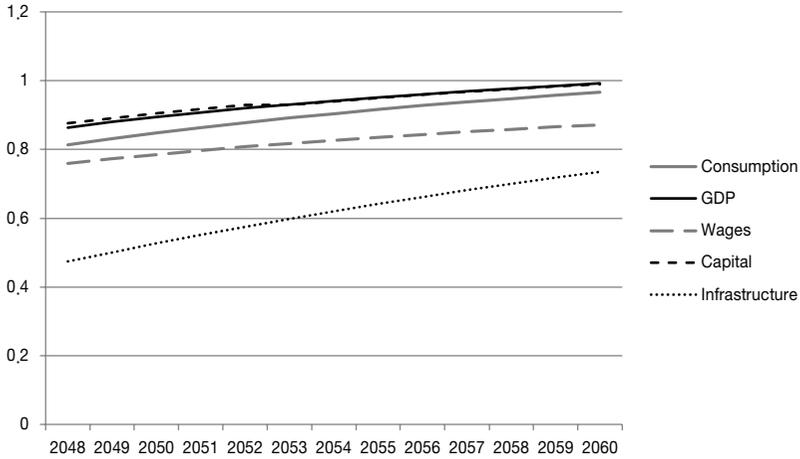


Figure VI-12 Non-Random Time Paths for North-to-South Ratios of Key Per Capita Variables



Figures VI-13 and VI-14 show the paths for capital and infrastructure. We see once again in Figure VI-14 that the amount of capital that is physically in the North exceeds the amount of capital that is owned by Northerners, because of Southern investment into the North. The amount of capital in the North that is owned by South Koreans is shown separately in Figure VI-15. This amount has reached equilibrium by the start of the unified nation period and does not change much going forward. Figure VI-16 shows the continued borrowing from abroad by the North and the South. We see a type of convergence here as the North's borrowings decline toward the level of the South's.

Figure VI-13 Non-Random Time Paths for Various Capital Stocks

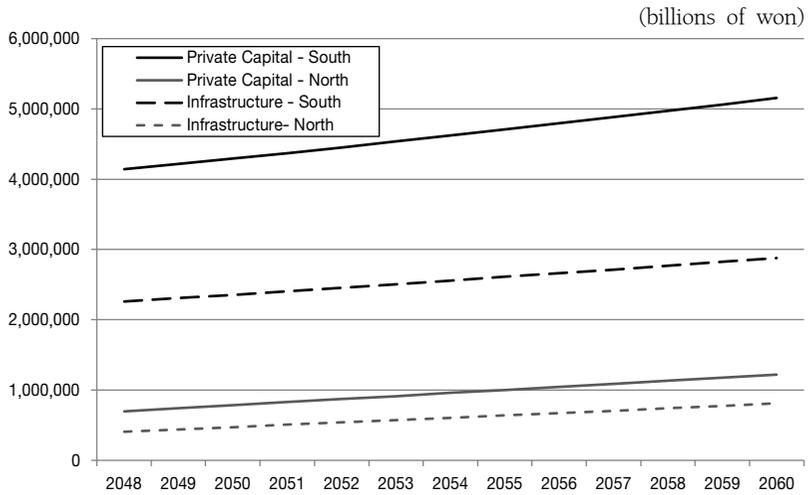


Figure VI-14 Time Paths for Owned Capital vs. Effective Capital

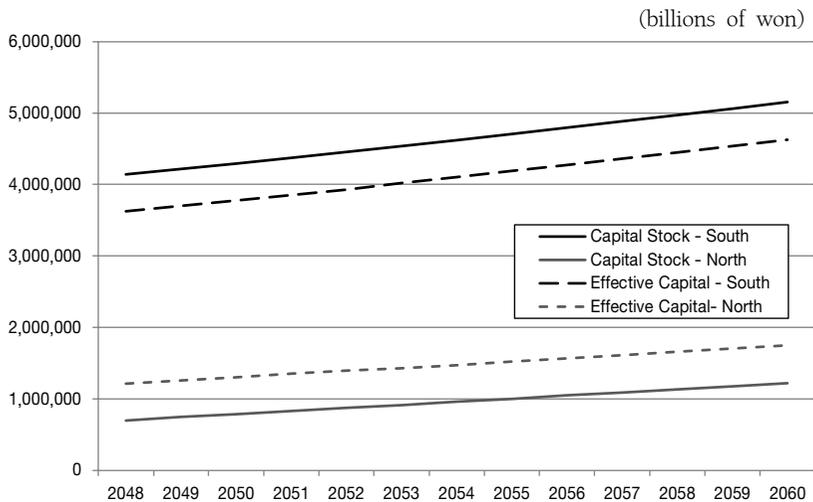


Figure VI-15 Non-Random Time Path for Capital Migration from South to North

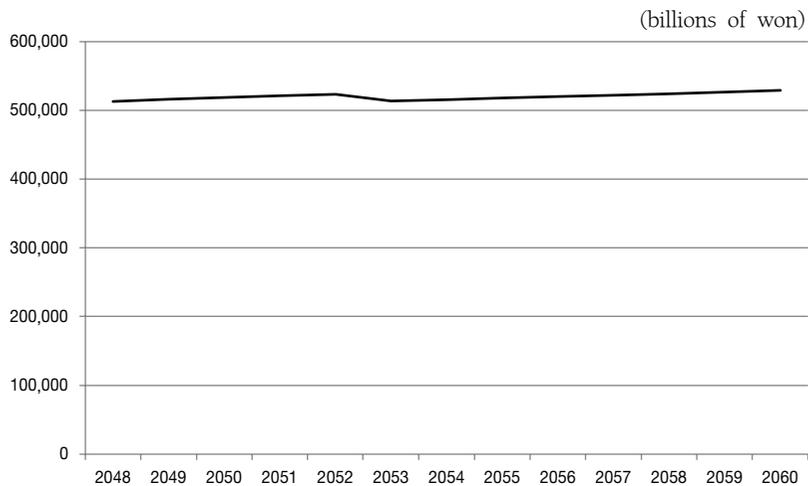
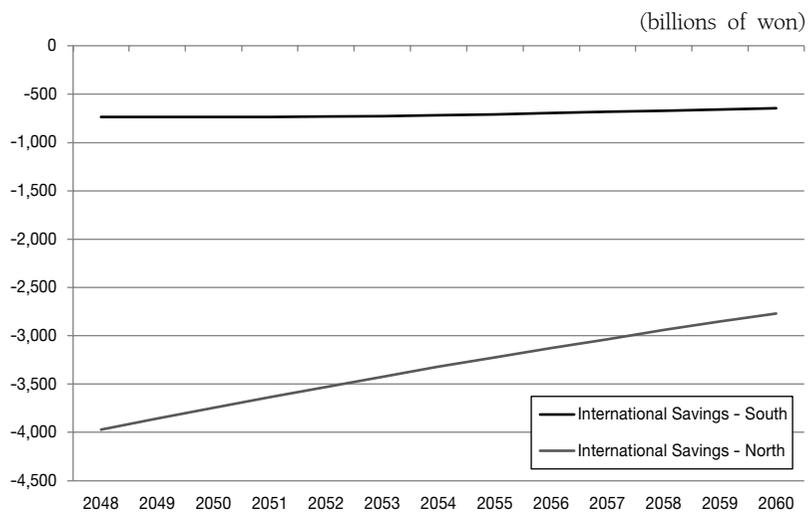
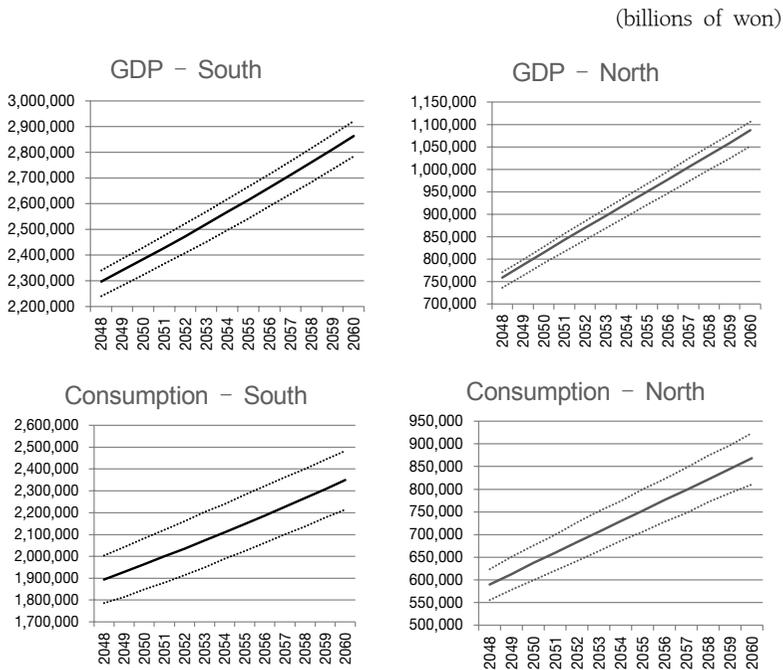


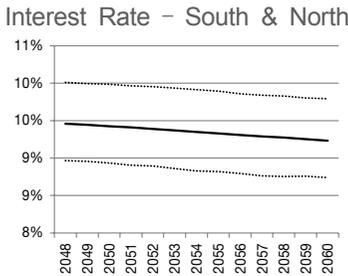
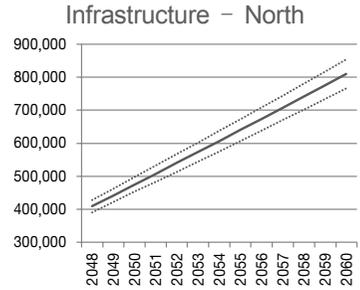
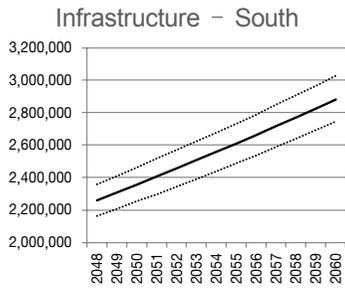
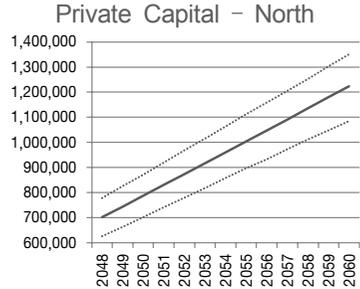
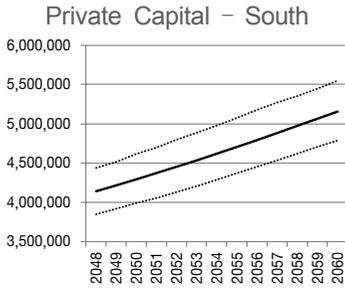
Figure VI-16 Non-Random Time Paths for International Savings



Once again, and for the final time, we show the confidence bands for the key variables. The story is the same here as with Stage 3: The relatively narrow bands indicate that the underlying economic forces that have been built into the model and that we have discussed extensively in this study have bigger impacts on the key variables than do the random shocks to productivity, returns on foreign investment, and the real exchange rate.

Figure VI-17 Time Paths with Confidence Bands for Key Variables





In this final stage of full unification, economic forces that have been put in motion in the previous stages operate to bring continued growth to the North and the South. The process of convergence continues as the North continues along the development path already trod by its Southern neighbors. This enables the two Koreas to join fully together in a single economy that brings substantial benefits to all Koreans.

VII

Summary of Economic Effects over All Stages

This chapter summarizes the results of all of the stages of unification. We review the behavior of key economic variables in both the North and the South. We also examine the behavior of peninsula-wide variables where such aggregations are possible. From this we attempt to draw a set of conclusions concerning the costs and benefits of unification.

First we present Table 12, which matches the format of the tables in previous chapters and show the overall projected changes in key variables between now and 2060, when we assume full unification is complete. Our analysis projects that the economy of North Korea would be completely transformed from one of the most impoverished and dysfunctional on earth to one that achieve middle class status and has in place the structure and tools needed to develop into a rich nation, as the South has. The modeling implies that Northern GDP, consumption, and wages would grow by more than 25 times. North Korea's infrastructure would expand massively. Its private capital stock would also strengthen, increasing more than 15 times in value.

Table 12 All Periods and Stages (2014-2060)

Won Values (in trillions unless otherwise noted)

| | North | | | South | | |
|------------------------|--------|--------|---------------|--------|--------|------------------|
| | 2014 | 2060 | 95% C.I. | 2014 | 2060 | 95% C.I. |
| GDP | 36.6 | 1090 | [1050, 1110] | 1270 | 2860 | [2780, 2920] |
| Consumption | 19.4 | 868 | [810, 924] | 1040 | 2350 | [2210, 2480] |
| Annual Wage (millions) | 2.37 | 73.6 | [71.2, 74.9] | 39.3 | 84.4 | [82.1, 86.1] |
| Private Capital | 68.6 | 1220 | [1080, 1350] | 2140 | 5160 | [4790, 5550] |
| Military Capital | 224 | 197 | [189, 204] | 200 | 452 | [431, 475] |
| Public Infrastructure | 0.0641 | 810 | [765, 853] | 1300 | 2880 | [2740, 3030] |
| Rental Rate (%) | 0.0814 | 0.0954 | [0.0896, 0.1] | 0.0908 | 0.0947 | [0.0894, 0.0999] |

Percent Change

| | North | | South | |
|-----------------------|------------|----------------------|--------|---------------|
| | | 95% C.I. | | 95% C.I. |
| GDP | 2880.0% | [2770%, 2920%] | 125.0% | [119%, 130%] |
| Consumption | 4370.0% | [4080%, 4660%] | 126.0% | [113%, 139%] |
| Annual Wage | 3010.0% | [2910%, 3060%] | 115.0% | [109%, 119%] |
| Private Capital | 1680.0% | [1480%, 1870%] | 141.0% | [124%, 160%] |
| Military Capital | -12.1% | [-15.8%, -8.99%] | 126.0% | [116%, 138%] |
| Public Infrastructure | 1260000.0% | [1190000%, 1330000%] | 122.0% | [111%, 133%] |
| Rental Rate | 17.2% | [10.1%, 23.1%] | 4.3% | [-1.58%, 10%] |

These gains are made possible in large part because of substantial aid from the South, but it continues to experience steady growth in all major indicators of economic well-being even after that aid ends. The South's living standards would be somewhat lower because of transferring aid to the North, but having a neighbor who is economically much healthier brings countervailing gains. As with almost all efforts to strengthen economic ties across borders in the modern world, synergy allows all to gain.

Despite the gains that would result from Korean unification, it does generate costs. We will now discuss them and compare them to the benefits, in order to gain a better overall vision of the ramifications of such a large and wide-ranging project.

The costs and benefits of unification come from four primary causes. First, aid transfers from the South to the North; second, decreases in military tensions; third, accumulation of infrastructure in the North, and finally, better opportunities for both capital and labor in both countries.

We examine all of these in more detail below.

1. Aid Transfers from the South to the North

Transfers from the South to the North are a cost imposed on the South and a benefit enjoyed by the North. The net effect of these transfers is an overall increase in well-being, however.

The costs of unification include the loss of revenues on the part of people living in the South. The government provides aid to people the North in the form of humanitarian aid, infrastructure transfers, and wage subsidies.

Humanitarian aid and wage subsidies come at the cost of higher taxes in our model. Higher taxes means less consumption and less investment in private capital. This lowers the well-being of workers in the South, albeit the loss manifests itself as a slower increase in the South's standard of living. This loss occurs via a direct effect whereby consumption falls when taxes rise, but also indirectly via the fact that a more slowly growing capital stock leads to a more slowly growing GDP.

Infrastructure transfers come at the cost of lost infrastructure investment in the South. This also works to slow the rate of GDP growth and affects the standard of living.

This loss of welfare in the South manifests itself as a gain in the North, of course. Northern workers enjoy higher wages and higher consumption from the wage subsidies and humanitarian aid. Infrastructure transfers increase the productivity of capital and labor in the North putting the country well on the road to meaningful development.

In monetary terms these kinds of transfers are a zero sum, the amount of money paid by the South equaling the amount of money received by the North. In terms of welfare, however, there is an overwhelming net gain. The cost to workers in the South is quite small in per capita terms, and the per capita gain to workers in the North is huge. Basically, this is because the marginal benefit of one won in the North is much higher than the marginal benefit in the South.

2. Decreases in Military Spending and Conscription

One direct benefit of unification is the associated reduction of military spending and conscription in both the North and South. This is a “peace dividend” that frees up capital and labor from the production of defense readiness and allows it to be used in the production of final good and services. Given the huge importance of the military in the North Korean economy, the benefits of this reduction are much larger in the North than the South, but both countries unambiguously gain from a drop

in military tension on the peninsula. Military spending does not go to zero, of course, and defense readiness is still needed for a unified Korea, but the inefficiencies associated with Koreans being ready to go to war with other Koreans are eliminated.

Not only are resources freed up, but the abolition of the relatively unproductive military production of goods and services in the North leads to increased productivity.

3. Increased Infrastructure Spending in the North

The adoption of higher rates of infrastructure investment in the North leads to huge gains in production there. At first this benefit comes at the expense of the South, which reduces its own infrastructure investment. However, once the North begins to pay for its own infrastructure, it experiences a one-time drop in after-tax income, and this leads to a drop in consumption. In the long-run, consumption grows more rapidly because of this, but there is a short-run cost to be paid. Hence this is a short-run cost, but a long-run benefit with a net gain as a result.

We note that this policy change is not something that requires unification to achieve. The North could unilaterally choose to increase its spending on infrastructure and pay the short-term cost in lost consumption in order to achieve the long-run benefit of greater productive power. However, given the already low levels of consumption in the North, this would be too painful in the short run. The transfers from the South allow infrastructure investment to rise without a devastating drop in consumption. Again the

South could provide this aid without unification, but it is much more likely to occur as part of a unification package. Political unification makes it easier to control the transfers to make sure they are effectively invested. In addition, it makes those receiving the funds more accountable for their proper usage.

4. Better Opportunities for Labor and Capital

One notable benefit that accrues to the South is that it gains access to investment in the North. This is true to a limited extent today, and more opportunities may develop in the future under the current status quo. However, unification truly opens up these opportunities. As shown in Figure VII-1 below, interest rates in the North surge into double digits during the System Integration Phase from 2030 to 2040. Figure VII-5 shows that a substantial portion of the private capital owned by the South is actually located in the North during this period. As a result, investors in the South earn a much higher rate on their capital in the North than they would otherwise be able to do without unification. The total value of additional capital returns, including a loss in 2031, is just under 74 trillion won.

In addition, some workers in the North are allowed to migrate to the South where they are more productive and receive higher wages. We have modeled this with an immigration quota system, but, in the long-run, free mobility of labor between the North and South leads to an equalization of wages, just as free mobility of capital leads to an equalization of interest rates.

Figure VII-1 Non-Random Time Paths for Interest Rates



There are winners and losers from these expanded opportunities, but standard trade theory shows how the gains to the winners outweigh the losses to losers. In the South, capital owners gain, while labor may lose as Northern workers coming to the South drive down Southern wages. Our model has only one type of labor, but with skilled and unskilled labor we would expect to see gains to skilled workers in the South and losses for Southern unskilled workers, who would face more direct competition from Northern immigrants. Conversely, labor in the North gains, while capital owners potentially lose. However, given the scarcity of private capital in the North prior to unification, these losses are likely to be quite small.

5. Net Effects

Overall the benefits to people in the North overwhelmingly dominate any potential losses to people in the South. As Figures VII-2 through VII-4 show, the levels of GDP, consumption, wages, and private capital do not actually drop in the South as unification proceeds. GDP, consumption and wages grow robustly, but not as fast as they would without unification. Private capital in the South actually rises more rapidly. However, this is due to an increase in the South's ownership of capital. A great deal of this capital ends up physically located in the North and contributes to Northern GDP. The effective amount of private capital in place in the South follows a path similar to GDP, consumption, and wages as can be seen in Figure VII-5.

Figure VII-2 Non-Random Time Paths for GDP and Consumption

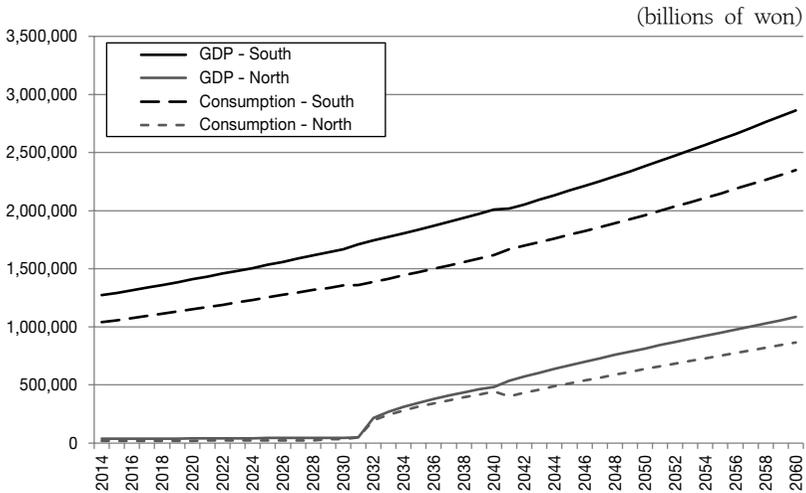


Figure VII-3 Non-Random Time Paths for Various Capital Stocks

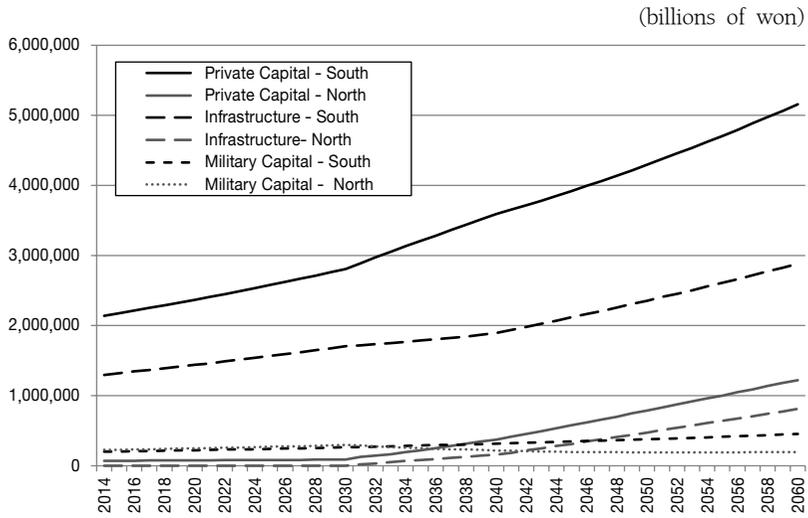


Figure VII-4 Non-Random Time Paths for Wages



Figure VII-5 Time Paths for Owned Capital vs. Effective Capital

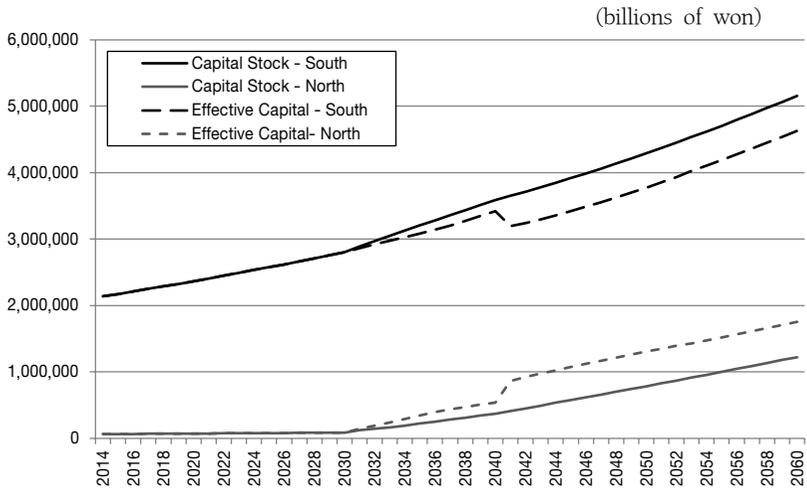


Figure VII-6 shows that both the North and South respond to the increased investment opportunities associated with better economic policy in the North by borrowing on the world markets. Given that we assume high transactions costs associated with such borrowing, the amounts are relatively small. We note that the amounts in Figure VII-6 and its equivalents in other chapters are the amounts of increased borrowing above and beyond any net debt or asset position by the North or South already existing at the beginning of our simulation. We also note that the North borrows more internationally than the South.

The flows of capital from the North to the South swamps international borrowing because the costs of internal capital movement are so much lower than the costs of international movement.

Figure VII-6 Non-Random Time Paths for International Savings

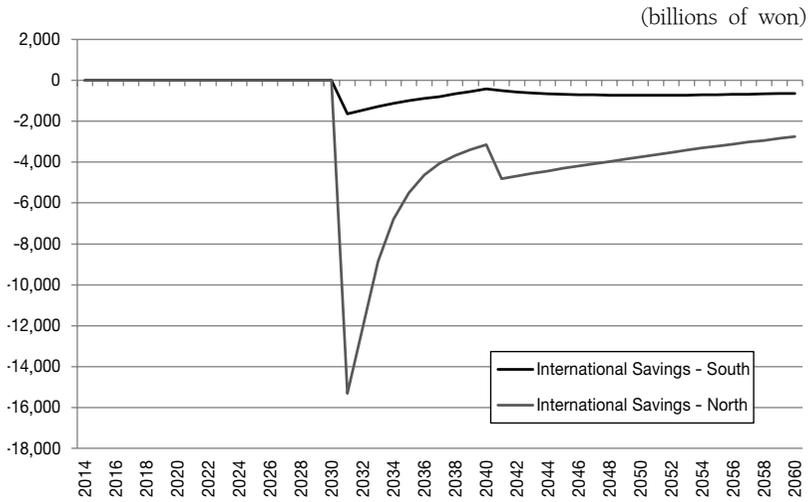


Figure VII-7 illustrates the overall net benefit to Korea as a whole. With unification in 2030, the aggregate levels of GDP, consumption, private capital, and infrastructure all rise rapidly, indicating large gains in the overall standard of living in Korea. Almost of this is due to increases in standard of living in the North. Figure VII-8 reinforces the point made above that these gains come with only moderate increases in international borrowing.

Figure VII-7 Non-Random Time Paths for Key Unified Variables

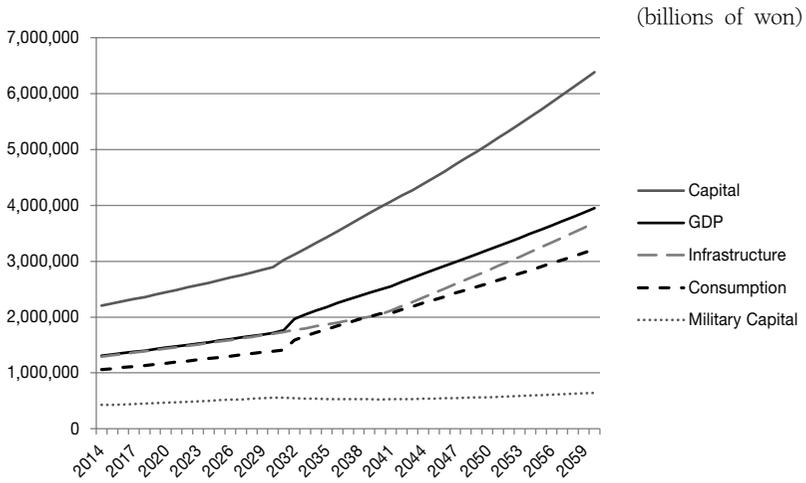
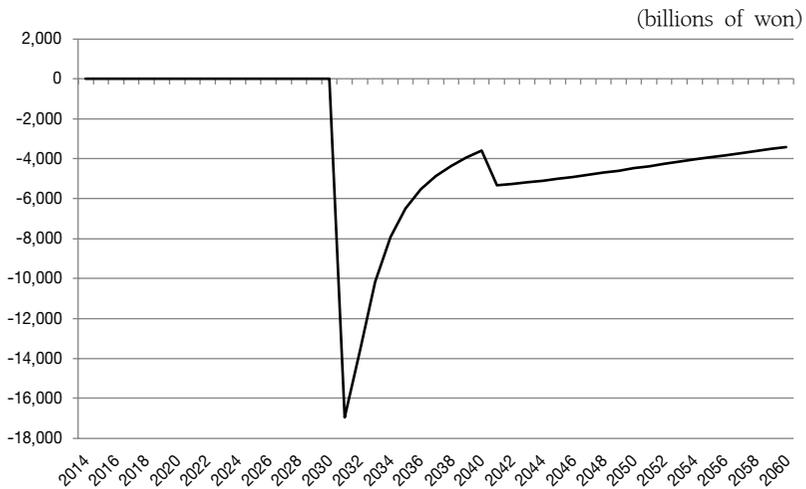
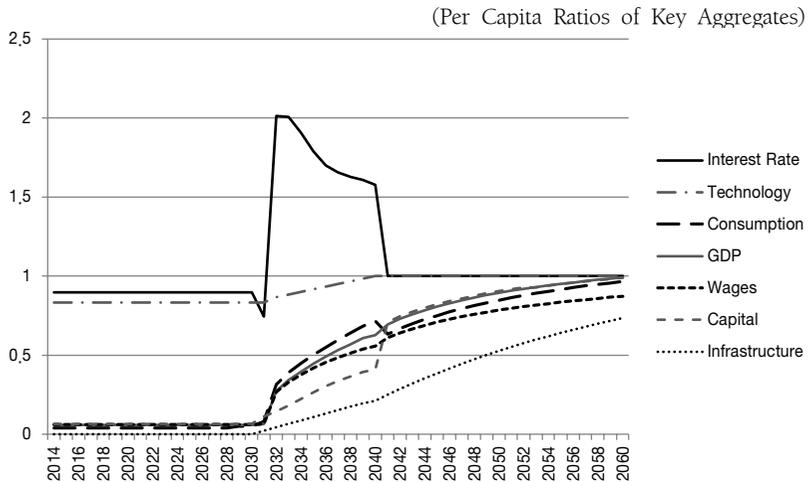


Figure VII-8 Non-Random Time Path for Unified International Savings



Lastly, Figure VII-9 shows that, even with full unification, there are still lingering regional effects. Since infrastructure per person remains lower in the North than the South for a long time, wage rates, consumption, GDP, and capital stocks are also lower. This disparity disappears over time as infrastructure per person in the North and South slowly converge to a common value. These disparities could be ameliorated if the South were to continue a policy of sending infrastructure transfers to the North. In the context of a unified Korea, this would amount to a policy of allocating infrastructure to the locations where it has the largest impact, rather than putting it in regions proportionally to population. In this regard, our model overstates the degree of likely regional differences once unification is complete.

Figure VII-9 Non-Random Time Paths for North-to-South



In summary, our dynamic stochastic general equilibrium model allows us to simulate the unification of North and South Korea. We have considered only one possible sequence of policies through time, though we have considered the uncertainty that is associated with unpredictable economic shocks. In reality, any actual unification scenario will likely differ in many policy dimensions. Aid transferred to the North could be larger or smaller than we assume. Military reductions could be larger or smaller and may have implications for the rate of technological progress that we have ignored. The details of the policies could have important differences. For example, we have assumed that new taxes are non-distortionary. An actual tax system will have some distortions that alter the incentives to save and work, which would alter our model's predictions.

We are not so concerned about the precision our model has in forecasting, however. Our goal is much more modest. We are attempting to gauge the rough magnitude of the costs and benefits to people living in both the North and the South. We believe that our model sheds valuable light on this issue.

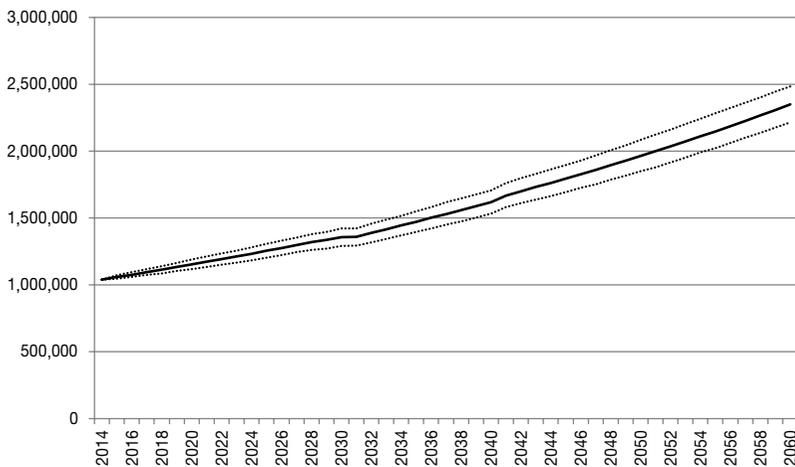
6. Net Gains by Region

We find that there are substantial gains to be had for the North. Indeed even small changes in the right direction can have huge positive impacts on Northern standards of living. These gains come from three major sources: ① increases in infrastructure, which render capital and

labor more productive, ② reductions in military spending and conscription, which free up resources for the production of final goods and services, and ③ free mobility of capital, which allows the abundant capital in the South to migrate to the North where it is more efficiently used.

Gains to the South are more modest and mixed. Much of the initial cost of jump starting the North's economy is paid for by taxing the South's workers, and this slows down Southern growth rate. However, as Figure VII-10 shows, while the effects of this financing on consumption during the System Integration stage are clearly noticeable, the movements are actually quite small relative to the confidence bands. This means that the random shocks which routinely generate economic fluctuations are likely to have much larger effects on the South's standard of living

Figure VII-10 Time Path with Confidence Bands for Consumption in the South



than any effects caused by unification. The South gains from having access to investments with higher returns in the North. It also gains from a reduction in military spending and conscription just as the North does, but the gains are not as significant given the smaller size of its military relative to the whole economy.

In conclusion, our analysis implies that the net economic gains from unification are high: unification's potential benefits easily offset its costs.

1 Introduction

a. Dynamic Stochastic General Equilibrium

In this appendix, we work with a dynamic stochastic general equilibrium (DSGE) model. This class of macroeconomic models is, first and foremost, general equilibrium in nature. That is, the economy in the model consists of several types of agents interacting with each other in various markets, all of which are in equilibrium. Our agents include households, firms, governments and financial intermediaries.

General equilibrium requires, first, that all households maximize utility. Secondly, all firms in the economy must maximize profits. Finally, all markets in the economy must clear; i.e., supply must equal demand. In this chapter we will set up and solve maximization problems for both households and firms. The solutions to these problems are the optimal behaviors which translate into supplies and demands for the various goods and factors of production in the model.

Our model is also explicitly dynamic. Agents make decisions over time based upon expectations of what the future will be. Households are forward-looking when it comes to their savings decisions. They form expectations of their future income and calculate an optimal consumption

path over time. Savings on the part of households is the primary determinant of the private capital stock which, in turn, influences the level of GDP. In our setup, firms will be making static decisions each period concerning how much labor to hire and how much capital to rent.

Government behavior is not derived from a maximization problem. Instead, we write simple rules that characterize the government's tax and spending behavior. These rules result in the dynamic evolution of key public capital stocks. Specifically, we track stocks of military capital and infrastructure.

Lastly, our model contains important stochastic processes. These are unforecastable movements in key variables that agents view as essentially random. In our case, we model technology as a stochastic process that evolves over time. This process will be highly persistent, so that when the level of technology today is above its trend, it will very likely be above the trend next period also. There will be unexpected movements that could push it higher above the trend or move it back toward or even below the long-run trend.

We will also assume a stochastic process for the real exchange rate, which is the number of home country goods one needs to forgo in order to purchase a unit of foreign goods. We model the rate of return on international savings as a stochastic process as well.

The stochastic shocks ensure that prediction and forecasting can be done only within statistical confidence bands. Since the shocks are fundamentally unpredictable, we can only say that the economy will

follow a given path over time if and only if the shocks realized take on particular values. Since no agent, not even the modeler, can know which values will actually occur, the best we can do is say the actual path of the economy will lie within some upper and lower bounds some percent of the time. We will generally use 95% confidence bands.

b. Solution and Simulation

DSGE models like the one we build in this chapter are generally not solvable using algebra. We cannot write down closed-form algebraic solutions for the dynamic behavior of the capital stock tomorrow, for example, as a function of the capital stock today and the realization of the stochastic shocks. As a result we are forced to use numerical approximation techniques. The functions that generate next period's values of key variables as a function of today's observables are called "transition functions". We work with a set of approximation tools bundled together in a software package called Dynare. Dynare allows us to solve for quadratic or cubic approximations of the transition functions.

Once we have these approximate transition functions we then generate a series of realizations for the time path of the economy using Monte Carlo techniques. We run a large number of these simulations and then take the average values over the simulations along with the 95% confidence bands. We use these as our forecasts of the effects of various policy changes in the face of fundamental uncertainty in the economy.

c. Key Features

Our model of the economies of North and South Korea has the following key features:

- There is a single tradeable output good (Y) which is produced using capital (K), labor (L_w) and publicly provided infrastructure (I).
- Domestic agents may buy ownership in foreign output but pay a quadratic cost when they repatriate real goods.
- The government imposes taxes and uses the proceeds (T) to fund purchases of military capital (M) and infrastructure capital (I).
- The government also conscripts labor for military service (L_c).
- Exogenous stochastic processes include: domestic productivity (z), foreign rates of return (s^*), and the real exchange rate (q).

We set up and solve a series of problems. These include:

- A household's utility maximization problem over time in the face of uncertainty. This problem will yield a demand for private consumption, a supply of capital goods, a supply of savings funds, and a supply of labor to the market.

- A goods producer's maximization problem each period. This problem yields demands for capital and labor and a supply of final goods.
- The behavior of the central government, which will impose taxes on households and conscript labor for military service. The government will also produce and maintain stocks of military and infrastructure capital. It combines military capital and conscripted labor to produce a chosen level of defense. Infrastructure affects the level of total factor productivity enjoyed by firms.
- The financial sector accepts savings deposits from households and invests them in foreign financial assets. These assets are potentially subject to random fluctuations in international returns, and their flows will certainly be influenced by random fluctuations in domestic total factor productivity. The real domestic rate of return on foreign assets is also subject to adjustment costs and premia related to the imperfect substitutability between domestic and foreign assets. These distortions work to retard the flow of real capital goods between countries.
- Market-clearing and adding-up constraints ensure that all markets clear and that prices are appropriate to accomplish this. International prices will either be set at fixed values or subject

to exogenous processes which cannot be influenced by agents in the domestic economy. This is the small open economy assumption, which allows us to skip modeling the economy of the rest of the world.

We organize the appendix as follows. First, we build a model of a single open economy that trades with the rest of the world. We proceed to characterize the behavior of consumers, firms, the government, and the financial sector for this single economy. We show how to redefine variables in a way that removes the assumed growth trend and renders the model amenable to solution and simulation.

We then build a two-country version of this model where a country denoted N (for the north) and another country S (for the south) trade on world markets. This second model is manipulable in ways that mimic various stages of economic unification.

2. A Small Open Economy Single-Country Model

We construct a small open economy dynamic stochastic general equilibrium (DSGE) model. Our model allows for a single non-traded final good (Y) which is used for consumption (C) and investment in various types of capital goods. It is produced using capital (K), labor (L) and publicly available infrastructure (I). Labor is given as a fixed endowment and is supplied inelastically. A fraction of the labor endowment is conscripted for military service. Capital accumulates

optimally over time. Productivity is exogenous and has a trend, a stochastic component, and a component that depends on infrastructure per worker. Also assumed exogenous and stochastic are the international interest rate (s^*) and the real exchange rate (q). Households may save or borrow internationally and trade balances every period.

We first consider a single-country model in a small open economy. However, we duplicate this model and calibrate the model parameters separately for the north and the south. This is very much in the spirit of our earlier work in [2] and [3]. We consider various degrees of economic integration between the north and south once we have the two economies calibrated.

a. Basic Setup

(1) Households

In both countries, each period households maximize utility, supply capital and labor and save by holding physical capital and savings bonds. The typical consumer's problem is illustrated by the Bellman equation in 1 which is maximized subject to the budget constraint in 2.

$$V(k, b; \Theta) = \underset{k', b'}{\text{Max}} U(c) + \beta E\{V(k', b'; \Theta')\} \quad (1)$$

$$c = w\ell_w + (1 + r - \delta_k)k + \pi + (1 + s)b - k' - b' - \tau \quad (2)$$

In these equations ℓ_w is labor supplied to the market, w is the wage rate, r is the rental rate for capital, δ_k is the rate of capital

depreciation, k is capital holdings, s is the interest rate on domestic bond holdings, b is holdings of domestic bonds, τ is a lump-sum tax, and next period values are indicated by a prime.

Assume the following CRRA functional form for utility:

$$U(c) = \frac{c^{1-\gamma} - 1}{1-\gamma}$$

The first-order and envelope conditions then reduce to the Euler equations in 3 and 4.

$$c^{-\gamma} = \beta E \{ c'^{-\gamma} (1 + s') \} \quad (3)$$

$$c^{-\gamma} = \beta E \{ c'^{-\gamma} (1 + r' - \delta_k) \} \quad (4)$$

The endowment of labor, denoted $\bar{\ell}$, is supplied inelastically and fixed so that $\bar{\ell} = 1$. Due to military conscription, the amount of labor available to the market is $\ell_w = \bar{\ell}(1 - \ell_c)$, where ℓ_c is the conscription rate.

(2) Firms

Final good producers maximize profit from hiring the capital and labor and selling the final good, as shown in equation 5.

$$\text{Max}_{K, L_w} \Pi = I^\omega K^\alpha (e^{gt+z} L_w)^{1-\alpha-\omega} - rK - wL_w \quad (5)$$

The production function is Cobb-Douglas:

$$Y = I^\omega K^\alpha (e^{gt+z} L_w)^{1-\alpha-\omega} \quad (6)$$

The factors demanded are L_w and K , I is the public infrastructure, g is a trend growth rate for technology, and z is a stochastic deviation of the level of technology from this trend. The first-order conditions reduce to equations (7) through (9).

$$r = \alpha \frac{Y}{K} \quad (7)$$

$$w = (1 - \alpha - \omega) \frac{Y}{L_w} \quad (8)$$

$$\pi = \omega Y \quad (9)$$

(3) Government

The government imposes lump-sum taxes and allocates revenues to military capital and infrastructure. It combines these with conscripted labor to produce a level of national defense (D). The defense production function is given by:

$$D = I^\psi M^\lambda (e^{gt+z} \bar{L} \ell_c)^{1-\lambda-\psi} \quad (10)$$

The period-by-period government budget constraints are:

$$\kappa_M Y = \Delta M, \kappa_I Y = \Delta I$$

where κ_M is the tax rate for funds allocated to military capital and κ_I is the tax rate for funds allocated to infrastructure.

A capital accumulation equation for military capital is given by:

$$M' = (1 - \delta_M)M + \kappa_M Y \quad (11)$$

where δ_M is the depreciation rate.

A capital accumulation equation for infrastructure is given by:

$$I' = (1 - \delta_I)I + \kappa_I Y \quad (12)$$

where δ_I is the depreciation rate.

(4) Financial Sector

Banks maximize profits from net issuance of domestic bonds which are backed by holdings of foreign bonds, B^* . The banks sell bonds to households and offer interest rate s . The international interest rate is denoted s^* and is quoted in foreign output units. The variable q is the real exchange rate measured in domestic units per foreign unit.

In the current period, the bank sells a net sum of B' new domestic bonds. It uses these funds to buy $qB^{*'}$ new foreign assets, hence the total foreign asset stock is given by:

$$B^{*'} = \frac{1}{q} B' \quad (13)$$

Next period the bank receives a stochastic return of $1 + s^{*'} - \nu \frac{q'B^{*'}}{Y'}$ per foreign asset. The total payment received in domestic units is

$q'B^{*'} \left(1 + s^{*'} - \nu \frac{q'B^{*'}}{Y'} \right)$. This payment is spread equally over the B' domestic bonds issued, so that: $(1 + s')B = q'B^* \left(1 + s^{*'} - \nu \frac{q'B^{*'}}{Y'} \right)$. Or,

$$1 + s' = \frac{q'}{q} \left(1 + s^{*'} - \nu \frac{q'B^{*'}}{Y'} \right) \quad (14)$$

The parameter ν reflects the imperfect substitutability between home and foreign financial assets. As B^* rises, the relative return on foreign

assets will tend to fall, reflecting a premium being paid to relatively scarce home assets. Some sort of return friction is necessary to prevent our model from generating unrealistic amounts of capital flight in response to shocks.

(5) Market Clearing and Adding-Up

All markets must clear and this imposes additional restrictions on the model. Capital and labor are not traded internationally. Consistency between household variables and aggregate variables gives:

$$\begin{aligned} K &= Pk, B = Pb, \\ \bar{L} &= P\bar{\ell}, L_w = P\ell_w \\ C &= Pc, T = P\tau \end{aligned} \tag{15}$$

Clearing of the final goods market gives (16)

$$Y + (1 - \delta_K)K = C + K' + X \tag{16}$$

Here, X is net exports.

Capital and labor markets clear from (15).

Balanced trade gives (17).

$$X + sB + q(B - B') = 0 \tag{17}$$

The first two terms are the current account and the last term is the capital account.

One of the above market clearing conditions is redundant by Walras Law. We choose to omit (16).

Since it turns out later to be easier to deal with per capita variables for labor, we use the ℓ s, rather than the L s as variables.

This means we will also need to treat P as a variable which reflects the population of the two regions, rather than as a parameter. If the population were fixed we could treat it as a parameter. However, in our later policy experiments we allow interregional migration, which means P changes endogenously. In the single country model, P is trivially given by the following:

$$P = \bar{L} = 1 \quad (18)$$

(6) Exogenous Laws of Motion

The technology shock is specified by the law of motion shown in equation (19). This is modeled as an AR(1) process.

$$z' = \rho_z z + e'; e' : iid(0, \sigma_e^2) \quad (19)$$

Finally, equations (20) and (21) specify the laws of motion for the two exogenous shock processes, the international interest rate and the real exchange rate.

$$s^{*'} = (1 - \rho_{s^*}) \bar{s}^* + \rho_{s^*} s^* + u'; u' : iid(0, \sigma_u^2) \quad (20)$$

$$\ln q' = (1 - \rho_q) \ln \bar{q} + \rho_q \ln q + \varepsilon'; \varepsilon' : iid(0, \sigma_\varepsilon^2) \quad (21)$$

Equations (2) through (15) and (17) through (21) are a system of equations that define the economy.

(7) A Stationary Version

To render the model stationary and therefore suitable for solution and simulation, we need to transform all growing variables into their

stationary versions. Glancing at equation (5) we see that labor-augmenting technology is e^{gt+z} . The variable z is stationary and mean zero. Variables which grow at rate g include: $K, B, B^*, Y, w, M, D, T, I$ and X . We divide each of these by $e^{\bar{g}}$ and denote this stationarized version of the variable with a carat.

We can use (15) in the household equations to express all variables in aggregate terms. We can use (13) to eliminate B^* as a variable. We also eliminate ℓ_w as a variable by using the equation $\ell_w = \bar{\ell}(1 - \ell_c)$. Finally, we choose a level of lump-sum taxes that are a constant share of GDP each period.

$$\hat{T} = (\kappa_M + \kappa_I)\hat{Y} \quad (22)$$

$$\begin{aligned} \hat{C} = & \hat{w}P\bar{\ell}(1 - \ell_c) + (1 + r - \delta_K)\hat{K} + \hat{\pi} \\ & + (1 + s)\hat{B} - (\hat{K}' + \hat{B}')(1 + g) - \hat{T} \end{aligned} \quad (23)$$

$$\hat{C}^{-\gamma} = \beta E\{[\hat{C}'(1 + g)]^{-\gamma}(1 + s')\} \quad (24)$$

$$\hat{C}^{-\gamma} = \beta E\{[\hat{C}'(1 + g)]^{-\gamma}(1 + r' - \delta_K)\} \quad (25)$$

$$r = \alpha \frac{\hat{Y}}{\hat{K}} \quad (26)$$

$$\hat{w} = (1 - \alpha - \omega) \frac{\hat{Y}}{P\bar{\ell}(1 - \ell_c)} \quad (27)$$

$$\hat{\pi} = \omega\hat{Y} \quad (28)$$

$$\hat{Y} = \hat{I}^\omega \hat{K}^\alpha (e^z P\bar{\ell}(1 - \ell_c))^{1 - \alpha - \omega} \quad (29)$$

$$\hat{D} = \hat{I}^\psi \hat{M}^\lambda (e^z P\bar{\ell}\ell_c)^{1 - \lambda - \psi} \quad (30)$$

$$\hat{M}'(1 + g) = (1 - \delta_M)\hat{M} + \kappa_M\hat{Y} \quad (31)$$

$$\hat{I}'(1 + g) = (1 - \delta_I)\hat{I} + \kappa_I\hat{Y} \quad (32)$$

$$1 + s' = \frac{q'}{q} \left(1 + s^{*'} - \nu \frac{\hat{B}'}{\hat{Y}'} \right) \quad (33)$$

$$\hat{X} + s\hat{B} + [\hat{B} - \hat{B}'(1 + g)] = 0 \quad (34)$$

$$P = 1 \quad (35)$$

$$z' = \rho_z z + e'; e': iid(0, \sigma_e^2) \quad (36)$$

$$\ln q' = (1 - \rho_q) \ln \bar{q} + \rho_q \ln q + \varepsilon'; \varepsilon': iid(0, \sigma_\varepsilon^2) \quad (37)$$

$$s^{*'} = (1 - \rho_{s^*}) \bar{s}^* + \rho_{s^*} s^* + u'; u': iid(0, \sigma_u^2) \quad (38)$$

The 17 dynamic variables defined by these equations are:

$$\hat{C}, \hat{w}, r, \hat{K}, \hat{B}, \hat{T}, \hat{Y}, s, \hat{M}, \hat{I}, \hat{D}, \hat{X}, P, \hat{\pi}, q, s^* \text{ and } z.$$

We can solve this system of equations for its steady state. Once we have this, we can approximate the policy functions that map the exogenous and endogenous state variables into next period's endogenous state variables. We do this approximation using Dynare and a 2nd-order polynomial approximation.

In our baseline case, which is before any reform, we use two versions of equations (22) - (37): one for the north and one for the south. Since we view the north as being a closed economy in the baseline case we will impose an additional constraint given in (39).

$$\hat{X}^N = 0 \quad (39)$$

(8) Steady State

We can pin down steady state values of s and r immediately from the steady state versions of equations (24) and (25).

$$\frac{(1+g)^{\gamma}}{\beta} - 1 = \bar{s} \quad (40)$$

$$\frac{(1+g)^{\gamma}}{\beta} + \delta_K - 1 = \bar{r} \quad (41)$$

Next, we take guesses for the three steady state values for $\bar{K}, \bar{B}, \bar{I}$ and use the following definitions.

$$\bar{Y} = \bar{I}^{\omega} \bar{K}^{\alpha} (P\bar{\ell}(1-\ell_c))^{1-\alpha-\omega} \quad (42)$$

$$\bar{w} = (1-\alpha-\omega) \frac{\bar{Y}}{P\bar{\ell}(1-\ell_c)} \quad (43)$$

$$\bar{M} = \frac{\kappa_M \bar{Y}}{g + \delta_M} \quad (44)$$

$$\bar{D} = \bar{I}^{\psi} \bar{M}^{\lambda} (P\bar{\ell}_c \bar{\ell})^{1-\lambda-\psi} \quad (45)$$

$$\bar{S} = \bar{S} * -\nu \frac{\bar{B}}{\bar{Y}} \quad (46)$$

$$\bar{X} = (g - \bar{s}) \bar{B} \quad (47)$$

$$P = 1 \quad (48)$$

$$\bar{C} = \bar{w} P \bar{\ell} (1 - \ell_c) + \hat{\pi} + (\bar{r} - \delta_K - g) \bar{K} + (s - \bar{g}_r) \bar{B} - \kappa \bar{Y} \quad (49)$$

The two equations that must be satisfied by these steady state values are the steady state versions of (26) and (32), given below.

$$\bar{r} - \alpha \frac{\bar{Y}}{\bar{K}} = 0 \quad (50)$$

$$\bar{I} = \frac{\kappa_I \bar{Y}}{g + \delta_I} \quad (51)$$

3. A Small Open Economy Two-Country Model

For a two-country model with no trade or migration of labor, we can simply solve and simulate two single-country models with the same parameters and shocks for the s^* process.

However, if we allow for movements between the north and south in labor, capital, real tax revenue, or other factors, we need to keep track of how much moves.

a. Two Independent Countries

We can keep the characterizing equations (22) - (37) for each region and denote the location with an appropriate superscript. For example, GDP in the north would be denoted Y^N . We also carry along one version of (38), which is an international return and therefore the same in both regions.

There are 33 equations and 33 unknowns in this two-country system with no interregional movements.

b. Two Interrelated Countries

(1) Labor Migration

The total population of both countries is given by $P = P^N + P^S = 1$, with the following definitions:

$$P^N = \bar{L}^N$$

$$P^S = \bar{L}^S.$$

Suppose we wanted to allow for migration of labor from the north to the south. This is accomplished through an exogenous variable, L^M , which represents the number of workers who move from the north to the south. With the additional variable, the characterizing equations for the two populations become

$$P^N = \bar{L}^N - L^M$$

$$P^S = \bar{L}^S + L^M$$

We also add the following equation:

$$w^S - w^N = Q_L$$

where Q_L is a per period cost of relocating from the north to the south.

(2) Costless Physical Capital Mobility

Suppose we allowed the free flow of physical capital from the south to the north. Again, we need to add an additional variable, K^M , which represents the movement of capital. Equations (26) and (29) for the north and south would be replaced with:

$$r^N = \alpha \frac{\hat{Y}^N}{\hat{K}^N + \hat{K}^M}$$

$$r^S = \alpha \frac{\hat{Y}^S}{\hat{K}^S - \hat{K}^M}$$

$$\hat{Y}^N = \hat{I}^\omega (\hat{K}^N + \hat{K}^M)^\alpha (e^z P \ell_w^N)^{1-\alpha-\omega}$$

$$\hat{Y}^S = \hat{I}^\omega (\hat{K}^S - \hat{K}^M)^\alpha (e^z P \ell_w^S)^{1-\alpha-\omega}$$

We also add the following equation:

$$r^S - r^N = Q_K$$

where Q_K is a per period cost of moving capital from the south to the north.

(3) Aid and Subsidies

Suppose the south gave humanitarian aid or government revenue subsidies to the north. We will denote the real value of these transfers as T^M . These are assumed to be transferred to the government of the north as general tax revenue, which can then be either spent on infrastructure investment or transferred to households. This gives the following government budget constraints:

$$T^S = (\kappa_M^S + \kappa_I^S)Y^S + T^M \quad (52)$$

$$T^N = (\kappa_M^N + \kappa_I^N)Y^N - T^M \quad (53)$$

There is also the possibility of a wage subsidy in the north by the south. In that case, workers in the north would receive wage w while firms would pay $w(1 - \tau_w)$ for their labor. A firm's first-order condition with respect to labor is then given by the following equation:

$$(1 - \tau_w)\hat{w}^N = (1 - \alpha^N - \omega^N) \frac{\hat{y}^N}{p^N \epsilon_w^N} \quad (54)$$

Also, we must add the subsidy to the budget constraint in the south. Thus (52) becomes the following:

$$T^S = (\kappa_M^S + \kappa_I^S)Y^S + T^M + \tau_w^N \hat{w}^N P^N \ell_w^N \quad (55)$$

The budget constraint for the north is unaffected by this change.

A third possible form of aid is the south providing support for infrastructure investment in the north. The south would accomplish this by sending fraction ϕ of their gdp to the north for infrastructure buildup. This transfer would require changes to the budget constraints in the north and south:

$$T^N = \kappa_M^N Y^N + \kappa_I^N Y^N - T^M - \phi Y^S \quad (56)$$

$$T^S = (\kappa_M^S + \kappa_I^S)Y^S + T^M + \tau_w^N \hat{w}^N P^N \ell_w^N + \phi Y^S \quad (57)$$

Additionally, there are changes to the north's capital accumulation equation for infrastructure:

$$I^{N'} = (1 - \delta_I^N)I^N + \kappa_I^N Y^N + \phi Y^S \quad (58)$$

(5) Model Equations

A stationary two-country model looks similar to the single-country version. The substitutions used previously to simplify the model are again used here. We denote the region of a variable with either an N or S superscript.

Equations for the North

$$\hat{T}^N + \hat{T}^M + \phi \hat{Y}^S = (\kappa_M^N + \kappa_I^N) \hat{Y}^N \quad (59)$$

$$\hat{C}^N = \hat{w}^N P^N \bar{\ell}^N (1 - \ell_c^N) + (1 + r^N - \delta_K^N) \hat{K}^N + \hat{\pi}^N + (1 + s^N) \hat{B}^N - (\hat{K}^{N'} + \hat{B}^{N'}) (1 + g^N) - \hat{T}^N \quad (60)$$

$$\hat{C}^{N-\gamma^N} = \beta^N E\{[\hat{C}^{N'}(1 + g^N)]^{-\gamma^N} (1 + s^{N'})\} \quad (61)$$

$$\hat{C}^{N-\gamma^N} = \beta^N E\{[\hat{C}^{N'}(1 + g^N)]^{-\gamma^N} (1 + r^{N'} - \delta_K^N)\} \quad (62)$$

$$r^N = \alpha^N \frac{\hat{Y}^N}{\hat{K}^N + \hat{K}^M} \quad (63)$$

$$(1 - \tau_w) \hat{w}^N = (1 - \alpha^N - \omega^N) \frac{\hat{Y}^N}{P^N \bar{\ell}^N (1 - \ell_c^N)} \quad (64)$$

$$\hat{\pi}^N = \omega^N \hat{Y}^N \quad (65)$$

$$\hat{Y}^N = (\hat{I}^N)^{\omega^N} (\hat{K}^N + \hat{K}^M)^{\alpha^N} (e^{z^N} P^N \bar{\ell}^N (1 - \ell_c^N))^{1 - \alpha^N - \omega^N} \quad (66)$$

$$\hat{D}^N = (\hat{I}^N)^{\psi^N} (\hat{M}^N)^{\lambda^N} (e^{z^N} P^N \bar{\ell}^N \ell_c^N)^{1 - \lambda^N - \psi^N} \quad (67)$$

$$\hat{M}^{N'}(1 + g^N) = (1 - \delta_M^N) \hat{M}^N + \kappa_M^N \hat{Y}^N \quad (68)$$

$$\hat{I}^{N'}(1 + g^N) = (1 - \delta_I^N) \hat{I}^N + \kappa_I^N \hat{Y}^N + \phi Y^S \quad (69)$$

$$1 + s^{N'} = \frac{q^{N'}}{q^N} \left[1 + s^{*'} - \nu \frac{\hat{B}^{N'}}{\hat{Y}^{N'}} \right] \quad (70)$$

$$\hat{X}^N + s^N \hat{B}^N + [\hat{B}^N - \hat{B}^{N'}(1 + g^N)] = 0 \quad (71)$$

$$P^N = \bar{L}^N - L^M \quad (72)$$

$$z^{N'} = \rho_z^N z^N + e^{N'}; e^{N'}: iid(0, \sigma_{eN}^2) \quad (73)$$

$$\ln q^{N'} = (1 - \rho_q^N) \ln \bar{q}^N + \rho_q^N \ln q^N + \varepsilon^{N'}; \varepsilon^{N'}: iid(0, \sigma_{\varepsilon N}^2) \quad (74)$$

Equations for the South

$$\hat{T}^S = (\kappa_M^S + \kappa_I^S + \phi) \hat{Y}^S + \hat{T}^M + \tau_w^N \hat{w}^N P^N \bar{\ell}^N (1 - \ell_c^N) \quad (75)$$

$$\begin{aligned}\hat{C}^S &= \hat{w}^S P^S \bar{\ell}^S (1 - \ell_c^S) + (1 + r^S - \delta_K^S) \hat{K}^S + \hat{\pi}^S \\ &\quad + (1 + s^S) \hat{B}^S - (\hat{K}^{S'} + \hat{B}^{S'}) (1 + g^S) - \hat{T}^S\end{aligned}\quad (76)$$

$$\hat{C}^{S-\gamma^S} = \beta^S E\{[\hat{C}^{S'}(1 + g^S)]^{-\gamma^S} (1 + s^{S'})\}\quad (77)$$

$$\hat{C}^{S-\gamma^S} = \beta^S E\{[\hat{C}^{S'}(1 + g^S)]^{-\gamma^S} (1 + r^{S'} - \delta_K^S)\}\quad (78)$$

$$r^S = \alpha^S \frac{\hat{Y}^S}{\hat{K}^S - \hat{K}^M}\quad (79)$$

$$\hat{w}^S = (1 - \alpha^S - \omega^S) \frac{\hat{Y}^S}{P^S \bar{\ell}^S (1 - \ell_c^S)}\quad (80)$$

$$\hat{\pi}^S = \omega^S \hat{Y}^S\quad (81)$$

$$\hat{Y}^S = (\hat{I}^S)^{\omega^S} (\hat{K}^S - \hat{K}^M)^{\alpha^S} (e^{z^S} P^S \bar{\ell}^S (1 - \ell_c^S))^{1 - \alpha^S - \omega^S}\quad (82)$$

$$\hat{D}^S = (\hat{I}^S)^{\psi^S} (\hat{M}^S)^{\lambda^S} (e^{z^S} P^S \bar{\ell}^S \ell_c^S)^{1 - \lambda^S - \psi^S}\quad (83)$$

$$\hat{M}^{S'}(1 + g^S) = (1 - \delta_M^S) \hat{M}^S + \kappa_M^S \hat{Y}^S\quad (84)$$

$$\hat{I}^{S'}(1 + g^S) = (1 - \delta_I^S) \hat{I}^S + \kappa_I^S \hat{Y}^S\quad (85)$$

$$1 + s^{S'} = \frac{q^{S'}}{q^S} \left[1 + s^{*'} - \nu \frac{\hat{B}^{S'}}{\hat{Y}^{S'}} \right]\quad (86)$$

$$\hat{X}^S + s^S \hat{B}^S + [\hat{B}^S - \hat{B}^{S'}(1 + g^S)] = 0\quad (87)$$

$$P^S = \bar{L}^S + L^M\quad (88)$$

$$z^{S'} = \rho_z^S z^S + e^{S'}; e^{S'}: iid(0, \sigma_{eS}^2)\quad (89)$$

$$\ln q^{S'} = (1 - \rho_q^S) \ln \bar{q}^S + \rho_q^S \ln q^S + \varepsilon^{S'}; \varepsilon^{S'}: iid(0, \sigma_{\varepsilon S}^2)\quad (90)$$

Inter-Korea Equations

$$\hat{T}^M = \kappa_T \hat{Y}^S \quad (91)$$

$$w^S - w^N = Q_L \quad (92)$$

$$r^S - r^N = Q_K \quad (93)$$

International Equations

$$s^{*'} = (1 - \rho_s^*) \bar{s}^* + \rho_s^* s^* + u'; u': iid(0, \sigma_u^2) \quad (94)$$

The 36 dynamic variables defined by these equations are:

$$\hat{C}^N, \hat{w}^N, r^N, \hat{K}^N, \hat{B}^N, \hat{T}^N, \hat{Y}^N, s^N, \hat{M}^N, \hat{I}^N, \hat{D}^N, \hat{X}^N, P^N, \pi^N, q^N, z^N, \\ \hat{C}^S, \hat{w}^S, r^S, \hat{K}^S, \hat{B}^S, \hat{T}^S, \hat{Y}^S, s^S, \hat{M}^S, \hat{I}^S, \hat{D}^S, \hat{X}^S, P^S, \pi^S, q^S, z^S, \\ Q_L, Q_K, s^*, T^M$$

(6) Calibration

In the baseline model, we need to calibrate the following parameters for each country:

$$\delta_K, \delta_M, \delta_I, \omega, \psi, \alpha, \lambda, \rho_z, \rho_q, \sigma_e, \sigma_\varepsilon, \bar{q}, \kappa_I, \kappa_M, \ell, \ell_c, P_o, \beta, \gamma, \nu.$$

We also need to calibrate the following universal parameters:

$$g, \rho_s, \sigma_u, \bar{s}^*$$

(7) Parameter Choices

κ_M, κ_I – tax rates, as percentages of GDP, for funds allocated to military capital and infrastructure.

These tax rates and the factor shares of production explained below are chosen so that our baseline steady state values hit certain target ratios. The ratios are based on the current state of the North and South Korean economies. They are:

$$\frac{c^N}{c^S} = .025, \frac{y^N}{y^S} = .025, \frac{d^N}{d^S} = 1.25.$$

To hit these targets, we choose the following values:

$$\kappa_I^N = 0.0001$$

$$\kappa_I^S = .065$$

$$\kappa_M^N = 0.35$$

$$\kappa_M^S = .01$$

$\alpha, \lambda, \omega, \psi$ - capital and infrastructure shares in GDP and defense. The factor shares of production are also chosen in an effort to match target ratios of the north and south economies. For private production, we choose $\alpha = .15$ and $\omega = .25$. For defense production, we choose $\lambda = .2$ and $\psi = 0$. The same values are used in the both the north and the south.

$\delta_K, \delta_M, \delta_I$ - depreciation rates for various capital stocks.

Data from the IMF's national income accounts statistics for the south imply an average depreciation rate of 4.78%. We assume the same rate applies to all forms of capital, giving $\delta_K = \delta_M = \delta_I = .0478$. We use the same values for both the north and south.

$\bar{s}^*, \bar{q}, \rho_z, \rho_s^*, \rho_q, \sigma_u, \sigma_e, \sigma_\varepsilon$ - parameters for the exogenous laws of motion.

Data from the Penn World Tables for real exchange rates for the period 1990-2010 gives a value of $\bar{q}S = 1.426$. This is South Korean baskets of goods per U.S. basket. Similar data is not available for North Korea, so we take the average over the same period of the exchange rate between the following countries and the U.S.: Cambodia, Chad, Kazakhstan, Kenya, Laos, Senegal, Tajikistan, and Tanzania. This gives $\bar{q}N = 2.9$. These countries were chosen because they have per capita GDP similar to North Korea. The U.S. ex post real lending rate averages to 3.3 percent or $\bar{s}^* = 0.033$.¹³⁾

We run autoregressions on the deviation of total factor productivity from a linear trend and find an estimate of $\rho_z = 0.9283$. A similar regression on the natural log of the real exchange rate for South Korea versus the U.S. gives $\rho_q = 0.5497$. An autoregression on the U.S. ex post real lending rate gives $\rho_s^* = .704$. We use these same values for North Korea.

$\bar{\ell}, \ell_c$ - skilled and unskilled labor endowments, conscription rate. We set $\bar{\ell} = 1$ by a normalization of units. [4] reports active militaries of 687,000 and 1,106,000 for the south and north respectively. This gives $\ell_c^S = 0.0138$ and $\ell_c^N = 0.0452$.

P_o - population normalized for sum of both regions equals one. The World Bank reports populations of 49.771 million and 24.451 in 2001 in the south and north respectively. This gives $P_o^N = 0.33$ and $P_o^S = .67$.

¹³⁾-see [1] for a full explanation.

β - subjective discount factor. We set $\beta^N = \beta^S = 0.98$ which is consistent with other DSGE parameterizations.¹⁴⁾

ν - interest rate spread sensitivity. We use $\nu = 5$.

g - average growth rate. The same total factor productivity data used above yields an average annual growth rate of technology for the south of $g = 0.017$.

Table A-1 summarizes the parameter values explained above.

Table A-1 Baseline Parameter Values

| Country-Specific Values | | | Universal Values | |
|-------------------------|--------|--------|------------------|--------|
| Parameter | North | South | Parameter | Value |
| \bar{K}_M | 0.3500 | 0.0100 | g | 0.017 |
| \bar{K}_I | 0.0001 | 0.0650 | ρ_s | 0.704 |
| δ_K | 0.0478 | 0.0478 | σ_u | 0.0001 |
| δ_M | 0.0478 | 0.0478 | | |
| δ_I | 0.0478 | 0.0478 | | |
| α | 0.1500 | 0.1500 | | |
| λ | 0.2000 | 0.2000 | | |
| ω | 0.2500 | 0.2500 | | |
| ψ | 0.0000 | 0.0000 | | |
| β | 0.98 | 0.98 | | |
| γ | 1.3 | 1.3 | | |
| $\bar{\ell}$ | 1 | 1 | | |
| ℓ_c | 0.0452 | 0.0138 | | |
| ν | 5 | 5 | | |
| ρ_z | 0.9283 | 0.9283 | | |
| ρ_q | 0.5497 | 0.5497 | | |
| σ_e | 0.0276 | 0.0276 | | |
| σ_ε | 0.1 | 0.1 | | |
| \bar{q} | 2.9 | 1.426 | | |
| P_o^N | 0.33 | .67 | | |

¹⁴⁾-This implies a quarterly discount factor of approximately 0.995

Part 2

**Costs and Benefits of
Korean Unification**
International Dimension

Given the current situation, in which the Kim regime is firmly in control of North Korea's politics and in which South Korea, China, and the United States are opposed to any action that might create instability in the region, it would seem that Korean unification remains a distant goal—at least if unification takes place in the gradual method hypothesized by the Guiding Model that provides the background for this discussion. That being the case, it is difficult to specify the political, economic, and social conditions that will exist when the two Koreas finally reunify. In the absence of knowledge about those future conditions, we are assuming current conditions and trends.

The Guiding Model seeks to make a distinction between costs and benefits in the two major categories that provide the structure for these chapters: “economic” and “non-economic” costs and benefits. The Model further breaks down the costs into those relating to the economy and physical infrastructure (“economic”), politics and the functions of government including security (“non-economic”), and social welfare in the broadest sense (also “non-economic”). For example, the cost of planning for a North Korean refugee center would be a political cost. The cost of putting up and maintaining the building would be an economic cost. And the cost of providing food and clothing for the refugees would

be a social cost. Needless to say, all these costs require the expenditure of money and in that sense they all have an economic impact. In fact, it is generally the case that social welfare costs are by far the largest part of a national budget. In this example, the corresponding political, economic, and social benefits of a refugee center are likewise easy to envision. Finally, we are well aware that costs and benefits in one area generally spill over to other areas. For example, economic benefits confer political and social benefits.

Making such distinctions is somewhat artificial—and demanding for those of us who are trying to imagine what the different stages of unification will look like. On the other hand, these distinctions force us to think about all the different ways that the unification project will have impacts on the parties involved, including the U.S. government, U.S. non-government organizations, and the American people.

Not all the costs and benefits can be priced or “counted,” but that doesn’t mean they are free. Almost all “non-economic” costs carry a price. For example, the cost of time (e.g., time spent on planning) can be priced, and people rarely make any kind of effort unless they expect it will eventually result in an economic reward. Likewise people usually find a way to make economic profit from political and social benefits. For example, business people are constantly on the lookout for favorable market conditions in which to invest, divest, buy or sell.

We cannot know what the world will look like at the time of unification. Therefore, it is important to be clear about the forecasting principles we use to predict how future costs and benefits will be regarded,

regardless of the situation. Our assessment and predictions are based on several assumptions about how people in South and North Korea and in the United States will calculate costs and benefits. The conceptual diagram for the Guiding Model offers the goal of the “realization of human security by a good player” by way of the principles of goodness, pluralism, and effectiveness. It seems to us that although these may be excellent principles leading to an ideal goal, people are in fact motivated by much less laudable considerations.

We suggest that the cost-benefit approach to unification is useful not only to analyze the U.S. position on Korean unification but also to explain how ordinary people go about making decisions—now and in the future. That is, we assume that people are usually motivated by the desire to acquire (or motivated by the habit of acquiring) things that benefit themselves and those close to them. In short, most of the time people are selfish and seek economic goods (products, services, etc.) that they expect will bring them happiness, although the desire for power is also a strong motivator. True, people can be altruistic at times, but altruism is more the exception than the rule. This selfish viewpoint was expressed by the political strategist James Carville (who helped Bill Clinton win the presidency in 1992) when he said, “(It’s) the economy, stupid.” A political version of this fundamental selfishness is the tendency to favor local political goals over national and international goals, in line with the famous dictum of the American politician Tip O’Neill: “All politics is local.”

A complementary way of looking at economic motivation is to view

it as social exchange. When faced with important decisions, individuals and groups often try to calculate the costs and benefits of their options, and when they expect to incur a cost in their choice, they will look for some offsetting benefit—preferably one that comes sooner rather than later.

What we're suggesting is that, in the long term, individuals in South and North Korea are going to look at unification in terms of how it benefits them individually. (As an aside, we assume that the basic human nature of North Koreans is the same as that of South Koreans.) South Koreans are going to want to see benefits to balance the costs they will incur. Americans are likewise going to be looking for unification benefits sooner rather than later. It seems that only when we have a charismatic American president who can beguile citizens into putting aside their immediate welfare in favor of future goals do the American people and those who represent them invest heavily in the future or in other peoples.

First and foremost the U.S. government will view Korean unification in terms of how it satisfies U.S. national security interests. The White House periodically issues a National Security Strategy, the latest of which was released in May 2010.¹⁵⁾ The white paper lists the following interests: maintain national security (e.g., homeland defense, counter-terrorism, and counter-proliferation), pursue economic prosperity, promote American values (e.g., democracy and human rights), and preserve a stable international order (e.g., maintaining strong alliances, strengthening international institutions).

¹⁵⁾-The White House, *The National Security Strategy*, May 2010.

The U.S.-ROK Mutual Defense Treaty has been the backbone of our security relationship with Korea for the last 60 years, and the alliance is one of America's strongest foreign commitments. Twenty years into the post-Cold War era, the alliance is primarily focused on deterring North Korean provocations and defending against possible North Korean attacks. The strength of the alliance has varied slightly over the years. It was somewhat weakened during the decade beginning in 1998 when two South Korean presidents pursued engagement with North Korea while their supporters often voiced anti-American sentiments. It has rebounded since then but it is difficult to predict how strong it will be in the Guiding Model's target unification year of 2030.

Apart from security concerns, the United States has developed many ties with Korea that keep the two nations close. They share similar economic and political models. American culture is popular in Korea and Korean culture is popular in the major American metropolitan centers. Over a hundred thousand Americans live in Korea and almost two million Koreans live in the United States.

Korea does not have to convince the United States of the importance of unification. After all, the United States fought its own civil war to keep the union together, and the U.S. government under the first President Bush was a strong supporter of German unification. U.S. government officials have often voiced support for Korean unification. President Eisenhower assured ROK President Syngman Rhee in 1953 that "The United States will not renounce its efforts by all peaceful means to effect the unification of Korea."¹⁶) President Carter told President Park

Chung-hee in 1979, “We must take advantage of changes in the international order ... ultimately, to bring permanent peace and unification to the Korean peninsula.” In 1985, President Reagan told President Chun Doo-hwan, “We must ultimately achieve peaceful unification of the divided land through democratic means.” Addressing the Korean National Assembly in 1992, President George H. W. Bush declared, “The American people share your goal of peaceful unification on terms acceptable to the Korean People.” A year later, President Clinton repeated the sentiment: “We support Korea’s peaceful unification on terms acceptable to the Korean people,” adding, “And when the unification comes, we will stand beside you in making the transition on terms that you have outlined.” While visiting the Demilitarized Zone in 2002, President George W. Bush said, “I see a peninsula that is one day united in commerce and cooperation instead of divided by barbed wire and fear ... And when the day comes, all the people of Korea will find in America a strong and willing friend.”¹⁷⁾ And in 2009 President Obama’s White House issued a “Joint Vision” paper that looks forward to a “peaceful unification on the principles of free democracy and a market economy.”¹⁸⁾

¹⁶⁾Unless otherwise indicated, quotations are taken from Peter M. Lewis, “US Foreign Policy toward the Korean Peninsula: An Anti-Unification Policy or Just Too Many Uncertainties to Account For?,” *International Journal of Korean Unification Studies*, Vol. 16, No. 2 (2007), pp. 79-108.

¹⁷⁾Thomas M. Defrank, “Prez Peeks at N. Korea,” *New York Daily News*, February 20, 2002, <http://articles.nydailynews.com/2002-02-20/news/18198068_1_wire-and-fear-north-korea-sunshine-policy>.

¹⁸⁾The White House, “Joint Vision for the Alliance of the United States of America and the Republic of Korea,” June 16, 2009, <http://www.whitehouse.gov/the_press_office/Joint-vision-for-the-alliance-of-the-United-States-of-America-and-the-Republic-of-KoreaJointVision.doc>.

The United States will inevitably have its own opinions about what foreign policies Korea should adopt after unification, and much of this concern will center on neighboring China. As serious as the current threat from North Korea is, it is something that can be handled—although if it comes to war, the cost of handling it will be great. China, on the other hand, cannot be “handled.” The U.S.-China relationship remains strained, thanks in part to the very different nature of China’s political system and in part to Washington’s wariness about China’s growing influence in the region (and also to China’s own resentment of America’s continuing influence in Asia). China is destined to become a great power, and the most that the United States can hope to do is exert some influence on China’s policies. A unified Korea can help the United States exert this influence.

Japan can also help the United States influence China, and fortunately the U.S.-Japan relationship remains robust, based on similar political and economic systems. As a legacy of the Cold War, when Japan was viewed as an “unsinkable aircraft carrier” helping to protect the West against communism (to quote former Prime Minister Yasuhiro Nakasone in 1983), Japan is considered the “linchpin” of American security in the region (to quote President Barack Obama in 2012).¹⁹⁾ As an alliance partner, this puts the U.S.-Japan alliance at least on par with South Korea’s security alliance, which James P. Zumwalt of the State Department referred to in 2012 as “a linchpin of security and prosperity in Northeast

¹⁹⁾—David Nakamura, “Japan Alliance Called ‘Linchpin,’” *Washington Post*, May 1, 2012, p. A9.

Asia.”²⁰) The U.S.-Taiwan relationship continues to be solid as well, although it must be kept low-key.

How much does Korea need the support of the United States or any other country to reunify? As far as the legal aspects of unification, we are not aware of any international laws governing Korean unification, and in any case they would not be binding. In the German unification case there were four occupying powers—legally and physically—and Germany was not a sovereign state. In Korea’s case there are no occupying powers and Korea has only a fraction of the foreign troops that were stationed in Germany. Again, in the German case, even though Germany legally needed the assent of foreign powers to unify, events on the ground moved so fast (i.e., tens of thousands of East Germans crossing the border and an East German government that was disintegrating) that neither the occupying powers nor, for that matter, the West German government, could appreciably slow the process of unification.

Although the Republic of Korea is concerned about soliciting unification support from the international community, events may move so quickly that unification in some form takes place without anyone’s consent—although in the Guiding Model scenario, this is not expected to be the case. How smoothly the unification process goes will depend in part on foreign attitudes toward unification, particularly those of the United States and, perhaps more importantly, China, but if the Koreans present the world with a “done deal,” they should find themselves

²⁰—James P. Zumwalt, “U.S.-Republic of Korea Alliance,” Statement Before the House Committee on Foreign Affairs Subcommittee on Asia and the Pacific, June 6, 2012, <<http://www.state.gov/p/eap/trls/rm/2012/06/191869.htm>>.

in a strong bargaining position. This is what Germany accomplished with the Two Plus Four Talks.

1. Overview of Unification Stages

The Guiding Model of unification presupposes a North Korea that accepts unification according to South Korean specifications. It also assumes a consensus in South Korea about the desirability of formal unification (but this would hardly be a complete consensus). The model proposes a preliminary “division dissolving” period of 2 years, followed by formal unification (in the year 2030) and “system integration” lasting 10 years, and then a “nation building” period of another 10 years during which all significant differences between the North and South Korean people disappear.

Much of the discussion that follows comes from other papers we have been asked to write about the role of the United States in Korean unification.²¹⁾ What is distinctive about this essay is that it looks at unification over three stages. In terms of costs (people are usually more sensitive to costs than to benefits), the first unification stage is preparatory and seems to impose mostly the costs of thinking, talking, and planning.

²¹⁾-See Ralph Hassig and Kongdan Oh, “The United States and Korean Unification,” Jung-Ho Bae (ed.), *Korean Unification and the Position and Roles of the Four Neighboring Powers*, (Seoul: Korea Institute for National Unification, 2011), pp. 49-72 (pp. 39-57 in the Korean language edition). Also, Kongdan Oh, “The Costs of Korean Division and the Benefits of Korean Unification for U.S. National Security,” Kyuryoon Kim and Jae-Jeok Park (eds.), *Korean Peninsula Division/Unification: From the International Perspective* (Seoul: Korea Institute for National Unification, 2012), pp. 11-27.

The second stage is when most of the work is done and money is spent. The third stage involves a long and gradual period for South and North Koreans to accommodate themselves to each other and is probably more important for Koreans than for foreigners.

a. Overview of the Division Dissolving Stage

Most of the unification costs to the United States during this period will take the form of the non-economic costs of planning, humanitarian aid, and financial and technical assistance in case the United States is called upon to help maintain social order in North Korea. The decline and breakup of North Korea will bring a tremendous political-security benefit to the United States in the form of reducing or eliminating North Korea's military threat. This non-economic benefit will be accompanied by the benefit of financial savings if at least some American troops are withdrawn from the region.

We assume North Korea will suffer from political and social instability during this period. The nature of that instability will depend upon what has happened in Korea up to that point. We already have a good idea of what North Korea's economic and social breakdown will look like because it has been unfolding since the mid-1990s. People will be pursuing their own economic goals, mostly in the form of small businesses. The national economy, including large businesses, will be bankrupt. Neither kind of business will survive competition with South Korea after unification (as was the case with East German businesses after German unification).

More importantly, society will be pervaded by a level of corruption that is ingrained in North Korean culture as the necessary norm for survival. There is every reason to believe that North Koreans will continue to think and act in terms of expedient corruption for many years after unification, constituting a strong challenge to the laws and customs of a unified Korea.

Assuming that the North Korean economy will not have had a chance to recover by the time of unification, the physical needs of the North Korean people will probably increase in the period immediately preceding unification as economic and social structures break down and people are forced to fend for themselves. Also, as every year passes, the basic health of the North Korean people will have continued to deteriorate.

Impending unification will raise the hopes and expectations of ordinary North Koreans, who will be dissatisfied if economic conditions do not quickly improve for them after unification. It will not be enough simply to improve their lives: they will expect a dramatic change for the better, and as they become more fully aware of how South Koreans live, they will expect an equally good life, even though they have not done anything for the last half century to earn it.

Given our assumption that people are generally selfish and focus on local political goals, we expect some resistance to unification on the part of Koreans in both the South and the North, who fear that their personal welfare will be threatened by a change in the status quo. After all, several million North Koreans at the top of the political ladder are currently doing quite well for themselves, even while their national

economy is suffering. Will unification benefit them or will they be discriminated against or even punished by South Koreans? Negotiations between the South Korea and the North Korean transitional government could take years. Consider how much trouble negotiations over the two small enclaves of Kungang and Kaesong have been!

Likewise, South Koreans may wonder why they should put themselves out for North Koreans. The North Korean government has always boasted to its people that they are free of taxes (although this was not actually the case); now North Koreans will be rescued by taxes paid by South Koreans. In their resistance to a unification tax, South Koreans have already voiced their skepticism over transferring large amounts of money to the North. These are issues for Koreans to deal with, but they will also influence foreign attitudes toward unification.

b. Overview of the System Integration Stage

According to this unification model, the System Integration stage will begin when unification has been officially declared. We suppose that the timing of this announcement will have more legal than practical significance. Many issues will remain unsettled and many problems of unification will remain unsolved. Some Koreans in the South and the North will still object to unification.

It is conceivable that a sizeable segment of the North Korean security forces and political elites may wage a rear-guard, non-violent, resistance to unification mechanisms, especially in light of the fact that the most successful North Korean businesses, soon to be taken over or outcompeted

by South Korean businesses, are run by the military. The North Korean government will have gradually lost its authority in previous years. More North Korean gangs will form. The deep and widespread corruption of North Korean society will resist the rule of law and will migrate to South Korean society. A measure of chaos will continue even as attempts at system integration are initiated. Millions of North Koreans will need foreign aid to survive. Most of these costs of chaos will be borne by South Korea, but it is likely that Korea will reach out to the international community for some financial assistance. The United States, unilaterally or multilaterally, may be called up to help.

For the government, businesses, and people of the United States, this stage brings a greater measure of certainty and clarity to Korea's future. It will be seen by most people as a sign that Korea cannot turn back. Yet at the beginning of this stage it will be too early to discern the outlines of a unified Korea.

A unified Korea will not just be a bigger South Korea but a different Korea. It will include over 25 million former North Koreans, and if they have an important say in shaping the domestic and foreign policy of a unified Korea (which they will presumably be entitled to), they may not favor being closely allied with their former American enemy. After all, what has the United States done for them? So far as they know, the United States has led the international community in imposing economic sanctions on them.

Although we are not aware of any surveys of defector attitudes toward the United States (there may well be some), we imagine that North

Korean popular attitudes are largely negative. One defector who has addressed this issue says that “Since North Koreans can’t hear or see any news about America for themselves, they can’t help believe what the government says.”²²⁾ He says that as a consequence, attitudes are quite negative. He goes on to say that after coming to South Korea his attitude changed because he discovered South Koreans had favorable attitudes toward Americans. But this has not always been the case. Pew Research Polls show that in 2013 Koreans had a very high opinion of the United States (78% favorable),²³⁾ but in 2002 and 2003, for example, the favorable rating was no more than 50%.²⁴⁾ (This was in the middle of the ten-year Sunshine Policy period, the internationally unpopular George W. Bush was the U.S. president, and in June of 2002 an American armored vehicle accidentally ran over two 14-year-old Korean girls.) Who knows what Korean attitudes toward the United States will be like at the time of unification?

If the U.S.-Korea security alliance continues, it will be based on a very different rationale from the past. No longer will its purpose be to deter and defend against North Korea. Now it will be to promote regional stability. Given the rise of China and the possibility that this rise could create regional instability, one of the purposes of the alliance will be to constrain China. This change in purpose will present the Korean people

²²⁾Jae Young Kim, “I Used to Have Nightmares about Americans,” *NKNews*, March 21, 2013, <<http://www.nknews.org/2013/03/i-used-to-have-nightmares-about-americans/>>.

²³⁾Pew Research Global Attitudes Project, “Opinion of the United States, 2013,” <<http://www.pewglobal.org/database/indicator/1/>>.

²⁴⁾Pew Research Global Attitudes Project, <<http://www.pewglobal.org/database/indicator/1/country/116/>>.

with a serious dilemma, given that South Korea's economic and cultural relations with China will probably have grown even stronger than they are now. Koreans will also want to have a good relationship with Russia, with which they will share a short border, but a U.S.-Korea alliance after unification may not be looked upon favorably by Russia (unless at that time Russia is also in a competitive relationship with China).

c. Overview of the Nation Building Stage

It seems to us that the process of turning South and North Koreans into Koreans will be a natural, evolutionary process rather than a process that can be guided and engineered. In short, this will be a period of acculturation, especially for North Koreans. At the beginning of this stage the political, legal, economic, and social mechanisms for unification will be in place, although open to revision. The unification tasks that remain will involve adjustment—on the part of those who engineer the unification mechanisms and on the part of the Korean people who are influenced by those mechanisms. The process of national reconciliation will be particularly important and challenging.

2. Non-Economic Costs of Unification for the United States

a. Non-Economic Costs in the Division Dissolving Stage

In this preliminary period, when Koreans are actively discussing their future, U.S. government and non-government organizations will

also be thinking about their future in a unified Korea, constituting a non-economic cost. The primary issue for the U.S. government will be its own national security and the national security of a unified Korea, its alliance partner. It will be recalled that the primary U.S. concern in the run-up to German unification was that a united Germany remain in NATO. The comparable concern leading up to Korean unification will be to keep a unified Korea as an alliance partner. In 1989 it was not clear whether the Soviet contest with the Western powers would continue. Consequently, it was considered important to keep a unified Germany in NATO to provide for a frontline defense. At the time of Korean unification, if political conditions remain as they are today, the concern will be to counterbalance China.

If there is a breakdown in social order in North Korea during these final days of the North Korean regime, it is possible that Chinese troops might set up a police force on North Korea's side of the border. If Chinese troops are in fact stationed in Korea at the time of unification, the situation would more closely parallel Germany before unification, when some 350,000 Soviet troops were stationed in East Germany facing 250,000 American troops, 45,000 British troops, another 45,000 French troops, and a few thousand Belgians and Dutch. Delicate negotiations were necessary to convince the USSR to remove its troops (by 1994) in return for promises not to place Western troops in the former East Germany and to revise NATO's relationship with the Soviet Union so that German membership in NATO would not constitute a direct threat to the Soviet Union.

b. Non-Economic Costs in the System Integration Stage

(1) North Korea's Weapons of Mass Destruction (WMD)

Planning for and taking early action to secure North Korea's WMD will be at the top of the U.S. agenda during this period, unless the WMD has already been secured. The United States and Korea's neighbors will be eager to transport these weapons out of Korea and dismantle the associated nuclear facilities before a unified Korea has a chance to consider whether it really wants to give them up. Another obvious cost to the United States will involve cleaning up North Korea's nuclear installations. It may also be necessary to buy off some of North Korea's nuclear scientists.

(2) U.S. Troops in Korea

Although North Korea is a major security threat to the United States, China is considered an even greater threat. The end of North Korea does not mean the end of the China threat. A critical issue will be what relations a unified Korea adopts toward the United States and its neighbors. If Korea remains a strong American ally, unification will be considered a benefit, but if Korea moves toward political neutrality or leans toward China, unification will impose a heavy political cost on the United States. At about the same time, Taiwan may finally become part of China, removing another regional government that has been friendly to the United States.

A weakening of the alliance may also cost the United States Korean support in international forums, including the United Nations. The United

States will almost certainly lose some military bases in a unified Korea, and the spirit of the U.S.-ROK alliance may be weakened, especially considering that it has largely been justified by the existence of a belligerent North Korea.

If the U.S. security relationship with Japan is weakened by Korean unification (with the absence of a threatening North Korea), this will count as yet another security cost to the United States. On the other hand, the creation of a stronger Korea may well persuade the Japanese that they need to maintain their close security relationship with the United States, given the long history of uneasy relations between Korea and Japan. Viewed from yet another perspective, if a continuing U.S.-Japan alliance is seen as a threat to Korea, the Koreans might choose to keep their own alliance with the United States to help protect themselves from Japan. Moreover, a Japan that becomes nervous about a more powerful Korea might increase its military forces, which would also not be good for Korea. The last thing Korea wants is to be sandwiched between two powerful states with which it has had poor relations in the past.

Unification will likely come as a great economic, political, and social shock to the Korean people. They may prefer to maintain their relationship with the United States for the time being in order to avoid encountering an additional shock in their international relations. Much of this alliance dilemma could be avoided if the United States were able to continue its strong security relationship with Korea in the context of a multilateral security organization rather than as a bilateral alliance.

After unification, some reorganization and relocation of U.S. military forces will be inevitable, and the cost will run into the billions of dollars,

including the cost of cleaning up the bases that have been abandoned. Sales of U.S. weapons systems to Korea, which vary tremendously but seem to average at least \$1 billion per year, may decline.

Any U.S. troops remaining in Korea after unification would serve a regional stability function and also constitute a small force to face the Chinese. Even without a Chinese “threat” the United States would probably want to keep some troops in Korea. Troop reductions tend to be “sticky”: once troops are in place, military organizations are reluctant to move them out unless they are under fire. Looking again at the case of Germany, more than 20 years after unification the United States still has about 50,000 troops stationed there, at an annual cost of \$4 billion.²⁵⁾ These troops do not remain to protect Germany but to provide a backbone for U.S. military operations in areas adjacent to Europe. A similar function could be served by U.S. troops remaining in Korea, according to the U.S. military doctrine of “strategic flexibility.”²⁶⁾

(3) Assistance with Domestic Security

Especially if North Korea has already undergone one or more disruptions of its ruling regime, social order will have deteriorated even farther than it has today. Many underdeveloped countries in the world are able to live with such a high level of social chaos that the government

²⁵⁾-Donna Cassata, “Report: U.S. Footing Greater Bill for Overseas Bases,” *Associated Press*, April 17, 2013, <<http://bigstory.ap.org/article/report-us-footing-greater-bill-overseas-bases>>.

²⁶⁾-Mark E. Manyin, Emma Chanlett-Avery, and Mary Beth Nikitin, “U.S.-South Korea Relations,” CRS Report for Congress, May 15, 2012, p. 24.

is unable to control large parts of the country, and North Korea may be able to survive for an interim period in a similar state. But before Korea can be unified such lawlessness must be largely eliminated, and while the South Korea government will take primary responsibility for backing up North Korean security forces, the United States is likely to be consulted on how to maintain civil order.

(4) Humanitarian Aid

The breakdown of government in North Korea will provide an opening for foreign humanitarian organizations to move in and assist with the care of the North Korean people. No country in the world has as much expertise in dealing with humanitarian tragedies as does the United States. Foreign religious organizations will also make plans to go into North Korea to establish churches.

(5) Public Relations

Considering the many decades that the North Korean regime has had to vilify Americans, one order of business at this stage should be for the U.S. government to initiate a public relations campaign to persuade former North Koreans, now constituting a third of unified Korea's population, that the United States is not a threat and that the American government, people, and businesses ("capitalists") can provide Korea with important benefits. At the same time, assuming the United States remains wary of China and its influence in the northern half of Korea, it will be important to persuade Koreans that the Americans are better

partners than the Chinese. It is unfortunate that this kind of publicity campaign has not started already because it will take a long time to change anti-American attitudes.

c. Non-Economic Costs in the Nation Building Stage

The United States will encounter the same costs in this stage as in the previous stage. However, we would expect these costs to decline as the northern half of the country becomes more integrated into the international community.

3. Non-Economic Benefits of Unification for the United States

The Guiding Model assumes that a prerequisite for unification will be the weakening of the North Korean regime and possibly the establishment of one or more successive (and presumably ineffectual) economic reform regimes. This being the case, the greatest benefit for the United States will be the decline or elimination of previous costs associated with a belligerent North Korea.

a. Non-Economic Benefits in the Division Dissolving Stage

For the United States, the greatest benefit of the process of division dissolving will be the expectation, growing more certain as time passes, that this is the beginning of the end of North Korea. This great benefit will not be a consequence of unification but rather a consequence of

North Korea's political decline, and the benefit will be gained whether or not unification takes place. However, formal unification will "secure" this benefit and provide some assurance that North Korea becomes a stable territory rather than an ungoverned or poorly governed territory.

Because the benefit of North Korea's weakening and transformation takes place before the two Koreas are unified, for the United States the benefit comes before any major unification costs. This would appear to be a good thing. Whether or not this early benefit (North Korea falling into the hands of South Korea) is indeed an ideal situation in terms of gaining American support for Korean unification depends upon whether Americans are reminded that North Korea's demise will not be certain until the two Koreas are formally unified (at the beginning of the next stage).

The most obvious costs of Korean division (costs that will no longer be imposed on the United States) are the costs of coping with a belligerent, unstable, and immoral North Korea. Apart from this, the calculable costs of Korean division probably consist more of opportunities currently lost than costs incurred, and these opportunity costs are very difficult to estimate. The military and security costs imposed by the current North Korean regime are the money and effort required to constrain, deter, and defend against a state that is an avowed enemy of the United States and its regional allies. These costs are of two distinct kinds: current costs and those that might potentially be incurred if North Korea ever carried out its threats to attack the United States and its allies. Both kinds of costs are difficult to calculate, but no one can doubt their magnitude.

Consider, for example, the calculations necessary to determine the financial cost of stationing U.S. troops in South Korea—a cost that might be reduced or even eliminated with the demise of North Korea. Estimates of this cost vary widely but a conservative estimate is between one and two billion dollars a year.²⁷⁾ That does not include the cost of building facilities for these troops. In that regard, a bilateral decision has been made to move most of the American soldiers who reside in the Seoul area and to the north to an area south of Seoul. Recent estimates of this moving cost are \$14 billion, at least some of which will be borne by the United States.²⁸⁾ This figure is relevant to the future task of relocating U.S. troops in a unified Korea.

If somehow all these current costs to the United States could be calculated, then the incremental cost of stationing American troops in Korea could only be determined by subtracting the cost of stationing them elsewhere and providing them with transportation back to Korea or to some other destination in Asia if they are needed. How many troops might be released from duty if North Korea were no longer considered a threat is impossible to say. If the departure of U.S. troops from South Korea should weaken deterrence to the extent that North Korea (before it collapses) launched an attack on South Korea, then

²⁷⁾Mark E. Manyin, Emma Chanlett-Avery, and Mary Beth Nikitin, *Ibid.*, p. 22. According to the authors, “South Korea’s direct financial contribution for U.S. troops in South Korea in 2011 will be 812.5 billion won (about \$743 million). This is about 42% of the total cost of maintaining U.S. forces in South Korea.” According to Craig Whitlock, “U.S. forces in S. Korea to be farther from DMZ,” *Washington Post*, October 3, 2013, p. A15, in 2012 the United States spent \$2 billion on personnel costs and \$1.1 billion on other expenses.

²⁸⁾Mark E. Manyin, Emma Chanlett-Avery, and Mary Beth Nikitin, *Ibid.*, p. 22.

the cost of returning these troops along with several hundred thousand additional troops to engage the North Koreans in combat would be astronomical. In short, removing at least some U.S. troops from Korea and the region would constitute a non-economic benefit for the United States, but the removal should be done in stages.

Another current cost incurred by the North Korean military threat involves U.S. defense exercises, several of which are held every year. The cost of these exercises is not made public, but to get an idea of their magnitude, consider how much it cost the United States to respond to enhanced military threats from North Korea in the spring of 2013. The United States flew bombers from Guam and the U.S. mainland to the Korean peninsula and stationed anti-missile batteries in the region. According to one reporter, sending a single B-2 bomber on one sortie to the Korean peninsula (at an estimated cost of \$135,000 per flying hour) cost over \$5 million.²⁹⁾

American anti-missile defenses against North Korea are another major cost currently imposed by North Korea's threats, although it is not clear that these defenses would be reduced after North Korea's demise.³⁰⁾ In the spring of 2013 the United States spent an additional billion dollars to bolster its missile defense against North Korea. These missiles

²⁹⁾-Douglas Birch, "The High Cost of Rattling North Korea's Cage: B-2 Flights Send Expensive Message," public e-mail message on the Center for Public Integrity, March 29, 2013, <<http://www.publicintegrity.org/2013/03/29/12407/high-cost-rattling-north-korea-s-cage>>.

³⁰⁾-Thom Shanker, David E. Sanger, and Martin Fackler, "U.S. is Bolstering Missile Defense to Deter North Korea," March 15, 2013, *New York Times*, <http://www.nytimes.com/2013/03/16/world/asia/us-to-bolster-missile-defense-against-north-korea.html?pagewanted=all&_r=0>.

were integrated into an anti-missile program that has probably cost over \$200 billion since the mid-1980s.³¹⁾ Of course, after North Korea's collapse most of these missiles would probably be kept to intercept Chinese and Russian missiles, so the savings benefit would not be great.

Another non-economic cost imposed by North Korea's belligerence is the cost of South Korean goodwill lost as a result of stationing American troops in the country. When these troops—many of them infantry soldiers—get into trouble with Korean residents, they create a very bad reputation for the United States. Although these troops serve an important security function, soldiers are not usually our best international goodwill ambassadors.

For the United States, the potential costs of continued Korean division (meaning the continued existence of a belligerent North Korea) are much greater than the current cost of basing troops on the peninsula. These potential costs would be greatly reduced if North Korea reformed on the way to unification, and they would be completely eliminated by unification, thus constituting a tremendous benefit. Consider the following scenarios: North Korea launches a full-scale attack on South Korea, either by surprise or as a result of escalating tensions. North Korea launches missiles against Japanese cities or American bases in Japan. North Korea launches a nuclear-tipped missile against an American city and scores a lucky hit. North Korea sells nuclear material to a state or to a non-state group that subsequently uses a nuclear weapon

³¹⁾—Bob Dreyfuss, "The Costly Failure of Missile Defense," *The Nation*, July 26, 2013 <<http://www.thenation.com/blog/175449/costly-failure-missile-defense#>>; the author cites the *New York Times* for cost estimates.

against the United States or one of its allies. In each of these cases, however improbable, the costs, including the cost of human life and health, would be staggering.

North Korea's international criminal activities, including counterfeiting (e.g., of American currency) and drug manufacture impose security and financial costs on the United States. North Korea's human rights violations may not constitute a direct security threat to the United States, but they do impose a moral cost on any American official who might be in a position to alleviate the fear and suffering of millions of North Koreans but chooses not to do so, even for the best of reasons.

To some degree arms buildups in South Korea and Japan are a direct result of the North Korean threat, and the very presence of these arms constitutes a threat to the security of the region, at least insofar as they provoke North Korea to engage in a retaliatory build-up of its own military forces. And finally, the diversion of U.S. attention and military resources to counter North Korean threats constitutes an opportunity cost that is difficult to calculate. All these costs would be reduced or eliminated by the reform of North Korea—a distinct benefit for the United States.

North Korea's history of aggression, its revolutionary nature, and its military resources are a clear threat to the United States and its regional allies. But for all of that, the greater long-term threat to U.S. security comes from China, which is opposed to democracy and is gradually expanding its regional and global influence. If the United States and China could cooperate to contain North Korea, then North Korea's belligerence

(in a divided Korea) might even be considered a benefit to U.S. security by providing common ground with China. Unfortunately, this does not seem to be the case. Despite China's oft-made assertions that it is opposed to North Korean provocations and WMD proliferation, China has repeatedly acted to protect North Korea. For example, after North Korean attacks on South Korea in 2010, the Chinese called on "all parties" to remain calm. After the 2012 rocket launch, which was in clear violation of United Nations resolutions, the Chinese again called for everyone to remain calm and agreed to only two additional sanctions, even though the larger number of sanctions favored by other UN members would have done little to damage North Korea. In short, rather than nudging China closer to the Western democracies, North Korea provides China with a tool to compete with the United States and constrain its influence in the region. As North Korea dissolves, China will lose that tool—a benefit for the United States.

Other countries, for example Iran, and Syria, are also perceived as threats to the United States, and both have benefited from military cooperation with North Korea, in numerous cases involving missile and nuclear technology. They thus pose a greater threat (and cost) to U.S. security than they would without a belligerent North Korea.

b. Non-Economic Benefits in the System Integration Stage

In this stage a new Korea is working through the process of reformation (re-forming). The conventional threat to the United States that was

formerly posed by North Korea is gone, so at this stage the absence of that threat does not count as a new benefit but as a continuing benefit, albeit a more secure one.

The global community hopes that after unification Korea will divest itself of nuclear weapons inherited from North Korea. This will count as a great benefit for the United States. But perhaps the weapons will not be given up. Korea will face a nuclear China and a Japan that could quickly acquire nuclear weapons. Many Koreans, especially those from the North, will remain suspicious of the intentions of their neighbors. It is hoped that Korea will opt to depend upon U.S. extended nuclear deterrence for its security, but even today some South Koreans are skeptical of the U.S. commitment in that regard and are calling for their own nuclear force, although it is likely that many of them would change their mind in the absence of a threatening North Korea.³²⁾

At this stage of unification the unified Korean nation will decide what kind of security relationship it wants with the United States, and with other countries. If the Korean people decide that they want to keep their alliance with the United States, this decision will count as a major benefit for the United States, which will gain a larger and stronger ally in Northeast Asia than it had before. Such an alliance would be particularly useful in giving the United States more leverage in dealing with China.

³²⁾-In a recent Seoul National University Poll, 52% of South Korean respondents, thinking about North Korea's nuclear weapons, favored getting their own nuclear weapons, versus 20% opposed and the remainder undecided. *Yonhap News*, Sept. 26, 2013, <<http://english.yonhapnews.co.kr/search1/2603000000.html?cid=AEN20130926009300315>>.

Some South Koreans today envision a unified Korea as politically neutral, and this is Pyongyang's avowed preference. Positioned between China and the West, it is understandable that Korea would wish to avoid getting caught up in future conflict. But whether it is possible for a country in Korea's geopolitical position to be neutral is another question. True neutrality would mean downgrading security relations with the United States and improving security relations with China and Russia. Even now, South Korea is moving closer to China in its economic relations, so a future political realignment is not unthinkable. Economic pressure for a closer Korea-China relationship would be even stronger if a South Korea-Japan-China free trade agreement should ever come to fruition. Thus it is too early to tell whether unified Korea's alliance position will count as a cost or a benefit to the United States.

Opening the northern half of the country to Americans will provide an opportunity to win new friends by making contact with the northerners and their culture. Humanitarian organizations will be especially pleased to gain access to millions of people in need. Religious organizations will rush in to re-establish the churches that were abolished by the Kim regime. Some of the two million Koreans residing in the United States will be grateful of the opportunity to visit their homeland and reunite with family members.

c. Non-Economic Benefits in the Nation Building Stage

The role of the United States during this period will be to continue the initiatives it introduced in the System Integration stage. The costs

and benefits will be the same as those that accompanied that earlier stage. As Korea becomes a more stable and prosperous country, non-economic benefits should begin to outweigh the initial heavy non-economic costs of unification. Unified Korea's relationships with China and Japan will determine the political costs and benefits that the United States will have in this period. However, now we are trying to forecast several decades into the future, which is usually a fruitless endeavor.

4. Economic Costs of Unification for the United States

a. Economic Costs in the Division Dissolving Stage

Economic costs of unification—that is, costs directly related to infrastructure development and business conditions—will be extremely high. In the first 20 years after unification, Germans poured approximately \$2 trillion into the former East Germany, which was never as impoverished as North Korea is. This is one reason to expect that over a similar span of time Korean unification will cost at least as much. A major task for the United States will be to help the South Korean government line up international funding in preparation for unification.

b. Economic Costs in the System Integration Stage

How much, if any, of the cost of rebuilding the northern half of the peninsula would be provided by the United States in the form

of aid or grants is impossible to determine at this point. As for American businesses, which have a strong presence in South Korea but are almost entirely absent from the North, there is no reason to expect that they would incur economic losses as a result of economic changes in the North accompanying Korean unification.

c. Economic Costs in the Nation Building Stage

Assuming that American businesses gradually enter the northern half of Korea, they will incur the usual start-up costs. How much long-term aid might be extended by the U.S. government to rebuild the northern parts of Korea cannot be determined, but it seems likely that long-term aid would increasingly be taken over by the Korean government.

5. Economic Benefits of Unification for the United States

a. Economic Benefits in the Division Dissolving Stage

Just as security threats from North Korea currently impose a variety of heavy costs on the United States, the clouds of war also dampen investor interest in the Korean peninsula. The weakening of the North Korean regime in the Division Dissolving stage will reduce official hostility toward capitalism and lessen the unpredictable treatment of foreign business that North Korea is famous for. This would confer a benefit on any American businesses that planned to enter North Korea.

b. Economic Benefits in the System Integration Stage

As the North Korean market becomes normalized in the System Integration stage, the economic benefits of unification for the United States will include an expanded market for U.S. products, access to new mineral resources, and possibly opportunities for investment in the northern half of the peninsula.

It is possible that business opportunities in the North might prove disappointing for at least some American companies. South Korean companies will have a strong advantage and Chinese companies will have experience in dealing with the North Koreans—even if much of that experience has not been pleasant. If the North Korean people hold a grudge against the United States and Japan, companies from these countries may not find North Korea a hospitable place to do business. Moreover, the culture of corruption will continue in North Korea for many years after unification, creating a difficult business environment—especially for American businesses, which are legally prohibited from offering bribes.

It seems likely, however, that as the investment environment in the North stabilizes, American firms would be invited to join the rebuilding campaign that North Korea will desperately need. In any case, the expansion of South Korean businesses into North Korea will provide opportunities for the many American businesses and joint ventures that already operate in South Korea. Also, considering that American consumer goods and services are extremely popular the world over, it may be the case that North Koreans will be eager to gain access

to them, even preferring them over some South Korean and Chinese products.

c. Economic Benefits in the Nation Building Stage

As the years pass during the Nation Building stage, American businesses should do well in a unified Korea, although they will face stiff competition from South Korean, Chinese, and Japanese companies. Just as American companies have learned how to adapt and prosper in other countries, they should do well in the northern half of Korea as they become familiar with this territory.

6. Concluding Remarks

The U.S. government has given little thought to Korean unification. This is hardly surprising given the fact that Washington has yet to develop a policy that would encourage the North Korean government to adopt the political and economic reforms necessary to move toward unification. The Obama administration's official North Korea policy remains "strategic patience," which cedes the initiative to other countries. South Korea has made attempts to engage North Korea but these attempts have largely failed to influence the North Korean government (the impact on the North Korean people is another matter). China has the means to influence the Kim regime but judging by Beijing's actions the Chinese probably prefer the status quo to alternatives that might lessen their

influence in North Korea. Overall, little has changed in the regional political situation since the year 2000, when I wrote one of my first reports on unification.³³⁾

The changes that have come to North Korea in the last two decades can be largely credited to the North Korean people, who have reshaped their economy and loosened the government's control over their lives. South Korea and the United States, however, have done little to encourage the people in their efforts.

Meanwhile, China grows stronger in the world, in the region, and in North Korea. By the time of unification the power balance in the region may be much more favorable to China than it is today, thus reducing the benefits of unification for the United States and increasing the costs.

In summary, the basic equation that describes the impact of Korean unification for the United States is this: ① Early large gains in national security as North Korea changes its focus from military-first to economics-first; ② Potential national security costs if a unified Korea downgrades its alliance with the United States—or security benefits if a unified Korea remains a close American ally; and ③ Growing opportunities for American businesses as the North and South Korean economies become integrated.

³³⁾-Kongdan Oh Hassig, "Post-Unification Korea and America's Place in It," Institute for Defense Analyses Document D-2479, August 2000.

IX

The Costs and Benefits of Korean Unification for China

The Korean Peninsula is witnessing the dynamics of the big powers with delicately intermingled national interests. Since the end of the Cold War, the region's big powers have kept adjusting their foreign policies to the ever-changing situation while seeking to exert more influence over the region. The ongoing situation in the region does not only depend on the general trend of world development, but also on the interest and power structure of the four big countries, namely, China, Russia, Japan and the United States.

Bordering China, the Korean Peninsula's geopolitical position, its history and current status have been closely related to China's political, military and economic security.³⁴⁾ Should the nuclear crisis give rise to large-scale riots or even war, the international environment that China faces would seriously deteriorate with the social stability and economic development in Northeast China being greatly impaired. Therefore, it is of vital importance to China's strategic interests to lower the possibility of the crisis escalating into war, to help pull the Peninsula out of a Cold War, and to prevent, or at least postpone, the occurrence of acute conflicts on the Peninsula. To maintain peace and stability on the

³⁴⁾Jianyi Piao, *The Studies of Korean Peninsula in China* (the Ethnic Publishing House, 2006).

Peninsula does not mean to maintain the separated nation situation. On the contrary, China is playing an active role in breaking the impasse between the United States and North Korea, helping with a soft landing of North Korea's economy, and promoting the peaceful unification of the Peninsula, which is not only in China's interest, but will also satisfy the common interests of all parties to the greatest extent.

China has been supporting the unification of the Korean Peninsula. As a close neighbor to the Peninsula, China does not only expect to maintain a friendship with North Korea, but is looking forward to developing a strategic cooperative partnership with South Korea, both on the political level and in other fields. China does not seek a leading position, scope of influence, or self-interest on the Peninsula. Actually, the Chinese government and its leadership have repeatedly declared that China supports the two sides on the Peninsula advancing towards détente, and then a peaceful unification, on the condition that no external forces get involved.

China's academia once had vehement discussions about the unification of the Korean Peninsula, which reached their apex when Kim Dae-jung, the former president of the ROK, paid a visit to the DPRK in 2000. The ROK's Sunshine Policy had greatly reduced South-North tensions, and experts even believed that the unification would no longer be an intangible dream after Kim Dae-jung's visit.

The last decade has witnessed a series of changes across the Peninsula and the world at large. Government transitions of the ROK and the U.S., plus the second DPRK nuclear crisis as a result of the three nuclear

tests by the DPRK, disrupted the process. The Cheonan Incident and Yeonpyeong Island issue even further worsened the South-North relations. Currently, though Kim Jong-un has smoothly inherited power from his father Kim Jong-il, it seems that he is not yet ready for new political agendas. Therefore, Chinese scholars generally believe that unification on the Peninsula will not be available in the coming short term, except in the case of abrupt internal incidents.

Currently, Chinese scholars' research on the unification of the Peninsula mainly includes reviews of previous policies of the two sides, analysis of the influencing factors of the unification, and comparison of the interests and roles of the various major players.³⁵⁾

Government officials and scholars in China seldom deliver comments on questions concerning the stability of the DPRK regime to avoid criticism from the DPRK, and they also show little interest in conducting joint research with scholars from the ROK and the U.S. on measures they should take in case of emergencies.

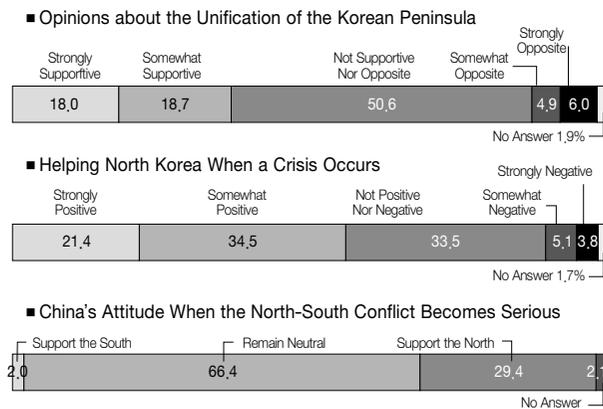
Even for the common people, based on the research³⁶⁾ of EAI and ARI in 2011, 50.5% of the Chinese people "neither support nor oppose" for the unification of the Korean Peninsula. 29.4% of the Chinese people still support North Korea, while only 2.0% of the Chinese people favor South Korea's side.

³⁵⁾ These points could be founded in papers of Rui Guo, "Korean Peninsula and China's Great Strategy," *Journal of PIA University of Foreign Languages*, No. 1 (2006); Xiangyang Chen, "An Initial Analysis of China's Policy toward the Unification of the Korean Peninsula," *Asia & Africa Review*, No. 5 (2012); Linlin Wu, "Studies on Korean Peninsula Unification From the Perspective of Geopolitics," *Journal of Yanbian Party School*, No. 2 (2010); etc.

³⁶⁾ JoongAng Ilbo, September 27, 2011, <http://chinese.joins.com/gb/article.do?method=detail&art_id=73408>.

In short, China's view on the unification of the Korean Peninsula is "Détente, Peace and Unification,"³⁷⁾ which has also become a common hope for the people of both the North and the South on the Korean Peninsula. The leaders of both countries are also adjusting their policy according to the changing situation, trying to enhance peace and stability on the Peninsula.³⁸⁾ However, due to the lasting mutual distrust and huge differences between the two nations in their social systems, ideologies, economic systems, and values, a breakthrough in their political relationship is barely visible in the short term.

Figure IX-1 Chinese Public's View on the Korean Unification³⁹⁾



37)-China's position on Korean unification could be seen in the paper: Xiangyang Chen, "An Initial Analysis of China's Policy toward the Unification of the Korean Peninsula," *Asia & Africa Review* (May 2012).

38)-Ministry of Foreign Affairs of the People's Republic of China, "President Xi Jinping, Comprehensively Promote Mutually Beneficial Cooperation Push Forward China-ROK Relations for Greater Development," <<http://www.fmprc.gov.cn/eng/wjwb/zjzg/yzs/xwlb/t1054787.shtml>>.

39)-More detail on *JoongAng Ilbo*, September 27, 2011, <http://article.joins.com/news/article/article.asp?total_id=6280208>.

Generally speaking, there are two types of arguments among Chinese scholars about the unification of the Peninsula—those that support unification led by the ROK and those that question the practicality of the process.

Prof. Zhu Feng from Peking University and Prof. Zhang Liangui from the Party School of the Central Committee of the Communist Party of China are critical about the DPRK's behaviors, and they argue that China should support the efforts led by the ROK to reunify the Peninsula. China's support should be rewarded with commitments from the ROK, which, for instance, should include the withdrawal of U.S. troops from the Peninsula and abrogation of the ROK-U.S. alliance treaty. They also believe that China can benefit economically from the enlarged and integrated market as a result of the unification.

Some other scholars think that unification initiated by the ROK will bring about uncertain prospects of various crucial issues; for instance, how to deal with the DPRK's nuclear program, whether the ROK can integrate the DPRK economically, whether the ROK can consolidate its democracy after unification, whether the ROK can pay for the cost of the unification, and to what extent the outcome of the unification will change the geopolitics of Northeast Asia. They also believe that China will lose the DPRK as a strategic buffer zone, and will have to deal with the potential refugee problems. Beijing is also seriously concerned about the security of the DPRK's nuclear weapons.

In China's view, the approaches for unification of the Korean Peninsula include:

a. Military (by war)

The Korean War has proven that the use of force is no solution to the unification problem, and turmoil will only produce disastrous outcomes. Both the DPRK and the ROK have clearly expressed the wish for peaceful unification, and major neighboring powers also clearly object to the military solution.

China does not hope to see the prospect of military operations, and opposes unilateral military intervention either by the ROK or the U.S., whether with a surgical strike on its military and nuclear facilities or by highly intensive offenses on potential targets, like on Libya.

b. Merge (by annexing)

According to various research reports, many emergencies can happen on the Peninsula. And the ROK will highly likely take advantage of these emergencies to dominate the unification, since it obviously has more resources.

c. Step-by-step (by peaceful means)

The two sides of the Peninsula enhance equal and peaceful economic and cultural communication so as to increase confidence with and reduce hostilities against each other. On this basis, the two sides should establish a framework for peaceful and stable unification.

This approach serves the best interests of the two sides, and complies with the aspiration for peace and development of the people of the

world and Northeast Asia region. It is also the most viable in theory, historic practice, and reality.

It is obvious that different ways, in which the unification will take place in varied forms, will bring about different benefits and risks for China.⁴⁰⁾

In this project, four unification types, namely ① Equivocal (gradual-symmetrical), ② Abrupt (radical-symmetrical), ③ Guiding (gradual-asymmetrical), and ④ Absorptive (radical symmetrical) are suggested according to the degree of unification speed, and the relative weight of the tasks.

This sub-project concludes that the Guiding type of unification is expected to be the most feasible scenario (gradual-asymmetrical). So, this sub-project will analyze the political, economic and social costs and benefits that unification might have on China based on this presumption.

1. Non-Economic Costs and Benefits of the Unification for China

a. Non-Economic Costs

(1) Losing a friendly neighbor and an important buffer

China and the DPRK have special relations. The friendship between the two is deeply rooted in similar historical experiences, shared cultural

⁴⁰⁾-Kiejoon Pak, "China's Cost-Benefit Analysis of a Unified Korea: South Korea's Strategic Approaches," *The Journal of East Asian Affairs*, Vol. 26, No. 2 (Fall/Winter 2012).

traditions and the same ideology, and is even enhanced by the values of each other in geostrategy and the experience of shoulder-by-shoulder fighting in the 1950s. The friendship is at all levels of governments, parties and the people.

China-DPRK relations are not as smooth as they should be, but it is widely accepted as a truth that the DPRK has been a “quasi-ally” of China for a rather long time. The two will always like to describe their close bilateral relations being as close as “lips and teeth,” “brothers and comrades,” and “blood brothers.”

After the death of Kim Jong-il, China supported the DPRK in establishing Kim Jong-un’s status as the successor, Just as President Hu said, “We are willing to join hands with the Korean comrades to build, develop and consolidate the bilateral traditional friendship and cooperation.”⁴¹⁾

Currently, China still has deep traditional friendship and close geostrategic relations, and shares broad common interests with the DPRK. Officially speaking, the new developments in the relations between the two sides include “frequent high-level contacts, the deepening of economic and trade relations, vigorous exchanges in various fields and the strengthening of strategic communication.”

If unified, the DPRK would no longer exist as an independent state, which would result in the gradual elapse of China-DPRK traditional friendship. And China would lose the DPRK as a “strategic buffer zone.”

⁴¹⁾ “Hu Jintao and Other Leaders go to DPRK Embassy to Condoled upon the death of Kim Jong-il,” *News of the Communist Party of China*, <<http://cpc.people.com.cn/GB/64093/64094/16666407.html>>.

(2) Rise of national defense budget to directly face military forces of the ROK and even those of the U.S.

Chinese believes that by joining in the Korean War, China had rightly and successfully prevented the war from spreading to its own territory, just as the slogan proclaimed, “protecting the home and defending the nation.” If the U.S. finally stationed its forces by the Yalu River as a result of the unification, Chinese would think that they had bled in vain.

The 1400-km border between China and the DPRK is located in geographically complicated areas, including parts of the Yalu River, the Tumen River and the Baekdu Mountain (Changbai Mountain). In certain areas, the two countries are actually only one leap apart. Judging by the special geography, the border can be extremely easily crossed. Due to its friendly relations with the DPRK, China can maintain very low defense expenditures on its northeastern front.

If unified, especially should the ROK annexed the DPRK, China would have to confront a unified and strong Korea dominated by the ROK. China would have to directly face a strengthened U.S.-ROK alliance, and could even witness U.S. forces across the rivers. The consequence would be a sharp rising of defense expenditures, which would further push China to restructure its total defense budget, and redeploy its military forces. According to ROK economists, China’s defense budget would therefore increase by one percent, which would be U.S. \$1.66 billion calculated on the basis of the number provided by SIPRI.⁴²⁾

⁴²⁾-Stockholm International Peace Research Institute, “Global Military Expenditure Reduced for the First Time in 15 years,” *DSTI*, April 17, 2013, <<http://www.dsti.net/Information/News/81536>>.

Despite additional expenditures, the real effects should not necessarily be better than the current status.

(3) Losing “special status” on regional politics

China has long had played a special meaningful role in promoting peace and negotiations regarding the various issues in the region. For instance, China contributed greatly to the engagements between various parties and brokered the Six-Party Talks. China has its own advantages in having good relations with both the ROK and the DPRK.

The outside world would think that China does not have significant leverage on the DPRK. But it is not the truth. In fact, China does have special and extremely important influence on the DPRK. Without participation of Chinese volunteers, the final outcome of the Korean War would have been unimaginable for the DPRK. Until today, the economically plagued DPRK is still dependent on China for food and energy supplies.

China and the DPRK still maintain frequent people-to-people, party-to-party and military-to-military communications. Due to these channels, Beijing has often been the actor that various parties can turn to for help in a relevant crisis.

For the Six-Party Talks, China has not only been the host but also responsible for drafting the agreements. In addition, it is China that has often restarted the process by cleverly mediating various parties when it was in stagnation. Even the U.S. side greatly appreciates China's efforts, and highly expects China's cooperation.

After the unification, the tensions between the DPRK and the ROK would no longer exist, and China-DPRK special relations would elapse into history. Therefore, neither the ROK nor the U.S. would like to seek China's assistance. China's role would decline.

(4) The weakening of China's international image and status

It is in the Six-Party Talks that China has been moving to the center of global politics. In the Six-Party Talks, China practiced its responsibility as a regional power, as well as the concepts of "harmonious world" and "peaceful development."

If the DPRK were annexed by the ROK, China's capability and credibility to protect its allies would be questioned, and its resolution to safeguard the security of ideology would be affected. Finally, its international image and status would be undermined.

The losses cannot be calculated in numbers. But for China, they are serious. Whoever may be the leaders would not like to be questioned for losing the DPRK. It might undermine the political interests of specific politicians.

(5) Facing territorial and history disputes

The demarcation of the boundaries between China and the DPRK was not conducted with careful consideration. For the sake of China-DPRK friendship, China had at that time conceded the islands in the Yalu River, more than half of the crater lake, Heaven Lake (Tianchi) in the Changbai Mountain, and some part of the Special Economic

Zone (SEZ) of the Yellow Sea. That is to say, China had conceded what it could. China and the ROK also have disputes on the Socotra Rock, which the ROK calls as the Jeodo, and SEZ as well, though the two do not share a land border.

The issue of the Gando Convention has become another diplomatic problem between China and the ROK, since a number of people in ROK are still talking about the issue. The ROK Ministry of Foreign Affairs used to claim that since the Eulsa Protective Treaty, which was imposed on Korea by Japan in 1905, is no longer effective. In other words, the “Gando Convention,” signed between Japan and the Qing Dynasty should also not be in effect.⁴³⁾

China, in 2002, announced the Northeast China Project, which is a research program on the history and current status of its northeast boundaries. Though it was merely an academic project, demonstrations occurred, protesting the project. Some South Koreans wrongly believed that this project involves the issue of “Goguryeo.” They thought that China was actually seeking for its interests in the name of academic study. That is academic politics.

Unification might trigger the rise of nationalism. Motivated by that, a “unified Korea” would likely put forward a new quest for territories and territorial seas. For instance, Korea could possibly propose to abrogate “Gando Convention,” and request sovereignty over Gando. It is also likely that tensions would rise on the demarcation of continental shelves and

⁴³⁾-Ifeng.com, September 20, 2011, <http://news.ifeng.com/world/detail_2011_09/20/9328331_0.shtml>.

rights and the sovereignty over SEZs.

China also has Korean ethnic groups, whose population amounts to approximately two million. A small proportion of them have shown identification with the ROK due to the same origin. Unification would likely encourage them to push forward secessionist movements. That would further produce negative effects on China's efforts to maintain national unification, especially when the secessionist movements in Taiwan, Tibet and Xinjiang have not been pacified.

b. Non-Economic Benefits

(1) More secure and stable border areas

The Korean Peninsula closely involves China's political, economic and strategic security due to its special geographical location and historical reasons.

Historical examples indicate that the unified Korean Peninsula serves to strengthen the stable and friendly relations between China and Korea, and enhance China's national security on its eastern boundaries. The Peninsula, if divided, will threaten China's national security, and will even drag China into wars.

China had been dragged into all four wars of the modern era. The four wars all caused serious damage to China. In 1894, China fought a war with Japan over its penetration into the Peninsula. After China lost the war, China had to give up Korea as a tributary state, ceded its territories and was imposed with a heavy compensation. In 1904, though China did not participate in the war between Japan and Russia

over Korea, the war took place on China's territory, and China's northeastern part was severely ravaged. Since 1931, China had been fighting against Japan's invasion, which had caused extreme tremendous damages on the Chinese nation. In that war, Korea not only was the base of Japan's invasion, but also was the sources of materials and soldiers. And China also lost hundreds of thousands of lives in the Korean War that started in 1950. All these four wars were more or less related to Korea's lack of independence, either because of its being divided or being occupied.

After unification, it would be least likely that the Peninsula would have internal wars, and China would be dragged into the wars since the Peninsula would lose its value as a base to attack China.

(2) Fewer DPRK defectors and the NGOs

The issue of "North Korean Defectors" has always been thorny. The DPRK is located in a special geographical position. It faces the seas on its east and west, and neighbors the ROK on the south, but with a four-kilometer-wide demilitarized zone. Due to the special location, "defectors" have to go to the ROK via China.

On one hand, China regards the defections as a result of serious economic reasons rather than political persecutions. Relevant international regulations should not be applied to their cases. Therefore, China cannot grant them with refugee status. For this, China has been criticized by some NGOs promoting "democracy" and protection of "human rights."

On the other hand, China has to take some measures ,though China does sympathize with those “defectors.” First, the DPRK strongly demands China to take measures according to agreements signed between the two; and second, these “defectors,” which have totaled 20 to 30 thousand in recent years, have caused serious problems in social security within China’s northeast region.

When some of those “defectors” attempted to enter other countries’ embassies and consulates in China, the issue of the “defectors,” which should be irrelevant with China, has become a diplomatic problem. China has to invest a lot of its diplomatic resources to this issue. China, naturally, does not want the matter to be categorized as a refugee issue, and does not want it to be internationalized and politicalized.

After unification, the question of the “defectors” would no longer exist. Those NGOs could no longer stay in China in the name of protecting the “defectors.”

(3) No longer being criticized by the opposite two sides

Judging by the triangular relations, China has often been criticized by the other two sides. To maintain good relations with the two Koreas, China has to carefully manage relations with the two states.

The West thinks that China is the largest assistance provider for the DPRK and senior alliance⁴⁴⁾ partner; they expect that China can play a meditating role in the solution of the DPRK nuclear weapons

⁴⁴⁾-Degang Sun, “New China’s Quasi-alliance Strategy,” *World Economics and Politics*, No. 3 (2012).

development, nuclear tests, missile launches and other issue, or to put pressure on the DPRK.

The West thinks China and North Korea are “blood brothers” or “brothers and comrades,” so that China maintained its position during the course of the UN Resolution only to “leave the back door open” by not strictly implementing sanctions in the future.

China had also been criticized for not taking a neutral and balanced position in dealing with the Yeonpyeong Island incident and the “defector” issue. China has been unreasonably criticized.

After the third nuclear test, there are many doubts from the international society about China’s policy including: does China still hold a unique influence over DPRK? Will China adopt more hardline policies following the DPRK’s repeated provocations? Will China strictly implement the UN resolution it has endorsed? Will China reconsider its DPRK policy as a whole?

China has to adopt a very sophisticated policy, so as to maintain a kind of balance between ROK and DPRK. After the unification, China would not need to worry about such a diplomatic dilemma. Pressure on China from the international community would be greatly reduced, and China would have much broader leeway in diplomacy.

(4) Another strong partner on some international issues

The Chinese and Korean peoples have similar historical experiences and share similar views on many international issues.

If the DPRK and the ROK were unified, China and the “unified Korea” could jointly work to counter Japan’s rightist forces, and oppose

Japan's wrong historical outlooks and wrong positions on textbooks, comfort women and politicians visiting the Yasukuni Shrine. The two could also push the U.S. to pressure Japan for compliance. The two could also work jointly on political and security arrangements in northeastern Asia, and promote together peace and stability in the region.

(5) More impetus to achieve the unification of the two sides across the Taiwan Straits

The Chinese people cherish the same dream of national unification as Korean people do. The unification of the Peninsula would produce positive effects on China's efforts to solve the Taiwan problem.

Both the Chinese and Korean peoples are thinking of national unifications despite different historical backgrounds. The division of the Peninsula is the consequence of the competition for geopolitical interests between major powers, while Taiwan's separation is an outcome of China's civil war. And the unification of the Peninsula is a process between two independent sovereign states, while the mainland and Taiwan are actually under the same sovereignty. But China's unification will be more complicated. Geographically, the DPRK and the ROK are separated by the 38th parallel, while the Mainland and Taiwan are separated by the Straits. And both the DPRK and the ROK enshrine the paramount objective of unification, while some people in Taiwan advocate "Taiwan Secession," "Two Chinas" and "one China, one Taiwan" despite strong recognition of the one-China policy.

If the people across the Peninsula could overcome the differences of political systems, living standards and understandings of history, and

cooperate sincerely for the cause of their nation, their examples would greatly encourage the people across the Straits to work for national unification.

The peaceful and gradual process of unification of the DPRK and the ROK would enlighten the Chinese people for its great cause of unification.

Table 13 Non-Economic Costs and Benefits for China

| BENEFITS | Division Dissolving | System Integration | Nation Building |
|-----------|---|--|---|
| | <ul style="list-style-type: none"> • Decrease in criticism by the two opposite sides • Decrease in geopolitical risks • Decrease in the NGOs' activities • Stable border areas • WMD control • Increase in a unification-friendly international environment • NE Asian security organization preparation | <ul style="list-style-type: none"> • Decrease in criticism by the two opposite sides • Decrease in geopolitical risk • Decrease in the NGOs' activities • Stable border areas • WMD control • Increase in a unification-friendly international environment • NE Asian security organization preparation | <ul style="list-style-type: none"> • Decrease in criticism by the two opposite sides • Prepare for a new geopolitical situation • Decrease in the NGOs' activities • Stable border areas • WMD control • Increase in a unification-friendly international environment • NE Asian security organization |
| COSTS | Division Dissolving | System Integration | Nation Building |
| Political | <ul style="list-style-type: none"> • Weakening China's international image and status • Decrease in legitimacy of China's ideology • New territorial disputes | <ul style="list-style-type: none"> • Weakening China's international image and status • Decrease in legitimacy of China's ideology • New territorial disputes | <ul style="list-style-type: none"> • Weakening China's international image and status • Decrease in legitimacy of China's ideology • New internal turmoil • Increase in public opinion of liberal democracy |

| COSTS | Division Dissolving | System Integration | Nation Building |
|----------------|--|---|---|
| Administrative | <ul style="list-style-type: none"> Administrative-judicial system preparation | <ul style="list-style-type: none"> Administrative-judicial system preparation | <ul style="list-style-type: none"> Administrative-judicial system preparation |
| Diplomatic | <ul style="list-style-type: none"> Loss of a friendly neighbor Losing a “special status” on regional politics | <ul style="list-style-type: none"> Facing a new Korean Peninsula preparation Losing a “special status” on regional politics | <ul style="list-style-type: none"> Facing a new Korean Peninsula preparation New Order preparation |
| Security | <ul style="list-style-type: none"> Preparation for facing ROK or U.S. military forces Increased national defense budget Loss of an important buffer Increase in border areas instability Costs of cross-border control North Korean refugees preparation | <ul style="list-style-type: none"> Preparation for facing ROK or U.S. military forces Increased national defense budget New security situation preparation Increase in border areas instability Costs of cross-border control North Korean refugees preparation | <ul style="list-style-type: none"> Increase in facing ROK or U.S. military forces Increased national defense budget New security situation preparation Increase in border areas instability Costs of cross-border control North Korean refugees preparation |
| Social | <ul style="list-style-type: none"> Costs of emergency aid Increased health and medical care costs | <ul style="list-style-type: none"> Costs of emergency aid Increased health and medical care costs | <ul style="list-style-type: none"> Costs of emergency aid Increased health and medical care costs |

2. Economic Costs and Benefits of the Unification for China

Learning from the Germans, the ROK has conducted research on the political and economic costs of unification. There is also research in this regard in the series of research.⁴⁵⁾ Therefore, this report will not address more on this issue.

a. Economic Costs

(1) Losing its preferential status in the DPRK

The DPRK is one of China's major economic partners. The collapse of a traditional market of socialist countries and the sanctions by Western countries have all added to the DPRK's economic difficulties. As a result, the DPRK has become increasingly dependent on China.

China's food and energy aid has been crucial for the DPRK to maintain its economic security. China has also assisted the DPRK in improving infrastructures, including traffic, communication and irrigation facilities.

China and the DPRK cooperation is found at all levels. At the national level, China has constructed highways, a second bridge across the Yalu River, and rented the ports of Rason (Rajin-Sonbong) for China-DPRK cooperation on the project of "one bridge, two islands."⁴⁶⁾ At the provincial level, Jilin and Liaoning provinces have respectively mapped out plans for their cooperation with the DPRK. Many private enterprises have made large investments in the DPRK, since the DPRK has cheap labor and rich mineral resources.

After unification, especially if the DPRK were to be annexed by the ROK, China could not maintain special relations with the DPRK, and Chinese enterprises would no longer have the same advantages in competition. The opportunities, which only China can have, would be open to the international community. Since the ROK in particular

⁴⁵⁾-See Kyuyoon Kim and Jae-Jeok Park (eds.), *Korean Peninsula Division/ Unification: From the International Perspective*.

⁴⁶⁾-The two islands are Hwanggumphyong and Wihwa Islands.

would probably dominate the markets, Chinese enterprises would be squeezed.

(2) Investments might be seriously undermined

China's investments in the DPRK are mainly in infrastructures and mineral resources. For instance, a Jinlin-based corporation got the rights to exploit iron minerals in Musan County, North Hamgyong Province for 50 years by signing agreements with the DPRK government. China Minerals Corporation also got the rights to exploit coal for 50 years by signing contracts. China also has cooperation with the DPRK in copper and molybdenum mines. According to a report by a ROK commercial institution, 70% of China's investments in DPRK in 2006 were in resources development projects, and China was able to import minerals worth \$270 million. China also has investments in the industrial parks of the Rason (Rajin-Sonbong) Special Economic Zone, Sinuiju Special Administrative Region, etc.

The ROK has already expressed its concern and dissatisfaction regarding China's economic cooperation with the DPRK. The ROK believes that China has been purchasing mineral resources actually at very low prices. The DPRK has to export coal and iron ore to alleviate its economic pressure, while importing crude oil, machineries, electronic apparatus and food from China. The ROK thinks that this kind short-sighted exploitation will cause the loss of resources, and the agreements between China and the DPRK will be an obstacle for the ROK and the DPRK to build economic community. The ROK even

thinks that in this way, the DPRK will even become a Chinese economic province.

After the unification, especially if the DPRK were to be annexed by the ROK, all these projects would highly likely be interrupted by the ROK under the name of reassessment, which would seriously undermine the profits of China's investments and enterprises, whether in the short or long term.

b. Economic Benefits

After unification, China would no longer have to provide the DPRK with assistance. This part of the report will address the potential positive effects on the development of China's northeastern part.

The three provinces in China's northeastern part are firstly liberal ones, whose industrial capability used to be the material foundation of liberalization for the rest part of China. But unfortunately, during the last decades, the three provinces have been lagging behind China's coastal areas due to retired industrial bases. The coastal areas have achieved rapid economic development since the initiation of reform and the opening-up policy. To reverse that trend, China mapped out a plan to revitalize the northeast. Various economic development programs have been produced under that umbrella.

The instability of the Peninsula, the uncertainty of the prospect of the relations between the DPRK and the ROK, and the DPRK's nuclear and missile tests all have produced negative effects, not only on the Peninsula itself but also on the three Chinese northeastern provinces. For instance,

during the last decades, international investments have actually taken wait-and-see attitudes toward the three provinces. As a result, some of the projects, which should have greatly promoted the development of the three provinces, have not been pushed forward. What's more, given its proximity, the DPRK has geographically separated the three provinces from the rest part of the world, especially from the ROK. Such special conditions have restricted the development of the region.

A unified Peninsula would provide a favorable atmosphere for the opening-up of China's northeast, a significant part of China's long-term, overall opening-up strategy. And the development of its northeast would promote China's overall, balanced development.

Unification of the Korean Peninsula would benefit the revitalization of China's northeast. And China's strategies of attracting investments, while going out and making full use of two markets and two kinds of resources, would be sufficiently applied to its northeast region. By that, the northeast would economically become an integrated not only with China but also with the world.

The unification would greatly increase the competitiveness of China's northeast economy in the whole Northeast Asian region. China's northeast would be able to take advantage of its special geography so as to achieve a sustainable development and competitiveness.

The unification of the Korean Peninsula would enhance mutual trust and good-neighborly relations in the region. China's land border and coastal lines, run respectively 8,676 kilometers and 2,920 kilometers, along the three northeastern provinces and Inner Mongolia Autonomous Region. Korean

unification would be conducive for creating a peaceful and win-win regional environment by enhancing its relations with its northeastern neighbors.

The unification would serve to achieve the objective of a win-win outcome. China's northeast is an important base of industry, energy and raw materials. By expanding its opening-up activities, China's northeast could deepen its cooperation with neighboring countries in resources exploitation and raw materials processing, which would promote China's win-win cooperation with relevant parties.

According to relevant research programs, in the coming decades, China would increase the development levels of its northeast provinces. By 2015, the total volume of trade of its northeast would reach \$255 billion, among which \$76 billion would come from various Northeastern Asian countries, with a yearly increase of 15%. The direct foreign investments would be \$50 billion, among which \$6 billion would come from Northeastern Asian countries, with a yearly increase of 15%. China's investments in Northeastern Asian countries would increase by 20%. By 2020, the total volume of trade would reach \$390 billion, among which \$117 would come from Northeastern Asian countries, with a yearly growth of 12%. Foreign direct investments would increase to \$77 billion, among which \$9 billion would come from Northeastern Asian countries, with a yearly growth of 12%.⁴⁷⁾

⁴⁷⁾-See "the Plan of Revitalizing Northeast China," *Xinhua*, December 19, 2007, <chinaneast.xinhuanet.com/2007-12/19/content_11981590.htm>.

Table 14 Economic Costs and Benefits for China

| | Division Dissolving | System Integration | Nation Building |
|-----------------|---|---|---|
| COSTS | <ul style="list-style-type: none"> · Losing preferential economic status in North Korea · Possible interruption of North Korea-China economic cooperation · Economic support towards North Korea · Prepare for emergency aid | <ul style="list-style-type: none"> · Possibility of losing benefits from investments in North Korea · Possible interruption of North Korea-China economic cooperation · Economic support towards North Korea · Prepare for emergency aid | <ul style="list-style-type: none"> · Possibility of losing benefits from investments in North Korea · Korean Peninsula-China economic cooperation · Economic support towards the Korean Peninsula · Prepare for emergency aid |
| | Division Dissolving | System Integration | Nation Building |
| BENEFITS | <ul style="list-style-type: none"> · Korean Peninsula market-economy preparations · North Korea economic reconstruction plan preparation · Production capability preparation · Training and education preparation · Participation in infrastructure building · Changchun-Jilin-Tumen development strategy preparation · Tumen River development program preparation · Railways, highways, and oil & gas pipelines preparation | <ul style="list-style-type: none"> · Korean Peninsula market-economy preparations · North Korea economic reconstruction plan preparation · Production capability preparation · Benefits from training and education · Participation in infrastructure building · Changchun-Jilin-Tumen development strategy preparation · Tumen River development program preparation · Railways, highways, and oil & gas pipelines preparation | <ul style="list-style-type: none"> · Korean Peninsula Market-economy · North Korea economic reconstruction plan preparation · Promoting production capability · Benefits from training and education · Participation in infrastructure building · Benefits from the Changchun-Jilin-Tumen development strategy · Benefits from Tumen River development program · Benefits from railways, highways and oil & gas pipelines |

3. China's Major Concerns: Issues, Pace of the Unification Process, and Emergencies

It should be mentioned that the unification by itself will produce tremendous impacts on various issues from the U.S. forces in the ROK, ROK-U.S. relations, and China-U.S. relations. Various uncertainties will also be looming. For instance, will the new Korean entity take pro-China or pro-U.S. positions, or just stay in the middle? Will China and the U.S. have more confidence in each other or just be more strategically suspicious of each other?

a. Major Issues

This part will address four issues relevant to the unification. They are the nuclear issue, unified Korea's foreign policy, U.S. military forces in the ROK, and China-U.S. relations' prospects. These four issues will be major factors that China will consider during and even long after the unification.

(1) The nuclear issue

China's positions regarding the DPRK's nuclear issue include denuclearization of the Peninsula, peaceful resolution of disputes, and maintaining peace and stability in the region. China thinks that its interests can be maintained if the issue is addressed in the above-mentioned way. Therefore, China has been frequently and consistently emphasized these principles.

Some scholars used to argue that the DPRK with nuclear weapons, while not chaotic, would be more in China's national interests rather than one chaotic but without nuclear weapons. Peace and stability will be more relevant than the question as to whether the DPRK has nuclear arms.

But they have changed their perspectives after the DPRK conducted nuclear tests for the third time. They argued that China was no longer a mediator but an immediate victim, since the DPRK's capability of strategic deterrence has produced negative effects on China's strategic interests. First, the DPRK already has the capability of threatening China's national interests, and some of China's major cities and best developed coastal areas are all in the range of DPRK's strategic weapons. Second, the DPRK's growing deterrence capability will stimulate other regional countries to advance their military facilities and even nuclearize their weapon systems, which will worsen China's neighboring environment. Third, the DPRK's nuclear tests and military threats provided the U.S. with excuses to increase more strategic resources in the Asia-Pacific region, which increases strategic pressure on China. Therefore, China will persistently stand for denuclearization of the Peninsula.

It is always China's serious concern of what kind of measures relevant parties will take to ensure nuclear security in the process, and how a unified Korea will address the nuclear weapons. China is particularly worried about these issues if the DPRK is annexed by ROK. In the case the DPRK was annexed by the ROK, something very serious must have happened regarding the DPRK's nuclear weapons and relevant facilities. If so, how would the DPRK officials and leaders deal with

the nuclear facilities under various uncertainties? The nuclear weapons, if out of control, would cause large casualties, or cause serious pollution to the neighboring environment. That would not be something that China could shoulder.

Another concern for China would be whether the unified Korea would keep these nuclear weapons. A number of South Koreans argue that the DPRK's nuclear weapons belong to the Korean nation, and South Koreans should be proud of them, despite the current separation. By that logic, a unified Korea would regard the nuclear weapons as valuable assets.

Anyway, how to deal with nuclear technologies and facilities, and whether to eliminate nuclear weapons, will both be thorny issues. China is seriously concerned.

(2) Unified Korea's foreign policy

The division of the Peninsula is the outcome of major powers' competition for hegemony in the region. The way of the unification and the foreign policy of a unified Korea will also be more or less affected by major neighboring powers.

China believes that the ROK currently depends on China for economic benefits but also on the U.S. for security protection. Or to put it another way, the ROK seeks business relations with China but allies itself with the U.S..

If the DPRK were to be annexed by ROK, it is highly likely that a unified Korea would adopt a pro-U.S. policy, and would even become

a bridgehead for the U.S. to contain China. Therefore, China should be aware of this.

According Professor Chen Fengjun of Peking University,⁴⁸⁾ an expert on Korean issues, in the longer term, the unification of the two Koreas would remove potential sensitive hotspots, which would benefit not only China and the Peninsula but also the whole region. From the perspective of geopolitical strategy, the special location of being among several great powers, the unified Korea would have to take a neutral policy so as to play its due role by taking a balanced approach. Usually, it would not form an alliance with another country. That means China can have friendly relations with it. Militarily, it could be a balance against other powers.

Such arguments are actually very indicative. That is to say, China expects that a unified Korea would take a neutral policy by abrogating all treaties that are military by nature. A unified Korea, not allied with any power, but friendly with all countries, would be in China's interests. China also expects that a unified Korea would resolve its disputes with other countries through peaceful means, and put aside conflicts that cannot be resolved in the short term.

(3) U.S. forces stationed in the ROK

According to the 1972 statement the DPRK and the ROK agreed on three principles of independent and peaceful unification, and that

⁴⁸⁾Junfeng Chen, Chuanjian Wang, *Asia-Pacific Powers and Korean Peninsula* (Beijing: Beijing University Press, June 1, 2002).

the two sides would realize unification in peaceful and independent ways, free of intervention by external powers. However, despite the statements, the two sides have different interpretations of the term “independent ways.” Since the U.S. military forces stationed in the ROK closely affect the security, political and strategic interests of both sides, though in opposite directions, the interpretations of the status of U.S. forces have become the area that the two sides have sharply conflicting disagreement.

Nowadays, the ROK and the U.S. are enhancing their relationship in a strategic alliance after the Cheonan Incident and Yeonpyeong Island issue, but this is not a positive approach, because it will further complicate the situation on the Peninsula.

The U.S.-ROK military alliance will be upgraded to an all-round alliance to cover military, security, political, economic, social and cultural aspects, which serves the U.S.’s strategic goal of maintaining its leading role in regional and global affairs. It would certainly undermine peace and stability in Northeast Asia and would bring uncertainty to the region.

After unification, especially if the DPRK were to be annexed by the ROK, a unified Korea would highly likely keep U.S. forces on the Peninsula, or gradually implement the conditional withdrawal of U.S. forces. In any case, all these above-mentioned arrangements would pose challenges to China’s security.

China believes that withdrawal of U.S. forces will be a crucial step before establishing a peace mechanism, the peace treaty signing, and an arms reduction.⁴⁹⁾ China also believes that for the sake of lasting

peace and stability on the Peninsula, a unified Korea neither needs U.S. forces to fill in the vacuum nor needs U.S. forces to prevent potential regional threat.

U.S. forces, if they continue to stay on the Peninsula, or even move forward up to along the border with China and look at China across the river, they will form extremely strong strategic pressures on China. Even if U.S. forces are not stationed along the border, the newly integrated U.S.-ROK and U.S.-Japan military alliances in Northeast Asia will negatively affect China's national security.⁵⁰⁾

The main goal of U.S. forces on the Peninsula lies in ensuring ROK's security and preventing the DPRK from attacking the ROK in an unexpected way. When the two sides are unified, such an excuse will lose its ground. Then, if U.S. forces continue to stay, China will think that they are intentionally aiming at China, and thereby undermining regional security.

(4) The prospect of China-U.S. relations

The media often describes China-U.S. relations as the most important bilateral relations. The two also jointly claimed in a 2011 statement that both will work together to build a cooperative partnership of mutual respect and mutual benefit. The report of the 18th Party Congress formally proposed the concept of "a new model for major countries' relations."

⁴⁹⁾-Qingyi Meng, Wenjing Zhao and Huiqing Liu, *Korean Peninsula: Problems and Resolves* (Beijing: People's Publishing House, December 1, 2006).

⁵⁰⁾-Xiandong Han, *The Security Structure of The Korean Peninsula* (Beijing: China Social Sciences Publishing House, October 1, 2009).

But China-U.S. relations are extremely complicated, since the two are extremely different from each other in history, culture and values, yet having tremendous common interests. Therefore, during the last decades, relations between the two have been coupled with both cooperation and conflict. While Deng Xiaoping used to say that China-U.S. relations can neither be too bad nor be too good, some others would like to categorize the two as “neither enemies nor friends,” “sometimes enemies, some other times friends,” or “might-be enemies or might-be friends.”

After the unification, the U.S. would shift its strategic attention on to China instead of on to the DPRK. Therefore, any of Chinese military action in its northeast could be regarded as threatening U.S. interests in Northeast Asia. Meanwhile, China would also be concerned about any U.S. military action. As a result, the two could very easily enter into conflicts due to misperceptions of the other’s intentions, since the two do not have sufficient trust in each other.

China and the U.S. would undoubtedly be the two major powers having influence on the unified Korea. When the relations between the two major powers are sound, a unified but neutral Korea would have a large maneuverability. But if the unified Korea were required to choose sides as a result of worsening relations between the two major powers, it would have a nightmare.

All the variables will have direct or indirect impacts on China’s national interests. It is also likely that China will have to face more negative rather than positive impacts. That’s why some Chinese scholars

would like to argue for maintaining status quo rather than seeing the prospect of a unified Korean Peninsula.

Table 15 China's Major Concerns

| | | Division Dissolving | System Integration | Nation Building |
|-----------------------------------|----------------------|------------------------|-----------------------|--------------------|
| Nuclear issue in the Peninsula | With nuclear weapons | negative | negative | negative |
| | No nuclear weapons | positive | positive | positive |
| Foreign policy | Close to the U.S. | neutral | neutral | neutral |
| | Close to China | positive | positive | positive |
| | Neutral | positive | positive | positive |
| U.S. Troops in the Peninsula | Yes | neutral | negative | negative |
| | No | neutral | positive | positive |
| Sino-U.S. relations | Good | positive | positive | neutral |
| | Bad | negative | negative | neutral |
| | So-so | neutral | neutral | neutral |

b. Pace of the Unification Process

This paper mainly deals with the case that the unification takes place in a peaceful and gradual manner with the ROK guiding the process. But judging by current circumstances, two other cases should also be addressed.

The first is the decelerated process as a result of the dissatisfaction of the DPRK with the ROK. The other is the accelerated process as an outcome of unexpected political incidents in the DPRK. Despite being determined on the side of ROK, deceleration is highly likely. Confrontation between the DPRK and the ROK is for the inheritance of national sovereignty.

Hence, their competition is by nature a zero sum game. That's the reason why neither of the two can tolerate the other side. What's more, after separation of more than half a century, the two have respectively established national frameworks with totally different ideologies, political and economic systems, and social values. Not only the two political entities are in conflict with each other, but also the people of the two sides cannot live peacefully.

The two sides might be able to overcome some of the differences in political, economic and social systems by the unification assistance from neighboring countries, but they would certainly have problems in engagements and integrations. After all, the two have had different ways of thinking and ideologies for too long, which is always an obstacle to building confidence.

The recent conflicts between the DPRK and the ROK over Kaesong Industrial Region Complex suggest that the two sides could very easily break apart over trivial matters. The international community, therefore, has reasons to expect a long and tough process of unification.

The second case would be the scenario of accelerated unification as a result of the DPRK's internal conflicts. Kim Jong-un's new style, as shown in the last months, has made the DPRK's domestic political structure vulnerable rather than solid. Kim Jong-un, less than thirty years old, and with neither revolutionary nor political career experience, is still a new hand. It is expected that he will likely strengthen his control of power anxiously, which might cause strong dissatisfactions from dignitaries.

Regarding external affairs, Junior Kim, short of experience, will highly

likely adopt aggressive and even radical actions, which might trigger escalations of regional tensions.

Kim Jong-un has reshuffled high government officials, so as to strengthen his own position in the party and military. These changes might have been necessary, but they had sown seeds of political turmoil, since such changes have caused dissatisfaction among some senior veteran politicians.

c. Emergencies

According to various research reports,⁵¹⁾ many emergencies can happen on the Peninsula. The ROK will highly likely take advantage of these emergencies to dominate the unification, since it obviously has more resources. China is very worried that such emergencies will happen on the Peninsula including:

- The U.S. launches surgical strikes on the DPRK as the result of the rise of American extreme conservatives;
- Clashes between the DPRK and the U.S., and between the DPRK and the ROK on the land, in the sea and in the air near the 38th parallel;

⁵¹⁾-Such research reports including: U.S. Government Printing Office, “China’s Impact on Korean Peninsula Unification and Questions for the Senate,” A Minority Staff Report Prepared for the Use of the Committee on Foreign Relations United States Senate, December 11, 2012; Jonathan D. Pollack and Chung Min Lee, *Preparing for Korean unification: Scenarios & Implication* (Washington, D.C.: RAND, 1999); Charles Wolf Jr. and Kamiljon T. Akramov, *North Korean Paradoxes: Circumstances, Costs, and Consequences of Korean Unification* (Washington, D.C.: RAND, 2005); Bruce W. Bennett, *Preparing for the Possibility of a North Korean Collapse* (Washington, D.C.: RAND, 2013).

- A large number of refugees pours into neighboring countries when sanctions, blockades and embargoes cause the collapse of the DPRK regime;
- The DPRK kidnaps Americans as hostages, and the U.S. launches rescue operations;
- Political turmoil, or even a military coup d'état, happens because of a worsening domestic economic situation;
- Chemical and nuclear weapons are sold by the DPRK army to the international market, resulting in serious nuclear proliferation;
- Natural disasters (for instance, earthquake, eruption of volcanoes, and the spread of epidemics) occur in the DPRK;
- The DPRK withdraws from “the Armistice Agreement,” and declares war with other countries.

Potential actions China might take in case of emergencies, like border security, refugees and the loss of control of nuclear weapons include:

- Build up troops in the border area and declare a state of emergency;
- Enter into the state of crisis management;
- Strengthen border control and set up refugee camps;
- Prepare medical teams for humanitarian assistance and rescue;
- Make preparations to properly deal with nuclear weapons;
- Strengthen the exchange of information with relevant parties;
- Send a special envoy to mediate among various parties;
- Urge the UN to send troops to handle emergencies;
- Urge the UN to implement international trusteeship by third-party intervention.

4. Concluding Remarks

China expects the Korean Peninsula to be free of war, turmoil, fierce changes, nuclear weapons. China supports gradual and peaceful unification, instead of by radical and military means.

China has consistently supported the unification of the Peninsula. China does not think that the unification itself is a problem, but is concerned as to what ways, when, at what costs, and whether the people can live a better life after unification. So, China does have a say regarding the unification, and China will never dominate the process, either in the timing or by the means unification is to take place.

In the short term, unification—even in a peaceful and gradual manner—will produce a greater negative impact rather than benefits for China.

But in the longer term, unification will have more benefits than harm to China, whether politically, economically or in security issues.

It should be mentioned that the unification by itself will produce tremendous impact on various issues such as the U.S. forces in the ROK, the ROK-U.S. relations and China-U.S. relations. Various uncertainties will also be looming. For instance, will the new Korean political entity adopt a pro-China or pro-U.S. position, or just stay in the middle? Will China and the U.S. have more confidence in each other or become more strategically suspicious of each other?

All these variables will have direct or indirect impacts on China's national interests, and it is also likely that China will have to face more negative rather than positive impacts. That is why some Chinese scholars would like to argue for maintaining the status quo rather than working

harder towards a reunified Korean Peninsula.

So with that, China opines that the unification will still be a remote objective, since the two sides on the Peninsula have substantially different perceptions of unification. And China is far from being prepared for such a process.

The method of a cost-effect analysis delivers a clear picture of China's calculation of interests in the unification. But worth mentioning is that this method is not perfect, since not all the costs and effects can be numerically calculated.

Despite the above-mentioned analysis, China's positions are clear. China will consistently and persistently support the unification of the two sides on the Peninsula, though China will have to make specific judgments in different scenarios. China will support peaceful and stable process towards the final unification, and will not accept a process by war or turmoil.

And as one of the neighboring states, China also thinks that the U.S., Japan, the ROK, Russia and China should effectively cooperate during the Korean Unification process. All the neighboring states should accept the win-win instead of zero-sum games. For instance, they should list and re-order the region interests, sign an agreement on a Nuclear-free Peninsula, strengthen exchanges in cultural, social, and prepare to build a new regional order with a security organization in Northeast Asia. All the neighboring states should avoid mistrust, misunderstanding and security dilemmas.

Especially, as the biggest "stake-holder," the ROK should consider

China's major concerns regarding the unification. It should also reflect on its historical lessons, and jointly work with other parties for a more peaceful and stable regional order.

The role that the ROK and China can play in the peaceful unification includes encouraging the two Korean parties to do the following: fully implement "The Agreement on Reconciliation, Nonaggression, Cooperation, and Exchange Between North and South" for the purpose of increasing psychological identification; sign "the agreement on peaceful coexistence" to take the place of "the armistice agreement" of 1953; recognize the differences in the two systems; strengthen exchanges and cooperation in science, culture and education; adopt a self-reliant approach in the unification, that is, the process not to be dominated by outside powers; encourage the DPRK to reform and open up, and to provide convenience for such efforts; and encourage the ROK to provide the DPRK with financial and technological assistance, instead of pressuring the DPRK with economic measures.

In all, this project will build a more synthetic and comprehensive quantitative model to assess the unification costs and benefits for China in order to help the ROK and China to prepare for future Korean unification.

X

The Costs and Benefits of Korean Unification for Russia

As a neighboring country, Russia is closely involved in the political processes on the Korea Peninsula and will be involved in Korea's unification process at different stages. It is necessary to stress that Russia's foreign policy priorities will not be focused only on the normalization of political and security situation on the Korea Peninsula and strategic support of Korea unification, but Russia simultaneously will also intend to elaborate and realize new economic, political and security strategies toward Northeast Asia (NEA) in order to diversify its foreign political and economic relations in favor of NEA and to expand different kinds of cooperation with the regional powers. That is why security stability, denuclearization of the Korean Peninsula, and peaceful unification of Korea as a democratic, open and friendly country are among the most important issues of Russia's long-term foreign policy.

In this case, it ought to be noted that Russia, as well as other regional powers, has to take into account the specific political realities on the Korean Peninsula and in NEA—before, at the different stages of unification, and after the process of unification. It means that it will be necessary for Russia to be adequate—economically, politically and military (or better to say to have security capability)—to the new realities in NEA and on the Korean Peninsula.

Accordingly, positive trends in inter-Korean relations, as well as the real unification of Korea, could be realized in the full-scale, if the regional community would be ready: ① to overcome any kind of confrontation and low-level political confidence among countries involved in inter-Korean relations; ② to take into accounts political and security interests of all NEA countries (including U.S.'s regional interests); and ③ to support strongly a reduction of military tensions on the Korean Peninsula.

Under these conditions, it is necessary to stress that Moscow will be keen to support inter-Korea cooperation as well as dialogue and cooperation with the Northeast Asian countries. According to the main idea of Korean unification, denuclearization should be guaranteed from the starting point of unification until the building of a unified nation. So, for Russia, the most prominent model of a unified Korea would consist of a democratic society, open to an international cooperation economy, a nuclear-free country without the military infrastructure of any regional power in the North part.

If Korean officials and regional powers agree on these basic features of a unified Korea and regional security, as well as for prospects for large-scale regional economic and political cooperation, it will be easy for them to stimulate North Korea's transition towards a market economy and more open society, in addition to actively support the unification process. The correlation between security concerns and economic issues are to be on the agenda regarding the Korean Peninsula at the Korea Unification stage. It is important for Russia to be sure that regional

powers will be ready to agree on the basic characteristics of a unified Korea (economic, political, security, humanitarian) and the role of this country in NEA as well as in the global community.

It will be in the interests of both Russia and a unified Korea not only to solve the problem of nuclear weapon on the Korea Peninsula, but also to ensure that denuclearization of a unified Korea becomes an integrated element of North East Asia's regional security system.

Under these conditions, it will be possible for Russia to determine political and economic risks and to forecast possible costs and benefits of Korea unification for Russia.

The costs and benefits of Korean unification at different stages for Russia will depend on many factors: government-controlled business activities, the roles of huge infrastructure projects at home and abroad, reduction of the shadow economy, etc. These kinds of factors will be described and be taken into account in accordance of the general, structured contents of this research—from the Division Dissolving stage to the System Integration stage, and, finally, to the Nation Building stage.

The forecasts and estimations are based on Russian, South Korean and international statistic data, on IMEMO forecasts of the development of Pacific Asia, including the Korea Peninsula during the next two decades. While analyzing special problems of transition of North Korea towards a market economy and inter-Korea relations, special attention is paid to Russian and East European countries reforms' experience, as well as to the German unification experience and its spillover effect on to

neighboring regions. One of the basic ideas of this analysis is that the first and the second stages, Division Dissolving and System Integration, will be characterized by the role of government control and state institutions, as well as international organizations playing leading roles in economic development. That means that free market forces will be under rigid government control at the beginning of Korean unification.

Accordingly, the costs and benefits will be estimated by analyzing state-business partnerships at the two early stages of unification and only in dealing with the last one—the Nation Building stage—will estimation be realized in accordance with mainly market forces.

This chapter is divided in two parts: ① non-economic costs and benefits, ② economic costs and benefits. In turn, each part is composed of three sections: in the first section, costs and benefits at the Division Dissolving stage will be discussed; in the second one, at the System Integration stage; and in the third, at the Nation Building stage.

1. Non-Economic Costs and Benefits of the Unification for Russia

a. Costs

(1) Division Dissolving Stage

The long-term Russian policy for the Korea Peninsula under the unification process would be adopted during this period. In addition, Moscow will have to participate in the negotiations and consultations on the possibilities of multinational cooperation of the regional powers

to support Korean unification. Accordingly, this period will be very important for minimizing non-economic risks (as well as economic costs of unification).

Russia will increase military, police and custom duty costs during the Division Dissolving stage of the unification process. The main reason will be to prevent negative consequences of the transition process in North Korea, especially for the Russian Far East. Russia will have to increase expenditures on military and security infrastructure to improve the border guard as well as upgrade the capabilities of its army, air forces and navy to control possible threats to the Russian Far East's security under transition period in North Korea and to be ready to prevent illegal immigration and other possible threats.

Russia intends to spend about 500 billion euros to supply its military forces with modern arms and military equipment during 2014-2020. In addition, Moscow will invest about 100 billion euro in its military production industry. According to vice prime-minister D. Rogozin, realization of this investment program is necessary for Russia to be able to meet global security issues, especially those modern trends found within the Asia-Pacific region. Moreover, according to Mr. D. Rogozin, there will be another stage of this program after 2020.⁵²⁾

This program will be a significant burden on Russia's budget, especially if domestic economic trends are not radically improved. Of course, security instability on the Korean Peninsula (including possible military

⁵²⁾-*RIA Novosti*, September 03, 2013, <http://ria.ru/defence_safety/20130903/960450223.html>.

unrest in North Part of Unified Korea) is not the only, but is an important factor, disturbing Russia's security interests in Northeast Asia.

It is necessary to predict the beginning of possible transition period problems at the Division Dissolving stage, such as government administration frustration, especially at the regional and local levels, from a crisis of North Korea's totalitarian political system. Under these conditions, old administration and management systems will be undermining the transition and it will be rather difficult to control domestic political and social stability. Accordingly, social and political protests and unrest could be initiated.

One of the consequences of this process could be weak control of weapons depots and illegal cooperation among former North Korea military personal, retired and on-duty officials, businessmen and criminal groups. Under these conditions, different kind of weapons could be appear on the black market and illegally redistributed in North Korea, as well as illegally exported to neighboring countries, including Russia. One of the consequences of this process would be the introduction of more rigid controls on the Russia-Korea border and Russia-Korea foreign exchange.

Moreover, as one can see in history of transition periods, in such countries as Russia, Ukraine, and the Balkan countries, it is possible to predict that domestic and even foreign quasi-business activities can be increased under the transition period. That is why Russia must be ready to oppose illegal bilateral trade, criminal activities on the Russia/Korea border, including illegal fishing, production, drug exporting, etc.

In order to better control its domestic criminal situation (especially in the Russian Far East), Russia must be ready to finance joint anti-criminal and anti-corruption operations with Korean officials.

One of the most difficult problems of a unified Korea will be the adaptation of a social system to the new national realities. It will take many years—or even several decades—to introduce modern social relations into the North and to come to a balanced social policy at the national level.

It will be very difficult for a unified Korea to resolve these problems alone. At the same time, it will be impossible to postpone realization of some social programs (especially humanitarian, medical and education) for a long period.

So it will be necessary for Russia to take part in international humanitarian programs, together with Korean officials, other regional powers, the UN and different kinds of global and Pacific institutions to support social stability and to prevail during possible disasters, as well as to supply the North Korean people with necessary aid, including food, medicine and education to support different populations (children, young and old generation, students, and workers in large and small cities, as well as in villages).

Joint Russia-Korea medical projects will be on the agenda to prevent pandemic diseases and to improve the medical care system in North Korea. During this period Russian medical personal and non-military special emergency forces could be located in the North Korea region. All such activities would be financed within Russia's budget and by

humanitarian funds.

From the very beginning of development of North Korea as a market-oriented, integrated part of a unified Korea, a very long, radical upgrading of education and training levels of different kinds of personal will be one of the most important problems of the Korean unification, due to the political and economic isolation of the DPRK from outside world. Under these conditions, Russia will be among the countries that would be ready to subsidize education of the North Koreans, mainly in university centers in Siberia and in the Russian Far East, such as in Vladivostok and Khabarovsk, as well as in North Korea.

(2) System Integration Stage

The political and military situation in North Korea and on the Korea Peninsula will be stabilized, with military costs being stabilized as well.

According to the normalization of a unified Korean domestic situation, humanitarian and special aid programs, initiated by Russia, will be reduced, step by step. At the same time, social (humanitarian) aid will be transferred from emergency operations to educational programs and to the support of the establishment and development of adequate social institutions. Medical program activities will be focused on supporting medical modernization to establish an efficient medical infrastructure.

Social (education) programs will be developed to continue—or even expand—education programs for North Koreans at home, and in Russia, to improve education of special groups, such as medical personal and teachers. As far as the Russian public and private business will be involved

in realization of modernization projects, Russia will have to support the education of technical experts, engineers and workers for basic industries, such as transportation, power stations and energy distribution systems, etc.

The task of great importance at this stage will be the mental, emotional and cultural adaptation of North Korea society to the realities of the global community. Of course, Korean culture will dominate. Meanwhile, cultural exchanges with other countries in various forms will be increased. Russia, as well as other countries, will support bilateral cultural exchanges with Korea. In this case, special culture programs and grants for Russia-Korea culture cooperation would be initiated.

(3) National Building Stages

Because of the stabilization of the Korean Peninsula, this stage would be characterized by improved regional security in NEA on a significant scale. Accordingly, security infrastructure and military activities of NEA countries should be adequately adapted to the level of inter-Korea integration. That means economic exchanges and the business infrastructure will be expanded while military maneuvers on the Korean Peninsula and in the near areas, as well as the military infrastructure, will be minimized and shrunk, step by step. Positive trends in Korea unification will make it possible for Russia to at least stabilize its military expenditures in the Russian Far East. In other words, military costs for Russia will have good chances to being frozen or even declining.

As far as Korea unification will be realized in accordance of this

positive scenario, it means that costs of Russian involvement in Korean affairs will be radically decreased.

b. Benefits

Even just the start of a dialogue among regional powers on Korea's unification issues and the minimizing of prospects for military conflict and any form of confrontation on the Korean Peninsula will improve political and security stability in NEA, which in turn brings political benefits for Russia.

(1) Division Dissolving Stage

Russia is interested in predictable consequences of a North Korea transition and a step-by-step inter-Korea integration as a decisive factor of stability on the Korean Peninsula. These trends will meet for the most part Russia's Pacific strategy; that is, to improve radical expansion and diversification of foreign economic relations with the Pacific countries, as well as to support peace and stability in the NEA. Under these conditions, unification of Korea would be an important, comprehensive long-term factor of Russia's domestic and regional foreign economic policy towards NEA.

It is hardly possible for Russia to suspect significant benefits at this stage of Korea unification. The difficult economic and social situation, as well as fluctuations in domestic political movements within North Korea, and diplomatic maneuvering of regional powers will be typical for this stage of Korea unification. At the same time, this stage will

be characterized by a different kind of negotiations among regional powers and the establishment of pilot regional economic and political institutions. This trend will meet Russia's long-term political priorities in NEA and on the Korea Peninsula. That means the political and security situation will be improved step by step, and Russia's military and security expenditures will at least be stabilized.

(2) System Integration Stage

Every stage of Korea's unification that brings regional peace and security will be to Russia's political benefit.

(a) Information Benefits

Unification of Korea will create a new information situation in Northeast Asia and in Russia, especially in the Russian Far East. The deficit of information on the one side, and often negative news from DPRK as a neighboring country, on the other side, has been a cause for discomfort within the Russian Far East's local population. In turn, this discomfort has been one of causes of mass-media speculation and negative forecasts on regional security.

Because of this news turmoil, some peoples feel moral pressure and may leave the Russian Far East, primarily Primorie Krai, for other Russian regions. That is why regular and a truly different kind of news from a unified Korea would be an important, additional factor of social and political stability in the Russian Far East.

Moreover, positive information on the political, economic and security

situation on the Korean Peninsula, as well as active distribution of Korean business news about growing and different kinds of opportunities, cannot stimulate domestic and foreign economic activity of local business especially among small and medium-sized companies. Positive information will also improve different kinds of strong interest in non-commercial and cultural public organizations to expand their activities in a unified Korea, such as social and humanitarian activities as well as cultural exchanges (music, theatre, film and dance education and presentations, etc.).

(b) Domestic Political Security

At System Integration stage Korea unification could be reached with accordance of improvement of regional security and political relations between regional powers. It means that security tension in NEA will be reduced in a result of regional agreements on political and security issues. In turn, predictable political and security situation will help to exclude any foreign disturbance of security and political stability in the Russian Far East.

(c) Defense Benefits

Under these conditions, any improvement of the political and security situation on the Korean Peninsula and in North East Asia will give to Russia's government a chance to optimize its defense structure in the Russian Far East and to reduce military spending. In any case, for every one percent of reduced military expenditure, it will be possible

to invest about 700 million euros in the Russian Far East economic programs, infrastructure development and in realization of regional ecological, social and humanitarian programs. So, the positive trend in the unification of Korea during the System Integration stage may be a factor for redistribution of budget resources from military to economic and social programs.

(d) Ecological Benefits

Russian public organizations and NGOs pay a great deal of attention to the ecological situation at home and in NEA countries. For example, the nuclear incident in Japan was viewed very negatively in the Russian Far East. Because Russia-North Korea relations were at zero level, the unification of Korea will make it possible to create a new stage of ecological policy at home and abroad.

There will be three important consequences for Russia if the ecological situation in Unified Korea is improved:

First, it would be possible to reduce budget expenditure on ecological programs.

Second, improvement of the North Korean ecological situation, following unification, will be an important factor of political and social stability in the Russian Far East.

Third, there will be significant benefits for Russia, so far as Russia and Korea having new opportunities to initiate large-scale ecological cooperation at bilateral and multilateral levels, including improving maritime ecological control.

At this stage, new opportunities will appear for the Russian and Korean people to increase bilateral exchanges. Orderly forms of immigration will make it possible for North Korean people to legally cross the border. New opportunities will make it easy for Russian citizens from the Far East regions and Korean citizens to travel by car and by train. It will create better conditions for expanding personal, tourist and humanitarian exchanges.

(3) National Building Stages

The National-Building stage and the establishment of a unified Korea will create new opportunities for Russia to realize a flexible foreign policy in NEA. It will give a chance for Moscow to increase foreign policy soft power instead of increasing military capabilities and rebuilding a Soviet-style militarized model of the Russian Far East.

2. Economic Costs and Benefits of the Unification for Russia

In this part of the paper it is necessary to pay special attention to the economic development and the capability in managing the transformation traps likely to be associated with a unified Korea. Russian economic costs and benefits depend wholly upon it. If in a few years after unification, a unified Korea has a rapidly growing market economy, the Russian economy will benefit not only because of new market expansion, but also because of the whole region's economic exhilaration in China, a unified Korea and Japan. In that case, the North Korean

Region could become an important trade, logistic, transport, communication and information hub.

a. Costs

(1) Division Dissolving Stage

We assume that during the Division Dissolving stage, Korea will be under economic cost pressures, but these kinds of costs will be caused mainly by political problems and because of the need to create social stability and democratic order in the North as it now exists in South Korea. Economic costs and benefits during the System Integration and the Nation Building stages depend on many noneconomic variables, so we assume that during the Division Dissolving stage the following favorable conditions for further economic development will be achieved:

- (South) Korean government will be controlling the borders (including the ex-DMZ);
- working law-enforcement authorities within the North Korean Region will be established;
- all interested domestic political and economic institutions inside Korea, such as private firms, different kind of parties, public groups and NGOs, as well as the unified Korea's foreign partners, such as neighboring states, international organizations and transnational corporation ,will agree that economic transformation is a long process. Under this process, economic rights could and should be partially introduced, step by step, to the North

Korean people, at least during the System Integration stage.

Accordingly, basic economic rights of North Korean people would be as follows: freedom of movement within the North part of Unified Korea; equal rights of personal property disposal as well as rights to initiate private business; equal rights to sell and buy all kinds of goods and services, as well as equal opportunity to receive directly or indirectly financial resources (by loans, tax reliefs, etc.).

The costs during the Division Dissolving stage will mainly be born by South Korea and international organizations. The most important of expenditures will be as follows: humanitarian aid to North Koreans, regional economic analysis, investor consultations, regional development programs' expansion (infrastructure), and essential social infrastructure renewal (hospitals, schools). According to the East German experience, the expenses will depend on how much should be the minimum infrastructure, how fast should be the buildup, and what should be set as minimum welfare state benefits (pensions for the retired persons, family-related bonuses and so on). After these political decisions have been made, a detailed economic costs calculation could be possible.

Costs for the Russian side will be determined by the necessity to improve knowledge of the real economic and social situation in North Korea. Statistical and feasibility studies will be continued and it will be necessary to establish joint research groups by Russian and Korean government and public institutions, as well as by private companies.

Moreover, at the same time, Russia-South Korea bilateral trade and investment exchanges will stagnate due to significant part of government and business activities being focused on the North's economic welfare. It is difficult to calculate how much of South Korean investment in Russia will drop, but it is possible to predict that during two-three years, it may be about 30-50%, given that South Korean firms will follow South Korean government recommendations to mainly invest into the North Korean region. But soon, leading South Korean corporations will resume their global investment activities. (It should be noted that the East German experience confirmed that the vast majority of the companies were ready to do their business in accordance with government political recommendations, but only for a short period of time. As far as it became clear that the labor costs in the East German region increased radically, West German firms started to invest in other opened East European countries, like the Czech and Slovak Republics.)

The basic national challenges for North Korea are not political or nuclear problems or disputes with the outside world, but domestic economic problems. Instability on the Korean Peninsula at this stage is the main obstacle for development of Russia-North Korea relations. Legacy of this negative experience will be an important obstacle for realization of any of Russia's strategic programs during the first years of the Unified Korea period. Russia's economic assistance—not business activity—will dominate Russia-North Korean region economic exchanges.

(2) System Integration Stage

We assume that during the System Integration stage the reforms will be gradual: privatization, monetary union, gradual labor market opening and gradual price liberalization. That would ensure that costs would be as low as possible. As we mentioned, the costs for the Russian side strongly depend on the whole economic development of the Unified Korea. That is why it would be better to start with discussing the economic development in the North Korean region.

(a) Liberalization

There is a trade-off between fast opening up of the North Korean regional economy for consumption goods and the benefits for South Korean firms, government and the bordering regions (China, Russia and partly Japan).

If the boundaries are opened and a flow of consumer goods expands into North Korea, there is a real danger that the type of consumption behavior of the North Korean people will be approximately the same as it was in East European countries during the first stage of transition: some money will be saved (typical traditional behavior for Korean people), but a significant amount of money will be spent to consume imported goods rather than investing (typical behavior of East European consumers and new rich people in modern North Korea after several decades of consumer deprivation). In such a scenario, the benefits will be divided mostly between South Korean and Chinese firms. The proportion will depend on openness of the North Korean-Chinese boundary.

At first glance, such a scenario could be seen as a preferable one. If we assume that the spending per day of a person in North Korea is 4 to 8 dollars and 50% of it will be spent on imported goods, at an average of about \$700-1,400, or in total for the North Korean region, about \$3-6 billion will be spent on imported consumption goods per year (not taken into account the accumulated money during the planned economy period; we assume that the North Korean people will be likely spending on clothes, electronic devices, etc.).

It is important to note that there are about 600-800 thousand people who may be characterized as making up North Korea's middle class. These kinds of people are able to consume, including luxury goods, much more than the average people. But prosperity and consumer demands of this group may be undermined during Korean unification, because many of them belong to leading groups of the party, the military and the bureaucracy.

The stable growth of regional consumer demand in the North more or less looks like the first stage of establishment of a normal domestic consumer market. But only at first glance is this scenario tempting. Growth will lead to a situation where money invested in the North Korean region (construction of housing, infrastructure development, social transfers) will be transferred back into South Korea (or even out of the Korean region into China or Vietnam) and not reinvested into the North Korean region for sustained development of the local economy.

So liberalization of the domestic market will be a great challenge to North Korean industry because of pressures from foreign producers,

as illustrated by international trade research and research on economic integration.⁵³⁾

In order to minimize the negative effects of a consumption boom and to support investment in the North Korean region, it will be necessary to stimulate foreign direct investment by consumer product firms into the North Korean region. This would be a short-term measure, because it will be possible to start consumer goods production in the North Korean region for local consumption in a short time and on a large scale. That could be realized by introduction of prohibitive tariffs (correction and exception of import tariffs) during at last 5 years of the System Integration stage. Because of low-cost local labor and investments from South Korea and other foreign investors, this kind of goods could successfully compete with imported consumer goods within a short time.

On the other hand, if the problem of outflows of invested money caused by consumer goods spending is not solved, it will lead to the following costs for (South) Korea:

- The North Korean region will remain as an underdeveloped or semi-developed region, constantly dependent on different kinds of transfers (for old-age pensions; for public administration, etc.).

It is very difficult (or even impossible) to calculate the total amount

⁵³⁾-Thomas Christiaans, "International Trade and Industrialization in a Non-scale Model of Economic Growth," *Structural Change and Economic Dynamics*, Vol. 19, No. 3 (2008), pp. 221-236.

of subsidies, because it will depend on collected taxes. For example, if the per capita tax amount in North Korea is 40% of the South level, but the socially acceptable level of public administration requires 80% of costs spent in the South, the missing amount of financial resources will have to be transferred from South's budget to the North Korean region.

- At some scale, migration exchanges between North and South will be necessary for the economic development of a unified Korea. Meanwhile, migration on a large scale from the North to South could undermine social stability in the country.

Because of the above-mentioned arguments, it would be better to first stimulate investment by Korean and foreign consumer goods producers. In order to minimize investment, business activity in the North should be located in some areas with better labor forces, equipment, etc.

The expected loss of revenues by the banking sector should be also added to the economic costs. Consumer credit should be allowed only for a housing construction and apartment renovation, partially for consumer goods produced in the North Korean region (for example, furniture, home appliances), for cars produced on the Korean Peninsula and for education. Other forms of consumer credit should be given freely only after completing the System Transformation stage. Such measures will mean less profit for the banking sector during the first decade, but it will bring more quality benefits: North Korean households

will have no possibility to spend money on imported goods, such as on iPhones.

(b) Infrastructure Construction and Housing

The forthcoming costs for infrastructure and housing can be calculated, taking into account the following items:

- Theoretical studies on dependence of economic growth on investment in infrastructure.

Unfortunately, it is hardly possible to use this approach for North Korea. There are no statistical data from reliable sources on the North Korean economy. It will probably be necessary to simultaneously realize infrastructure projects and real business projects. Under these conditions, it is possible to exclude misunderstanding while still needing to correct infrastructure and business projects. Accordingly, risks in the North will be rather high during the first stage of economic modernization. Nevertheless, investment in infrastructure will reduce transportation costs and improve domestic trade and export capabilities and thereby stimulate total business and investment activity. In addition, a total statistical system will be developed step by step. So, theoretical approaches will be suitable for the North Korean region only after the System Integration stage is completed.⁵⁴⁾

⁵⁴⁾-For example: Stephen Straub, "Infrastructure and Growth in Developing Countries: Recent Advances and Research Challenges," Policy Research Working Paper 4460, World Bank, 2008.

- The comparison of economic and social realities of the North and the South.

This approach isn't preferable because the optimal infrastructure for North Korean region can—and very probably will be—not identical with the South Korean one. There are several reasons for this difference: ① the population density in North Korea (200) is less than in South (476) and will decline after unification because of migration from rural regions to towns inside North Korean region as well as inter-Korea migration and emigration to neighbor countries (mainly to China and Russia, totally about five to ten percent of the North's population); ② new priorities in optimization of infrastructure in accordance with modern models of urbanization, industrial policies, ecological standards, etc. (new types of industrial clusters, growing role of public transportation, recreation zones). So, modern cities require more infrastructure than what seemed optimal 20-30 years ago.

- Capabilities to finance needs necessary to prevent North Korean regional social peace and economic uprisings.

This approach is better than those mentioned above: North Korea is a militarized state with a big army, police and other security institutions which will not be able to survive after Korea unification without deep reforms and reduction; the majority of the people engaged in military-industrial complex will be jobless after the Division Dissolving

stage. During the beginning of System Integration stage, there is no hope there will be enough jobs created by the private sector for people with such professional skills. In administrative economies there is also hidden unemployment: people who are employed only because it is not allowed to fire them or because the company leaders are indifferent to production costs. Many people will lose their jobs because of closed factories.

The infrastructure programs should meet the demands of these kinds of people. At the beginning of the transition period, the construction industry can contribute up to 15% of GNP, while usually it is about four to five percent. But the construction sector will not be the leading industry longer than five to seven years as one could see from the East German experience. That means that there could be possible employment for these people during the second half of the System Integration stage when the bulk of infrastructure projects will be carried out.

It is assumed that migration liberalization in the North Korean region (meaning freedom of movement to South Korea) will come only after the System Integration stage. In this case, the socially acceptable levels of earning in the North could be less than 30% of the South's level at the beginning of the System Integration stage (while the level would be higher towards the end of the period).

Investment in the infrastructure sector should be carried out very carefully. The total influence of the infrastructure projects on the North Korean regional economy will be great: most of the investments will

be financed by the South Korean government (by special bonds sales, etc.). It means that the market interest rates will go up. High interest rates will influence private companies' investment policies and personal investment priorities.

According to the German unification experience, infrastructure investments in East Germany were attractive if they were initiated or supported by public investment funds and companies. On the other hand, the problems that dominated the role of public investment activity negatively affected private investment in the Eastern German economy.⁵⁵⁾ It means that the main task for the government would be to coordinate and balance investment policy at the stage of modernization of the North Korean region economy.

(c) Non-Sector Transformation Costs

At this stage, North Korea's transition will stimulate Russia to finish feasibility studies and to actively begin realization of non-sector transformation costs. For Russia, it will be necessary to understand not only the possible costs but also the risks of economic relations with a unified Korea, especially with the country's North region. The transformation of an administrated economy into market economy means that it is necessary to change nearly all basic economic institutions. The history of transition of post communist states shows the success of the reforms depends not only on what to reform, but also on how

⁵⁵⁾-Gerlinde Sinn and Hans-Werner Sinn, *Jumpstart: The Economic Unification of Germany* (Cambridge, Massachusetts: MIT Press, 1994).

fast and in which direction the economy will be transformed.

Regression analysis for Eastern European countries showed an important trend: if countries realized privatization fast and radically within the first three years after the beginning of the reforms, new market institutions weren't established or were too weak. The results of these reforms were worse in the next nine years, compared with those of other countries where the privatization was carried out slowly.⁵⁶⁾

What does it mean in the North Korean case? It means that the costs of transformation could be reduced within two or three years of the System Integration stage market if new market institutions are gradually introduced in just some key economic sectors.

(d) Agriculture

The most preferable sectors would be in agriculture. During last decade it was possible for North Korean people in villages to personally develop mini-parcels not only for home consumption, but also for sale as produce: people could sell vegetables and other food at the local markets. Although the government tried to rigidly limit this trade activity or even stop it, nevertheless quasi-market mechanisms were established. As a result, pro-market behavior was growing among the local population. It would be in the interest of the national economy to secure property rights of these land parcels to the people now cultivating them and to introduce market institutions into this sector. Among these market institutions one can see easy ways for tax charges, easy ways for selling

⁵⁶⁾ Полтерович В.М., Элементы теоретической реформы (Moscow: Ekzamen, 2007).

produce in the markets or to supplying shops, and most important, the possibility to be taking out loans under the mortgage of owned land for further business development.

The same selection should be applied to other sectors of the North Korean economy, more or less connected with quasi-market rules now in North Korea or that exist under the umbrella of the shadow economy (shops, markets, hairdressers' salon, shoe repair, transport services, etc.). For the most part, they belong in the service sector.

This reform implementation would be realized according to the transition period experiences, but in accord with developing countries' realities. Hernando de Soto devoted his book, *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*, to this problem.⁵⁷⁾ He notes, that the shadow economy can't use the advantages of a developed financial sector—if owner rights are not fixed, than the owners can't get a credit for further business development.

(e) The Shadow Economy Trap

Gradual privatization will help avoid the shadow economy trap. It is very important to stress that the shadow economy in North Korea now is much bigger than it was in other socialist economies just before market transformation started (shadow, including black and grey, economy consist of about 50% of North Korean GNP).⁵⁸⁾ In nearly

⁵⁷⁾-Hernando de Soto, *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else* (New York: Basic Books, 2003).

⁵⁸⁾-It is difficult to estimate the shadow economy in North Korea. We assume for at least for 50%, but it can be even more. In North Korea, foreign currency fuels

all post-socialist economies (except East Germany), the shadow economy grew during the first years of transformation. For example, in Russia rate of the shadow economy increased from 12% GNP at the transformation start (1991) to about 40% in the middle of 1990s.

Thus we can assume that the North Korean region will likely track the same. Consequently, there are two questions: First, why did the shadow economy expand during the transformation process? Second, what can be done to avoid developing the shadow economy in the North Korean region?

The first answer relies on the work of Jonson, Kaufmann and Shleifer,⁵⁹⁾ “The Unofficial Economy in Transition.” They came to the conclusion that if a lot of people are involved in a shadow economy, they won’t be likely to change their activity in favor of the official sector. As we mentioned above, the shadow sector in the North Korea could be about 50% GNP. Accordingly, it is a significant probability that the figure will be rather high, even after the start of the market reforms in a unified Korea. That trap can be broken only by administrative measures (police activity, etc.).

Second, what can be done to avoid developing the shadow economy in the North Korean Region is as follows:

- At the begging of the System Integration stage, privatization should

shadow economy. *MSN.News*, <<http://news.msn.com/world/in-north-korea-foreign-currency-fuels-shadow-economy?stay=1>>.

⁵⁹⁾-Simon Johnson, Daniel Kaufmann, and Andrei Shleifer, “The Unofficial Economy in Transition,” *Brookings Papers on Economic Activity*, No. 2 (1997).

not be intensified. It would be more prominent if existing semi-market firms in North Korea's (grey economy) can be integrated into the official legal economy.

- Foreign direct investment and joint venture firms at the beginning of System Integration stage should be allowed only in special economic zones and in special infrastructure projects under government control. This measure will be necessary to prevent criminal and grey economy activity as well as to limit corruption. The starting point should be the development and expansion of now existing special production zones in North Korea.
- The taxation system worked out for the North Korean region shouldn't be a copy of the one now existing in South Korea (the same goes for social transfers). The System Integration stage should be divided in two parts: in the first part, taxation should be as low and easy as possible; while rigid administrative control, the law and the punishment system being as strong as possible; later and during the second part, taxation should become more complex in order to adopt a tax system, step-by-step, up to the national level at the beginning of Nation Building stage.
- Deficit of high quality human capital will be the main problem. In addition, it will be necessary to prepare a large number of personnel in order to control transportation & communications facilities, for business, to staff the social and public functions in North Korea. Therefore, North Korean labor personnel, as well as local and foreign business persons, will have to take into account these limitation factors.

Because of the realization of joint economic, legal and administrative measures, it would be possible to limit and prevent expansion of a shadow economy during the System Integration stage and to significantly reduce the scale of a shadow economy during the Nation Building stage.

(f) Costs for Russia

As was mentioned above, many factors will influence Russia's relations with a unified Korea. But mainly the costs for Russia's business activity on the Korean Peninsula during the Korean Unification will depend on the development of the North Korean economy. This paper proceeds from the forecast of a slow, but positive realization of reforms and economic development in the North Korean region during the System Integration stage. (At the end of System Integration stage, the GNP per capita in North Korean Region could be about 40% of the level of the South Korean one.)

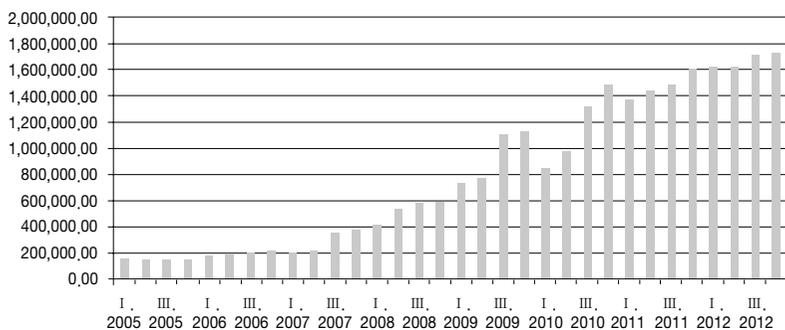
Russia's business activity will greatly depend on North's economic situation. Negative trends, such as a shadow economy, corruption, inability of businessmen and consumers to pay for electricity, transport fees, etc. will be serious obstacles for realization of Russia's huge transportation and energy projects.

Because North Korea isn't now an important trade partner for Russia and its many factories, power stations and industrial facilities were constructed with the support of the Soviet Union several decades ago, the Russian public and private business will have to resume their activities in the North from the zero level. In this case, it will be necessary to

initiate or to resume rather expansive feasibility studies of a number industrial and infrastructure projects. Also it will be necessary for Russian business institutions to educate local workers and personnel.

South Korean investment in Russia will be decreasing during this stage, because of growing number of investment projects in North Korea. Negative consequences of this trend will be important for some Russian regions, especially the Russian Far East. During last decade, one could see a rapid growth of direct investment from South Korea to Russia.

Figure X-1 Russia's Economy Growth (2005-2012)



Because Russia will intend to be integrated into the NEA regional infrastructure network, development of border transport facilities, realization of some infrastructure projects, and modernization of old ports and other transport facilities, will be started or resumed. It will take significant government and private investment at this stage. Under these conditions, financial resources will be used not only to realize

expensive transportation and energy projects, but also to create logistic, information centers integrated with railways, roads, seaports, etc.

At this stage, finalizing the legal basis and institutional infrastructure for upgrading bilateral economic relations will be an important issue to increase development of economic, trade and investment exchanges between Russia and a unified Korea.

At this stage of Korea unification, the costs will be significant for Russia, because of financial expenditures on the realization of a number of long-term and expensive infrastructure projects. In this case, at least three huge infrastructure projects maybe mentioned.

First, Russia will be able to take part in the modernization of the North Korea railways between Trans-Siberia and South Korean railways.

Second, pipelines will have a chance to be constructed to supply the unified Korea with oil and gas.

Third, an electricity network system could be constructed to export electricity from electric power stations in the Russian Far East to the unified Korea.

In addition, it is important to take into account that realization of all of these projects will be depend on an adequate base of Korean power stations' capabilities. Accordingly, Russia will have to be involved in modernization of the energy industry in the North part of Korea.

In sum, realization of all of these projects will cost Russia billions of U.S. dollars.

(3) Nation Building stage

It is possible to expect that during the Nation Building stage costs spent on the North Korean region's modernization will be moderate. Probably the North Korean region will need some special attention, but the market mechanism will start to work more actively at that time. For Russia, there will be no significant costs at this stage, because nearly all of infrastructure projects will be realized, and because the relationship between the two countries Russia and a unified Korea will be mainly be market based.

So, the cost and risks for the Russian side at this stage will be stabilized or even decreased so long as the unified Korea, as Russia's economic partner, will be predictable and open as a regional and global market.

b. Benefits

(1) Division Dissolving Stage

At this stage Russia will try to achieve several gains by doing the following:

- clearing up new demands as a result of new types of life and new business activities in the North Korea region; Russian business will have a chance to supply the new markets with consumer and capital goods. Although traditional Russia's exports to South Korea will be expanding moderately, Russia's exports to North Korea will be increasing more intensively;

- minimizing business risks and costs by cooperating with Korean partners and regional powers partners;
- establishing financial institutions to support investment projects in the unified Korea. It will be a period of future negotiations and investment for key actors—public and private firms, including Russian TNC.

Meanwhile, even at this stage, Russia will benefit from the North Korea transition and the beginning of Korea unification. Export of goods and services, as well as capital, will be increased as a result of growing demand in some of North Korea's regions and industries. For example, it is possible to forecast that agriculture will intensively increase. Accordingly, Russian companies will be able to expand exports of fertilizer on a large scale to supply growing demand. At the same time, agriculture will demand such goods as wood and wooden products. In order to be able to supply the Korean domestic market with such kind of goods, North Korean labor and South Korean investment resources will be used in Siberia and the Russian Far East regions. That means that triangular cooperation could be organized and rapidly increased during this period, with some other industries possibly being involved in this kind of process.

(2) System Integration and National Building Stage

During the System Integration and National Building Stages, the benefits will be of three kinds:

- resource base enlargement: cheap labor force and better natural resources;
- new markets demand expansion;
- new logistic and hub opportunities.

As mentioned above in the part devoted to costs, cheap labor force and new markets for consumer goods, there are two opposite factors of economic development. It seems that during the System Integration stage, cheap labor force will play the main and important role in economic development. South Korean firms will organize industrial production in the North Korean region to reduce production costs and to upgrade the South's domestic economic infrastructure in favor of high tech production. But during the Nation Building stage, the advantages of the North's new markets' growing demands will be used for wide-scale economic development.

Such scenario will be of profitable for traditional industries (for example, textile, garment and foot production) as well as for the South Korean knowledge economy.

About five-seven years of System Integration could be used for the probe-tested model of cooperation between South and North Korea. During this period, the number of production centers, like the Kaesong Industrial Complex will increase.

The benefit of a new or enlarged domestic market for Russian exporters and investors will be important during the System Dissolving stage years, when construction projects will be realized in North Korea with the

demand for Russian construction goods and some capital goods will be expanding. Importantly, during the System Integration stage, demand will continue to increase for fertilizers producers, agricultural equipment, medical equipment and other kinds of capital goods needed for infrastructure projects. In addition, demand for different kinds of energy supply will constantly increase.

This may be illustrated by the following example: In 2011, less than one third of the ROK domestic car production was used for domestic consumption (1,211 thousands cars). That amount would steadily grow during the System Integration stage. The growth rate will depend on several factors: economic development, small and medium-sized enterprise expansion, wealth distribution, and credit programs for the North Korean population.

It is possible to compare the situation in the North of a unified Korea with that of Romania. The country was one of the least developed among the Eastern European countries (and still it is). In 1990, agriculture's value add was nearly 28% of the GDP with 34% of the female and 25% of the male population being engaged in agriculture. In other words, the situation was comparable to the one in present-day North Korea.

In 1991 Romania, there were 63 passenger cars per 1,000 inhabitants, in 2010 there were 202 passenger cars. (By comparison: In 2009, Korea there were 267 passenger cars per 1,000 inhabitants in South Korea)⁶⁰⁾

⁶⁰⁾-Statistics: *World Bank, Eurostat*, <http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Stock_of_vehicles_at_regional_level>.

Today, the number of cars and lorries are very insignificant in North Korea, but it is possible that situation in North Korea will be comparable with situation in Romania. It will mean that the domestic car production in the unified Korea may grow at approximately 10% during the beginning of the System Integration stage; at the end of Nation Building stage, there may be no significant difference between two parts of the unified Korea.

Of course, the quality of the North and South car markets will be different. Thus, secondhand cars (mainly from the South) will occupy a significant part of North's car market. In turn, this trend will stimulate new cars sales in South Korea.

In any case, modernization of the North Korean economy will stimulate growing demand for Russian oil. Russia's oil exports to the ROK and DPRK in 2010 reached eight to nine million tons. In a unified Korea, industrial and consumer demand will stimulate oil and oil products consumption on a large scale. As a result, the total oil imports of a unified Korea from Russia could be increased to 25-35 million tons.

Now Russia supplies the ROK with 2.2 billion cubic meters (1.6 million tons) of LNG.⁶¹⁾ Because there is a good chance that in the near future Russia gas exports will be liberalized, not only Russia's main gas producer GAZPROM, but also other companies will be able to export gas from Russia to Korea at appropriate prices. In such a case, total natural gas and LNG exports from Russia to a unified Korea could be increased at

⁶¹⁾-A.G. Korzhubayev, I.I. Melamed, and L.V. Eder, "Perspectivy energeticheskogo sotrudnichestva Rossii s Yuzhnoi Korei (Prospects for Energy Cooperation between Russia and South Korea)," *Ecological Bulletin of Russia*, No. 4, (2012) p. 13.

least in ten to twelve times. In addition, Russia will have an opportunity to increase coal exports to the Korean Peninsula from about 8.5 million tons of coal in 2010 to 25 to 35 million tons.

Korean unification will lead to price decreases for Korean exports to Russia, because of factors such as: low labor costs in the North, improvement of communications, transportation and logistics facilities (new roads, railroads, etc.), modernization of energy (natural gas from Russia and nuclear electric powers) as well as import of electricity from the Russian Far East; and finally—the growing total efficiency of Korean industry.

At this stage, Russia's economic relations with Korea would be radically intensified.

The advantage of North Korea will be in low labor costs and it would be an important argument in the triangular cooperation of North and South Korean and Russian firms in a unified Korea as well as in Siberia and the Russian Far East.

Accordingly, it will be possible for the Russians to increase in the most prominent areas of business activity:

- 1) Infrastructure (roads, railroads, ports etc.): Some of these projects would be realized at bilateral levels, with some others as a result of international projects (with participants of other regional powers and Asia, as well as global economic organizations).
- 2) Electric power stations and electricity network and distribution system: Russian firms already have experience in the construction

of electric power stations in North Korea. In addition, it would also be possible for Russia to take part in construction of nuclear power stations.

- 3) Common interests in the development of the energy industry and improvement of electricity consumption (as well as other aspects of green growth) will stimulate the two countries' joint research programs. Medicine, the space industry, marine resources and nano-technology are among other areas of bilateral cooperation.
- 4) Estimates and forecasts for Russia should take into account Russian think tanks' analyzes of the transformation process in Russia, and in other CIS and Eastern European countries, including Eastern Germany. The last could be valued with great interest, because Russian experts had other political and Weltanschauung (worldview) adjustments, more than German experts. During the German unification, the political point of view dominated, while economic logic was pulled away to a middle distance. That caused economic losses, which could have been avoided.
- 5) Russian companies' efficient investment projects and benefits will depend to a large scale on the investment climate in North Korea at the stage of unification (transparency, corruption, competition, scale and type of privatization). As the business climate improves, the number of Russian business success stories will increase.

Benefits for Russian firms will be increase and risks will decrease:

if international organizations and/or pull of states invest in the regional infrastructure (roads, railroads and so on); and if South Korean firms increase business activities by establishing joint venture companies in Russia or with Russian firms in North Korea.

Benefits of Russia-Korea trade exchanges will be increasing as far as legal and administration bilateral cooperation improves. For example, it will be possible to put an end to criminal fisheries in the Russian Far East.

Russia will intend to raise its focus on the development of Siberia and the Russian Far East and to put economic development of the Far East on a healthier basis. In this case, it is necessary to stress that for Russian consumers will benefit from the competition between Chinese and Korean producers.

At the same time, Korea unification can increase competition between importers from NEA countries for Russia exports of goods and services. As a result, it would give Russia a good chance to intensify economic ties with NEA, including a unified Korea and to develop economic relations within the region, as well as with partners in other parts of the world.

This means that positive trends on the Korean Peninsula will create an environment conducive to stability and multinational cooperation in Northeast Asia.

The state gas company, Gazprom, and the leading state oil company, Rosneft, declared East Siberia and the Russian Far East would be their primary areas of business activity as new strategic energy export bases

and the NEA as a new prominent export market. Construction of a modern energy infrastructure and new production facilities on the Korean Peninsula will support business expansion of Russian energy companies towards the Pacific region.

That means that realization of the infrastructure (construction of railways, pipelines and electricity network) project in a unified Korea by Russian companies will make it possible to transform investment costs into long-term benefits.

Thus, no task is more important at the stage of Korea unification than making a final draft of a trade and investment agreement between Russia and the unified Korea. That will make it possible to create the basis for a long-term, bilateral partnership.

Successful realization of strategic Russia's business projects in North Korea will stimulate cooperation between Russian companies and corporations from the southern part of the unified Korea. Both Russia and the unified Korea would be interested in minimalizing development costs. In this case, some strategic issues, such as exchanges in R&D and in high-tech industries (aero-space, medical equipment etc.) have good chances to be formalized at this stage. That would make it possible to create a bilateral long-run strategy—from cooperation in realizing innovation programs and the development of an education infrastructure to the integration in innovation research and production. This trend would upgrade economic relations between Russia and the unified Korea and help bring to Russia benefits at home and from abroad.

One of the important issues from the impact of Korea unification

on Russia will be growing Russia-Korea economic integration. Realization of economic projects with Russian participants on the Korean Peninsula will be accompanied with joint Russia-Korean industrial, agricultural, infrastructural and some other projects initiated in Russia's regions—first of all in Siberia and the Russian Far East. Financial, labor (including North Korean labor) and technical resources from Korea could be involved in these projects' realization, while fuel, mineral resources, semi-finished and final goods could be realized in both Russia and the unified Korea, as well as in NEA and the other Pacific countries.

Moreover, Russian-Korean projects could be supplemented with participants from other countries. All of these trends will make it possible to transfer for step-by-step economic cooperation between Russia and the unified Korea into multinational regional cooperation that will be an element of regional economic integration in NEA. These trends will create (in spite of some difficulties) positive scenarios for Russia's economic prospects in NEA and the Pacific region.

3. Concluding Remarks

South Korea will be the main driver of the Korea unification process. But it would be hardly possible to say that North Korean side can play only a passive role. As far as the quality of life in the North Korean region, a growing number of businessmen, increased by local public groups, will support driving forces—or even begin to play more active roles—in the modernization and unification process.

Russia, as well as other regional powers, will also have opportunities to play roles as supporters of the driving forces in the unified Korea. Development (with Russia's support) of transportation, industrial and social infrastructures will be important factors for the establishment of a unified economy on the Korean Peninsula, integrated into the NE Asian regional economy. This process will be in Russia's favor as well as in the unified Korea's interests.

Stability on the Korea Peninsula and in the NEA region as a result of Korea unification will improve Russia's security. A unified Korea as a friendly political partner will give Russia an opportunity to realize a more efficient foreign policy globally and in the Pacific area. Economically, a unified Korea will be prominent in Russia's foreign trade and as an investment partner. Finally, it means that the unification of Korea will benefit the long-term Russian interests on the Korea Peninsula, in NEA, and globally.

XI

The Costs and Benefits of Korean Unification for Japan

The unification of Korea itself is mainly a crucial subject for the Korean people. However, the Japanese would also have to think about what role it could play and what expectations it could obtain in the Korean unification process. There are at least two factors that Japan would have to think about in the Korean unification process. First of all, Japan would have to take into consideration its past colonial rule over the Korean Peninsula. Japan would need to provide economic cooperation and other necessary measures along with reconciliation of historical issues. Second, Japan would engage in the Korean unification process not only out of Korean interests but also for its own national interests. While Korean unification should be carried out primarily for the interests of the Korean people, Japan would have to calculate its political, social and economic interests when engaging in the Korean unification process.

This paper analyzes potential costs and benefits based on an analytical model for the costs and benefits of Korean unification. The comprehensive model consists of three stages of unification (Division Dissolving, System Integration and Nation Building) and focuses on three areas (political, social and economic).⁶²⁾ First, Section 2 will explore the political and

⁶²⁾-For an understanding of the comprehensive model, see Kyuroon Kim *et al.*, *Analytical*

social costs and benefits of Korean unification from the Japanese perspectives. This section will deal with what costs Japan would incur to deal with the nuclear problem, the abduction issue, and the human security issue; and what benefits it could obtain in these areas from the Korean unification process. Next, Section 3 will also explore the economic costs and benefits of the unification for Japan. In this section, an economic cooperation package from Japan to North Korea, as part of the settlement of Japan-DPRK normalization, will be regarded as the main cost to Japan, while potential economic benefits for Japan by participating in the process of unification will be discussed. Finally, a brief conclusion follows.

1. Non-Economic Costs and Benefits of the Unification for Japan

a. Political and Social Costs

(1) Division Dissolving Stage

(a) Security sector: North Korea's nuclear weapons programs

The question of weapons of mass destruction (WMD), including nuclear weapons issues, the missile program, and the biochemical weapons program, is probably the most important security concern not only for both Koreas but also for the countries in Northeast Asia. Therefore,

Model for Unification Cost and Benefit (in Korean) (Seoul: Korea Institute for National Unification, 2012).

the control of WMD would be the central political issue in the Division Dissolving stage of the unification. Also, the WMD issue would heavily influence the unification process in economic and social areas as well. In particular, the denuclearization of the Korean Peninsula merits primary attention, since it is not only a Korean issue but also an international problem. While South and North Korea would have to deal with most of the actual tasks of controlling and abolishing WMD on the Korean Peninsula during the unification process, the United States and China would play critically important roles in promoting the denuclearization process. On the other hand, Japan would not play a major role in the security sector, but would economically and politically support denuclearization and stabilization of the Korean Peninsula.

The Six Party Talks have already produced several important joint statements on the question of the nuclear issue, as well as agreements that will be a basis for WMD control on the Korean Peninsula from the Division Dissolving stage through the Systems Integration and Nation Building stages. According to the Joint statements, the members of the Six Party Talks, including Japan, promised energy assistance to North Korea as an inducement to end its nuclear programs. In the Joint Statement of 19 September 2005, first, the member countries stated a willingness to provide energy assistance as well as agreeing to encourage economic cooperation in the areas of energy, trade and investment, through bilateral and/or multilateral means.⁶³⁾ Also, the joint statement of 3 October 2007

⁶³⁾-Ministry of Foreign Affairs of Japan, "Joint Statement of the Fourth Round of the Six Party Talks," September 19, 2005, <http://www.mofa.go.jp/region/asia-paci/n_korea/6party/joint0509.html>.

specified that economic, energy, and humanitarian assistance to the DPRK would be provided up to the equivalent of one million tons of heavy fuel oil in exchange for the dismantling of its nuclear weapons programs.⁶⁴⁾

Although Japan once expressed its position that it would not participate in economic and energy assistance to North Korea until the abduction issue of Japanese citizens has been satisfactorily resolved, Japan would be ready to offer economic and energy aid to the DPRK as stipulated in the agreements of the Six Party talks once the actual unification process begins, while taking into consideration the prospect of resolution of the abduction issue. In the Division Dissolving stage's security area, Japan would participate in economic and technical assistance to support the control of WMD on the Korean Peninsula, since it is an urgent security challenge not only for both Koreas but also for the United State, China, Russia and Japan. Most of the actual tasks, including denuclearization, relocation and contaminated area control, will be pursued by the South Korean government as well as by the neighboring powers but mainly by the United States, China and the United Nations. At this stage, Japan would financially and technically support the process of WMD control.

(b) Political sector: The abduction issue

The abduction issue has been one of the most critical and politically sensitive issues in Japan's policy toward North Korea. During the summit

⁶⁴⁾-Ministry of Foreign Affairs of Japan, "Second-Phase Actions for the Implementation of the Joint Statement," October 3, 2007, <http://www.mofa.go.jp/region/asia-paci/n_korea/6party/action0710.html>.

meeting with Prime Minister Koizumi on September 17, 2002, Chairman Kim Jong-il surprisingly admitted that North Korea kidnapped 13 Japanese nationals during the late 1970s and early 1980s and claimed that eight of them had died. The Japanese government and public have been doubtful about the evidence North Korea has provided because of the inconsistency and deceptiveness of the proof offered.⁶⁵⁾ Therefore, while North Korea has claimed that it submitted all evidence, Japan's abduction policy is determined by the premise that all the remaining abductees are alive. It is actually hard to verify the real situation of the abductees in North Korea. Thus, it is considered that the exact number of abductees, as well as the truth of the victims' condition, will not fully be discovered unless significant changes within the North Korean regime occur.⁶⁶⁾ Once the Korean unification process commences, there may be more opportunities to resolve the abduction issue between Japan and a unified Korea.

In the Division Dissolving stage, Japan will engage in the following three urgent measures.⁶⁷⁾ First, the Japanese government would vigorously pursue information on the abductees as well as Japanese

⁶⁵⁾-For more detail analysis, see Emma Chanlett-Avery, "North Korea's Adduction of Japanese Citizens and the Six-Party Talks," CRS Report for Congress, March 19, 2008, pp. 2~3.

⁶⁶⁾-Mihoko Matsubara, "Who's Missing? Who Cares: The Issue of Abduction by North Korea," *Stanford Journal of East Asian Affairs*, (Summer 2011), p. 80.

⁶⁷⁾-Rebuild Japan Initiative Foundation, "Kitachosen Hokai (Collapse of North Korea)," *Nihon Saiaku no Scenario: Kokonotsu no Shikaku (The Japan's Worst Case Scenario: Nine Blind Spots)* (Tokyo: Shinchosha, 2013), p. 159. Although the report presumes the collapse of North Korea, Japan would pursue similar measures in Division Dissolving stage.

citizens on the Korean Peninsula. Secondly, it would ensure the security of Japanese residents in Korea. Thirdly, Japan would ensure the security of the abductees in North Korea. Former Prime Minister Naoto Kan once expressed the willingness to discuss with the ROK government about the deployment of Japanese Self Defense Forces to the Korean Peninsula during any Korean crisis to protect Japanese citizens including the Japanese abductees when he had a meeting with the Families of Victims Kidnapped by North Korea on December 10, 2010.⁶⁸⁾ Although the ROK government and Korean media negatively reacted to Prime Minister Kan's statement, Japan would have to pursue close coordination and cooperation with the United States, as well as the ROK, in protecting Japanese citizens in Korea, especially in the event of possible emergencies on the Korean Peninsula.

(c) Humanitarian sector: Human security issue

Japan has promoted diplomacy with an emphasis on human security perspectives as a new concept for international cooperation.⁶⁹⁾ The basic idea is based upon the premise that the traditional concept of “state security” or “national security” alone, which is primarily designed to protect the national boundaries and the people within those boundaries,

⁶⁸⁾-“Korea Rejects Self Defense Forces’ Rescue Operation of Japanese Citizens during Emergencies in the Korean Peninsula“ (Jieitai no Fojin Kyushutsu, Kankoku ni Kyohikan—Chosen hanto yuji), *Yomiuri Shimbun*, December 12, 2010, <<http://www.yomiuri.co.jp/featur/e/20080115-899562/news/20101212-OYT1T00248.htm>>.

⁶⁹⁾-This paragraph owes much to the following document. Ministry of Foreign Affairs of Japan, “The Trust Fund for Human Security: For the ‘Human-centered’ 21st Century,” August 2009, <http://www.mofa.go.jp/policy/human_secu/t_fund21.pdf>.

is not sufficient in the modern era of globalization. Human security aims to protect people from critical and pervasive threats to human lives and enhance human fulfillment. For these purposes, human security tries to integrate and strengthen initiatives that emphasize “human-centered” rather than “state-centered” perspectives. The concept of human security has been one of the main pillars of Japanese foreign policy since the late 1990s. Based on this idea, Japan has been involved in various human security initiatives, including the establishment of the Commission of Human Security, development of the human security concept, and creation of human security networks that have provided support for humanitarian assistance, environmental preservation and sustainable development and related concerns within developing countries.

While there are many human security needs with regard to North Korea, such as humanitarian assistance, taking care of refugees, and defectors, Japan has not been engaged in these problems with North Korea. As a matter of fact, Japan has virtually separated its human security diplomacy from the North Korean problem, and has rarely considered humanitarian issues in North Korea from human security perspectives.⁷⁰⁾ On December 2, 2003, at a symposium on current security issues co-organized by the Asahi Shimbun Company and the Ministry of Foreign Affairs of Japan, a member of House of Councilor,

⁷⁰⁾-See Sachio Nakato, “Hokuto Asia no Ningen no Anzen Hoshō-Nihon no Tai Kitachosen Seisaku wo Megutte (Human Security in Northeast Asia: Japanese Policy Toward North Korea),” Shiro Okubo (ed.), *Globalization to Ningen no Anzenhoshō* (Globalization and Human Security) (Tokyo: Nihon Hyoron Sha, 2007), pp. 217-238.

Keizo Takemi, who has also promoted the concept of human security as one of the major policy directions of Japanese diplomacy, recognized that there are many humanitarian issues in North Korea. He also pointed out that the North Korean nuclear development has become a threat to Japan and its citizens, and therefore concluded that it is actually difficult for the Japanese government to adopt a human security approach towards North Korea, especially when it is closely related to Japan's national security.⁷¹⁾ In other words, when national security issues are at the forefront of a state's concerns, it is difficult to pursue the human security idea alone .

As the unification process begins by eliminating North Korean security threats to Japan, it is likely for Japan to engage North Korea more positively from a human security perspective as well. In the Division Dissolving stage, the ROK government will need to provide for welfare costs, including to socially disadvantaged people in North Korea plus emergency medical care, urgent protection of North Korean cultural and historical heritage; and treatment in the humanitarian sector, such as separated families and kidnapped persons. Especially during the Division Dissolving stage, Japan will be ready to provide various emergency measures for people in North Korea as well as humanitarian support from human security perspectives. These emergency measures would include medical care, nutrition, infectious disease control, environmental protection and other needs for people in North Korea.

⁷¹⁾ "Current Security Issues," (Anzenhoshō no Konnichiteki Kadai), *Asahi Shimbun*, December 2, 2003, <<http://www.asahi.com/sympo/anzen/>>.

(2) System Integration Stage

(a) North Korea's nuclear weapons program

In the System Integration stage, while the ROK government and the international society would continue to work on denuclearization as well as the control and destruction of the biochemical weapons on the Korean Peninsula, Japan would also continue to support the control and removal of WMD from the Korean Peninsula during the Division Dissolving stage. Beginning with the System Integration stage, the ROK government would start to engage in military facility transformation of the DPRK and reeducate or retrain discharged soldiers in the North. Also, border control, public safety, including refugees' camps, would be established and maintained. While the ROK government would mainly have to take care of all these tasks and necessarily spend for these emergency expenditures, Japan along with other countries in the Six Party talks would financially support the ROK government in dealing with these issues.

(b) The abduction issue

Through the System Integration and possibly Nation Building stages, Japan would further cooperate with a unified Korean government to resolve the abduction issue. Currently, Japan remains committed to its three conditions, which must be met to resolve the issue of the Japanese abducted by North Korea. Prime Minister Shinzo Abe clearly defines the requirements of resolving the abduction issue as ① all survivors' immediate return to Japan, ② disclosure of the truth about

the missing victims and ③ extradition of the perpetrators to Japan.⁷²⁾ It could be a long process to achieve all the above-mentioned Japanese government objectives. However, Japan will be ready to pay for all the necessary costs to solve the abduction issue and sees this unification process, especially during the Systems Integration stage, as an important opportunity to solve the abduction issues if a unified Korea cooperates with Japan.

(c) Diplomatic issue: Normalization talks

During the Systems Integration stage, Japan would make utmost efforts to discuss with a unified Korea the issue of normalization with the DPRK. At this stage, and through the Division Dissolving stage, both South and North Korean governments together declare the official unification. Therefore, it is likely that Japan would need to discuss the concerned issues with a unified Korea, even with regard to its normalization with the DPRK. From Japan's perspectives, as the nuclear and missile issues and the abduction issues are resolved in the System Integration stage, Japan would be ready to normalize with the DPRK. In this stage, Japan and a unified Korea will intensively discuss the question of settlement for the unfortunate past between Japan and Korea during the colonial period. Japan and a unified Korea might possibly engage in other historical and territory issues, including comfort women and the Takeshima/Dokkdo issue. If Japan and a unified Korea decide

⁷²⁾ "Abe sets 3 conditions in policy to resolve abduction issue with N. Korea," *Asahi Shimbun*, January 15, 2013, <http://ajw.asahi.com/article/behind_news/politics/AJ201301150037>.

to discuss these issues, however, it might take some more time for Japan and a unified Korea to proceed with normalization talks.

(d) Human security issue

From the Systems Integration to the Nation Building stages, the ROK government will need to spend several social expenditures, mainly for North Korean citizens' adaptation costs. Japan would continue to support the welfare sector, the health and medical care sector, and the humanitarian sector from human security perspectives. Japan will also be able to provide project-based assistance to NGOs and local authorities during the Systems Integration stage. South Korean NGOs and international NGOs would play an important role in taking care of social issues in this process. As civil society in a unified Korea develops through the unification process in social areas, not only inter-government assistance, such as the ODA, but also grass-root level support would be possible for the northern part of the Korean Peninsula.⁷³⁾

(3) Nation Building Stage

(a) Security sector

In the Nation Building stage, while a unified Korea would domestically establish a new security system under the integrated military organization, a new security system in Northeast Asia might be discussed among

⁷³⁾Japan has engaged in many project based assistance to NGOs as well as local authorities as part of its human security diplomacy. See for example, Ministry of Foreign Affairs of Japan, "Grant Assistance for Grass-Roots Human Security Projects," <http://www.iraq.emb-japan.go.jp/documents/grassroote_infomation.pdf>.

the participants in the Six Party talks when Korea unifies. This would happen if the United States, China, Russia, a unified Korea and Japan agree on establishing a peace mechanism to relieve tension and manage various security issues in the overall Northeast Asian context.⁷⁴⁾ The present framework of the Six Party talks mainly focuses on the North Korean nuclear issue. The new security system among the Six Party talks participants, however, would need to cover not only the nuclear issues but also to address traditional and non-traditional regional security issues.⁷⁵⁾ However, while the establishment of a multilateral security institution in Northeast Asia may be pursued, at least in the foreseeable future, Japan would not hope that a new security institution would replace U.S. bilateral security arrangements with Japan and South Korea.⁷⁶⁾ Therefore, Japan would try to maintain its alliance with the United State while participating in the rule-making process of establishing a multilateral security framework in Northeast Asia.

⁷⁴⁾ Experts and government officials have advocated a new security structure in Northeast Asia and Korean Unification would be another momentum to discuss about a creation of security mechanism in the region. See for example, Christopher R. Hill, "The Six Party Process: Progress and Perils in North Korea's Denuclearization," Assistance Secretary for Bureau of East Asia and Pacific Affairs, Testimony before House Committee on Foreign Affairs Subcommittee on Asia, the Pacific and the Global Environment and Subcommittee on Terrorism, Nonproliferation, and Trade, October 25, 2007, <<http://2001-2009.state.gov/p/eap/rls/rm/2007/94204.htm>>.

⁷⁵⁾ For a critical assessment on a multilateral security mechanism in Northeast Asia, see for example Scott Snyder, "Prospect for a Northeast Asian Security Framework," Council on Foreign Relations, April, 2009, <<http://www.cfr.org/world/prospects-northeast-asia-security-framework/p19263>>.

⁷⁶⁾ This has been a mainstream perspective on multilateral security framework in Northeast Asia both in Japan and the United States. See for example, Joseph S. Nye, "The Case for Deep Engagement," *Foreign Affairs*, Vol. 74, No. 4 (July 1995), pp. 90-102.

(b) Diplomatic sector⁷⁷⁾

In the Nation Building stage, Japan would be concerned if anti-Japan sentiment in a unified Korea starts to increase, especially on the question of historical and territorial issues. Both South and North Korea view that Japan has never satisfyingly apologized and has not taken full responsibility for its past colonial rule over the Korean Peninsula. While Japan-South Korea relations have developed in some areas, such as economic and cultural exchanges, anti-Japan feelings are deeply rooted in Korean politics with regard to historical problems. For example, it was reported on April 24, 2013 in *The Japan Times* that Prime Minister Shinzo Abe's remarks on Japan's aggression triggered anger in South Korea.⁷⁸⁾ The Japanese government's behavior on historical and territorial issues can inspire Korean nationalism based on anti-Japan feelings and such anti-Japanese feelings boost pro-unification sentiment among the Koreans.⁷⁹⁾ If Korean unification is promoted through anti-Japan sentiment, it would not be a desirable course for Japan. Therefore, Japan would need to take actions to prevent a unified Korea from becoming an anti-Japan nation. In order to do so, Japan would need to engage

⁷⁷⁾-Some of the basic argument in this section owes much to my previous work on Japan's position on the Korean unification. See Sachio Nakato, "Costs and Benefits of Korean Unification for Japan: Political and Economic Perspectives," in Kyuryoon Kim and Jae-Jeok Park (eds.), *Korean Peninsula Division/ Unification: From the International Perspective*, pp. 154-157.

⁷⁸⁾-Reiji Yoshida, "Abe War Comment Roils S. Korean Media," *The Japan Times*, April 24, 2013, <<http://www.japantimes.co.jp/news/2013/04/24/national/abe-war-comment-roils-s-korean-media/#.UlzE16SChdg>>.

⁷⁹⁾-Joungwon Alexander Kim and Myungshin Hong, "The Koreans, Unification, and the Great Powers," *Current History* (April 2006), p. 189.

in solving historical issues with a unified Korea in the Nation Building stage.

Japan would also try to prevent a unified Korea from falling under Chinese influence. China is now the largest trade partner both for South and North Korea. It is possible that a unified Korea would not only promote Korea's economic development in the long run, but also accelerate economic integration especially with the three northeastern provinces in China through economic cooperation between China and a unified Korea. It could eventually expand opportunities for imports from China as the purchasing power of a unified Korea increases. As a result, it seems logical to assume that economic relations between China and a unified Korea would deepen even further. One of the hidden agendas for Japan is to promote a FTA with a unified Korea, which would be considered an attempt to embrace Korea into its political and economic sphere—or at least to balance Chinese influence over Korea. Moreover, if a unified Korea makes a strategic turn towards China during the Nation Building stage, it would be a serious security concern for Japan in the long run. Therefore, Japan would try to emphasize the importance of U.S.-ROK-Japan trilateral cooperation and hope that a unified Korea would maintain a security alliance with the United States.⁸⁰⁾

⁸⁰⁾—It could be a controversial issue within a unified Korea in the future. Needless to say, Japan should not and cannot intervene in the diplomatic direction of a unified Korea.

b. Political and Social Benefits

(1) Division Dissolving Stage

(a) Benefits of WMD control for security environment

The elimination of weapons of mass destruction will be a huge political as well as security benefit for Japan. As the threat of weapons of mass destruction is gradually eliminated in the unification process during the Division Dissolving stage, Japan will definitely enjoy a more secure environment. Japan has been seriously concerned about North Korea's increasingly sophisticated nuclear weapons program, along with a potential military confrontation with China over maritime disputes. North Korea launched a long-range rocket in December 2012 and conducted its third nuclear test in February 2013. While Japan has been concerned more about the Nodong medium-range ballistic missiles that have already been deployed, Japan has also raised concern that North Korea continues to develop more advanced and longer-range missiles that could carry nuclear warheads. Japan's annual 2013 defense paper warns that North Korea has developed into a more real and imminent problem for the international community.⁸¹⁾ If such military concerns are reduced through the control of WMD on the Korean Peninsula during the Division Dissolving stage, it would mark the beginning of an improved security environment for Japan and other Northeast Asian countries.

⁸¹⁾-Hiroko Tabuchi, "Japan Warns of China and North Korea as Security Threat," *The New York Times*, July 9, 2013, <http://www.nytimes.com/2013/07/10/world/asia/japan-warns-of-threats-from-china-and-north-korea.html?_r=0>.

(b) Social and cultural exchanges

As the unification process proceeds from the Division Dissolving to the System Integration and on to the Nation Building stages, Japan would benefit from cultural and human exchanges between Japan and a unified Korea. Since 2006, through its North Korean economic sanctions, Japan has banned the entry of North Korean nationals into Japan as well as North Korean ships into Japanese ports, and has restricted Japanese citizens from visiting North Korea. As a result, there is a fairly limited flow of people between Japan and North Korea. Accordingly, it is three times more expensive to visit North Korea than South Korea.⁸²⁾ As various security and political obstacles are gradually reduced from the Division Dissolving stage, people from Japan would start to visit North Korea and it would become possible for people in North Korea to visit Japan. As a result, even from the Division Dissolving stage, cultural and social exchanges, including tourism, academic and sports exchanges, would gradually start to develop between Japan and North Korea.

(2) System Integration Stage

(a) Diplomatic normalization

From the System Integration stage to the Nation Building stage, in the security and political sectors, the question of diplomatic normalization between Japan and a unified Korea would be promoted

⁸²⁾ There is no direct air flight between Japan and the DPRK. Although the ferry called *Mangyongbong-92* used to trip between Wonsan and Niigata, but the entry of ship to Japanese ports has been suspended after North Korea's missile and nuclear testing in 2006.

and may possibly be achieved. Japan has made it clear that it would pursue normalization with North Korea based on the Japan-DPRK Pyongyang Declaration by comprehensively resolving the prominent issues of concern, including the abduction, nuclear, and missile issues, and thereby normalization would contribute to Northeast Asia's peace and stability.⁸³⁾ Therefore, as nuclear and missile issues, along with the abduction issue, are resolved, Japan and a unified Korea need to engage more in historical reconciliation which would lead to normalization between Japan and the DPRK. Since North Korea is virtually the last remaining country with which Japan has not established diplomatic relations, normalization with DPRK is going to be a diplomatic benefit for Japan. Actually, the failure of establishing diplomatic relations between Japan and the DPRK has been one of the crucial sources of hostile relations between the two countries. Therefore, normalization with North Korea would consequently create a more secure and improved political environment for Japan.

(b) Stability in North Korea's social sector

Through the three stages of the unification process, if Japan can successfully engage in humanitarian assistance, there would be several positive effects on Japan. First of all, Japan's positive support for humanitarian measures, including in the welfare, health and medical sectors, would promote the North Korean people's welfare and improve health and medical conditions in North Korea, during both the Division

⁸³⁾-Gaimusho, *Gaiko Seisho (Diplomatic Bluebook)* (2012), p. 36.

Dissolving and the System Integration stages. Especially in the System Integration stage, these measures would contribute to social stabilization and a smooth transition in the Korean Peninsula and such a stable unification process would certainly benefit Japan. Secondly, Japanese humanitarian support would also relieve the ROK government's economic burden, since welfare costs, social insurance and support for positive transitional dynamics would otherwise comprise huge costs for the South Korean government and people. Finally as a result, appropriate Japanese humanitarian involvement during the unification process of the Division Dissolving and the System Integration stages may start to contribute to creating a better image of Japan in both North and South Korea.

(3) Nation Building Stage

(a) Diplomatic sector: Further cooperation between Japan and a unified Korea

Especially in the Nation Building stage and after, further cooperation between Japan and a unified Korea would be expected if the unification of Korea is promoted under South Korean leadership, as is assumed in this project. It is likely that Japan would pursue much closer cooperative relations with a unified Korea if the political regime and economic system of the unified Korea were to be promoted under a liberal democracy and a market economy. The Japanese government considers that South Korea is the most important neighboring country with which it shares fundamental values, a democracy and a market economy, although Japan and South Korea have periodically had political disputes over historical

issues.⁸⁴⁾ In addition, South Korea is also an ally of the United States. Therefore, if the unification of the Korean Peninsula is advanced with the South Korean system and a unified Korea preserves its military alliance with the United States, it will be politically and strategically preferable and beneficial for Japan.

(b) Social sector: Benefits of the humanitarian issue in Japan

There would be several benefits for Japan in the humanitarian sector through the three stages of Korean unification. First, the abduction issue could be resolved, or at least many aspects of the three conditions to resolve the abduction issue (all survivors' immediate return to Japan, disclosure of the truth about the missing victims and, extradition of the perpetrators to Japan) could be resolved in the Nation Building stage. Second, hostile relations among Korean residents in Japan would be mitigated and reduced. The division of the Korean Peninsula has also created hostile relations between pro-North Korean and pro-South Korean organizations in Japan. However, the unification process of the Korean Peninsula, especially in the Nation Building stage, would promote and complete reconciliation and unification among Koreans in Japan. Third, at this stage, Japan and a unified Korea could practically deal with the issues concerning Japanese wives in the North. Some wives might return to Japan or there could be mutual visits between the Japanese wives and their families to and from Japan and a unified Korea along with humanitarian treatment for them.

⁸⁴⁾-*Ibid.*, p. 40.

2. Economic Costs and Benefits of the Unification for Japan

a. Economic Costs

The United States, China and South Korea have used economic and energy assistance to North Korea as an inducement to promote denuclearization of the Korean Peninsula or have provided North Korean citizens with humanitarian assistance, such as food and nutrition. However, it is also widely considered that one of the largest possible economic benefits to North Korea would come from Japan as a part of the reconciliation of historical tensions over its colonization of the Korean Peninsula.⁸⁵⁾ On September 17, 2002, Prime Minister Koizumi and Chairman Kim Jong-il agreed in the Pyongyang Declaration that Japan would provide North Korea with economic cooperation, since Japan caused tremendous damage to the people on the Korean Peninsula during its colonial rule from 1910-1945.⁸⁶⁾ Such an economic cooperation package—at a major cost to Japan—would be provided to a unified Korea over the three stages of the unification process.

In the Japan-DPRK Pyongyang Declaration, Japan and North Korea share “the recognition that, providing economic co-operation after the normalization of relations between Japanese and the DPRK, including

⁸⁵⁾ For comprehensive analysis on foreign assistance to North Korea, see for example Mark E. Manyin and Mary Beth Nikitin, “Foreign Assistance to North Korea,” CRS Report for Congress, June 11, 2013.

⁸⁶⁾ While North Korea once demanded the economic package be labeled as “reparations” or “compensations,” in the past negotiations, Japan suggested to use the word “economic cooperation” as it did in the 1965 Japan-South Korea normalization since Japan and Korea were technically never at war. North Korea dropped its demand and agreed to use the term “economic cooperation” at the summit.

granting aid, long-term loans with low interest rates, and such assistance as humanitarian assistance through international organizations, over a period of time deemed appropriate by both sides, and providing other loans and credits by such financial institutions as the Bank of Japan for International Co-operation with a view of supporting private economic activities, would be consistent with the spirit of this Declaration, and a commitment of the parties to sincerely discuss the specific scale and content of the economic co-operation during the normalization talks.”⁸⁷⁾

While the size of Japan’s economic cooperation package to North Korea has not been released and will later be determined through Japan-DPRK normalization talks, the amount of the economic package has occasionally been reported and estimated. When the Treaty on Basic Relations between Japan and the ROK was established in 1965, Japan agreed to provide South Korea with a total amount of \$800 million, which consisted of ① \$300 million as a grant, ② \$200 million as a loan at low interest, and ③ more than \$300 million as economic assistance by Japanese private banks.⁸⁸⁾ While the 1965 Japan-ROK normalization treaty is likely to be a base for determining the amount of economic cooperation, there are several appraisals of the current value of the economic cooperation of the Japan-South Korea basic treaty. It is reported that North Korea has demanded \$10 billion as a minimum

⁸⁷⁾-Ministry of Foreign Affairs of Japan, “Japan-DPRK Pyongyang Declaration,” September 17, 2002, <http://www.mofa.go.jp/region/asia-paci/n_korea/pmv0209/pyongyang.html>.

⁸⁸⁾-See for example, Mark E. Manyin, “North Korea-Japan Relations: The Normalization Talks and the Compensation/Reparations Issue,” CRS Report for Congress, September 12, 2002, and Mark E. Manyin, “Japan-North Korea Relations: Selected Issues,” CRS Report for Congress, November 26, 2003.

while Japanese officials were discussing an amount between \$5-10 billion.⁸⁹⁾ While the current value of the 1965 basic agreement is one of the important indicators, the size of the economic package would be decided not only by the adjusted value of the basic treaty but also by other political and humanitarian factors between Japan and North Korea.

(1) Division Dissolving Stage

As North Korea's nuclear issue and the abduction issue are resolved, the size and content of Japan's economic package will be discussed and actually be provided to North Korea after normalization through the unification process during the Division Dissolving, the System Integration and the Nation Building stages. Therefore, while a Japanese economic cooperation package depends on when Japan and the DPRK normalize, during the Division Dissolving and the System Integration stages, the Japanese economic cooperation package or other types of economic cooperation would be used for energy supplies, infrastructure investment, such as construction, transportation, communication, energy, environmental preservation and others to develop the North Korean economy.

Especially, in the Division Dissolving stage, economic stabilization of the Korean Peninsula would be the most important and urgent task for both the South and North Korean governments. The ROK government would spend emergency expenditures to stabilize the economy and both

⁸⁹⁾-Manyin, 2002, p. 3.

governments would need to coordinate their economic policies. Also, the ROK government and business organizations would start to investigate the Northern part of economy, including basic infrastructure, natural resources, transportation systems, and others. In this Division Dissolving stage, the ROK and DPRK governments would play major roles in the economic stabilization, with economic cooperation from Japan being used for the above policy purposes.

The negative impact of destabilization of the Korean economy in the Division Dissolving stage could also be of some costs for Japan. First, since the ROK government needs to focus on economic measures for market transformation of the North Korean economic system, including economic stabilization as well as the System Integration policies, Japanese exports to South Korea may be influenced by such a policy shift and emphasis in the Division Dissolving stage. Trade between Japan and South Korea might stagnate. In addition, Japanese investment in South Korea would also stagnate, or some of the Japanese investment might even be withdrawn from South Korea, if economic instability of the Northern part influences the economy of the Korean Peninsula as a whole.

(2) System Integration stage

From the System Integration stage, the major task for the ROK government is to promote the systems transformation of the North Korean economy and to integrate it into the South Korean market economy. The ROK government would conduct privatization as well as liberalization of the North Korean economy and to create a monetary union. Also,

it would spend government expenditures for infrastructure development and improvement, including in housing, city maintenance and construction, transportation and communication infrastructures, and power plant construction. In the System Integration stage, a Japanese economic cooperation package would be useful for vitalizing the Korean Peninsula economy. The Japan Bank for International Cooperation would provide various long-term loans with low interest rates, along with humanitarian assistance through international organizations from the System Integration stage, as agreed in the Japan-DPRK Pyongyang Declaration on September 2002.

From the System Integration to the Nation Building stages, compensation for victims mainly in North Korea during the colonial rule of the Korean Peninsula might also be discussed and provided. Compensation would be provided to victims in North Korea during the past colonial rule and to the relatives of these victims who died in forced labor and in other occasions. The issue of the comfort women might also be discussed and compensation would be provided to these victims. Today, in South Korea, surviving comfort women still continue to strive for acknowledgment and seek a sincere apology from the Japanese government. While the Japanese government maintains its position that it has already apologized and compensated the former comfort women, the ROK government has also urged Japan to take proper actions regarding the comfort women issue.⁹⁰⁾ Japan would provide compensation for

⁹⁰⁾-See for example, "S. Korea reiterates call for Japan to compensate for former sex slaves," *The Mainichi*, August 29, 2013, <<http://mainichi.jp/english/english/newsselect/news/20130829p2g00m0dm095000c.html>>.

former comfort women in North Korea, but how the compensation should be provided would remain unclear and controversial.

(3) Nation Building Stage

In the Nation Building stage of the unification, the economy of a unified Korea will fully be integrated and stabilized. In this stage, it would be expected that both South and North Korea start to enjoy the fruit of economic vitalization and development from the Nation Building stage. From this stage, a unified Korea would not only complete marketization as well as liberalization of the Northern part of economy, but also pursue more trade with neighboring countries and try to invite foreign direct investment into the Korean Peninsula. In the Nation Building stage, a Japanese economic cooperation package, such as grant aids and long-term loans after normalization, would be utilized for improvement of the North Korean infrastructure as well as economic development of a unified Korea.

b. Economic Benefits

(1) Division Dissolving Stage

There will be several economic benefits at each stage of the unification process from the Division Dissolving, the System Integration, through to the Nation Building stages as seen from the Japanese standpoint.⁹¹⁾

⁹¹⁾-Some of the basic argument in this section overlaps my previous study on economic benefits on Japan from Korean unification. See Sachio Nakato, "Costs and Benefits of Korean Unification for Japan: Political and Economic Perspectives," pp. 149~152.

However, it seems difficult to expect much economic benefit in the Division Dissolving stage, especially from purely economic perspectives.⁹²⁾ Japan and other major powers would enjoy much of the economic benefit after the economy of a unified Korea becomes stabilized and fully integrated into a one-market economy. There would still be some economic benefits for Japan, however, in the Division Dissolving stage. For example, while trade volumes between Japan and South Korea would stagnate during the Division Dissolving stage as discussed above, Japanese trade with North Korea might gradually increase even from this stage. Japan and North Korea have virtually no economic relations and substantive exchanges due to various political and security reasons. Once the unification process of the Korean Peninsula initiates, Japan would be able to start trade engagement with North Korea, and trade volumes between Japan and North Korea will gradually increase little by little.

(2) System Integration Stage

From the System Integration to the Nation Building stages, trade between Japan and the Korean Peninsula would be expected to increase. Japan and North Korea engaged in trade until early in the 21st century. However, Japan completely stopped its economic relations with North Korea as its relations with the DPRK gradually deteriorated. Since Japan

⁹²⁾Current costs and economic burdens in defense expenditures incurred by hostile relations between the DPRK and Japan could be reduced as the unification process proceeds in security and political areas. Missile defense program led by the United States would be one of the examples to be considered. However, the economic benefits from the Korean unification in defense budget remain unclear in the rise of China.

has adopted and accelerated economic sanctions against North Korea in response to North Korean missile and nuclear tests, as well as to the abduction issue, economic transactions between Japan and the DPRK started to stagnate from 2003 with trade and investment between Japan and the DPRK coming to a virtual standstill.⁹³⁾ Once the North Korean nuclear issue and the abduction issues move toward resolution and as the economy of a unified Korea stabilizes through economic South-North integration, trade volume between Japan and a unified Korea would steadily increase as the unification process proceeds in the System Integration stage.

Related to the above issue, regional economic integration in Northeast Asia would be promoted from the System Integration to the Nation Building stages and beyond. Increase in trade between Japan and the Korean Peninsula may lead to the conclusion of an FTA between the two countries in the System Integration stage. South Korea is now one of the OECD countries. A unified Korea in the long run has great potential to become one of the largest economic powers in the world. Therefore, the establishment of an FTA between Japan and a unified Korea would create even larger markets for Japanese exports. In addition, the successful completion of a Japan-Korea FTA could be a critical step for creating a mega-market in Asia. By concluding the FTA with the United States and the EU, South Korea has successfully created its FTA networks with two huge markets. Japan has now engaged in the negotiations

⁹³⁾-See Dick K. Nanto and Emma Chanlett-Avery, "North Korea: Economic Leverage and Policy Analysis," CRS Report for Congress, January 22, 2013, pp. 38-42, pp. 59-60.

for the Trans Pacific Partnership (TPP) and it has recently reported that the ROK has also considered participating in the TPP negotiations.⁹⁴⁾ Therefore, if Japan successfully concludes an FTA with a unified Korea, it could give stronger momentum for deeper regional economic integration in Asia from the System Integration stage.

(3) Nation Building Stage

The unification process of the Korean Peninsula would provide more incentives for Japanese corporations to explore the possibilities in investing in North Korea, especially from the Nation Building stages and beyond.⁹⁵⁾ First, Japan would hope to utilize a competitive and abundant labor force in North Korea by investing in these areas. Stable economic transition and integration in the Korean Peninsula would certainly give incentives for Japanese companies to invest in a unified Korea. Next, Japan would be able to have access to natural resources in North Korea. Several research projects suggest that North Korea has large potential reserves of natural resources, such as magnesium, uranium, coal and other minerals.⁹⁶⁾ Since Japan has few natural resources, it would be interested in investigating and developing these resources in the process of unification. In addition, a natural gas pipeline project,

⁹⁴⁾-“Korea to Join Trans-Pacific Partnership,” *The Chosun Ilbo*, September 9, 2013, <http://english.chosun.com/site/data/html_dir/2013/09/09/2013090901471.html>.

⁹⁵⁾-Foreign direct investment in northern part of Korea would be possible even from Division Dissolving and System Integration stages. However, FDI would substantially increase from the Nation Building stage as preferable political and economic conditions are established.

⁹⁶⁾-Library of Congress, Federal Research Division, “Country File: North Korea,” July 2007, <http://lcweb2.loc.gov/frd/cs/profiles/North_Korea.pdf>.

linking North and South Korea to Russia, would bring energy to Japan. Japan obviously hopes to invest in and enjoy various economic benefits, such as cheap labor, natural resources and energy, especially from the Nation Building stage, while it would need to provide a unified Korea with an economic cooperation package which could be used for developing the northern part of Korea as part of a settlement resulting from normalization talks.

3. Concluding Remarks

In light of the above discussion, a few conclusions can be drawn. First of all, Japan would benefit in security, diplomatic and humanitarian areas through the unification stages of the security sector, although it would play a relatively minor role in the process. In this process, South and North Korea, the United States and China would play critical roles, while Japan would contribute to promoting the process to resolve and remove weapons of mass destruction, financially and politically. The elimination of WMD and denuclearization would create a preferable security environment for Japan, since it has felt threatened by the prospect of nuclear and missile attacks as well as conflict on the Korean Peninsula. Also, denuclearization and elimination of the security threat would promote the diplomatic normalization process between Japan and the DPRK, since the WMD issue has been one of the most critical impediments to normalization. As a result of denuclearization of the Korean Peninsula and normalization between Japan and the DPRK, humanitarian concerns

such as the abduction issue, the Japanese wives issue, and the status of Korean residents in Japan, could also be handled.

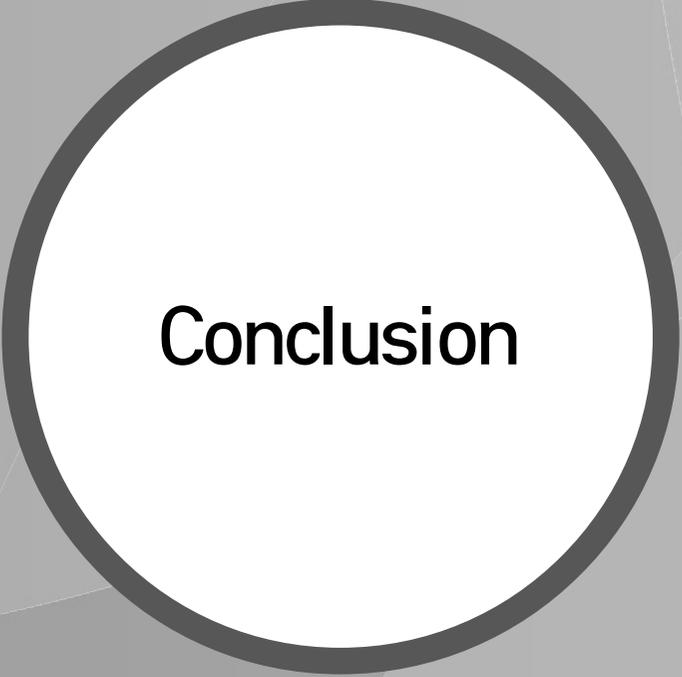
Second, Japan's role is especially important in the process of the Korean unification in the sense that Japan would have to provide an economic cooperation package after its normalization with North Korea. An economic cooperation package could be the basis for a Japanese contribution to the Korean unification from the Division Dissolving, to the System Integration and on to the Nation Building stages. The United States, Japan and the ROK have discussed the possibility of Japan's potential economic cooperation package, which might help to sustain the North Korean regime without any behavioral changes or could be used for military modernization, including the nuclear weapons program and missile development. However, if the unification process starts, Japan's potential financial assistance would be used for improving the basic infrastructure of the northern, developing the economy, and compensating victims of the colonial rule of the Korean Peninsula.

Third, Japan could also obtain several economic benefits through participating in the Korean unification process. Once the unification process begins, trade between Japan and the Korean Peninsula would gradually increase from the Division Dissolving stage. Actually, a unified Korea, potentially one of the economic powers in the world, would offer a larger export market for Japan. Also, the potential increase in trade between Japan and the unified Korea could contribute to ratifying an FTA between the two economies in the System Integration stage. As a result, the successful establishment of a Japan-Korea FTA could

provide opportunities for developing a huge market in Asia and beyond. In the long run, further regional economic integration would be expected through regional liberalization of trade and investment, such as APEC, TPP and an FTA, among China, Japan and a unified Korea. Needless to say, Japan would have more opportunities to invest in the northern part of Korea to gain access to natural resources, cheap and skilled labor, as well as energy supplied through a natural gas pipeline from Russia to a unified Korea and on to Japan, especially during the Nation Building stage.

Finally, along with reconciliation over the past colonial rule of the Korean Peninsula, Japanese positive involvement in the process of Korean unification from the perspectives of human security, as well as economic cooperation, could create a better image of Japan in Korea and contribute to better relations between Japan and a unified Korea both during the Division Dissolving and the System Integration stages. While economic and cultural exchanges between Japan and South Korea have developed, anti-Japanese feelings are still deeply rooted in both South and North Korean politics, mainly due to historical issues. Controversies over perceptions of history and the disputed island called Takeshima/Dokdo have created tensions between Japan and Korea. Japan would be trusted only when it takes proper remedial actions over historical problems with South Korea as well as North Korea. In this sense, Japan's positive contribution to the process of Korean unification would help reconcile the historical issues between Japan and a unified Korea and it would eventually benefit Japan, especially from the Nation Building stage and beyond.

Overall, while there are several pessimistic views on the costs of the Korean unification and concerns over likely outcomes of the unification, one could argue that both a unified Korea and Japan would obtain various benefits in political, social and economic areas from the unification if the unification process during the Division Dissolving, the System Integration and the Nation Building stages is properly managed and developed. neighboring countries, including Japan, would support unification, since they could also enjoy benefits from the unification. Some analysts believe that Japan does not want Korea to be unified, since a unified Korea would overtake Japan economically and militarily; and therefore, that a divided Korea may be preferable for Japan. However, as discussed in this paper, Japan would be able to enjoy many benefits from the Korean unification by positively participating in the process of the unification in political, social and economic areas. In this sense, Japan has enough reasons to support Korean unification, even from its own national interests' perspectives, based on the costs and benefits analysis.



Conclusion

Inter-Korean Dimension: DSGE Model

In order to analyze the costs and benefits of both the North and South, the study builds a dynamic stochastic general equilibrium (DSGE) model. As the name of the model indicates, it is a proper device to estimate the overall costs and benefits to South and North Korea when assuming unification. Also, it can capture changes to the economy year-by-year and can include movements in key variables as the unification processes progress. All premises, the unification stages' itineraries, and the major policy changes are abided by the above-mentioned scenario and by the model. We summarize our research findings of each period below.

Unification Preparation period, Northern Reform, 2014-2028: In order to calculate unification stages' costs and benefits, a pre-unification stage is assumed. We supposed that both South and North Korea's growth steadily increases 1.7% per year (baseline values) without random shock, and marketization of the Northern economy will be started. If the baseline GDP growth of both nations simply follows a linear trend, there will be about 27% increase in GDP, consumption, annual wage, private capital, military capital, public infrastructure in this period.

If any kind of exogenous shock is allowed in the model, the results will vary. The range is somewhat narrower for consumption, but capital, particularly private capital, and infrastructure have wider ranges because these variables are more sensitive to the productivity and foreign investments. Although we do not need precise projections for the values of each variables—the starting values of the key variables do not determine the effects of the unification to both economies—we set the growth rates conservatively so that our estimations becomes more resonable and realistic.

Division Dissolving stage, 2028-2030: Financial aid from the South transfers to the North. South Korean humanitarian aid boosts North Korean consumption by 37%. South Korean humanitarian donations reach 0.5% of national income during the two-year transition period. To raise the source of the aids, tax for South Koreans rises by 0.5% of national income, 11% of their original baseline tax, so their consumption decreases by a similar amount. South Korea's growth of GDP also slows down. During this stage, GDP in the North does not receive the huge boost, because South Korean aid is assumed to go to North Korean consumers (a simple transfer of money). However, in the first year of the period, there will be a huge leap in North Koreans consumption in percentage terms, about 35% on average if no random shock to the economy is assumed, or 32 to 42% if we take account of the random shocks. Since the aid from the South does not boost production in the North, constant transfer of the aid is required to keep North Korean consumption remain at the increased level from the original baseline.

Owing to the financial aid from the South, the North can cut back its taxes for 43%. Despite the increase of its consumption, it will remain difficult for North Korea to develop its overall economy fairly because its infrastructure and private capital stock are scanty. Like other poor nations, corrupt elites in the North may appropriate certain amount of the government-to-government aid. Even if the North Korean rulers take 10% of the aid from the South, it would boost the consumption greatly. The Southern government can expect that the good will toward the unification spreads among North Koreans so that the tension between North and South gets alleviated.

System Integration stage, 2030-2040: A few major integration variables are concerned during this stage, including infrastructure aid, wage subsidies and humanitarian aid, military restructuring, with the North phasing out military production, capital flows from the South to the North, and labor flows from the North to that of the South. Continuing aid from the south becomes the foundation of the Northern economy to grow faster instead of falling back. What truly accelerates the growth of Northern economy is the infrastructure aid from the South. It enables the North to cultivate its capabilities for sustainable development by remarkably strengthening its heart and veins for economic growth. Wage subsidies which could amount to 15% of North wages would also help to boost growth, enable GDP and consumption to increase, and give Northern workers stronger motivation to work. The merger of two militaries also would contribute to further growth of North Korea by reducing its military spending.

The ten-year input dramatically changes the Northern part from

the poorest state to the level of a developing state. North Korean GDP and wages would increase by 10 times, while consumption would rise by 13 times over the decade from 2030 to 2040. After dramatic growth in the North, North Korean GDP and consumption per capita comes close to that of the South: 60% for GDP and 70% for consumption. More importantly, since the gains from free markets and trade are not zero sum, South Korea would continue its steady growth, even while providing the North with massive aid with the opening up of labor and capital flowing between the two nations. The model implies that South Korea GDP, consumption, and wages would grow in real terms by a solid one percent to two percent per year. This growth would come on top of an already high standard of living.

Although it is not revealed in our studies, there will be substantial political and social gains which come from the reconciliation of the North and South.

Nation Building stage, 2040-2050: During this stage, the Southern part's assistance, such as aid and wage subsidies, would be integrated into unified governance. Regulations and restrictions, such as labor mobilization and capital movements that differentiated the South from the North, would be gradually removed. The North becomes a self-sufficient, 'not receiving aid' economy.

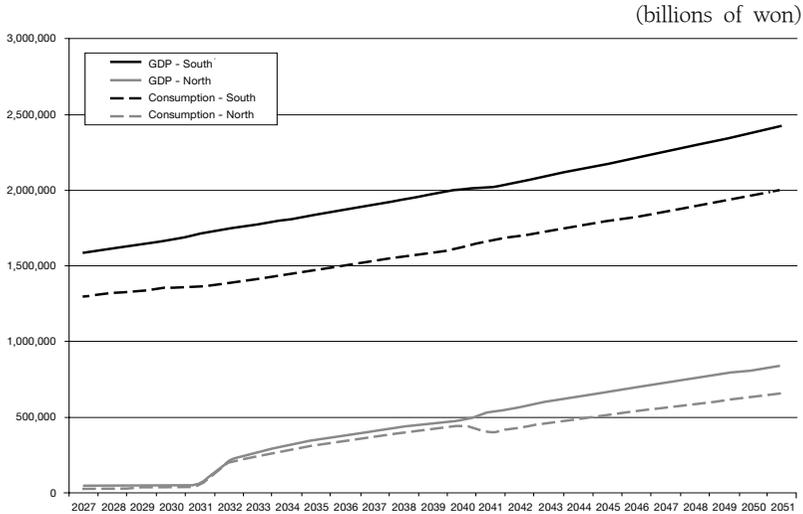
Increasing rates of GDP, consumption, and wages in the North are faster than those of the South, meaning that the North continues to converge towards the South by a substantial degree. By 2050, the per capita GDP in the North is projected to be more than 90% of the

South's, with per capita consumption over the 80% threshold. The wage ratio approaches 80%. The infrastructure ratio, which is barely above zero in the present day, would be more than 50% by 2050. The South is projected to enjoy continued steady growth in the 2040s. All key variables grow at rates near the trend, with consumption growing more, because at this stage, the South retains the funds that it had been sending to the North during the previous stages.

Unified Nation period, 2050-2060: Both sides continue to grow, but regional differences remain. Regional equality may be a policy goal. The economic growth and productivity of capital and labor of each region can be enhanced by the infrastructure of the region. Since the North starts off with less infrastructure than the South, it may take decades to narrow the gap. To meet this goal, investing more on the infrastructure in the North would be a better policy.

The unification costs and benefits analysis using the DSGE model shows quite a rosy unification future. While the North Korean economy grows at almost double digits during the System Integration stage, the Southern economy remains almost intact. The North Korean GDP, marked at 48 trillion won in 2030, reaches 815 trillion won in 2050. In addition, considering these calculations have not included substantial political and social benefits that would come from reducing tensions, the amount of unification benefits strongly support positive support for unification.

Figure XII-1 Non-Random Time Paths for GDP and Consumption in All Unification Stages



Our analysis projects that the economy of North Korea would be completely transformed from one of the most impoverished and dysfunctional on earth to one that achieve middle class status and has in place the structure and tools needed to develop into a rich nation, as the South has. The modeling implies that Northern GDP, consumption, and wages would grow by more than 25 times. North Korea's infrastructure would expand massively. Its private capital stock would also strengthen, increasing more than 15 times in value. The South gains from having access to investments with higher returns in the North. It also gains from a reduction in military spending and conscription just as the North does, but the gains are not as significant given the smaller size of its military relative to the whole economy.

The costs and benefits of unification come from four primary causes. First, aid transfers from the South to the North; second, decreases in military tensions; third, accumulation of infrastructure in the North, and finally, better opportunities for both capital and labor in both countries.

International Dimension: Neighboring Powers' Costs and Benefits

The four chapters in the Part 2 discussed costs and benefits to the neighboring four states—the U.S., China, Russia, and Japan—during the Korean unification process. The Guiding type of unification and the Three-Stage-Three-Area costs and benefits analytical model has been suggested for the writers to use for each state, while envisioning the future unification environment and direction. Because of the scenario and model are concentrated in the inter-Korean political, social and economic relations by three stages, international inputs and outputs are seldom commented. All authors, therefore, needed to project a future East Asian environment and their respective states' position under a somewhat vague trajectory.

On the economic costs and benefits side, all four states support the benefits side more or less. The economic benefits of unification include an expanded market for their products, access to new mineral resources, and possibly opportunities for investment in the northern half of the peninsula. Although sharing burdens of reforming and revitalizing the Northern economy for the South Korean government would be the biggest economic costs for all four states, and China's profits from the investments

in North Korea may be undermined, our authors agreed on that the benefits will exceed the costs in the long run. Particularly, China and Russia can expect the positive effects on the development of their northeastern provinces.

Disappearance of a belligerent and unstable North Korean regime, on the non-economic side, is also a major benefit factor. The great benefit for the U.S. will be a consequence of North Korea's political decline, not the unification itself, but it is expected that formal unification will secure the benefit from the decline of North Korea and provide some assurance that Northern Korean peninsula becomes more politically stable. China also can expect more secure and stable border areas between China and the Korean peninsula, and find a permanent solution for the "North Korean defectors issues," which are causing serious problems in social security within China's northeast region and leading to some international NGOs'—promoting liberal-democratic values—criticism toward China. Japan hopes to resolve the abduction issues, which have been one of the most critical and politically sensitive in Japan's policy toward North Korea.

The sharpest gap among authors is the future of the U.S.-Korea alliance and unified Korea's military-diplomacy relations. For the U.S. position, Dr. Ralph Hassig and Dr. Kongdan Oh mentioned an overall unification discourse that is lopsided and internationally not supported, suggesting internal and external difficulties of unification. They argue the major cost factor is the U.S.-China relations and future U.S.-Korea alliance, and there are further concerns regarding America's complex relations with China and Japan in the Northeast Asia.

Of particular interest is China's chapter that also concentrates on various types of unification, reflecting its sensitivity. Dr. Gong Keyu worries about China losing its special status on the Korean Peninsula and being in a direct border confrontation with a unified Korea, backed by the U.S.-Korea alliance, during the unification process. Economically, however, more specific benefits are listed, including a Changchun-Jilin-Tumen development strategy and the Tumen River development program.

Russia's position, authored by Dr. Alexander Fedorovskiy and Dr. Natalia Toganova, clearly categorizes the costs and benefits by each stage. After the short Division Dissolving stage, Russia feels there are more benefits in terms of security and economics. Russia advises gradual economic reform in the Northern part of Korea to lower transition costs—suggesting the need to develop a detailed policy on liberalization, infrastructure, non-sector transformation costs, and on avoiding a shadow economy trap.

In line with the other states, Dr. Sachio Nakato of Japan also mentions the result of North Korea's WMD will curve the cost and benefit line. The issue of abducted Japanese citizens by North Korea continues as a cost in the Division Dissolving and System Integration stages.

Table 16 Major Non-Economic Costs and Benefits for the Neighboring Powers

| Stages | States | Non-economic Costs | Non-economic Benefits |
|---------------------------------|--------|---|---|
| Division Dissolving Stage | U.S. | <ul style="list-style-type: none"> · Instable U.S./ROK security · Possibility of China's involvement | <ul style="list-style-type: none"> · Mitigated North Korean threat · U.S. defense cost reduction · Reduction of international criminal activities/human rights violations · Losing China's 'tool' · Losing North Korea's cooperators (Pakistan, Iran, Syria) |
| | China | <ul style="list-style-type: none"> · Losing China's neighbor/buffer · Rising defense budget to face new border with South Korea (or U.S.-ROK) · Losing special status in the region · Weakening China's international image/status · New territory/history disputes · Emergency aid | <ul style="list-style-type: none"> · More secured/stable border areas · Solving 'the defectors' problem · End of the balancing cost between South and North Korea · WMD control |
| | Russia | <ul style="list-style-type: none"> · Instability in Russian Far East (military, police, custom duty) · Humanitarian aid · Education assistance | <ul style="list-style-type: none"> · Improved environment for foreign relations · Decreasing military/security expenditure |
| | Japan | <ul style="list-style-type: none"> · Dismantling WMD (financial/technical) · Efforts to solve abduction issue · Costs of humanitarian aid | <ul style="list-style-type: none"> · WMD control · Social/cultural exchanges · Effects of humanitarian aid |
| System Integration Stage | U.S. | <ul style="list-style-type: none"> · Dismantling WMD (incl. scientists) · Volatile U.S.-ROK alliance · Weakening U.S.-Japan alliance | <ul style="list-style-type: none"> · Removed North Korean threat (continued) · Denuclearization (optional) · Continued U.S.-ROK alliance (optional) |

| Stages | States | Non-economic Costs | Non-economic Benefits |
|-----------------------|--------|---|---|
| | | <ul style="list-style-type: none"> · Relocation of the U.S.F.K. · Civil order assistance · Humanitarian aid · Pro-American campaign in the North | <ul style="list-style-type: none"> · Opening Northern part · Cultural exchange · Humanitarian exchange · Religious exchange · Korean-Americans' visit to North |
| | China | <ul style="list-style-type: none"> · Losing China's neighbor/buffer · Rising defense budget to face new border with South Korea (or U.S.-ROK) · Losing special status in the region · Weakening China's international image/status · New territory/history disputes · Emergency aid | <ul style="list-style-type: none"> · More secured/stable border areas · Solving 'the defectors' problem · End of balancing cost between South and North Korea · Unified Korea as a new international partner · WMD control |
| | Russia | <ul style="list-style-type: none"> · Social aid (education/medical modernization) · Cultural/Humanitarian aid | <ul style="list-style-type: none"> · Decrease in population outflow from Far East caused by instability of North Korea · Improved regional security · Decreased military spending · Russia-Korea ecological cooperation |
| | Japan | <ul style="list-style-type: none"> · Dismantling WMD · Efforts to solve abduction issue · Normalization talks (history/ territory issues) · Human security issue | <ul style="list-style-type: none"> · Diplomatic normalization · Effects of humanitarian aid |
| Nation Building Stage | U.S. | <ul style="list-style-type: none"> · Same as System Integration stage | <ul style="list-style-type: none"> · Same as System Integration stage · Benefits determined by future U.S.-China-Japan-Korea relations |
| | China | <ul style="list-style-type: none"> · Rising defense budget to face new border with South Korea (or U.S.-ROK) · Weakening China's international image/status · New territory/history | <ul style="list-style-type: none"> · More secured/stable border areas · Unified Korea as a new international partner · Development of Northeast Asian security organization |

| Stages | States | Non-economic Costs | Non-economic Benefits |
|--------|--------|---|--|
| | | disputes · Pressure for Liberal Democracy | · Leverage to solve cross-strait relations |
| | Russia | N/A | · New opportunity for Russia's Northeast Asia foreign policy · Decline of Far East military costs |
| | Japan | · Building a new regional security organization · Managing anti-Japan sentiment · Costs of preventing the Unified Korea from leaning toward China | · Diplomatically cooperative partner · Effects of humanitarian aid (better Japan's image) |

○ **Table 17** Major Economic Costs and Benefits for the Neighboring Powers

| Stages | States | Economic Costs | Economic Benefits |
|---------------------------------|--------|--|---|
| Division Dissolving Stage | U.S. | N/A | (New business opportunities) |
| | China | · Losing preferential economic status in North Korea · Possible interruption of North Korea-China economic cooperation · Economic support to the North | · Benefits from Investments in the North |
| | Russia | · Costs for Russia-Korea joint research program · Temporally Decreased / stagnated Russia's trade · Economic assistance to the North | · Increased Russia's market share in the North (fertilizer export growth, etc.) · Reduced business risks and costs · Uprising business activity in the Russian Far East |
| | Japan | · Economic and energy assistance | · Increasing Japan-Korea trade · Regional economic integration |

| Stages | States | Economic Costs | Economic Benefits |
|--------------------------|--------|--|---|
| System Integration Stage | U.S. | <ul style="list-style-type: none"> · Funding for infrastructure and business conditions · Relatively weak business environment for U.S. firms in the North | <ul style="list-style-type: none"> · New business/investment opportunities |
| | China | <ul style="list-style-type: none"> · Losing preferential economic status in North Korea · Possible interruption to North Korea-China economic cooperation · Economic support to the North | <ul style="list-style-type: none"> · New business/investment opportunities · Participation in infrastructure building |
| | Russia | <ul style="list-style-type: none"> · Decreased South Korean investment in Russia · Building infrastructure in the Russian Far East | <ul style="list-style-type: none"> · Expanded export of Russian construction/capital goods · Increased Russia's energy export · Expanded Russian engagement in infrastructure, electric power & energy · Increased Russia-Korea trade |
| | Japan | <ul style="list-style-type: none"> · Economic package (aid/long-term loans) · Compensation for colonial rule | <ul style="list-style-type: none"> · Increased Japan-Korea trade · Regional economic integration · New business/investment opportunities |
| Nation Building Stage | U.S. | <ul style="list-style-type: none"> · Funding for infrastructure and business conditions | <ul style="list-style-type: none"> · Expanded U.S. products' relative advantage |
| | China | <ul style="list-style-type: none"> · Economic support toward the North | <ul style="list-style-type: none"> · New business/investment opportunities · Participation in infrastructure building · Development of China's northeast |
| | Russia | N/A | <ul style="list-style-type: none"> · Expanded export of Russian construction/capital goods · Increased Russia's energy export · Expanded Russian engagement in infrastructure, electric power & energy · Increased Russia-Korea trade · Russia's involvement in regional integration in Northeast Asia |
| | Japan | <ul style="list-style-type: none"> · Economic package (aid/long-term loans) | <ul style="list-style-type: none"> · New business/investment opportunities |

Tables 1 and 2 clearly contrast the four states' costs and benefit factors during Korean unification. Common benefits of the non-economic area begin with disappearance of North Korea's unstable and hostile attitude, before and after the start of the unification process, although the detailed benefit factors are different.

The U.S. and Japan show more concerns about the 'regime-level' benefits, while the two bordering states—China and Russia—add mention of the 'individual-level' benefits, such as border stability and crime reduction. Apart from the U.S.-China security costs caused by future security stances in the North Korean area, all states show firm and clear benefits from the WMD control on the Korean Peninsula. In addition, all states counted humanitarian aid during the Division Dissolving and System Integration stages as non-economic costs.

Overall, the four states' outlook of economic factors indicate that a democratized, more market-oriented North Korea would induce a more economically beneficial environment during the unification process. The balance sheet in the economic area, however, shows that each state has specific cost/benefit considerations. The U.S., for instance, worries about the North Korean people's long-hostile stance toward Washington would weaken the U.S. business environment. Japan counts economic aids and long-term loans as costs to some amount that Japan would pay for North Korea-Japan normalization. The postures of China and Russia are somewhat different: China worries about a possible decrease in China-North Korea economic cooperation, while Russia is concerned about South Korean investment into building the Russian Far East infrastructure.

The primary purpose of the current research is to provide international community with diverse perspectives about the unification of the two Koreas. During the course of research among the participated scholars, our understandings about the course of Korean unification have greatly been augmented. Indeed, international experts have showed sincere attention throughout the year of 2013. On the one hand, they have made good effort to having acquaintance with the analytical framework suggested by the KINU research team. On the other hand, they have tried to provide diverse opinions about the various situations of the Korean unification. The current chapter is devoted to suggest important policy considerations for the policy makers of the four neighboring powers and the two Koreas.

First of all, the inter-Korean dimensional analyses suggest us that it is very important to approach the question of Korean unification based on the systematic framework. Using DSGE model to analyze various scenarios of Korean unification shows us economic benefits for the two Koreas. Macro-economic indicators representing Capital, GDP, Infrastructure, and Consumption are increased owing to the effects of the unification. The analyzed results, thus, indicate that the positive effects of the unification can be enormous to overcome the costs of the unification.

The second year's research articulated many quantitative and qualitative factors that will arise during the unification and integration process. More than half of the political and social factors have intangible attributes. Because it is not easy to quantify all qualitative factors, we decided to adopt a multi-faceted approach. In this context, adopting the dynamic stochastic general equilibrium model, based on the Guiding Type of Unification, can show us macro-economic fluctuations of the situations during the unification process.

Considering the public opinion about the burden-some effect of the unification, it is necessary for us to extend the current analyses of DSGE model to cover additional future scenarios. However, it should also be noted here that it is necessary for us to continue searching explanations about the incalculable effects.

In this way, we will be able to overcome wide-spread worries about the negative effects of the unification. In other words, more comprehensive research encompassing all aspects of the unification can guarantee a balanced viewpoint about the costs and benefits of the unification.

Secondly, analyses of the international dimension allow us to rethink about the importance of the international players. Experts present different factors according to their own roles. Sizable anxiety remains among the four powers, according to their geopolitical and economic situations, although our model of the Guiding Type of Unification suggests a gradual and staged unification process. Our diplomatic efforts for unification should be concentrated on how to lower costs and to raise benefits to each state, while taking a firm stance that a new unified

government would not cause cost-generating behavior.

All four states' experts show a unified Korea would induce a certain type of regional cooperative body. This indicates the future of a unified Korea's changed status in Northeast Asia. Regardless if the U.S.-Korea alliance continues during and after unification, the improved international status of a unified Korea would have much more influence in making a more cooperative Northeast Asian region.

During seminars and brainstorming sessions, all participated researchers tried to iron out the most important points regarding Korean unification. Each of the suggestions in the discussion well reflects various concerns and expectations which the four powers have and anticipate. Despite diverse standpoints of the participants, what we could see were strong correlations and similarities of the ideas on major issues, such as the prevention of the Cold-War like power struggle between the U.S. and China, sharing multi-dimensional burdens of the unification, stabilization of regional security and economy, and cooperation under the principle of peace and prosperity.

We iron out the following 10 principles to facilitate a peaceful and harmonious process of unification of the two Koreas at the international level.

- Promote collective regional efforts to contribute toward unification.
- Sustain strategic communication on Korean Unification and its importance.
- Construct a shared vision of a new Northeast Asia with a unified Korea.

- Build the foundation for a future regional security framework.
- Work toward successful elimination of North Korea's WMDs.
- Be sensitive toward each country's domestic concerns.
- Fortify regional economic cooperation as a catalyst for the peaceful unification.
- Support Korean efforts to alleviate the burden of the unification transition period.
- Create common ground in each country to promote responsibility and burden sharing.
- Consider human security aspects of the citizens of every state.

We then sort out the following 10 principles regarding the code of conduct to be avoided during the process of the Korean unification.

- Do not negotiate unification independently without consulting regional powers.
- Do not accept the concept of a zero-sum unification game.
- Do not ignore the human security concerns of regional powers (e.g., abductees, refugees).
- Do not underestimate the importance of cooperation with global institutions (e.g., UN, IAEA, World Bank).
- Do not replace ultimate future regional interests with short-term national interests.
- Do not insist that a unified Korea have a unified way of thinking.
- Do not assume Korean unification is overly burdensome.

- Do not be fettered by conventional, outdated ideas.
- Do not risk seriously damaging people's welfare in the process of the unification.
- Do not forsake the opportunity for unification in the interests of maintaining regional stability.

We hope our efforts could be useful for the policy makers in Korea and the neighboring four powers. It should also be noted here that the efforts for achieving the unification were begun when the Korea were divided against its will by the international arrangements. It is necessary for the two Koreas and international actors to continue making every effort to solve the problems stemming from the division of the Korean peninsula in a peaceful manner.

The unification of the two Koreas should be pursued in a gradual and incremental way in order to reduce excessive costs and to generate fruitful benefits. During the process of Korean unification, international community would have ample opportunity to share various benefits as suggested by our research. Now may be the high time for us to look bright side of the unification on the Korean peninsula.

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| 2011-01 | 제2차 핵안보정상회의와 북한 핵문제 | 전성훈 | 14,500원 |
| 2011-02 | 북한군의 기강 해이에 관한 연구 | 이교덕 외 | 11,000원 |
| 2011-03 | 통일 진입과정에서의 북한 재건 방향 | 최진욱, 김진하 | 5,500원 |
| 2011-04 | 북한의 부문별 조직실태 및 조직문화 변화 종합연구 | 정영태 | 16,000원 |
| 2011-05 | 북한형사재판제도 연구: 특징과 실태 | 이규창, 정광진 | 8,000원 |
| 2011-06 | 북한주민의 삶의 질: 실태와 인식 | 김수암 외 | 12,000원 |
| 2011-07 | 한반도 평화와 북한 비핵화: 협력적 위험감축(CTR)의 적용방안 | 박종철 외 | 10,000원 |
| 2011-08 | 대북한 핵협상 전략구상방향 | 홍우택 외 | 6,000원 |
| 2011-09 | 중국의 부상에 대한 북한의 인식과 대응 | 허문영, 마민호 | 10,000원 |
| 2011-10 | 북한 핵의 국제정치와 한국의 대북 핵전략 | 배정호 외 | 11,000원 |
| 2011-11 | 평화통일을 위한 통일외교 전략 | 박영호 외 | 13,500원 |
| 2011-12(I) | 중국의 G2 부상과 한반도 평화통일 추진전략 제1부 | 황병덕 외 | 15,500원 |
| 2011-12(II) | 중국의 G2 부상과 한반도 평화통일 추진전략 제2부 | 황병덕 외 | 13,500원 |
| 2011-12(III) | 중국의 G2 부상과 한반도 평화통일 추진전략 제3부 | 황병덕 외 | 18,000원 |
| 2012-01 | 미국의 對韓 핵우산정책에 관한 연구 | 전성훈 | 14,000원 |
| 2012-02 | 북한부패와 인권의 상관성 | 김수암 외 | 11,000원 |
| 2012-03 | 보호책임(R2P) 이행에 관한 연구 | 이규창 외 | 11,000원 |
| 2012-04 | EC/EU사례분석을 통한 남북 및 동북아공동체 추진방안: 유럽공동체 형성기를 중심으로 | 손기웅 외 | 14,000원 |
| 2012-05 | 김정은체제의 권력엘리트 연구 | 이교덕 외 | 13,000원 |
| 2012-06 | 독재정권의 성격과 정치변동: 북한 관련 시사점 | 박형중 외 | 11,000원 |
| 2012-07 | 북방삼각관계 변화와 지속: 북한의 균형화 전략을 중심으로 | 허문영, 유동원, 심승우 | 10,000원 |
| 2012-08 | 북한 핵문제의 전망과 대응책: 정책결정모델(Decision Making Model)을 이용한 전략 분석 | 홍우택 | 8,000원 |
| 2012-09 | 중국의 한반도 관련 정책연구기관 및 전문가 현황분석 | 전병곤, 양갑용 | 6,000원 |
| 2012-10 | 2000년대 대북정책 평가와 정책대안: '동시병행 선순환 모델'의 원칙과 과제 | 박종철 외 | 12,500원 |
| 2012-11 | 리더십교체기의 동북아 4국의 국내정치 및 대외정책 변화와 한국의 통일외교 전략 | 배정호 외 | 11,500원 |
| 2012-12 | 김정은 정권의 정책전망: 정권 초기의 권력구조와 리더십에 대한 분석을 중심으로 | 최진욱, 한기범, 장용석 | 7,500원 |
| 2012-13 | 신정부 '국가전략 DMZ 평화적 이용' | 손기웅 외 | 8,000원 |
| 2013-01 | 남북러 가스관과 동북아 에너지 협력의 지정학 | 이기현 외 | 6,000원 |
| 2013-02 | 한국의 FTA전략과 한반도 | 김규륜 외 | 8,500원 |
| 2013-03 | 김정은 체제의 변화 전망과 우리의 대책 | 박종철 외 | 10,000원 |

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| 2013-04 | EC/EU사례분석을 통한 남북 및 동북아공동체 추진방안 - EC기 분석을 중심으로 - | 손기웅 외 | 12,000원 |
| 2013-05 | 오바마·시진핑 시대의 동북아 국가들의 국내정치 및 대외정책과 한국의 대북 및 통일외교 | 배정호 외 | 11,000원 |
| 2013-06 | 북한사회 위기구조와 사회변동전망: 비교사회론적 관점 | 조한범, 황선영 | 6,000원 |
| 2013-07 | 인도적 지원을 통한 북한 취약계층 인권 증진 방안 연구 | 이규창 외 | 12,500원 |
| 2013-08 | 새로운 세대의 탄생: 북한 청소년의 세대경험과 특성 | 조정아 외 | 15,000원 |
| 2013-09 | 북한의 핵·미사일 대응책 연구 | 홍우택 | 6,000원 |
| 2013-10 | 북한에서 국가재정의 분열과 조세 및 재정체계 | 박형중, 최사현 | 7,000원 |

학술회의총서

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| 2011-01 | 한반도 통일비전과 국제협력 | | 4,000원 |
| 2011-02 | 북한인권 실상과 효율적 개입방안 | | 8,500원 |
| 2012-01 | The Outlook for the North Korean Situation & Prospects for U.S.-ROK Cooperation After the Death of Kim Jong-il | | 6,000원 |
| 2012-02 | 김정은 체제의 북한 인권문제와 국제협력 | | 19,000원 |
| 2012-03 | 해외 이주·난민 지원제도의 시사점 | | 12,000원 |
| 2013-01 | 유엔 인권메커니즘과 북한인권 증진방안 | | 20,000원 |
| 2013-02 | 한반도신뢰프로세스 추진전략 | | 19,000원 |

협동연구총서

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| 2011-14-01 | 북한정보관리체계 개선방안(총괄보고서) | 황병덕 외 | 14,500원 |
| 2011-14-02 | 북한정보관리체계 개선방안(상) | 황병덕 외 | 13,000원 |
| 2011-14-03 | 북한정보관리체계 개선방안(중) | 황병덕 외 | 12,000원 |
| 2011-14-04 | 북한정보관리체계 개선방안(하) | 황병덕 외 | 13,500원 |
| 2011-15-01 | 북한 경제발전을 위한 국제협력 프로그램 연구: 국제사회의 경험 분석(총괄보고서) | 임강택 외 | 11,000원 |
| 2011-15-02 | 부패의 개념과 실태 및 반부패 개혁 | 박형중 외 | 10,000원 |
| 2011-15-03 | 체제전환국의 시장-민주제도 건설 지원 | 박영호 외 | 13,000원 |
| 2011-15-04 | 국제사회의 개발지원전략과 협력체계 연구 | 장형수 외 | 9,500원 |
| 2011-15-05 | 수원국의 역량발전을 위한 개발협력전략과 사례연구 | 이종무 외 | 9,500원 |
| 2011-15-06 | 인프라 개발을 위한 국제협력 사례와 시사점 | 이상준 외 | 9,000원 |
| 2012-11-01 | 북한 경제발전을 위한 국제협력 프로그램 실행방안(총괄보고서) | 임강택 외 | 11,000원 |
| 2012-11-02 | 북한 부패실태와 반부패 전략 국제협력의 모색 | 박형중 외 | 10,000원 |
| 2012-11-03 | 북한 경제발전을 위한 국제협력체계 구축 및 개발지원전략 수립 방안 | 장형수 외 | 8,000원 |
| 2012-11-04 | 북한의 역량발전을 위한 국제협력 방안 | 이종무 외 | 8,000원 |

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| 2012-11-05 | 북한의 인프라 개발을 위한 국제사회 협력 프로그램 추진방안 | | |
| | | 이상준 외 | 8,000원 |
| 2012-12-01 | 한반도 통일 공공외교 추진전략(Ⅰ) - 공공외교의 이론적 조명과 한반도 주변4국의 對한국 통일 공공외교(총괄보고서) | 황병덕 외 | 13,500원 |
| 2012-12-02 | 공공외교의 이론적 조명과 주변4국의 한반도통일 공공외교 분석틀 | 김규륜 외 | 8,500원 |
| 2012-12-03 | 미국의 對한국 통일 공공외교 실태 | 박영호 외 | 9,500원 |
| 2012-12-04 | 중국의 對한국 통일 공공외교 실태 | 이교덕 외 | 7,500원 |
| 2012-12-05 | 일본의 對한국 통일 공공외교 실태 | 이진원 외 | 8,000원 |
| 2012-12-06 | 러시아의 對한국 통일 공공외교 실태 | 여인근 외 | 7,500원 |
| 2013-26-01 | 한반도 통일 공공외교 추진전략(Ⅱ) - 한국의 주변4국 통일공공외교의 실태 연구(총괄보고서) | 황병덕 외 | 14,000원 |
| 2013-26-02 | 한국의 對미국 통일 공공외교 실태 | 박영호 외 | 8,000원 |
| 2013-26-03 | 한국의 對중국 통일 공공외교 실태 | 전병곤 외 | 7,500원 |
| 2013-26-04 | 한국의 對일본 통일 공공외교 실태 | 이기태 외 | 8,000원 |
| 2013-26-05 | 한국의 對러시아 통일 공공외교 실태 | 조한범 외 | 6,000원 |

논총

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| 통일정책연구, 제21권 1호 (2012) | 10,000원 |
| <i>International Journal of Korean Unification Studies</i> , Vol. 21, No. 1 (2012) | 10,000원 |
| 통일정책연구, 제21권 2호 (2012) | 10,000원 |
| <i>International Journal of Korean Unification Studies</i> , Vol. 21, No. 2 (2012) | 10,000원 |
| 통일정책연구, 제22권 1호 (2013) | 10,000원 |
| <i>International Journal of Korean Unification Studies</i> , Vol. 22, No. 1 (2013) | 10,000원 |
| 통일정책연구, 제22권 2호 (2013) | 10,000원 |
| <i>International Journal of Korean Unification Studies</i> , Vol. 22, No. 2 (2013) | 10,000원 |

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| 북한인권백서 2010 | 박영호 외 | 10,000원 |
| <i>White Paper on Human Rights in North Korea 2010</i> | 박영호 외 | 20,000원 |
| 북한인권백서 2011 | 김국신 외 | 17,500원 |
| <i>White Paper on Human Rights in North Korea 2011</i> | 김국신 외 | 17,500원 |
| 북한인권백서 2012 | 김수암 외 | 19,500원 |
| <i>White Paper on Human Rights in North Korea 2012</i> | 손기응 외 | 23,500원 |
| 북한인권백서 2013 | 조정현 외 | 24,000원 |
| <i>White Paper on Human Rights in North Korea 2013</i> | 조정현 외 | 23,000원 |

기타

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| 2011 | 통일대비를 위한 북한변화 전략(통일대계연구 2011-01-1) | 박형중 외 | 17,000원 |
| 2011 | 북한변화를 위한 한-중 협력방안(통일대계연구 2011-01-2) | 임강택 외 | 6,500원 |
| 2011 | 남북 친화력 확대 방안(통일대계연구 2011-02) | 조 민 외 | 6,000원 |
| 2011 | 통일대비를 위한 국내과제(통일대계연구 2011-03) | 박종철 외 | 13,000원 |
| 2011 | 통일외교 과제와 전략(통일대계연구 2011-04) | 최진욱 외 | 13,000원 |
| 2011 | US-China Relations and Korean Unification (Grand Plan for Korean Unification 2011-05) | 최진욱 편저 | 12,000원 |
| 2011 | 통일 비용·편익 연구의 새로운 접근: 포괄적 연구요소의 도입과 대안의 모색 (통일 비용·편익 종합연구 11-01) | 김규륜 외 | 19,000원 |
| 2011 | 체제전환 비용·편익 사례연구(통일 비용·편익 종합연구 11-02) | 조한범 외 | 10,500원 |
| 2011 | 통일 비용·편익 추계를 위한 북한 공식경제부문의 실태연구 (통일 비용·편익 종합연구 11-03) | 임강택 외 | 9,500원 |
| 2011 | 2011년 통일에측시계구축 | 박영호, 김형기 | 8,000원 |
| 2011 | 한반도 통일과 동북아 4국의 입장과 역할 | 배정호 외 | 6,500원 |
| 2011 | Korean Unification and the Positions and Roles of the Four Neighboring Powers | 배정호 편 | 8,000원 |
| 2011 | 중국의 부상에 따른 동북아 전략환경의 변화와 한반도 | 배정호 편 | 12,000원 |
| 2011 | 2011 Unification Clock: When will We See a Unified Korea? Park Young-Ho, Kim Hyeong Ki | | 4,000원 |
| 2011 | 알기쉬운 통일교육 12주제 | 허문영 외 | 35,000원 |
| 2012 | 탈북자 관련 국제조약 및 법령 | 이규창 외 | 19,500원 |
| 2012 | 북한인권 이해의 새로운 지평 | 북한인권연구센터 편 | 20,500원 |
| 2012 | 알기쉬운 통일교육: 해외한인용 | 허문영 외 | 30,000원 |
| 2012 | 통일대비를 위한 대북통일정책 모색(통일대계연구 12-01) | 박형중 외 | 15,000원 |
| 2012 | 통일한국에 대한 국제적 우려해소와 편익: 지역 및 주변국 차원 (통일대계연구 12-02) | 박종철 외 | 14,000원 |
| 2012 | Korean Unification and a New East Asian Order (Grand Plan for Korean Unification 12-03) | 최진욱 편저 | 6,000원 |
| 2012 | Korean Peninsula Division/Unification: From the International Perspective | Kim Kyuryoon, Park Jae-Jeok | 13,000원 |
| 2012 | 중국의 국내정치 및 대외정책과 주요 국가들의 대중국 전략 | 배정호, 구재희 편 | 22,000원 |
| 2012 | China's Domestic Politics and Foreign Policies and Major Countries' Strategies toward China | Bae Jung-Ho, Ku Jae H. | 22,500원 |
| 2012 | 통일 비용·편익의 분석모형 구축(통일 비용·편익 종합연구 2012-1) | 김규륜 외 | 11,500원 |
| 2012 | '선도형 통일'의 경로와 과제(통일 비용·편익 종합연구 2012-2) | 김규륜 외 | 9,000원 |
| 2013 | 유엔 인권메커니즘과 북한인권 | 북한인권사회연구센터 편 | 18,000원 |
| 2013 | 중국 시진핑 지도부의 구성 및 특징 연구 (중국 지도부의 리더십 분석과 한중정책협력방안 2013) | 전병곤 외 | 9,000원 |

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| 2013 | 통일 이후 통합을 위한 갈등해소 방안: 사례연구 및 분야별 갈등해소의 기본방향 | 박종철 외 | 13,000원 |
| 2013 | 한반도 통일에 대한 동북아 4국의 인식 (통일외교 콘텐츠 생산(1)) | 배정호 외 | 16,500원 |
| 2013 | 알기 쉬운 통일교육III: 북한이탈주민용 | 조정아 외 | 11,000원 |
| 2013 | 알기 쉬운 통일교육III: 북한이탈주민용 수업지침서 | 조정아 외 | 6,000원 |
| 2013 | 민주화 및 양질의 거버넌스 수립: 북한 변화와 통일을 위한 시사점 (통일대계연구 13-01) | 박형중 외 | 13,500원 |
| 2013 | 시장화 및 빈곤감소형 경제질서 수립: 북한 변화와 통일을 위한 시사점 (통일대계연구 13-02) | 임강택 외 | 12,500원 |
| 2013 | 통일대계연구: 4년 연구 종합논의 (통일대계연구 13-04) | 박형중 외 | 8,000원 |
| 2013 | 정치·사회·경제 분야 통일 비용·편익 연구 (통일 비용·편익 종합연구 2013-1) | 조한범 외 | 17,500원 |
| 2013 | The Attraction of Korean Unification: Inter-Korean and International Costs and Benefits (통일 비용·편익 종합연구 2013-2) | 김규륜 외 | 15,500원 |
| 2013 | 한반도 통일의 미래와 주변 4국의 기대 (통일 비용·편익 종합연구 2013-3) | 김규륜 외 | 10,500원 |
| 2013 | 전환기 중국의 정치경제 (통일대비 중국에 대한 종합적 전략 연구: 통일시대 한중관계 전망 2013-1) | 배정호 외 | 15,500원 |
| 2013 | China's Internal and External Relations and Lessons for Korea and Asia (통일대비 중국에 대한 종합적 전략 연구: 통일시대 한중관계 전망 2013-2) | Bae Jung-Ho, Ku Jae H. | 17,500원 |
| 2013 | 중국의 대내외 관계와 한국의 전략적 교훈(통일대비 중국에 대한 종합적 전략 연구: 통일시대 한중관계 전망 2013-3) | 배정호, 구재희 편 | 16,500원 |

연례정세보고서

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|------|-----------------------------|--------|
| 2011 | 통일환경 및 남북한 관계 전망: 2011~2012 | 6,000원 |
| 2012 | 통일환경 및 남북한 관계 전망: 2012~2013 | 7,000원 |
| 2013 | 통일환경 및 남북한 관계 전망: 2013~2014 | 7,000원 |

통일정세분석

비매품

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|---------|-----------------------------------|--------------------|
| 2011-01 | 2011년 북한 신년 공동사실 분석 | 최진욱 외 |
| 2011-02 | 미·중 정상회담의 의미와 한국의 전략적 고려사항 | 배정호 외 |
| 2011-03 | 2011년 미·중 정상회담 평가: 동북아 및 한반도에의 함의 | 황병덕 외 |
| 2011-04 | 2009년 헌법 개정 이후 북한 노동법제 동향 | 이규창 |
| 2011-05 | 최근 북한 주민의 의식변화와 정책적 시사점 | 임순희 |
| 2011-06 | 최고인민회의 제12기 제4차 회의 결과 분석 | 임강택, 최진욱 |
| 2011-07 | 중동 민주화 혁명과 한반도 전략적 함의 | 배정호, 박영호, 박재적, 이기현 |
| 2011-08 | 북한의 여성권·아동권 관련 법 제정 동향 | 임순희, 김수암, 이규창 |

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| 2011-09 | 상반기 북한경제 분석 보고서 | 최진욱 외 |
| 2012-01 | 2012년 북한 신년 공동사설 분석 | 최진욱 외 |
| 2012-02 | 북한의 아동교육권 실태와 관련 법령 제정 동향 | 임순희, 조정아, 이규창 |
| 2012-03 | 북한 미사일 발사에 대한 국제사회의 대응 | 배정호 외 |
| 2012-04 | 제4차 당대표자회와 제12기 제5차 최고인민회의 분석 | 박형중 외 |
| 2012-05 | 최근 국제사회의 북한인권 논의동향 | 이금순, 한동호 |
| 2013-01 | 2013년 북한 신년사 집중분석 | 전성훈 외 |
| 2013-02 | 3차 핵실험 이후 김정은 정권의 대내외 정책 | 전성훈 외 |
| 2013-03 | 시진핑 체제의 출범과 대내외정책 방향 12기 전국인민대표대회 제1차 회의 결과분석 | 전병곤, 이기현 |
| 2013-04 | 북한 3차 핵실험 이후 미국의 대북정책 논의 동향 | 박형중, 박영호, 김동수 |
| 2013-05 | 대북경제제재에 대한 북한의 반응과 대북정책에의 함의 | 임강택 |
| 2013-06 | 한미정상회담 결과 분석 | 김규륜 외 |
| 2013-07 | 한중정상회담 결과 분석 | 이기현 |
| 2013-08 | 김정은 정권의 대내외 정책평가와 우리의 대응방향 | 박영자 |
| 2014-01 | 2014년 북한 신년사 집중분석 | 박형중 외 |

KINU 정책연구시리즈

비매출

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| 2011-01 | 재스민혁명의 분석과 북한에 대한 시사점 | 박종철 외 |
| 2011-02 | 창지투(長吉圖) 선도구와 북한나선특별시, 러시아 극동지역 간 경제협력 과제 | 림금숙 |
| 2011-03 | 6자회담과 남북관계: 전망과 대책 | 박종철 외 |
| 2011-04 | 보호책임(R2P)의 이론 및 실행, 그리고 한반도에의 함의: 리비아 및 코트디부아르 사태를 중심으로 | 조정현 |
| 2011-05 | 남북러 가스관 사업의 효과, 쟁점, 과제 | 이윤식 |
| 2011-06 | DMZ 총람: 개요, 정치·군사적 현황 | 손기웅 외 |
| 2011-07 | DMZ 평화적 이용의 국가적 의미 | 손기웅 외 |
| 2012-01 | 통일재원 마련 및 통일이지 결집 관련 국민의 인식 | 김규륜, 김형기 |
| 2012-02 | 2012년 상반기, 북한 정책동향 분석: 북한 매체의 논조를 중심으로 | 박형중 외 |
| 2012-03 | 러시아의 극동개발과 북한 노동자 | 이영형 |
| 2012-04 | 오바마 2기 행정부의 대 한반도 정책 전망 | 김장호 외 |
| 2012-04(E) | The Second Term Obama Administration's Policy towards the Korean Peninsula | Jangho kim |
| 2012-05 | 중국 18차 당대회 분석과 대내외정책 전망 | 이기현 외 |
| 2013-01 | 북한 지하자원을 활용한 DMZ/접경지역 남북 산업단지 조성방안 | 손기웅 외 |
| 2013-02 | 박근혜정부의 대북정책 추진 방향 | 최진욱 외 |
| 2013-03 | 박근혜정부의 통일외교안보 비전과 추진 과제 | 최진욱 외 |
| 2013-04 | 유엔조사위원회(COI) 운영 사례 연구 | 김수암 외 |
| 2013-05 | Trustpolitik: 박근혜정부의 국가안보전략 - 이론과 실제 탐색연구 - | 박형중 외 |
| 2013-06 | 서독의 대동독 인권정책 | 안지호 외 |
| 2013-07 | 2013년 북한 정책 논조 분석과 평가 | 박형중 외 |

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|---------|--------------------------------------|-------|
| 2013-08 | 한반도 신뢰프로세스 업그레이드를 위한 2014년 대북정책 추진전략 | 최진욱 외 |
| 2013-09 | 김정은 정권의 대남 긴장조성: 2013년과 향후 전망 | 박영자 외 |

북한인권: 국제사회 동향과 북한의 대응

비매품

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| 2011 | 북한인권: 국제사회 동향과 북한의 대응, 제6권 1호 | 김수암, 전현준, 이규창 |
| 2011 | 북한인권: 국제사회 동향과 북한의 대응, 제6권 2호 | 김수암, 김국신, 이규창 |
| 2012 | 북한인권: 국제사회 동향과 북한의 대응, 제7권 1호 | 손기웅 외 |
| 2012 | 북한인권: 국제사회 동향과 북한의 대응, 제7권 2호 | 손기웅 외 |
| 2013 | 북한인권: 국제사회 동향과 북한의 대응, 제8권 1호 | 이금순 외 |
| 2013 | 북한인권: 국제사회 동향과 북한의 대응, 제8권 2호 | 이금순 외 |

Studies Series

비매품

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|---------|---|--|
| 2011-01 | A New Approach to the National Community Unification Formula Park Jong Chul, Hong Woo Taek, Lee Kyu Chang, Kim Philo, Chun Chae Sung, Cho Seong Ryoul, Hong Ihk Pyo, Hwang Sun Hye | |
| 2012-01 | Study of Disciplinary Problems in the North Korean Army Lee Kyo Duk, Chung Kyu Sup | |
| 2012-02 | The Quality of Life of North Korean: Current Status and Understanding Kim Soo Am et al. | |
| 2012-03 | Basic Reading on Korean Unification Huh Moon Young et al. | |
| 2013-01 | Study on the Power Elite of the Kim Jong Un Regim Lee Kyo Duk et al. | |
| 2013-02 | Relations between Corruption and Human Rights in North Korea Kim Soo Am et al. | |
| 2013-03 | Easing International Concerns over a Unified Korea and Regional Benefits of Korean Unification Park Jong Chul et al. | |
| 2013-04 | 'Peaceful Utilization of the DMZ' as a National Strategy Son Gi Woong et al. | |

■■ 통일연구원 定期會員 가입 안내

통일연구원은 민족공동체 실현을 위한 국민 역량을 축적하고 통일환경 변화에 적극적 주도적으로 대응할 수 있도록 통일문제에 관한 제반 사항을 전문적, 체계적으로 연구하고 있습니다. 본원의 연구성과에 관심이 있는 분들에게 보다 많은 정보와 자료를 제공하고자 연간 회원제를 운영하고 있습니다.

연간 회원에게는 간행물을 우편으로 우송해 드리며 각종 학술회의에 참석할 수 있는 혜택을 드립니다.

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- 다) 기관회원: 학술 및 연구단체 또는 도서관

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- 라) 구간자료 20% 할인된 가격에 구입

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- 다) 홈페이지: <http://www.kinu.or.kr>

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Research on Unification Costs and Benefits 2013-2

The Attraction of Korean Unification

Inter-Korean and International Costs and Benefits

Kyuryoon Kim et al.

