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How to Finance North Korea's Capital Requirements for Economic Recovery

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INTRODUCTION

From a humanitarian perspective, rehabilitation is not only the problem of North Korea but also a concern of the international community. NGO reports and even the official reports of the North Korean government reveal that at least several hundred thousand people have succumbed to starvation. Although various governmental and non-governmental organizations are providing humanitarian aid, there seems to be no end in sight to the chronic food shortages at least for the near future. Preventing the North from deteriorating further has become a common agenda for the countries concerned.

We assume that North Korea lies in a poverty trap. Continuously decreasing capital stock has brought about the economic deterioration in the North. Rehabilitation of the North Korean economy should therefore begin with capital formation. However, the country does not have any capability to build up capital stock on its own. There is no

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choice but to provide capital to the North from outside.

This paper has two aims. The first one is estimating the capital needed to pull North Korea out of the poverty trap. The second one is to provide possible strategies to finance North Korea's economic recovery. To solve the the former problem, we have applied the computable general equilibrium (CGE) model. With the model simulation, the present economic condition will be described and the needed capital volume enabling the North's growth will be estimated. To solve the latter problem, all the possible ways to mobilize financing sources will be presented with their preconditions. Developing strategies for financing with internal and external basis will also be given.

ECONOMIC CHANGE IN NORTH KOREA

North Korea experienced negative economic growth for about ten years, from the beginning of the 1990s until 1998. According to estimates by the Bank of Korea (BOK), the North Korean economy has shrunk about 40% since 1990. North Korea itself has reported economic figures to the UN in order to obtain food aid, which showed an enormous decline. The United Nations Development Programme's office in Pyongyang indicated that GDP fell by nearly half between 1992 and 1996.[1)] By 1999, the negative economic growth had turned positive after a nine-year economic downturn and North Korea again realized positive economic growth of 1.3% in 2000. Clearly, the disastrous decline of North Korea's economy has brought about many social and political problems.

The economic downturn in North Korea began with the decline of its capital stock. The main reason for that decrease was the collapse of the international cooperation network among socialist

1) On GDP change in North Korea, see Marcus Noland, "Avoiding the Apocalypse: The Future of the Two Koreas," Institute for International Economics, Washington, D.C. (2000), p. 97.

countries. The most severe shock resulted from the abrupt end of economic relations with the Soviet Union. The capital stock in North Korea decreased for the following reasons:

Capital destruction through increases of import prices: The collapse of the cooperative network among socialist countries ended socialist-friendly prices, which usually ranged between one-fourth to one-third of normal prices prevailing in the international market. Import prices climbed abruptly as socialist countries demanded normal market prices. The three-fold to four-fold rise in the prices of important production materials drastically raised the input value over the output value,[2] and this has had a detrimental effect on capital stock in the North. Because the capital using import materials was employed mainly in the industrial sector, this capital destruction resulted in severe de-industrialization, not unlike that in East European countries in the early 1990s.[3]

Decline of capital utilization through change of the payment system: The payment system among the former socialist countries changed from a clearing system using transfer rubles to one with hard currencies. North Korea was not prepared to pay for necessary import goods because of a traditional deficiency of hard currencies. This caused a decline of capital utilization, which had adverse effects on production through capital destruction.

Demand decline through market contraction: The cooperation network among socialist countries secured export markets through a clearing system. The breakdown of this cooperation network resulted in market contraction and a decrease in demand. The decreased demand for exports constrained North Korea's capability to earn foreign currency, thereby affecting its imports (i.e., import

2) The price of crude oil from China rose from $60 per ton in 1989 to $135 in 1992.

3) Deindustrialization was not a result of the transformation process but a result of abrupt price increases. In particular, a rise in energy prices led to inefficient capital vintage. Martin Falk, Martin Raiser, and Holger Brauer, "Making Sense of the J-Curve: Capital Utilization, Output and Total Factor Productivity in Polish Industry 1990-1993," *Kiel Working Paper*, No. 723, The Kiel Institute of World Economics (1996).

capacity of important materials was reduced, which exacerbated the increased capital disemployment).

Capital pullout by the Soviet Union: The Soviet Union stopped providing loans in 1987. Moreover, it demanded the repayment of loans and pulled capital out of North Korea, in effect transforming the main capital provider into a capital extractor.

All of these factors severely reduced real capital volume in North Korea. The capital decrease initiated abrupt negative economic growth in the beginning of the 1990s.

North Korea's economic situation seems to fit the description of a poverty trap.[4] The supply of domestic and foreign savings is so low that the depreciation of physical stock is not being replaced. North Korea's economy in 1999 and in 2000 rose because of external capital inflow, especially from South Korea, China and Russia. Humanitarian assistance from the U.S. and other countries has contributed to economic growth as well. North Korea, however, does not have a large enough production capacity to satisfy domestic consumption and to compensate for capital depreciation. This suggests that the recent positive economic growth in North Korea may halt and reverse at any time, particularly if external capital inflows cease.

NORTH KOREA'S CAPITAL NEED FOR ECONOMIC RECONSTRUCTION

The Model

The aim of model simulation is to calculate the capital needed to draw the North Korean economy out of the poverty trap. The hardest problem with modeling North Korea is selecting an

4) See Robert Barro and Xavier Sala-i-Martin, *Economic Growth* (New York: Mcgraw Hill, 1995), p. 49.

appropriate model and estimating missing data, because North Korea does not release all of the economic data. In this paper, we employed a neo-classical computable general equilibrium (CGE) model. The CGE models have proven useful in studying the economy-wide structural effects of policy changes and economic reforms in many applications. The CGE modeling for the North Korean economy has been conducted by Noland, Robinson and Scatasta[5] and Shin and Lee[6] to compute the effects of policy changes on the North Korean economy. The model implements the input-output model describing the inter-industrial linkages as basic structure. The input-output model explicitly links industries in a value-added chain from primary goods, through continuously higher stages of intermediate processing, to the final assembly of goods and services for consumption. The sectors may be linked directly or indirectly via intermediate goods. Labor, capital, and intermediate goods are assumed to be used in the production process. This model therefore has been used to compute the sectoral effects of changes in exogenous variables such as foreign investmentin the economy or set up a consistent production plan.

The CGE model applied here has five sectors. There are three factors: land, labor, and capital. Composite household demand is specified as Cobb-Douglas, between government spending and private spending. Government spending therefore involves a fixed share of temporal consumption. Consumption across goods is determined by constant difference elasticity preferences. Consumers' demands for final goods sectors are generated from a representative regional household with Cobb-Douglas preferences over sectoral composites. Each sector consists of differentiated products.

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5) Marcus Noland, Sherman Robinson, and Monica Scatasta, "Modeling Economic Reform in North Korea," *Journal of Asian Economics*, Vol. 8, No. 1 (1996), pp. 15-38.

6) Shin Dong-cheon and Lee Young-sun, "The Effects of Investment in the North Korean Economy" (in Korean), *Kyongjehak Yongu*, Korean Economic Association, Vol. 45, No. 2 (1997), pp. 155-178.

Table 1. Elasticity for Substitutions

Sectors	Substitution between imports and domestic	Substitution between different imports	Substitution between production factors
Food	2.40	4.69	0.58
Mining	2.80	5.60	0.20
Light Industry	2.32	4.85	1.26
Heavy Industry	3.35	6.64	1.26
Services	1.94	3.85	1.38

Consumer and firm demand for these are generated by CES preferences.

The sectors are perfect competition and constant returns to scale. Specifically, factors and intermediates are combined according to a CES function, while intermediates in the final production are used in fixed proportions. This has two implications: First, the price of intermediates enters firms'cost functions, so price-raising in trade directly affects firms' productivity. Second, firms' demand for each variety of intermediates follows standard CES-derived demand functions.

Regional labor supplies are assumed to be fixed, but regional capital stocks are endogenous. To make the capital stocks in a region endogenous, the employed model here is the Ramsey model based on Franois and Roland-Holst, and Francois, McDonald, and Nordstrom.[7] This model allows us to overcome the limits of static change of capital stock. Some[8] explains the potential for a medium-

7) Joseph F. Francois and David W. Roland-Holst, "Scale Economies, Imperfect Competition, and Commercial Policy in Applied Models," in J. F. Francois and K. A. Reinert, eds., *Applied Methods for Trade Policy Analysis: A Handbook* (Cambridge: Cambridge University Press, 1997); J. F. Francois, B. McDonald, and H. Nordstrom, "Trade Liberalization and Investment in a Multilateral Framework," in R. Baldwin and J. F. Francois, eds., *Dynamic Issues in Applied Commercial Policy Analysis* (Cambridge: Cambridge University Press, 1999).

8) Paul Samuelson, "Trade Pattern Reversals in Time-Phased Ricardian Systems and Intertemporal Efficiencies," *Journal of International Economics*, Vol. 5 (1975);

run growth with the accumulation effect through induced changes in the savings patterns. The magnitude and possible direction of such effects depend on whether savings are assumed to be exogenously fixed or endogenously derived from intertemporal optimization.

Endogenous savings are determined by the condition that the opportunity cost of postponed consumption as given by the rate of time preference should equal the net marginal return of capital. The induced impact on capital formation may reinforce or weaken the static impact, or even reverse the short-term impact if returns on investment fall. The traditional explanation on economic growth with static effects is therefore potentially misleading. For this reason, our model employed the endogenous savings behavior in assessment of capital need in North Korea.

Model Data

The main difficulty in modelling the North Korean economy is the lack of reliable data on the input-output table. Some macro-variables are lacking to construct the social accounting matrix (SAM) for the CGE analysis, also. It is inevitable for us to estimate the input-output technical coefficients and other exogenous variables, using the available information on the North Korean economy and to apply the statistical method.

Due to the lack of data, researchers have used the data set for China or East Germany to estimate the necessary parameters for CGE-ananlysis of North Korea.[9] In these data, most of the CGE-

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Richard E. Baldwin, "The Growth Effects of 1992," *Economic Policy*, Vol. 9, No. 2 (1989); *Idem*, "Measurable Dynamic Gains from Trade," *Journal of Political Economy*, Vol. 100, No. 1 (1992); R. E. Baldwin and A. J. Venables, "Regional Economic Integration," in G. M. Grossman and K. Rogiff, eds., *Handbook of International Economics, Vol. III* (Amsterdam: North-Holland/Elsevier, 1995).

9) Noland, *et al*. (*op. cit*.), Shin & Lee (*op. cit*.) used Chinese data. However, because the industrial structure of China is totally different from that of North Korea, Yoon & Shin used the data of East Germany. Yoon Deok Ryong and Shin Dong-

analyses have tried to establish the input-output table of North Korea in 1990. However, the North Korean economy has experienced great changes since 1990. To estimate realistic figures of the North Korean economy, we needed to construct the input-output table of recent years.

We have chosen the input-output table of 1997 Vietnam to estimate the parameters of North Korea, because the contribution of capital to GDP in Vietnam is similar to that of North Korea, which implies the technology of North Korea resembles the Vietnamese technology. The model is calibrated on the social accounting data from the December 2001 edition of the Global Trade Analysis Project (GTAP) database version 5.[10] For our analysis, the input-output coefficients and sectoral final demands—private and government consumption, investment and exports—have been estimated from the 1997 Vietnamese input-output table and the available data on the North Korean economy.

There are no official taxes in North Korea; however, the so-called "transaction revenue"and various surpluses collected by the government from state and cooperative firms are akin to indirect value-added taxes. It is assumed that government takes the value-added generated by capital employed in industrial sectors, and that these revenues and surpluses constitute the government revenue. Investment is carried out by the government, which also provides subsidies to the private sector. All other aspects of the CGE model used in this paper follow the neo-classical CGE models described in Francois and Roland-Holst.[11]

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cheon, "Unification Costs and Optimal Distribution of Investment," *Kyongjehak Yongu*, Vol. 47, No. 3 (1999).

10) B. V. Dimaranan and R. A. McDougall, *Global Trade, Assistance, and Production: The GTAP 5 Data Base*, Center for Global Trade Analysis, Purdue University, 2001.

11) Francois and Roland-Holst, *op. cit.*

Simulation Results

(1) Social Accounting Matrix of North Korean Economy

One of the ways to understand North Korea's economic structure is by establishing the Social Accounting Matrix (SAM). The Social Accounting Matrix contains all the economic transactions among households, enterprises, the government, and other countries for one year. The SAM of the benchmark year should be produced at the first stage of CGE-analysis because it is the most basic data for understanding an economy. To know the most recent economic feature of North Korea, we chose the year 2000 as the benchmark year of our analysis.

The basic data to establish North Korea's SAM are national income, consumption, investment, government budget, international trade. Some figures must be estimated in order to construct systematic SAM, because the available data are not complete and the measuring method in North Korea differs from that of a market economy. Our paper has used data from BOK reports and the figures from a North Korean budget report. Government income is assumed to be the same as the whole budget volume. In North Korea, investments are made by the government. Payment for the people's economy in the budget is regarded normally as an investment. Private expenses form the rest of the final demand—the sum of the value added and import—after deduction of investment, government spending, and export. Table 2 shows the economic linkages in the North Korean economy.

We assumed the whole value-added, excluding labor cost, as government income. The government spends its income for government management, subsidies for household and enterprises, and investment for economic development. It is assumed that there are no household savings in North Korea. Even though households save, people are forced to save and the savings are not to be freely withdrawn. The government uses the savings as another financing source. Savings in North Korea are a form of government income,

Table 2. Social Accounting Martix of North Korea Economy

(Unit: Million dollars)

Expenditure / Receipt	Economic activities	Commo-dities	House-hold	Govern-ment	Capital account	Foreign countries	Total
Economic activities		16,366.8[1]	12,250.9[2]	708.1[3]	4,687[4]	560[5]	34,431.3
Commodities	17,635.8[6]						17,635.8
Household	7,227[7]			5,023.4[8]			12,391.0
Government	9,568.5[9]						9,568.5
Capital Account				3,837[10]		850[11]	4,687
Foreign countries		1,269[12]	141[13]				1,410
Total	34,431.3	17,635.8	12,391.9	9,568.5	4,687	1,410	80,833.4

1) demand for domestically produced intermediates
2) final demand for domestic products
3) final demand of government
4) investment demand
5) export demand
6) total intermediates
7) household income
8) final demand of government: Administration costs
9) government income
10) government savings
11) foreign savings (trade deficit)
12) import demand for intermediates
13) import demand of households

and for this reason, no household savings are assumed. This is why the SAM of North Korea does not have household savings.

The rows in Table 2 show the income of each economic subject and the columns reveal the expenses. “Economic activities” means the input-output relation and “commodities” reveals intermediates and final demand. “Household” shows the private economic activity and “government” the public activities. “Foreign countries” implies international trade and “capital” means saving and investment.

The SAM shows North Korea’s economic structure in 2000. Total production of goods and services is $34,431.3 million including $16,366.8 million in intermediates and $18,064.5 in final demands. The GDP amounts to $16,795.5 million including $7,227 million in household income and $9,568.5 million in government income. The

government spent $708.1 million for the purchase of goods and services, $5,023.4 to subsidize household and enterprises, and $3,837 million for investments. The export demand in foreign trade is $560 million and import volume amounts to $1,410 million. North Korea recorded an $850 million trade deficit in 2000.

(2) Capital Need of North Korea

The first step to calculate the capital need for economic reconstruction in North Korea is to understand the economic situation correctly. Table 3 shows the present condition of the North Korean economy. According to the simulation results on Table 3, North Korean GDP will decrease by 0.8312% and capital stock will shrink 1.73% every year. Under the given economic conditions, the sectoral production and capital stock will decrease, too. Capital in heavy industry will decrease most, followed by light industry. This implies that industrial production diminishes more rapidly than other sectors. The production capacity in the industries thus will decrease rapidly. Table 3 illustrates that the North Korean economy will decrease continuously which explains why North Korea's production has declined in the 1990s.

The most urgent goal for North Korea is to stop negative economic growth. Even though the North Korean economy achieved positive economic growth in 1999 and 2000, it was only temporary thanks to external capital inflow. However it does not imply the North Korean economy is once again growing. The economy can plummet again at any time if the external financial flow from outside ceases. It is necessary to reverse the trend of negative economic growth to fulfill the following condition: "Net saving must be positive."

According to the simulation with our model, this condition can be fulfilled if the investment volume is higher than $5 billion. In the Ramsey model we employed, the savings rate increases with a growing capital stock. Investment over $5 billion will bring the North Korean economy from the area of poverty trap to the area of

Table 3. Present Economic Situation of North Korea

(Unit: Percent)

	Production decrease	Capital decrease
Agriculture and fisheries	-0.2908	-1.1976
Mining	-1.0093	-1.2905
Light industry	-1.2476	-2.2792
Heavy industry	-1.7093	-2.8678
Services	-0.9045	-1.7479
Total	-0.8312	-1.73

economic growth. After this, the economy will grow automatically, because it can create net savings. Table 4 shows the growth effects of a $5 billion investment.

Even though the economy could grow independently after such a large investment, the growth effect would be quite moderate because almost all the investment would be allocated to cover the depreciation. In any case, it is difficult to realize an investment of $5 billion at one time in North Korea, which is almost one-third of the country's GDP. Therefore, we have tried to calculate the minimum investment volume per year to prevent negative economic growth. The necessary annual investment should be at least $1 billion according to our simulation. This result seems to be appropriate: Table 2 shows that North Korea had to make a foreign debt of $850 million, even though the economy is not growing. We have calculated the growth effect of $1 billion investment every year for five years. The result is in Table 5.

The investment of $1 billion for five years will bring a greater growth effect because the vintage effect has been calculated in the Ramsey model. The same amount of investment for five years raises GDP, capital stock, and household income higher with each year as compared to a one-time investment of $5 billion. This result shows that economic growth will be accelerated if the proportion of new capital in the whole capital stock increases.

The result of CGE-simulation confirmed that the present North Korean economy lies in a poverty trap. and it cannot grow without

Table 4. Growth Effects of a $5 Billion Inevestment

(Unit: Percent)

GDP growth	Capital stock growth	Household income
0.2027	0.5581	0.0646

Table 5. Growth Effects of $1 Billion Inevestment In Each Year For 5 Years

(Unit: Percent)

	GDP	Capital stock	Household income
1st Year	0.0399	0.1099	0.0125
2nd Year	0.0408	0.1124	0.0129
3rd Year	0.0417	0.1146	0.0133
4th Year	0.0426	0.1169	0.0137
5th Year	0.0435	0.1193	0.0142

external help. North Korea needs at least $5 billion to move from the stage of poverty trap to that of economic growth. The annual capital need to stop the negative economic growth amounts to $1 billion. The distributed investment for five years has a greater growth effect if it is realized annually: $1 billion for five years. Nevertheless, this volume of investment is just to halt economic deterioration. The active reconstruction of the economy will require much more capital.

STRATEGIES FOR FINANCING NORTH KOREA'S CAPITAL REQUIREMENTS FOR ECONOMIC RECOVERY

As the previous chapter makes clear, North Korea's capital requirements for economic recovery are very large, considering the size of the economy and population base. In order to make concrete progress in realizing the potential for economic recovery, North Korea will need a realistic financing strategy. In the absence of accurate information on the current status of the North Korean public finance system, external accounts and domestic banking system, one must rely on speculation to define such a strategy. But based on what seems apparent in North Korea's present financial

condition, it should be possible to identify the main elements of an approach that would be a beginning for discussion.

The core of the financing strategy must be to seek ways to increase domestic savings and investment rates, mobilize Official Development Assistance (ODA), and attract foreign investment. Removing obstacles that stand in the way of expanding these sources of funds is the first and highest priority. Second is to ensure that the funds are used in the most efficient way possible in order to maximize the potential economic benefits and to promote sustainable flows over time. Significant achievements in these two areas would provide the confidence and momentum on which to build a sound financing basis for economic recovery and future development.

Essential Preconditions for Mobilizing Resources

Willingness to attend to economic fundamentals: North Korea does not have the policies and institutions in place to guide the absorption of incremental resources for economic recovery, and seems to have been pursuing a strategy in recent years of using crises to seek infusions of external resources while resisting economic reform or openness. If there is one central lesson to be learned from the experience of economic development in the past decades, it is that pouring money into countries that have a weak commitment to sound economic management does not produce good development. Money is wasted and countries end up with unsustainable debt service obligations. If North Korea is going to be successful, it needs to be willing to work hard at economic reform and to be sincere in its desire to overcome the policy and institutional obstacles that constrain its ability to mobilize and allocate resources for economically beneficial purposes. Particularly important will be North Korea's willingness to equip itself with an economically literate leadership that is capable of shaping and managing economic policy as circumstances change. Within a well-conceived macroeconomic management plan, it is possible to estimate

the financing requirements for a specific program of domestically and externally funded public investment, and to use this as a basis for appeals for ODA from donor countries and Multilateral Development Banks. Having this overall framework in place is important as it would give donors confidence that the desired resource flows fit with prudent macroeconomic management. It is also important to assure foreign investors and commercial banks that they have adequate information to assess risks and country creditworthiness.

Willingness to become a member of the International Monetary Fund and the Multilateral Development Banks: North Korea will not be able to mobilize the finances it needs without joining the international financial system. Despite apprehensions of the political leadershi about the implications of taking this step, membership in the IMF, World Bank and Asian Development Bank, and eventually their private sector-oriented affiliates such as the International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA) will be required before large-scale external resource flows begin in earnest. Agreeing to the obligations of membership of the International Financial Institutions (IFIs) would send a critical important signal to the foreign private sector that North Korea is ready to engage in international economic activities within the framework that has been established for the international community as a whole, including regular reporting of economic and financial data and willingness to work with the IFIs in identifying and seeking solutions to problems that affect the investment climate. These will range from technical questions of foreign exchange and banking regulations to efforts to reduce corruption.

Willingness to address outstanding external debt: North Korea does not have a good reputation in financial circles and is in arrears with foreign creditors for loans dating back to the 1970s.[12] A credible

12)According to data compiled by the Ministry of Unification and Bank of Korea, total external debt in 1995 amounted to US$11.8 billion equivalent, representing over 50% of GDP. There are varying estimates of North Korea's external debt, but

strategy for external debt restructuring and future management must be established for private investors and commercial bankers to be willing to put money into North Korea. The IMF coordinates official debt restructuring negotiations through the Paris Club. Private debt restructuring is coordinated through the London Club by commercial banks involved. The World Bank has participated in the financing or guarantee of London Club debt restructuring in a number of countries at the request of the government concerned. Both of these proved to be important for the opening up of Vietnam to significant capital flows in the early 1990s, and both are likely to be important for the future flows of capital to North Korea. Since a significant share of North Korea's outstanding debt was provided by the former Soviet Union, a negotiation of transferable ruble debt will also be needed. Future Russian assistance for large infrastructure projects such as a linked railroad, rehabilitation of power plants, and a gas pipeline, will be tied to a satisfactory resolution of the bilateral debt issue.

Raising Domestic Savings and Investment

The most important source of capital for long-term economic development is domestic. Finding ways to increase domestic savings, both in public savings through taxes and in private savings through development of the domestic financial system, should be a high priority for North Korea. Translating these savings into productive investments through good public and private investment decision-making is also critically important. In East Asia, countries have achieved high savings and domestic investment rates, and this is a major reason for the economic success of this region. For a country

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it is likely that this includes something in the order of $3 billion overdue principle and interest payments on commercial debt, a smaller amount of official debt, and a larger amount of transferable ruble debt provided by the former Soviet Union.

that believes in *Juche*, aiming to increase self-reliance in this way should be at the center of North Korea's future economic development strategy.

The North Korean budget system is the centerpiece of its economy. The IMF estimated in 1997 that 80-90% of national income was channeled through the budget.[13] The principal sources of revenue for the budget were turnover taxes, profits from state enterprises and user fees for working capital. Together these represented 80% of all revenue estimated for 1996. From 1992 to 1996, total revenues declined almost 50% from 39.6 billion won to 20.3 billion won, according to data provided to the IMF. While comparable data are not available for recent years, the total budget approved by the Supreme People's Assembly in 1999 was 19.8 billion won indicating that the worst of the contraction occurred before the provision of international humanitarian aid, but that this aid did not reverse the decline. The published figures for 2000 and 2001 of 20.0 and 20.1 billion won suggest that revenues have stabilized at this level. Clearly the collapse of North Korean industry is the prime reason for the decline in budget revenues and the inability of the State to finance current consumption needs of the population that accompanied the food crisis of the late 1990s or to replace depleted capital stock in infrastructure and industry. The challenge in the future is how to stimulate growth in the industrial, agricultural and service sectors that can generate surpluses for investment both at the firm, cooperative and household levels and through a growing state budget.

Part of the response must be to create incentives for productive entities to become genuinely profitable. This means reducing the role of the Public Distribution System (PDS) where prices have been used mainly as an accounting device, and accepting the introduction of market principles and competition in the first instance within the

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13) International Monetary Fund, *DPRK, Fact-Finding Report* (Washington, D.C., IMF, November 1997).

state enterprise sector and in the agricultural cooperative system. It also means allowing households more freedom to retain and dispose of surpluses earned though participation in small scale economic activities. Price reform and steps to increase monetization of the markets will be important reinforcements of this basic policy. So will addressing the problem of property rights, especially land. Expanding the role of the domestic banking system and introduction of programs targeted to household borrowing will be needed.

A second area for focus is to shift the structure of State revenue mobilization. One aspect would be to reduce the role of turnover taxes and increase the role of profit taxes, and another would be to increase the role of customs duties in line with a policy to greatly expand the role of external trade in the economy. A detailed study of the budget system and strategy for tax reform will be needed to design and calibrate the right mix of policies, and this will need to be done with foreign technical assistance. Experience with other countries which have undergone the transition from socialist to market economic mechanisms will be useful input to the shaping of policy in this area.

Restructuring the system for domestic resource mobilization is a task that will yield results over time and there must be an evolutionary approach to the design to determine the best way to do this. Initially, efforts to change the incentives environment and expand the use of market mechanisms could be expected to lead to significant pressures to increase private consumption, which is highly suppressed in North Korea. Consumption-led growth would create significant welfare gains for the North Korean population, but would not result in a rapid rise in revenues available to the North for investment in large-scale infrastructure rehabilitation or to firms for capital stock replacement and introduction of new technologies. The lack of infrastructure is also a major inhibitor of economic growth. Thus the strategy for economic rehabilitation will need to lend great importance to early mobilization of foreign savings to meet these needs and reinforce domestic policy and institutional reforms. In the

medium and longer term, a greater share of infrastructure and enterprise capital investment should be provided through domestically mobilized sources.

A third area for focus is public expenditure priorities. No reliable breakdown of North Korean expenditures is available, but it is fair to assume that a very large share of the budget is allocated to support North Korea's military establishment.[14] The trade-off between allocation of resources to maintain a large conventional force structure and sustain programs for development of weapons of mass destruction on the one hand, and potential economy recovery of the "people's economy"on the other, is obvious. The peace dividend for the North Korean economy could be huge, if the right decisions are made in redeployment of military resources towards productive activities. Beyond this, there is a need to determine the right mix of expenditures to maximize economic development outcomes. A public expenditure review and public investment planning exercise will be needed to evaluate carefully the relative priorities and sequencing of specific projects, in line with an overall economic development strategy. The assistance of Multilateral Development Banks in this undertaking would be a valuable role for them.

Official Development Assistance

In the short and medium term, both foreign investment and Official Development Assistance will be needed to supply North Korea with the capital needed to realize its economic potential. While it is unusual that countries receive large flows of both at the same time, the experience of Vietnam in the mid-1990s demonstrates that this is possible to achieve. ODA will be particularly critical in

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14) Marcus Noland estimates the military share of GDP to be 25% and argues that demobilization could have significant economic benefits. *Avoiding the Apocalypse: The Future of the Two Koreas* (Washington, D.C.: Institute for International Economics, 2000), pp. 271, 281.

the initial stage for three reasons. First, it will be made available on terms that will be favorable for North Korea, and will comprise a mix of grants, concesssional loans, and long-term non-concessional loans on terms better than North Korea would be able to negotiate with commercial banks given country creditworthiness considerations. Second, ODA can be directed at high-priority public infrastructure projects that cannot attract private financing; this is going to be critical for the energy sector, transport and water management where such investment will remove infrastructure bottlenecks to profitable private investment. Third, ODA will finance not only capital investment, but just as important, the technical assistance and training that will be needed for North Korea to design and manage economic reforms, institutional development and capacity building.

At present, North Korea is receiving very little ODA. External assistance is being provided mainly as humanitarian aid. Food aid mobilized by the United Nations and bilaterally by China and South Korea, fuel oil supplied under the KEDO program (until December 2002) and bilaterally by China, and humanitarian projects funded by non-governmental organizations (NGOs), represent the core of this assistance. Development assistance is beginning to be provided under technical assistance projects supported by governments that have recently normalized relations with North Korea, agricultural rehabilitation projects sponsored by the United Nations Development Programme (UNDP) and International Fund for Agricultural Development (IFAD), and some small scale NGO projects. But there is very limited capital investment included in these initial activities. South Korea's *rapprochement* policy since the former President Kim Dae-jung could also be a chance for a massive ODA inflow.

Another important source will be the Multilateral Development Banks and Japan. The amount of ODA that Japan will make available to North Korea will be determined in the course of normalization of relations negotiations. The amount could be quite large, and used to

finance the core of the infrastructure rehabilitation needs. The balance between grants, soft loans and export credits will also have to be worked out during these negotiations as well as agreements on the priorities for use of these funds.

Mobilization and use of funds from the World Bank and Asian Development Bank (ADB) will be based on a number of considerations, after North Korea has applied and been accepted for membership. These include the following:

Eligibility for International Development Association (IDA) and Asian Development Fund (ADF) lending. A determination must be made whether North Korea will be eligible for the concessional lending windows of the Multilateral Development Banks; IDA for the World Bank and ADF for the Asian Development Bank. This will be based primarily on the estimate of the GDP per capita and how it fits with the IDA/ADF eligibility criteria in force at that time. The advantage for North Korea would be the low cost of such funds. The disadvantage is that IDA/ADF funds are limited and North Korea would be competing with Africa, Central America, South Asia, Cambodia, Vietnam, and even Indonesia for a share of the funds available. Any increments for North Korea in the future will also have to be proposed by the IDA Deputies and appropriated by the legislatures of the donor governments. At present, substantial weight in allocation of IDA resources among 78 eligible borrowing countries is given to performance in implementing policies that promote economic growth and poverty reduction. Given the large infrastructure investment requirements in North Korea, it is unlikely that IDA/ADF funds alone would be nowhere near sufficient to meet the requirements. Compared with other IDA/ADF borrowing countries, North Korea could not realistically expect to receive much more than $300 million per year from both the World Bank and ADB unless the IDA/ADF donors adopt specific policies allowing larger applications for the North Korean case. Some countries, such as Indonesia and India, receive blend programs that include both

IDA/ADF and IBRD/OCR lending. Typically the IBRD/OCR loans go towards infrastructure projects, while the concessional lending goes for social and environmentally-oriented projects. In the case of North Korea, the potential for a blend program should be explored, if it is determined to be IDA eligible.

Creditworthiness. The amount of lending any bank will provide to North Korea whether it is from Multilateral Development Banks or commercial banks will be strongly influenced by assessments of North Korea's ability to repay the loans. Any future program of lending by the World Bank and ADB will need to be based on such an assessment, which in turn requires that there be an acceptable macroeconomic context for determining the amount of borrowing that North Korea can prudently afford. One idea that could be explored in the future is the willingness of South Korea to guarantee loans taken by North Korea to offset the creditworthiness constraint.

Economic Policy Performance and Institutional Capacity. All loans provided by the Multilateral Development Banks have to be approved by their Board of Executive Directors, which will require some evidence that North Korea is sincerely making efforts to improve its economic policies and strengthen economic management capacities. The amount of lending and timing will be affected by the government's own priorities and level of effort in these areas. Meeting the expectations of the Boards will likely be a significant challenge for North Korea at the initial stages of a future lending program.

Country Assistance Strategy. The amount as well as the composition of lending will be primarily shaped by country assistance strategies that are prepared by the staff of the Multilateral Development Banks in close consultation with the government as well as other partners. These strategies provide the context and rationale for the program of both lending and non-lending services to be provided during a multi-year (usually three-year) programming cycle. All relevant considerations are included in the CAS documents, which are discussed by the Board of Executive

Directors and provide the foundation for management decisions on country programs and budgets.

Safeguard policies. Environmental and social protection are taken very seriously by the Multilateral Development Banks, and specific lending operations must be designed to mitigate any detrimental environmental or social effects. In these cases, detailed environmental action plans and resettlement action plans are required to be prepared and approved before loans are approved. North Korea's willingness and ability to address these aspects will have a bearing on future lending.

In addition to Japan and the Multilateral Development Banks, other donor countries that have normalized relations with North Korea as well as the European Union and development agencies of the United Nations are likely to increase their development assistance in parallel with the establishment of these core programs. While the amounts provided by individual countries and agencies are likely to be modest, collectively the program could be substantial. A major policy question for South Korea will be how to position its own ODA policy in relation to the rest of the international community. If North Korea supports expansion of international NGO programs also, additional resources could be mobilized through this mechanism. Overall, it is to be expected that an increase in ODA would be accompanied by a decline in humanitarian food aid so that the overall net resource transfers would be less than the ODA flows alone would indicate.

One important aspect of ODA mobilization will be the role of aid coordination meetings. UNDP and the World Bank provide aid coordination leadership in many countries. In North Korea, UNDP has already organized several roundtables to bring together government officials, multilateral and bilateral donors and NGOs to discuss the food crisis and the government's Agriculture Rehabilitation and Environmental Protection Program. While limited in scope, these meetings have served as important learning vehicles,

modeling the type of dialogue that will need to be expanded to a much larger agenda. In the future, it will be desirable to establish a full scale consultative group for North Korea, chaired by the World Bank, as exists for a number of other countries in the Asia region, both to support the ODA mobilization objectives and also the efficient utilization of this assistance. Equally important will be building capacity within the North Korean government to coordinate both internally and with the ODA donors to ensure good planning and implementation of ODA-financed projects. The ability of the government to engage in an open and frank dialogue with the donors on North Korea's economic development strategy, macroeconomic management, and practical problems in ODA implementation, will have a major impact on mobilization of ODA resources in the medium-term.

Foreign Investment

While foreign direct investment in North Korea has been very limited in the past, potentially, it should become a major future source of funding for economic rehabilitation and development. Three priority areas for initial focus are likely to be trade of North Korean raw materials such as minerals and seafood products, investment in light manufacturing in special enterprise zones and industrial parks, and expanded processing-on-commission trade with South Korea. Strategies for mobilizing foreign investment will need to take into consideration how to create an attractive environment for investment, what forms of investment will be most appropriate, and how to approach different potential geographic sources of investment.

In seeking to attract FDI, North Korea should consider a number of critical policy and strategic factors:

Project Selection—Quantity versus quality of FDI. For the benefits of FDI to be realized in the medium and long run, projects must have

both a commercial and economic viability, otherwise they will prove unsustainable and ultimately fail to meet their objectives.

Eliminating infrastructure bottlenecks. The major determinant of unprofitability of present South Korean investments in North Korea is the high cost of transport. Unreliable power supply and telecommunications are also major bottlenecks. Removing these bottlenecks would go a long way to making foreign investment in North Korean more attractive.

Structuring project finance. Finding the right balance of equity and loan finance in future private investment in North Korea raises a number of important issues. On the equity side, there will eventually be a need to give assurances to investors that the valuation of assets and property rights of investors will be defined appropriately, and will be respected. On loan finance, North Korea will need to substantially improve its reputation and creditworthiness to attract foreign loan financing of any significant scale. In the near-term, strategies should focus on royalties or user fees for foreign investors and to make adequate legal provisions for rent or lease of assets such as land, buildings and equipment. It will be necessary to create the basic conditions to attract investment: a modicum of transparency, a reasonably clear operating environment, ability to bring money in and out of the country, essential financial services, provisions for arbitration of disputes, etc.

Government regulation and oversight. While North Korea has made impressive efforts to improve its foreign investment laws and regulations in recent years, the fact is that North Korea does not function under the rule of law as typically expected by foreign investors. Concepts which are fundamental to conduct of international investment and business relations are not well defined under North Korean law, and not strictly enforced. North Korea will need to find ways to increase its credibility as a regulator of foreign investment.

Management Control and Labor. Foreign investors in Asia frequently complain about tensions in relationships between joint venture

partners. Typically, the underlying issue is management control. Local partners want the money, the technology transfer, and the management experience, but ultimately want to run the show. Current arrangements with North Korea typically involve relations between a foreign investor and a trading company, which in turn manages the relationship with the domestic production enterprise. This two-tier system will not serve North Korea in the future if it wishes to attract substantial amounts of FDI. To ensure efficiency and quality, foreign investors will want to have direct relations with plant managers and labor. This issue of direct contact and control over enterprise management and labor relations is likely to be the most critical of all issues facing foreign investors in the future in North Korea.

In the short and medium term, one strategy that can address many of these issues would be to give priority to creation of enterprise zones or industrial parks, such as the Kaesong Industrial Complex. There are many lessons that North Korea can learn from other countries' experiences with such zones, especially China and Vietnam and other socialist countries in transition in Eastern Europe. Some important lessons are:

- The provision of infrastructure by itself is not enough to make zones successful;
- Zones need to be in commercially attractive areas;
- The greater degree of policy liberalization or experimentation, the more successful they will be;
- Generally, the greater degree of private involvement in the management of the zones, the better the experience of success.

The implication is that there needs to be a strategy of increased policy liberalization and evidence that the original concept could be made viable for companies serving potential markets in China and Japan. For future zone developments, geographic attractiveness to South Korean investors should be given high priority, with the

Kaesong case a good starting point.

The idea of creating enclaves for foreign investment with required infrastructure, special rules, and incentives for investors that do not apply in the general economy, can only be a partial and medium-term approach for mobilization of capital and a demonstration that foreign-invested projects in North Korea can be profitable and economical. In the longer term it will be necessary for North Korea to build a national institutional base in the legal system and management of assets and labor, if it is going to integrate with the international economic system and realize its full economic potential. This strategy also applies primarily to manufacturing investments that capitalize on North Korea's relative low cost educated labor force. Expanding processing-on-commission and light manufacturing arrangements with South Korean firms is the most promising avenue initially. Information technology investments would also be suitable for enclave zones.

A different strategy will be needed to exploit North Korea's natural resources, especially minerals, in mobilizing foreign investment. The mining sector will attract investment because the value of the commodities is known in the international marketplace and the only major issue will be how to get them out of the ground and onto a ship at a cost that is profitable for the investor. Many of the problems facing manufacturing investments are not as acute for the mining sector, and thus it is likely to be easier for investors to negotiate agreements with North Korea that would meet their requirements and risk premiums. Mechanisms such as commodity swaps and inventive schemes to compensate investors for financing of equipment and other extraction and transport expenses by taking a share of commodity profits at the point of sale can be used to stimulate investment in the mining sector. While initially North Korea can benefit from the foreign exchange earnings that flow from international sales of mined minerals, over time the strategy should be to deepen domestic value-added capabilities by making it more attractive for foreign investors to finance processing plants in North

Korea and to export processed or semi-processed commodities. Because of the relatively large sums of capital involved, the legal framework and management control issues discussed above will need to be significantly advanced to attract commercial investment of this type.

To help catalyze foreign investment and reduce risks faced by investors by linking investments to the activities of the multilateral financial institutions, North Korea should plan to make ample use of the private sector windows of the World Bank Group and Asian Development Bank. Participation by the International Finance Corporation (IFC) in project finance for commercial ventures and accessing the facilities of the Multilateral Investment Guarantee Agency (MIGA) are likely to be especially valuable in the North Korean case. The Foreign Investment Advisory Services (FIAS) unit of the World Bank and IFC can be enlisted to provide advice and technical assistance to help North Korea establish policies and institutional capacities that will improve the climate for foreign investment.

Geographic Sources of Investment Capital

Geographically, an important issue will be how best to tap South Korean, Chinese, Japanese, Russian, European, American, Australian, Canadian and other sources of investment. Some of these countries already have a general political objective to stabilize the Korean peninsula and Northeast Asia, while some have more purely commercial interests. Strategies to attract foreign investment resources from these different countries will have to be adapted to the mix of political and commercial interests at stake.

In recent years, China has been the largest source of foreign investment in North Korea, with South Korea increasing its profile through expansion of the POC trade and the initiatives of a number of *chaebols* to launch projects in the North. As inter-Korean reconciliation progresses, expansion of South Korean investment is

likely to accelerate rapidly, while the share of Chinese investment is likely to diminish as political motivations to sustain the regime become less acute. North Korea's policy towards South Korea is likely to give great weight to improving the conditions for expanding economic relations.

Normalization of relations with Japan would result not only in a large package of official development assistance to finance infrastructure rehabilitation, but also most likely a large package of export credits to stimulate North Korean industry. Such credits would be accompanied by expanded FDI, especially by the *Chosun Soren* for projects targeting exports to Japan. It is expected that North Korea's economic relationship with Japan will grow significantly and that strategies to attract Japanese investment will figure prominently in North Korea planning.

Foreign investment originating in the U.S. is not likely to form a significant part of North Korea's future, and a great deal of effort could be wasted trying to stimulate large-scale flows from the U.S. Apart from motivated investors in the Korean-American business community and some niche interests in North Korean minerals, there are few drivers of potential American investment. China will dominate U.S. investor focus on Northeast Asia by virtue of the scale of its potential market. Vietnam will remain attractive for a variety of reasons, including emotional attachments forged during and after the Vietnam War. By comparison, North Korea will simply not be attractive to American investors. Furthermore, the sanctions regime that still exists in the U.S. against business relations with North Korea linked to U.S. laws governing non-proliferation of weapons of mass destruction, will serve to deter all but the most determined American investors from North Korea for the foreseeable future. The most promising area for U.S. investment would be in collaborative ventures with South Korean firms seeking to bring American technology or management expertise to their efforts to invest. In this case, American involvement will be motivated largely to protect relations with South Korean partners.

If the ruble debt issue can be resolved between Russia and North Korea, Russia could regain a prominent role as an investor in North Korea. Replacement of industrial equipment formally supplied by the Soviet Union and financing of large infrastructure projects such as the railroad and gas pipeline links through North Korea to South Korea, are areas where Russian investment might become significant in North Korea's capital mobilization strategy. The rail and gas projects could also generate income for North Korea in the form of transit fees for South Korea use of these resources, making the Russian projects even more attractive from a North Korean perspective.

North Korea's success in opening diplomatic relations with the European Union, Canada and Australia and efforts to improve relations with ASEAN also mean that investment and trade relations with countries outside the Northeast Asian region could be expected to expand in the coming years and North Korea will be well-served in its relations with these countries and the European Commission to seek ways to stimulate their interest in investment. While it cannot be expected that the overall investment from these sources would be extensive, the political desire of these countries to support the emergence of North Korea into the international community and progress in inter-Korean reconciliation will provide an incentive for some investment activity.

COMMERCIAL BORROWING AND TRADE FINANCE

North Korea will not be able to tap commercial debt markets as a sovereign borrower to any great extent until it resolves its existing external debt problems. For this to happen, a debt workout arrangement with the London Club of commercial creditors would most likely be needed. With ample gold reserves, a possible strategy for North Korea to tap commercial financial markets would be to seek ways to re-start gold sales and use this as collateral for

borrowing or other creative financing schemes. Similar strategies could be applied to other minerals with high market value.

Joining the IMF, World Bank and Asian Development Bank would also help improve North Korea's potential access to commercial borrowing, and will be an essential requirement for any large scale lending in the future. As inter-Korean relations progress, another strategy might be to seek guarantees from the South Korean government for North Korean borrowings for projects considered in the interest of both countries. Examples could be investments in transport and energy projects that will serve both countries, such as a gas pipeline and rail and road links to China and Russia.

Capital Market Development: Laying the Groundwork

While development of domestic capital markets for North Korea is a long way off, consideration could be given to allowing access to South Korea's capital markets of joint ventures with North Korean firms. Both long-term bonds and equity could be mobilized to support projects in this way, which would also serve a long-term goal to deepen the integration of the financial systems of the two countries.

CONCLUSION

The stability on the Korean peninsula presupposes the rehabilitation of the North Korean economy. The simulation results, however, show that the North Korean economy would collapse on its own because of its continuously decreasing capital stock. Industrial sectors in particular will shrink more rapidly than agricultural or service sector. It implies that the de-industrialization process is still ongoing in North Korea, something which had already halted in the old socialist countries in the mid-1990s. The shrinking industrial sectors will pull down other sectors like agriculture,

mining and services at the same time. The most urgent task, therefore, will be to stop further economic deterioration. According to simulation results, it is possible only if capital over $1 billion flows into North Korea for at least five years. A one-time $5 billion investment would also halt the economic downturn of North Korea. Further growth, on the other hand, will require much more capital.

North Korea will face colossal challenges in mobilizing the capital needed to finance a robust economic recovery program. Integral to success will be the ability to convince potential providers of finance that North Korean authorities are committed to adopting policies and building institutions that will enable effective use of such resources for economic growth and welfare improvement for North Koreans. International donors and investors will also need to fully acknowledge the difficulties in managing changes in North Korea and be prepared to assist North Koreans in obtaining knowledge and experience in how to participate in the international financial system. For these reasons, the overall financing strategy should start with modest objectives, in which success can become self-reinforcing and a foundation can be built for an increasingly ambitious program over the medium term.