

Economic Reforms and Skill Requirements in DPRK

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Introduction

The Democratic People's Republic of Korea (DPRK or North Korea) has been one of the world's most closed and inward-oriented societies since its foundation in 1948, and detailed information about the structure and development of the North Korean economy is extremely scarce. This notwithstanding, until the mid-1980s it was believed that North Korea's indigenous ideological mix of communism and nationalism—known as *Juche*—was relatively successful in generating economic growth and material welfare. This was largely the result of generous support from the Soviet Union and other CMEA allies. In particular, the North Korean economy was propped up by subsidized imports of oil, coal, other intermediates, and technology. These imports were not only underpriced, but to a great extent financed with credits from the partner countries. Meanwhile, relations with market economies were extremely limited, both because of the self-selected isolation mandated by the official *Juche* ideology and a longstanding trade embargo implemented by the United States.

The developments since the collapse of the Soviet Union have been dramatically weaker. Without the support from its allies, North Korea has faced severe difficulties in managing its command economy, and the last seven-year plan was abandoned in 1993. The end of aid from the Soviet Union threw the economy into a vicious circle where agricultural and industrial production contracted, incomes were insufficient to finance the investments needed to maintain capital productivity, and the deteriorating capital stock contributed to further declines in production and incomes. It is estimated that real per capita GDP fell by about 3 percent per year between 1990 and 2002. The only sector that has remained reasonably intact is the military, where North Korea boasts the world's fourth largest standing army and has possibly developed a domestic nuclear capability. However, given the heavy financing burden for its armed forces, the country's diminishing output is not sufficient to sustain the population. The period since the beginning of the 1990s has therefore been marked by constant food deficits, culminating in a devastating famine between 1995 and 1998 that caused hundreds of thousands of deaths. Since this time, the sustainability of the population is dependent on foreign aid. It is estimated that imports of around one million tons of rice are needed even when the domestic harvest is good. With extremely limited foreign exchange earnings from exports, foreign aid—mainly from China, South Korea, the United States, and the European Union—remains the only available source of finance.

This severe crisis in the mid-1990s, known as the "Arduous March," led many observers to speculate about the sustainability of the North Korean economy, and it was commonly believed that economic reforms of the kind implemented in China or Vietnam would be necessary for regime survival. However, the response was instead an even heavier emphasis on the armed forces, with campaigns promoting a "military-first" policy (Suh 2002). Finally, in July 2002, a first round of economic reforms was announced. Further reforms were introduced in 2003. The purpose of this brief note is to summarize some of the information about recent developments in

the DPRK economy, and to highlight the need for new skills, particularly related to economics and management. Considering the severe scarcity of economic statistics—the DPRK government has never even published a statistical yearbook (Eberstadt 2003)—the summary will be more fragmentary than what would be desirable.¹ The following two sections examine the economic development since the early 1990s and the reforms that have been undertaken since 2002. A final section discusses some of the major development challenges for the North Korean economy during the coming years: in particular, training in economics, business, and management is urgently needed to raise the likelihood that the ongoing reforms are successful and contribute to an opening up of North Korea.

Background

The Crisis

The favorable trade relations with the Soviet Union before the mid-1980s allowed DPRK to develop a highly import-dependent production structure: imported fuel and fertilizers were essential to maintain output levels. This dependence was not clearly manifested until the supply of cheap imports started to diminish in the late 1980s (although the North Korean economic development had already begun to stagnate at this time). The support from the Soviet Union was gradually withdrawn as North Korea refused to service the large debts that had been accumulated during the previous decades. The net flow of resources from the Soviet Union turned negative already in 1987 with immediate effects on the economy, in particular the agricultural sector.

The North Korean response was an intensification of farming, with double-cropping, new high-yield varieties, and other measures to boost output. Private garden plots and farmer's markets were also allowed to expand. While the short-term results may have softened the impact of the reduction in imported inputs, the medium-term results were disastrous. The more intensive land use led to soil depletion and lower yields, and the expansion of farm land into hillsides and other marginal land contributed to soil erosion, river silting and, eventually, severe flooding. Although there is no official confirmation, it is likely that problems with food shortages emerged already in the late 1980s. The official acknowledgement of hunger and food shortages did not come until 1994. In 1995 catastrophic floods destroyed a large part of the grain harvest and led to a full-blown famine, as well as the first official calls for international assistance. The flooding also destroyed a large share of North Korea's hydroelectric capacity. Deprived of energy and raw materials, industrial production also slumped. China provided some relief by allowing the DPRK to run a sizable trade deficit throughout the 1990s (the cumulative trade deficit with China since 1990 is estimated at close to USD 5 billion), but the manufacturing sector was not able to adjust to a situation where oil and other inputs are priced at world market prices.

Table 1 (see page 12) summarizes some of the effects of the crisis on the North Korean economy. The table includes data on national income, the state budget, exports and imports, and production volumes for some important agricultural and industrial goods.

Nominal gross national income (GNI) fell from around USD 23 billion in 1990 to a trough of less than USD 13 billion in 1998—a drop of more than 50 percent in real terms. Public budget revenue fell almost as much, but the pattern over time was distinctly different from that for

¹ See Foster-Carter (2003) for a discussion of some of the data sources on the DPRK economy.

national income. While income started contracting already before 1990, the public budget actually expanded, both in nominal terms and as a share of national income, until 1994. This suggests that one of the initial responses to approaching crisis was to increase the emphasis on the official economy. The state—including the military—was prioritized in the attempts to overcome the economic downturn and to avoid a system collapse of the Eastern European kind. However, the situation after 1997 looks very different from that in the early 1990s. The public budget contracted by more than half between 1994 and 1997. Although there is only limited information about the structure of the budget, it is clear that there have been significant changes in the weight of different expenditure categories. In particular, unofficial estimates suggest that the “military-first” policy has protected the military budget, and that military expenditure has only fallen some 10-15 percent, from USD 5.5 billion per year in the early 1990s to somewhat below USD 5 billion per year after 1998.² This would mean that the share of military expenditure increased from around one-quarter to more than half of the total budget.³ The most severe cutbacks have been in public investment, which means that public infrastructure is gradually eroding due to lack of maintenance and replacement investment.

Trade statistics also reveal how severe the crisis has been. Although there are no official trade data from DPRK, relatively precise measures have been compiled using mirror statistics from the trade partners.⁴ While the fall in GDP was relatively smooth until 1997 or 1998, the contraction in trade—in particular exports—occurred much earlier. The export volume fell by over 45 percent between 1990 and 1991, with a further large contraction between 1997 and 1998. Imports suffered equally. As a result, the import volume in 1998 barely reached 36 percent of the 1990 total. While exports have remained at less than half of the pre-crisis level, imports have recovered strongly during the past few years, explaining to a great extent the overall recovery of the DPRK economy after the “Arduous March.” The sources for the financing of the large trade deficit have largely been humanitarian aid funds.

The last part of the table looks at the developments in agriculture and industry. In food and agriculture, the main feature is the large fluctuation of total output from year to year. This reveals the vulnerability of the North Korean agricultural sector: with limited resources in terms of fertilizers, irrigation, machinery, and energy, total output is highly dependent on natural conditions. When temperatures and rainfall are unfavorable—as in 1995 or 2000—total output falls notably. Moreover, productivity has diminished over time because the expansion of production to marginal lands and the intensive use of fertilizers have reduced soil fertility. As an example, it can be noted that the yield per hectare of paddy rice has fallen from around 8 tons per hectare in the 1980s to about half of that at present. Domestic grain production is not sufficient to feed the population even in “good” years, and it is estimated that North Korea has a structural deficit in food production of about one million tons of grain per year (FAO/WFP 2003).

² Estimates from International Institute for Strategic Studies, London, and Ministry of National Defense, ROK.

³ It should be noted that SIPRI estimates of DPRK military expenditure are significantly lower, ranging from USD 2.2 billion in 1994 to USD 1.5 in 2002, suggesting a contraction of about one-third.

⁴ While these data capture most of the official trade, it should be noted that there are some areas that are not covered. Much of the border trade with China is not registered, nor is there much information about arms trade and other sensitive operations.

The collapse in the production of minerals and heavy industrial goods coincide largely with the falls in imports, revealing the import dependence of North Korean industry. The last rows of the table focus on what is arguably the main bottleneck in the Korean economy: energy. Oil imports fell rapidly from over 18 million barrels in 1990 to just over 2 million barrels in 1999. Although coal mining has been a highly prioritized area, production has fallen by about one-third during the past 12 years. The shortage of fuel—in combination with flood-damages to the country's hydroelectric installations, outdated infrastructure, and substantial losses in electricity transmission—explains why electric power generation barely reaches one-quarter of installed capacity.

The worst crisis years were 1995-1998, and some cautious recovery has occurred since that time. The main explanation for the stabilization of the economy is an increase in the inflow of foreign resources, mainly in the form of foreign aid, which has allowed an expansion of imports of food and fuel. The aggregate trade deficit during the period 1990-2002 amounts to about USD 8 billion, which must be considered a relatively large sum for a country that has been in default of its international loans since 1987, has had no access to international capital markets, virtually no foreign direct investment, and does not receive any outright development assistance beyond humanitarian aid. The total amount of food aid provided to DPRK by Japan, South Korea, the United States, the European Union, and other Western countries until early 2003 is valued at around USD 2 billion. The United States has also contributed about USD 700 million in heavy fuel oil following the 1994 Agreed Framework to halt and dismantle North Korea's nuclear program in return for alternative sources of energy.⁵ As mentioned earlier, China's accumulated trade surplus since 1990 is estimated at USD 4-5 billion. Additional funds have been provided by South Korea (e.g., in connection with meetings between Kim Dae Jung and Kim Jong Il), and it is also likely that some of DPRK's export revenues (e.g., for military supplies) are not fully reflected in the available statistics.

Effects on Economic Structure

The effects of the longstanding crisis differ between the main sectors of the North Korean economy. In recent years, it has been common to distinguish between three economic sectors: the official or state economy, the military, and the unofficial or private economy (Lee and Yoon 2004). There is no doubt that the official economy has suffered most. The official economy covers public administration, public services, state industry and state farms, and the Public Distribution System (PDS) for provision of food and other essential consumer goods to the population. The collapse of state industry and agriculture has led to a substantial contraction of state income and expenditure. Apart from the neglect of maintenance and investment needs in industry and infrastructure, the most serious consequence has probably been the gradual collapse of the PDS. The grain rations distributed through the PDS fell gradually from 600-800 grams per person before the crisis to 128 grams in 1997 (Noland 2000, 2003). The average ration has increased to around 300 grams per day, but there are large differences between regions and population groups. Government officials and citizens of Pyongyang receive around 700 grams per day, while PDS rations in other regions are substantially smaller—outside Pyongyang, a larger share of the ration is corn rather than rice. There have also been occasional reports of delays and temporary suspensions of PDS shipments to peripheral regions, but there is

⁵ Both the oil deliveries and the reactor construction project were frozen after the North Korean revelation in late 2002 of its heavy uranium nuclear program.

insufficient information to make any detailed comparisons. The PDS has apparently broken down for all other commodities.

The food rations of military personnel have not diminished as much as those of other population groups. On the contrary, the military-first policies have resulted in a clear priority regarding the distribution of the increasingly scarce resources in the state sector (Suh 2002). The military economy is managed separately from the rest of the economy, and comprises several hundred factories for the production of munitions and other equipment. This includes factories for civilian goods that can be shifted to military production, farms, mines, and even banks. Thanks to the privileged access to imports as well as domestic resources, the military economy—which is not considered to be closely integrated with the official economy—has avoided the extreme contraction that has affected other parts of the North Korean public sector.

Although the unofficial economy has also suffered from the crisis, it is clear that its relative share of aggregate economic activity has increased during the past decade. Until the early 1990s, the “private” sector consisted largely of the agricultural goods that were produced in the garden plots of the farmers and sold in “farmer’s markets” in rural areas; a limited supply of consumer goods produced by state enterprises outside the state planning system, using excess capacity and whatever materials could be found, was also available. These markets expanded rapidly from the early 1990s, and became increasingly important for incomes as well as food requirements when production in the official economy slumped and the PDS began to collapse. Hence, while official campaigns still tried to rein in private initiatives in the early 1990s, the fledgling markets were increasingly tolerated as the crisis grew deeper. This development appears to have been faster in more peripheral provinces where PDS shipments were reduced at an earlier stage: in these cases, local officials quickly realized that there was simply no alternative to private markets for fulfilling the basic needs of the population. Already before 2003, when the farmer’s markets were officially transformed into regular markets where all kinds of goods could be sold and bought, they had already undergone that transformation in practice. A variety of goods were transacted: agricultural surpluses from cooperatives and households, leakages from foreign food aid shipments, import goods from China, assets stripped from state enterprises, and products from small household enterprises.

Economic Reforms

Unlike most other command economies, North Korea did not introduce any fundamental reforms after the collapse of the Soviet Union. However, some market solutions emerged spontaneously during the mid-1990s when the official economy failed to provide basic necessities for the population. However, these were, at best, tolerated rather than encouraged by the national leadership. The word *reform* was not used in the official intercourse, since it automatically implied that the existing system was imperfect.

It was not until July 2002 that an economic reform package was quietly introduced (although Jo [2004] reports that the reforms were prepared for more than two years). These reforms—concerning microeconomic incentives, macroeconomic stability, foreign direct investment, and foreign aid—have gradually and cautiously been deepened since that time.

Microeconomic Reform

The most visible microeconomic measure at the outset of the reform process was a price reform to reduce the large gap between official prices that were not related to supply and demand forces, and the unofficial prices at which goods were traded in the farmer's markets and black markets. For instance, both the procurement and consumer prices of rice were steeply increased. Before the reforms, government purchased rice from farmers at a price of 0.8 won per kilogram, and charged a consumer price of 0.08 won per kilogram through the PDS. The reforms raised the procurement prices to 40 won per kilogram and the PDS price to 44 won per kilogram; similarly, the procurement and consumer prices of corn were raised from 0.49 and 0.07 won to 20 and 24 won per kilogram. Most other official prices—examples reported in South Korean press include other food products, diesel oil, electricity, bus, train, and subway fares, and other utilities—were also raised, with the average price increase estimated at a factor of 25 (Jo 2003).

It is clear that one of the motives for the higher procurement prices for agricultural products has been to stimulate production and increase the volumes distributed through the PDS. A problem with the earlier system was that acreage was diverted from grain production to other crops that could be sold at higher prices (or that grain was used to produce liquor that could be sold at substantially higher prices), which reduced the volume of grains available for the PDS. By raising the procurement prices close to the unofficial market prices (in mid-2002, the “black market” price of rice was reported to lie in the 40-50 won range), it was hoped that farmers would be coerced back into the official economy.

Other measures to boost agricultural production were also introduced. From the late 1980s, each cooperative farm household had been entitled to a private garden plot of 90 to 150 square meters, which was now increased to 1200 square meters. Since the farm households are allowed to sell the output from these plots at market prices (minus a 15 percent tax as a charge for the land use) they are generally more productive than the average acreage of cooperative or state farms. The distribution of profits from the cooperative farms has also been changed in an effort to improve production incentives. The cooperative farms are operating in a squad system and profits were divided to the squads based on the productivity of the squad. However, within each squad, profits were shared equally between all members. In connection with the price reforms, it was stated that profits would be distributed according to productivity also within each squad. Moreover, the procurement prices for vegetables and other crops are increasingly differentiated according to the quality of the produce. There are also unconfirmed reports that private farming is allowed in some provinces, as parts of cooperative farms have been assigned to individual households.

Together with the price reforms, there were also increases in official wages and salaries. These raises were differentiated according to the strategic importance of the population group. For regular workers, wages increased from 100-150 won per month to 2,000 won per month while scientists, technicians, and other highly educated groups saw their wages increase to a range of 3,000-5,000 won per month. The largest increases, however, were given to miners, who now earn up to 6,000 won per month. On average, wages have increased by a factor of about 18, meaning that the real purchasing power of the population has fallen as a result of the reforms (Jo 2003).

Another area where important microeconomic reforms have been introduced is industry and management. In the traditional command economy, factories were managed through the central plan, and the role of managers was essentially to supervise the implementation of the plan. With the reforms, it has been stated that factories, companies, and farms will become increasingly autonomous, and that they are expected to generate profits. The State Planning Committee continues to set the guidelines for national development, but the operational decisions are to be disaggregated to the company level. More specifically, state subsidies will be discontinued, and firms will be allowed to make some independent decisions regarding purchases of intermediate inputs, investments, and output prices. The central plan will still require the enterprises to deliver some amount of goods, but once these targets are filled, any additional production can be sold at market determined prices, either in the domestic market or to foreign buyers.

The profits generated through these operations are mainly intended to be used for investments and taxes—the state will no longer provide investment capital—but some part of profits can also be shared as a bonus between management and workers. These changes give a new strategic role to managers, who are not only expected to source intermediates and market their products but also minimize costs and maximize profits. One immediate result has been the emergence of various accounting systems to control costs and revenues, as well as a strong demand for market-oriented management training. Another outcome appears to have been the appointment of a cadre of younger managers, often in the 30s or 40s. It should, however, be noted that there are many question marks regarding the true independence of enterprises, not least regarding decisions connected to pricing, remuneration, and hiring and firing decisions (Noland 2003).⁶

The supply response to the initial round of reforms in July 2002 appears to have been relatively weak. Part of the reason is found in the generic difficulties of changing deep-rooted patterns of behavior that have been ingrained during several decades, but there were also more technical reasons for the limited responses. Firstly, the reforms were announced so late in the year that they could not influence farming decisions. Secondly, they presupposed the existence of markets where farmers and manufacturers could sell the output exceeding their planned production obligations (and purchase intermediates needed to increase output and productivity). However, the only existing markets were the farmer's markets, which were mostly located in rural areas, with limited official opening times and official transactions limited to agricultural products.

In reality, however, many of these markets had already become more or less permanent, and the selection of goods was also wider than what was officially sanctioned. In July 2003, the status of these markets was therefore changed. The epithet "farmer's" was abolished and a wide variety of consumer goods and industrial goods can now be transacted in the markets. In addition to farm cooperatives, the markets are used as outlets for trading companies, state enterprises, small household companies, and individuals, who all pay a fixed fee plus some share of their turnover for the use of the physical market facilities. Imported products, mainly Chinese, are prominent in many of these markets. In other words, the markets are the first officially sanctioned outlets for private enterprise (Babson 2003), although it must be emphasized that the private sector is still embryonic. Jo (2004) reports that the North Korean authorities are planning to open around

⁶ At the same time as there are reports of firms forced to lay off workers to cut costs (Cha 2004) there are also official statements declaring that firms will not be allowed to go bankrupt since unemployment is unacceptable to a socialist country (Jo 2003).

300 markets of this kind throughout the country, with every city and district to host 1 or 2 markets. In a related development, a large number of private or semi-private restaurants have recently been established in Pyongyang and other cities.

The latest development regarding markets appears to be the emergence of special “socialist goods trading markets” where state enterprises are allowed to trade raw materials, intermediates, spare parts, and equipment. Enterprises with surplus materials or insufficient inputs report to the planning authorities, who are expected to establish connections between sellers and buyers. It is not known to what extent the prices in these “markets” are related to supply and demand.

Macroeconomic Reform

In the area of macroeconomic management, three reform measures stand out. Firstly, in line with price adjustments for individual goods, the official exchange rate was devalued, from 2.15 won per USD to 150 won per USD. In December 2003, it was decided that the Euro would replace the USD as the foreign reserve currency. The official exchange rate is 172 won per Euro, but the unofficial rate, used for market transactions, is about 1,500 won per Euro. In other words, the monthly salary for a worker is about 12 Euro at the official exchange rate, or about 1.5 Euro at the parallel market rate. This arguably provides some new incentives for export-oriented production, although weaknesses elsewhere in the production system have so far precluded any significant export response.

Secondly, the price reforms have removed the very substantial subsidy to rice consumers that was inherent in the PDS. By selling rice at a consumer price that was only one-tenth of the procurement price, a total subsidy of several hundred million USD was transferred to consumers each year. By setting the consumer price of rice (44 won per kilogram) higher than the procurement price (40 won) it has been possible to remove the subsidy and to redirect scarce government resources to badly needed infrastructure investment and other needs.

Thirdly, it is clear that the price reforms have created substantial inflationary pressure. As a result of the increasing nominal purchasing power of the population and the limited short run supply response, the short run effect of the reforms has been to raise all market prices. Consequently, while the new official rice price was initially close to the informal market price, the informal price has subsequently increased to 150-200 won per kilogram; there are reports of even higher prices, toward 400 won, from provinces where the supply of rice is smaller than in Pyongyang. While there may be reasons for creating the very large one-time increase in prices that resulted from the 2002 reforms (e.g., to stimulate a strong supply response in an economy where some money illusion can be expected at the outset of a monetization process, or to neutralize private holdings of domestic currency that have been accumulated illegally), it is not in the interest of the regime to allow continuous high inflation (Noland 2003).⁷

⁷ It is possible that the December 2003 decision to replace the USD with the Euro as the main foreign currency for official transactions (and to require all citizens to convert their USD into Euro) had similar motives. Before this decision, it was estimated that the amount of privately held foreign currency was around USD 1 billion (Babson 2003) and the mandated conversion provided an opportunity to reduce liquidity and/or to expropriate illegally earned foreign currency funds. The fact that the State Bank most likely did not have sufficient Euro holdings to manage even part of the conversion supports this interpretation. However, the conversion appears not to have been successful, as the USD is still frequently used in the country.

Various measures have therefore been undertaken to control inflation. Although traders are formally allowed to set their own prices, the authorities define ceiling prices—in particular for agricultural staple goods. Official prices are adjusted regularly (every two weeks) but price adjustments are apparently kept below the overall inflation rates. Moreover, in March 2003, the government introduced so-called “People’s Life Bonds,” debt instruments intended to absorb some of the liquidity in the market. These bonds have a ten-year maturity (with gradual repayment of the principal from year five) and, instead of regular interest payments, annual drawings where prizes are distributed to winners. Apart from reducing liquidity, it is believed that the revenue from the bonds may be used to extend loans to state enterprises that are likely to face severe liquidity problems during the first years of the adjustment towards a more market oriented economy. However, it is not known how successful this campaign has been, nor are there any official statements regarding the particular objectives of the bond program.

An additional comment regarding information about the effects of the ongoing reforms is warranted. The lack of detailed information appears to be intentional. According to informal discussions with North Korean economic experts, the present reform process constitutes a three-year experiment that is to be evaluated at the end of 2005. Until that time, the authorities will reportedly restrict the flow of information regarding the impact of the reforms, in order to limit foreign interference in the assessment of the experiment.

Reforms and Skill Requirements

Looking at the prospects for continued economic recovery in DPRK, there is much uncertainty related to political developments. First and foremost, it is impossible to disregard the importance of the geopolitical situation on the Korean peninsula. A peaceful resolution to the nuclear arms conflict is probably a necessary condition for sustainable economic development. Even if the current economic reforms were to result in some increase of total production and income, it would probably not be sufficient to lead North Korea onto a sustainable growth path. External resources will be needed to facilitate a restructuring of the industrial sector, and normalized trade relations with other countries are necessary for sustainable growth and development. However, a diplomatic solution to the nuclear issue is a prerequisite both for increases in aid flows and for normal trade relations.

The development of domestic policies in the DPRK is also uncertain. The key question is probably if the economic reforms should be interpreted as a signal that the North Korean leadership has realized the weaknesses of traditional central planning and are now searching for a new model, or if the reforms are only tactical measures intended to ensure regime survival. Some observers believe that the reforms have already had a substantial impact on the economy, and that a return to the old system is no longer feasible, while others view the reforms mainly as a *monetization* (rather than a *marketization*) of a planned economy that is not changing in any fundamental sense. The proponents of the former view argue that the reforms provide a unique chance to promote change from within (Frank 2003a). Those who believe more in the latter interpretation see the reforms as a way to revive and improve central planning rather than replacing it with markets (Newcomb 2003, Eberstadt 2004).

These mixed views and the skepticism of many observers is undoubtedly related to the lack of information about events inside the DPRK. However, even assuming that the reforms reflect a

fundamental shift in ideology, there is no guarantee that they will be successful and lead to a permanent opening up of the DPRK society, with increasing international trade, investment, and other types of international contacts. The reform process is only at a very early stage, and further liberalization is needed to revive the economy. Moreover, to sustain the reform process, it is necessary to generate some lasting gains from the reforms. The increasingly important role of the private sector may be interpreted as a step in the right direction, but it is also essential to allow the private sector to move beyond farming and small household enterprises. Restructuring and productivity gains are badly needed in the state sector. Apart from the shortages of investment capital, the main constraint is a lack of relevant skills in economics, business, and management. Unlike the technology sector, where DPRK arguably possesses some capacity, there is no pool of managers and policymakers with the kinds of knowledge and experiences needed in a market economy. Instead, the existing cadre of managers is largely trained to be bureaucrats responsible for realizing production plans established elsewhere in the economy. However, one of the main objectives of the current economic reforms is to decentralize decisions from the planning ministry to individual enterprises and enterprise managers. It is hard to see how this process could be successful unless substantial investments are made to create the skill base needed in a market economy.

A major argument against increasing the aid flows to DPRK is the unwillingness of the international community to support an unpopular regime: by propping up the economy, aid may lengthen the survival of an unsustainable system and retard the necessary transition. However, these arguments do not apply for aid aiming to create and improve market economy skills. Skills in market-oriented business and management are, per definition, not very relevant in a command economy, and will be useful and valuable only if the reform process is sustained. Hence, increasing emphasis on business and management training is arguably one of the few areas aside from purely humanitarian assistance where the donor community can support North Korean development without strong fears regarding the consequences of this support.

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Table 1. Gross National Income, Government Budget, and Trade in North Korea 1990-2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GNI (nominal) (USD billion)	23.1	22.9	21.1	20.5	21.2	22.3	21.4	17.7	12.6	15.8	16.8	15.7	17.0
Government Budget (USD billion)	16.6	17.2	18.5	18.7	19.2	n.a.	n.a.	9.1	9.1	9.2	9.6	9.8	n.a.
Export (USD billion)	1.73	0.94	0.93	0.99	0.86	0.74	0.73	0.91	0.56	0.51	0.56	0.65	0.73
Import (USD billion)	2.44	1.64	1.62	1.66	1.24	1.31	1.25	1.27	0.88	0.96	1.41	1.62	1.53
Grain (10,000 tons)	402	442.7	426.8	388.4	412.5	345.1	369	348.9	388.6	422.2	359	394.6	413
Rice (10,000 tons)	145.7	164.1	153.1	131.7	150.2	121.1	134	150.3	146.1	162.9	142.4	168	173
Iron ore (10,000 tons)	843	816.8	574.6	476.3	458.6	422.1	344	291	289	378.6	379.3	420.8	407.8
Steel (10,000 tons)	336.4	316.8	179.3	185.9	172.8	153.4	120.8	101.6	94.5	124.3	108.6	106.2	103.8
Fertilizer (10,000 tons)	88.9	80.4	77.5	90.1	73.8	67.6	53.6	43.1	39.2	57.2	53.9	54.6	50.3
Coal Production (10,000 tons)	3 315	3 110	2 920	2 710	2 540	2 370	2 100	2 060	1 860	2 120	2 250	2 310	2 190
Oil Imports (10,000 barrels)	1 847	1 385	1 114	997	667	806	686	371	369	233	285	424	438
Electric Power Capacity (10,000 kW)	714	714	714	714	724	724	739	739	739	739	755	775	777
Electric Power Generation (10,000 kWh)	277	263	247	221	231	230	213	193	170	186	194	202	190

Source: Bank of Korea, ROK