THE FOOD CRISIS IN THE DPRK: PROSPECTS FOR POLICY REFORM

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The desperate food situation that has existed in North Korea since at least 1995 has caused enormous human suffering and has had a devastating impact on the country's economy. It appears that the last two harvests have been something of an improvement over previous years, but there is still widespread hunger. The World Food Program predicts that there will be many more deaths form malnutrition and related illnesses unless greater levels of food aid are forthcoming. However there are signs of donor fatigue in the international aid community, and the recent admissions by North Korea of the continuation of its nuclear weapons program is making many governments reluctant to give further assistance. This paper considers the evidence, scattered as it is, on the extent and impact of the food crisis, and presents estimates of the extent of food aid still needed. The degree to which this crisis has acted as a catalyst for policy reform in the agricultural and food marketing system, but also more broadly in the economy as a whole, is particularly important. The recent initiatives to introduce more market oriented policy reforms are considered in terms of their effectiveness and their impact on the food situation. It is argued that any temptation to use the current famine as a tool to gain

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concessions on its nuclear and missile programs should be avoided as it is likely to be counter-productive. It would be more constructive for the international community to engage North Korea through a continuation of food assistance, but in the longer term it is very important to assist in the reconstruction and reform of the agricultural system to allow a greater degree of future self-sufficiency.

Introduction

Of all of the problems that have beset the economy of the DPRK in recent years, it is the desperate food situation that has probably attracted most international attention. Estimates of the number of deaths that have resulted from the famine vary widely, but it seems likely that as many as two to three million people may have died from malnutrition or related diseases. Surveys by the United Nations have shown that at the height of the famine in 1998 as many as 60 per cent of children were significantly underweight for their ages. Fears have been expressed that a whole generation may have a seriously impaired intellectual development as the result of inadequate nutrition. Media attention has also bee focussed on the plight of the many thousands of refugees that have attempted to cross the border into China in search of food. Various governments, as well as a range of international non-government organisations, have given large amounts of food aid and related assistance in an attempt to stabilise the nutritional situation. However there are now disturbing signs that significant “donor fatigue” may now be setting in. In the last few weeks, the World Food Program has been issuing warnings that several million citizens are facing renewed hunger unless new donations of food aid are received very soon.

At the same time, the DPRK government has been announcing some new policy initiatives aimed at revitalising the economy, and in particular the agricultural sector. Large increases in both wages and food prices have been announced, and there are rumours that even more drastic reforms of the agricultural system may be on the way. It is still too early to judge how effective these measures will be, but they have caused much speculation among commentators who have sought to understand why these measures have been introduced, and have speculated about whether this heralds a radical new direction in policy by the regime in Pyongyang.

This paper attempts to do five things. First, I look at the dimensions of the food crisis. The evidence on the impacts of the famine is quite patchy, but I try to bring together what data are available and evaluate both the immediate and long-term implications of the current food crisis. Secondly, I explore some of the theories that have been put forward to explain why the famine has taken place. The DPRK itself has placed the primary blame on a series of catastrophic natural disasters, as well as the more general economic impact of the fall of the Soviet system, which for so long provided crucial support for its allies. Many other observers have given rather different interpretations, however, citing serious systemic weaknesses in the food production and distribution systems. As far as possible these alternative explanations are evaluated. Thirdly, I look at the pressures for reform being felt as a result of the disastrous food situation, and fourthly I examine the reforms that are needed and evaluate the measures that have already been announced. My approach in this part of the paper is to explore the basic problems that exist at three levels of the food system - the agricultural production sector, the economic and political organisation of the society as it relates to food, and the broad policy settings that determine the cost and price systems of food. I evaluate the needs at each level, make some judgements about the effectiveness of the reforms already underway, and try to map out an agenda for future

action. Finally, I make some suggestions about what the role of the international community might best be in the alleviation of the crisis.

My conclusions are that the extremely serious food situation has certainly been exacerbated by a sequence of natural disasters, but problems in the organisation of agriculture in the DPRK are the basic cause of the problem. Reforms are needed at all levels of the food production and distribution chain. The measures announced recently are a positive sign, but much more is needed, and a great deal of help will be needed from the international system to implement these changes. Short-term assistance in the provision of food aid must continue, but support for structural changes should begin as soon as possible. The aim should be to allow the DPRK to be as self-sustaining in food as possible. Most importantly, reactions to recent announcements about the continuation of the DPRK's nuclear program, and other concerns about the regime, should not be used by governments to delay the provision of such development assistance. Apart from any humanitarian considerations, it would be counter-productive to attempt to use hunger to force the regime into concessions and reforms.

The Dimensions of the Current Food Crisis

Although detailed and reliable statistics on most aspects of production and consumption in the DPRK are very difficult to obtain, it is clear that the food situation since 1995 has constituted a humanitarian disaster of immense proportions. In a country which has heralded the virtues of self-reliance and the paramount importance of the welfare of its population, this constitutes an undeniable challenge to national policy. Various estimates of food needs have been prepared by international agencies such as the Food and Agriculture Organisation of the United Nations (FAO) and the World Food Program (WFP), and these

are used in this section of the paper along with other estimates prepared by various groups in South Korea. We must be aware of some of the statistical shortcomings, but there is no denying the starkness of the very clear picture that emerges.

There have been persistent shortfalls in food production since 1995, and some writers have argued that problems in the supply of adequate nutrition were apparent even earlier, resulting in the continued need to import large amounts of grain from a variety of foreign sources. The precise amount of these grain shortfalls is a matter of some debate. Kim Woon Keun (1999), for example has compared the estimates of the FAO with those of the South Korean Ministry of Unification, the United Nations Development Program (UNDP) and the Korean Rural Economic Institute (KREI) in Seoul, and demonstrated some large differences, but all agree that significant shortfalls have existed for several years. In making its estimates, FAO has assumed an annual per capita consumption requirement of 167 kg of cereals or cereal equivalent, which gives around 75 per cent of the generally accepted daily calorie need of 2130 Kcal (FAO, 2002). FAO has also assumed that sufficient grain needs to be retained from each harvest for planting in the following season. This total demand has then been compared with estimates of total output, converting the yield of each crop to standard cereal equivalents. Total cereal output has fluctuated markedly, but has been on a general downward trend since the first crisis year of 1995/6, when the output was 4.1 million tonnes. There was a rapid decline to 1996/7, when 2.9 million tonnes was produced, and a further small decline to 2.8 million tonnes in 1997/8. There was a partial recovery to 3.8 million tonnes in 1998/9, but a fall in 1999/00 to 3.4 million tonnes, leading to the worst harvest in recent years in 2000/1 when only 2.6 million tonnes was harvested. Since then there has been another partial recovery resulting in an output of 3.7 million tonnes in 2001/2 and an estimate for the current year of 3.8 million tonnes. These calculations have resulted in estimates of cereal import needs to meet the food

shortfall of the following: 1995/6 1.471 million tonnes, 1996/7 1.934, 1997/8 1.836, 1998/9 1.040, 1999/00 1.331, 2000/1 2.196, 2001/2 1.304 and an estimated 1.084 in 2002/3 (FAO, 2002). These production shortfalls vary from region to region, but even in the partial recovery of the current season it is estimated that only three provinces (North Pyongan, North Hanghae and South Hwanghae) out of 12 will be able to generate a small surplus, while the 9 others will face severe shortages.

Translating these national figures into estimates of household food security in different regions and situations results in a picture of widespread deprivation, even disaster. In 1998 the WFP in conjunction with the European Union, UNICEF and the government of the DPRK undertook a detailed survey of nutrition in various parts of the country (WPF, 1998). The survey team was denied access to 82 counties, thus the work included data from 130 counties, representing some 71 per cent of the national population. It must be noted that the survey took place at the time of the most disastrous harvest in recent years. Overall, moderate and severe wasting, or acute malnutrition, affected some 16 per cent of the children surveyed, including some three per cent with oedema. Moderate and severe stunting, or chronic malnutrition, affected 62 per cent of all children. Some 61 per cent of all those children surveyed were moderately or severely underweight for their age. The most severe wasting was found in those aged one to three years, but stunting and underweight were prevalent in all age groups, with boys being rather more affected than girls. These are truly alarming results and suggest that the intellectual development of a whole generation may be adversely affected through a lack of adequate nutrition. A number of reports suggest that the picture has improved somewhat with the increased output of food since 2001, but we have no overall data on this. At the time of writing, the WFP is repeating its survey of 1998, and the results should be available by the end of 2002. However, the food shortfall estimates suggest that any improvement will only be relatively minor, and there are still strong grounds for very grave

concern. The recent testimony (May 2002) to the US House of Representatives International Relations Committee by the Regional Director for Asia at the World Food Program, John Powell, suggests that 40 per cent of all children under 5 are malnourished, even with the current assistance from international agencies.

There have been several attempts to estimate the number of deaths that have resulted from the famine. Many commentators have estimated that some 2.5 million people have perished from malnutrition and related diseases, although the official government figure is rather lower than this. Hwang Jang-yop, the high level defector, has stated that 1.5 million people died between 1995 and 1997 alone, and South Korean intelligence sources claim that leaked DPRK documents support a figure as high as 3 million since 1995 (for a summary of the evidence on these estimates of deaths in the famine see, for example, Noland, 2000). Whatever the precise figure, the extent of the human cost is immense. Many people have attempted to avoid starvation by fleeing across the border into China. Again, precise estimates vary, with most commentators using a figure of some 200,000 to as many as half a million.

The impacts of food production shortfalls at the household level can be ameliorated, at least in theory, through national level purchases of food on the international market and subsequent distributions to households, through purchases of food by households, using income generated from other activities, and by supplementary production on family plots in either rural or urban areas. As a last resort, food may be available under various food aid programs. Unfortunately, foreign exchange has been very scarce, limiting the size of food imports, and at the national level there have been too few opportunities to gain extra income. Even when money can be found, it is often difficult to access reasonable supplies. The result is that there continue to be serious shortages, even with the partial improvements in the last two years, and international agencies have been unable to keep up with continu-

ing demand for food aid. There is evidence that the food situation is now particularly difficult in some urban areas (FAO, 2002, Cho & Zang, 1999). In the current season, the government has maintained (at least in theory) its food allocation for the farming population at 600g per person per day, which is quite adequate. Many farmers have been able to grow other food in kitchen gardens or on hillside plots, and some now gain extra income from sales of surplus production in farmers' markets. Workers on state farms also seem to be reasonable placed in terms of salaries and access to kitchen gardens. However, urban families appear to be in much more difficult circumstances. Government allocations in urban areas have been kept at 270g of cereals per person per day, only 45 per cent of average daily energy requirements. In order to acquire the other 55 per cent of daily food needs, families must spend an estimated 75-85 per cent of their cash income. Given recent increases in food prices as the result of the partial monetisation of the economy, there are now serious doubts about the ability of urban residents to feed themselves on their present incomes (FAO, 2002). I will return to the impacts of these policy changes later in this paper.

The Causes of Famine

A variety of forces have been responsible for the current famine in the DPRK, although opinions differ as to the precise weight of each of these factors. Certainly, natural conditions have never favoured high levels of food output in the DPRK. Of the total national area of some 12 million hectares, around 80 per cent consists of mountainous terrain. Only 15 per cent can be classified as arable land, and soils are often poor. The climate is harsh, with a very short growing season of 130-190 frost-free days. Many crops, notably maize and rice, are vulnerable to severe cold snaps. Before 1945, the major agricultural areas of the

unified Korea were located in the south, and the DPRK has always had to struggle with its lack of natural resources for food production.

This ongoing environmental problem has been made much worse in recent years with a series of severe natural disasters. There were severe floods in 1995, 1996 and 2001; droughts in 1997 and 2000; a destructive wind storm in 2000; and a damaging storm and wave surge in 1997. The DPRK government has always pointed to these natural events as the major cause of the famine, and there is no doubt that this has been a very significant factor.

These natural disasters have been made much worse in their impact by the serious degradation that has taken place in the natural environment in the agricultural areas. Many soils that were not robust or fertile to begin with have been seriously over-cropped and subject to erosion, especially during periods of flood. In the search for extra land on which to grow food, many hillsides that are far too steep for cultivation have been brought into production, again with serious consequences for erosion. Much land has been put continuously under the same crops for years on end without any thought for proper crop rotation, and there has been a general lack of attention to soil maintenance and fertility enhancement practices. The result has been a serious decline in yields.

Agricultural productivity has also been badly hit by the impacts of the more general crisis in the DPRK economy. It is generally accepted that during the early 1990s it was the industrial sector that first went into recession, and it was only later that agriculture followed. Much of the farm machinery in the country is now old, and much of it is no longer useable. Only about half of the nation's 64,000 tractors are now operational (FAO, 2002). There are reports that oxen are being used increasingly in the cultivation of fields. A lack of spare parts, including tyres, is a major problem, and the decline in general industrial capacity is making it difficult to replace the ageing stock of farm machinery. The energy crisis facing the entire economy has had a major impact on

agriculture, with serious shortages of oil to power agricultural machinery and irrigation facilities. The general decline in the chemical industry has deprived agriculture of many of its most important inputs. Domestic production of fertiliser can now only meet 10 per cent of total requirements, and the availability of pesticides has been similarly compromised. As a result of these shortages of key inputs, plus declines in soil fertility through over-cropping, rice yields have declined from around 7 or 8 tonnes per hectare in the 1980s to about half of that level now. For this reason, the donation of fertilisers has become a major priority for the international agencies, and the DPRK is now almost totally dependent on these overseas sources.

The human impact of the famine and the level of fatalities have been exacerbated by the general deterioration in the level and availability of health services in the DPRK. Antibiotics and painkillers are in very short supply, and hospitals do not have the simple supplies need to treat the diarrhoea and similar infections that are killing many people, especially children (Rosenthal, 2001). Sanitation systems have broken down, with serious health implications. Hospitals frequently lack adequate supplies of food and clean drinking water, and in the cold of winter lack adequate heating. Thus, the problems in the food production system are in part just one aspect of a wider crisis in the DPRK's economy.

But some commentators have gone even further, arguing that the famine is, at least in part, the direct result of shortcomings in the organisation of the agricultural sector and in the policy framework within which it operates. Given the focus of this paper, it is important that we examine these claims in some detail.

Food supply problems have always plagued Communist regimes, as a number of commentators have pointed out. In Asia there have been serious periods of hunger or famine at various times in China, Mongolia, North Vietnam, and Cambodia, thus it is hardly surprising that many writers have seen fatal structural flaws in various aspects of

agriculture under Socialism. It has been common to cite the lack of incentive for individual effort under collectivised systems of agriculture, contrasting levels of labour involvement unfavourably with family-oriented systems of ownership. Communist governments have also been criticised for seeking to take too much food out of the rural areas to feed the growing urban populations without giving adequate financial returns to farmers. Eberstadt (1999) has argued that famine under Communist systems has generally been the result of rapid policy changes that have impacted disastrously on rural areas. In almost every case, this has involved: drastic changes in property rights or ownership structures on the farms; significant increases in taxes or procurement quotas for agricultural commodities; and / or a significant shift in the relative prices of food and non-food items. However, Eberstadt suggests, the features of the current famine in the DPRK do not seem to fit this earlier pattern. Famine does not seem to have resulted from any single change in policy direction, hence it the situation cannot be remedied simply by reversing the disastrous policy, and may be much more difficult to deal with. Eberstadt also notes some other important differences between the general experience of agrarian development under socialism and the specifics of the DPRK case. Famines in North Vietnam, Mongolia, North Vietnam and China took place in societies that were predominantly rural in nature. But the DPRK Korea has for some time been an essentially urban and industrial economy, with no more than around 30 per cent of the labour force involved in agriculture. Also, earlier famines under Communist regimes in Asia took place within only a few years of the regime coming to power, and could be regarded as problems of regime consolidation. The DPRK, by contrast, is a well established, mature regime (Eberstadt, 1999 pp. 64-5).

What then can we say about the specifics of the DPRK situation, and how can we account for the emergence of famine as a manifestation of seemingly long and slow processes of structural failure? One

important point concerns the drain on resources that has resulted from massive investments by the DPRK in its military capabilities. This has taken capital resources away from the investments that are urgently needed in rural infrastructure and in agricultural development projects of various kinds. All aspects of the DPRK economy have suffered from this enormous diversion of scarce resources, but the infrastructural problems do seem to have a particularly deleterious impact on the productivity of agriculture. Food has also been taken away directly to feed military personnel, and this has been part of a familiar story of large burdens on rural areas without adequate financial returns. It is also undeniable that many problems in the DPRK, as is constantly asserted by government sources in Pyongyang, can be attributed to the collapse of the old Soviet empire. The DPRK experience is now different from earlier patterns under Communism partly because it is much more alone in a global system that has marginalised it almost totally.

What we are lacking, however, are detailed empirical studies of the agricultural system that would allow us to assess levels of efficiency in various regions, and provide the basis for detailed advice on agricultural improvements. There are numerous general statements about the weaknesses of the current system and the inefficiencies caused by adherence to the "Juche farming system" (see, for example, Kim Woon Keun, 1999; Kim, Lee & Sumner, 1998), and the need for drastic market-oriented reforms. But it seems clear that in the current political climate in the DPRK such reforms are not possible. We are not starting with a clean slate, but need to locate agricultural change within an existing but evolving institutional and political framework. It is obvious from the food shortage picture that I have presented that the agricultural system is not working well, but the detail of exactly how is simply not available. We need more research and less simplistic sloganeering, but it is also unlikely that sufficient access will be given to researchers in rural areas to provide the necessary material on which

to base new technical and policy advice. This lack of basic information is also a problem when we turn our attention to the prospects for effective reform.

Pressures for Reform in the Agricultural and Marketing Systems

It is impossible to separate the pressures for specific reforms in agriculture and in the food marketing and distribution systems from more general calls for new policy directions for the entire economic system. But it is also clear that the food situation represents an extremely important challenge for the old policy directions, both in symbolic and more technical terms. For much of the period of Kim Il Sung's rule primary importance was given to the development of heavy industry and to the traditional ideologically driven methods of achieving industrialisation: notably the *Chollima* movement, the *Taean* Work System, the "Three Revolutions" and the *Chongsanri* Method (Buzo, 1999). However, there is no denying the symbolic importance of food, and of rice in particular, in the rhetoric of the regime. One of Kim Il Sung's most often quoted sayings during the 1960s was that "rice is socialism." In setting targets for the economy he often argued that the Communist project required that people be given enough to eat, and the role of the government was to "let all the people eat rice with meat soup."

It is also clear that at a political level the food crisis is putting great pressure on the regime, and is even threatening to corrode its level of legitimacy. Eberstadt (1999) has noted that in all earlier famines in Communist countries, there was such control of the media and other sources of information that news of the food shortages and consequent deaths was effectively hidden from both the outside world and from the populations of the areas not directly affected by famine within the countries concerned. As a result, the political pressures on the regimes

were limited, and in no case was the survival of the government at risk. Regardless of the almost legendary ability, or so it seems, of the regime in Pyongyang to control information, detailed news of the current food situation in the DPRK has been widely available. Indeed, the government has gone out of its way to document the dire situation as part of its drive to obtain economic assistance from the West. Given the tight political control exerted from Pyongyang, and the priority that has been given to maintaining the goodwill of the military, there seems to be no credible threat to the regime, but the pressures to do something effective to ease the food shortages is certainly there, and is one of the central reasons why there are some signs of reform, however preliminary and tentative. It is to these reforms that I now turn.

The New "Market System" and Other Reforms: An Assessment

Among analysts specialising in the DPRK, there is a great deal of debate about the degree of willingness of the government of engagement in serious reforms, including revitalisation of the agricultural sector. There are also disagreements about the actual capacity of the regime, both in political and technical terms, to successfully implement such changes. Some see the reform process, such as it is, as a half-hearted response to a crisis situation. There is no real commitment to the programme, it is often argued, and as little as possible is being done - just enough for the regime to ensure its survival. It is common to argue that the regime is faced with a fundamental dilemma in designing its responses to internal and external demands for reform. If reform is resisted, popular discontent may become so great that the regime's legitimacy is destroyed, and even though military control of the country may be very tightly organised, this would be very bad for the government. On the other hand, if reform programmes are initiated this may unleash forces for more fundamental change that are difficult

to control, and again the regime may be destabilised. This dilemma is widely cited as the reason for the apparent confusion about directions for change and for the stop-go nature of many initiatives. Reform in rural areas is always seen as a particularly difficult and potentially dangerous area for governments, and this adds to the current fuzziness of the reform picture.

However, a number of writers are now arguing that the signs of reform in the DPRK are real and meaningful (see, for example, Babson, 1999; Noland, 2002a; 2002b). The evidence that is cited for this putative new seriousness of purpose in Pyongyang is rather mixed. Babson (1999), for example, identifies a number of features that have evident in the behaviour of the government for a number of years: a new willingness to grant access to various international agencies and supply them with detailed information; an unstated tolerance of a range of informal or private activities by citizens, the so-called "second economy"; and a willingness to initiate a number of actual reform measures. Noland (2002b), on the other hand, quotes some much more recent indications of change, such as the expression of regret to South Korea over the naval clash in the East Sea in June2002, the initiation of work to connect transport links with South Korea, and the establishment of an autonomous special administrative region in the Sinuiju area. These recent initiatives have apparently caused Noland to reverse an earlier judgement (Noland, 1997) that there were few signs that the North Korean regime was interested in serious reform.

My own approach here will be to enumerate the various reforms that appear to be necessary to generate a serious improvement in the food situation, and then ask if there are signs that these changes have been at least begun. Of the reforms that I regard as essential that have not so far been put in place, I will then ask the question of whether there appears to be a realistic prospect that they will be. I will then critically examine those reforms that have been started, and attempt to estimate the impact that they will have on food availability. Three

distinct types of reforms are considered. First, I will look at questions of agricultural production, soil management, farm management and related issues. These might be called programs of *technical reform*. Secondly, I will explore some issues of *economic and political organisation*. Matters considered here relate to things such as land tenure, work organisation and incentives for extra effort. Thirdly, I will discuss broader issues of *economic policy* relating to the setting of relative prices for agricultural commodities, labour, production inputs, and food in urban areas.

As was noted earlier, Eberstadt (1999) has argued that we lack much detailed knowledge of the agricultural system in the DPRK, its detailed structure and economics, and hence it is often difficult to develop detailed plans of the real needs for improvement in the countryside. This is certainly true, but the UNDP has been working with the government of the DPRK over the years to tease out what is needed in the production area in particular. In December 1997, the government requested the UNDP to prepare and organise a roundtable on agricultural recovery and environmental protection. The aim here was to share information on the extent and causes of the food shortages that had emerged by that time, and to develop a consensus on the design of a plan to deal with the situation, restore agricultural productivity and improve rural living standards and the viability of co-operative farms (UNDP, 1998a). The roundtable developed such a consensus, and proposed a detailed plan of action to be put to potential international donors. Unfortunately, and I will look at the implications of this later, there was absolutely no response from the international community. However, this report from the roundtable, and the subsequent action plan that was developed (UNDP, 1998b) remains the most comprehensive guide to what is needed at the production level.

It was argued in the action plan that the aim should be to increase grain production to some 6.5 million tonnes within three years. This would involve a more general economic recovery to allow export

earnings to increase, and help from other countries to fund and organise a transitional package of assistance for agriculture. The elements of this package were:

- A programme of rehabilitation of flood damaged irrigation systems and related infrastructure, and a similar effort to restore damaged farmland.
- The rehabilitation of some domestic fertiliser plants and the provision of the necessary raw materials for fertiliser production, at least initially.
- The extension of attempts to develop more intensive cropping programs through the double cropping initiative.
- Assistance to farmers to diversify their production and adopt more environmentally sustainable farming methods.
- The development of new rural credit systems and related financial institutions.
- The strengthening of rural markets and other local institutions.
- The development of local centres for agricultural research and training.
- The initiation of major programs of environmental protection and reforestation.

(UNDP, 1998b)

It was anticipated that the rehabilitation and modernisation programme for irrigation and tideland reclamation projects would be relatively short term, but would require some capital and technology. Heavy equipment would be needed for major earth moving and civil works projects. Many old facilities such as pumping and power transmission systems would need to be replaced. The urgent need to enhance domestic production of fertiliser was expected to involve work over a comparable time scale. Assistance was required to rehabilitate and modernise the Namhung (West Coast) and Hungnam (East Coast) fertiliser plants. This was seen as vital to the enhancement of cereal grain outputs.

Crop diversification and the development of more appropriate land

use systems were seen as rather longer-term propositions, but it was still hoped to reach national self-sufficiency within some three years. It was assumed that some 580,000 hectares would be devoted to rice production, but higher levels of yield from this land would allow the area under maize to be reduced to 488,000 hectares (as against approximately 600,000 hectares in 1996/7). This would then allow the extension of land under pasture and other more appropriate uses of some types of land. However, increases in yields would still result in an expansion of total output of maize (UNDP, 1998b). Poultry and livestock production would be concentrated in hilly areas, removing the environmentally damaging cropping systems seen now. Meat production was anticipated to be around 400,000 tonnes by the end of three years. It was also proposed to expand the areas under mulberry and silk worm production to improve and diversify rural incomes. The double cropping program was to be greatly expanded. It initially involved the production of 47,000 tonnes of barley, but the plan was to cultivate some 200,000 hectares using these methods. The experiment was to involve imported seed varieties and fertiliser. The environmental protection program was to include expanded organic inputs and integrated pest management, watershed management and the development of commercial forests (UNDP, 1998b).

The action plan proposed that these technical innovations should be supported by an emphasis on new form of rural institutions. These would include the development of rural credit systems, which would also have important training functions. These would be important in the introduction of new technologies and cropping systems. Local marketing and distribution channels would be developed, which would be important especially for the sale of higher-value crops and livestock. The improvement of co-operative farms would concentrate on new management skills and the planning of new investment projects to bolster rural incomes.

It was estimated that the funding needed for such an integrated

programme would be in the region of $300 million over three years, which would appear to be a rather modest sum for such an important outcome.

The question of the need to strengthen rural institutions brings us to the second major area of rural reform, which relates to issues of economic and political organisation. Much of the debate here relates to the organisation of the state and co-operative farms, their level of efficiency, and the extent to which they are capable of being reformed. There is also controversy about what the ideal form of agriculture should be in the future, the end point to which all agricultural reform should be heading. Many commentators in South Korea have assumed that small-scale farming on an individual basis is the ultimate aim, but this has sometimes bee questioned.

At present, some 3,000 co-operative farms are operating in the DPRK, and they account for some 90 percent of all agricultural output. The size of these farms varies a great deal but the average is around 400-600 hectares (UNDP, 1998a). In addition, many households have their own kitchen gardens, usually less than 100 square metres in size. The co-operative farms were introduced partly in an attempt to improve and modernise farming techniques through the introduction of improved seed varieties, fertilisers and insecticides. The UNDP (1998a) has argued that most farms retain a substantial degree of autonomy over their production and marketing, but it is clear that in many key areas the government continues to exert tight control. Co-operative farms are essentially organised on a standard industrial model. Industrial efficiency concepts were used to design optimal farm sizes, labour force levels, number of tractors and other machines and the design of irrigation systems. However, methods of organisation and management also reflected more traditional forms and systems. Farms were located where possible to conform to the boundaries of the traditional sub-counties (ri). Membership of work teams accorded with the structures and locations of the old villages, attempting to

strengthen community spirit and use existing social ties to achieve new goals. The most basic aim of the farms was to be self sufficient, but as far as possible they should also play their part in meeting national goals for agricultural output. In addition, they were also expected to achieve some national goals in community policy, emphasising the achievement of community consensus on all decisions such as investment and the allocation of difficult work tasks.

One area in which the co-operative farms certainly have had little autonomy has been in the marketing of their surplus crops. They were expected to meet production levels (in addition to their own food needs) and these crops were sold at prices determined by the government. National distribution was organised through the Public Distribution System, and food was distributed at uniform prices throughout the country. Daily rations were again set by the government. In many cases food prices were heavily subsidised by the government. Given the shortages of food and many other commodities, free and open "peasant markets" have been allowed until the centralised distribution system "can supply enough of all the goods necessary for the people's life." Workers on co-operative farms have usually supplemented their incomes through the sale of fresh produce form their gardens, eggs, chickens, rabbits or goats. There have been numerous reports that since the onset of the food crisis these markets have become increasingly active, especially in the area along the border with China. Prices in these markets are not government controlled. Some estimates suggest that many people in the DPRK are now obtaining 50-90 percent of their daily needs, including food from the "second economy" (Chun Hong-Tack, 1999).

The government has assisted the co-operative farms by providing guidelines for the preparation of their annual plans, and the supply of inputs such as fertilisers, machinery and spare parts has also been centrally allocated.

In addition to these co-operative farms, around 1,000 state farms

have also been established. These tend to be in areas that require heavy and on-going government involvement, such as reclaimed tidal areas, or specialise in the large-scale output of specific needs for the farm sector, such as improved seed varieties or poultry breeding stock (UNDP, 1998a).

A number of outside experts have put forward ideas on how to improve the operations of the co-operative and state farms. Selig Harrison (1998) has argued that the most fundamental need is to provide incentives for higher levels of effort from individual farm members. Thus, he welcomes some reforms that have been instituted. One initiative has been to reduce the average size of work teams on co-operative farms from 25 to 8 members. This, he argues, will allow teams to keep a closer eye on anyone who is not working at a reasonable level. In addition, the new teams will be allowed to keep up to 30 per cent of their output, the precise level depending on the team's success in meeting or exceeding production quotas. These reforms, similar to those already introduced in China and Vietnam, are a step in the right direction, Harrison argues, but more needs to be done to provide new production incentives. Along these lines, he applauds the development in some areas such as Hoeryong in North Hamgyong, of a form of contract farming. Again modelled on an earlier Chinese initiative, families can lease land under 15 year agreements with the government. A quota is set for the level of output that must be sold to the state, but the rest may be kept by the family for consumption or private sale.

A much more detailed agenda for reform has been proposed by Moon Pal-Yong (1995). He reviews some of the basic features of the agricultural system on the DPRK, and argues that many of these characteristics militate against the efficient production of food and other crops. Land reform and the consolidation of holdings into co-operative and state farms, he suggests, have taken away incentives from farmers who have a centuries-old desire to own land. Collectivi-

sation has also taken away the sense of ownership of farm animals, machinery and other facilities. Under the labour management and remuneration system there is no incentive for harder work, he suggests. Agricultural administration is of a command type, again reducing incentives for local efforts or new initiatives. To overcome some of these problems, he has proposed three alternative scenarios for reform:

- *Family farming under individual private land ownership*. Moon accepts that the ultimate goal of agricultural reform should be the establishment of an owner-cultivator system based on the private ownership of land and capital. This he regards as an essential precondition for the development of a free market economy, which is in turn the only way to solve the DPRK's economic woes. The real benefit here would be the provision of incentives to individual producers. This is the system to which almost all farmers in the world aspire, and in many countries with formerly socialist systems of agriculture this is definitely the current direction of reform. However, Moon recognises the problems inherent in the rapid scrapping of the co-operative and state farm systems. Also, if all of the existing lands of the co-operative farms were to be distribute equally to the existing labour force, the average size of holding would be in the vicinity of two hectares, which would not be really economic. There are clear economies of scale in agriculture, as is being recognised in South Korea also, and this must be taken into account.
- *Individualistic farming under collective land ownership*. This would be a copy of the system now in operation in China. This is a form of tenant farming in which land is held collectively but capital is privately owned. All decisions about farm management, crop mix or levels of labour input are made by the farmer. However, the length of the lease must be sufficient to give the farmer incentive to improve the land and invest other forms of capital. One potential problem may be the transfer of leases between farmers as the result of marriages or deaths, and this may lead quite quickly to the emergence of serious inequalities in incomes.
- *Joint farming under collective land ownership*. This is essentially the existing system in the DPRK. It has a number of shortcomings, as has been outlined already, but it does allow the generation of significant

> economies of scale. Moon argues that many of the existing problems and conflicts can be overcome by breaking down the co-operative farms into smaller units, each based on village-level farming organisations. This would generate much more harmonious working relationships and encourage much more involvement in joint decisions. Thus the original social aims of the collective farming system could even be enhanced (Moon, 1995, pp. 94-99).

Having evaluated these alternative reform scenarios, Moon argues that while there are some important advantages in individualistic systems, the adjustment and establishment costs, both in economic and in human terms, would be enormous. As has already been noted, the DPRK is no longer a predominantly agricultural nation, hence the return to some form of traditional peasant production is unrealistic. The small farms would be uneconomic, and there would then have to be a new reform program to modernise the system. It would be better, he suggests, to try to develop a more efficient collective system, as in his third scenario.

This question of adjustment costs is an interesting and important one. Noland (2000) has argued, based on empirical evidence from other Asian countries and from parts of Eastern Europe, that the costs of a rapid or "big bang" approach to reform are not necessarily greater than those associated with a more gradualist approach. What is more important is the existence of a set of favourable initial conditions. The most important of these are: the structure of the economy; the degree of macro-economic stability; the degree of state capacity at the time that the reforms are initiated; and the willingness of the population to undertake change (Noland, 2000, pp. 256-260). My own view on this matter is that I do not regard the evidence on the lack of extra costs associated with a "big bang" approach at all convincing. But more importantly, the four important preconditions for reform that Noland has identified are certainly not present in the agricultural sector, or indeed in any other part of the economy. I will return to this crucial

question later in the paper.

This brings us to some of the broader economic environment in which the DPRK food production and distribution systems operate. Discussion in this area has been dominated recently by speculation about the significance of the market reforms that have recently been introduced (see, for example, Noland, 2002b; Saiget, 2002; FAO, 2002). Beginning in July 2002, a series of reforms have been announced, and others are rumoured to be on the way, especially in the agricultural area. Of the measures announced so far, the ones which appear to have potentially the most relevance for the food production and marketing situation are:

- Prices for rice and other food items have been increased sharply in recent months. In the case of rice the increase is as much as 40 times.
- Farmers are increasingly being allowed to trade surpluses at free markets.
- Procurement prices paid by the government for agricultural products have also been increased substantially.
- Urban salaries have been increased by as much as 30 times, but there are marked differences between different occupational groups. Some favoured groups such as military personnel, party officials, miners and scientists have received very large increases. Noland (2002b) reports that military personnel and miners have received wage increases in the region of 1,500 per cent. For agricultural workers the increases are more modes, around 900 per cent. Noland interprets this as an attempt to speed up processes of labour allocation.
- Subsidies to enterprises have been removed, and managers have been informed that they are now responsible for covering their own costs.
- The system of distributing goods through a rationing system has been drastically reduced. This includes the Public Distribution System for food. Distribution of goods will increasingly occur via a market system and at market prices.

It is still much too early to say what impact these reforms will have on the food situation. While price increases may assist in stimulating

production, the FAO (2002) has reported that many farmers appear rather confused about exactly what prices they will receive for their crops. The new price structures for farm inputs such as fertilisers, seeds and fuel are also unclear, at least to the farmers concerned. The FAO predicts that it will take some time for a positive response to these price changes to emerge. Many farmers interviewed by the FAO team expressed an interest in expanding the area under double cropping to take advantage of the new incentives, but most lack access to the physical inputs required to implement such a regime. FAO has also expressed concern about the signs of rampant inflation in the farmers' markets, and about the fate of the excess labour that will be created by the search for greater efficiencies in the state enterprises.

Looking at the three levels of reform that I have identified, there does seem to be a genuine desire for change, and a number of important measures have already been introduced. A range of commentators has speculated about the rationale for these changes after so many years of clinging stubbornly to the old structures and policies. The general consensus seems to be that the present situation is so desperate that faith in the old methods could no longer be sustained and some new policy directions had to be initiated. It is also generally conceded that it is the grave food situation that has been the most important catalyst for reform. In fact the reforms that have been initiated have been rather modest and cautious, in many cases simply mirroring the measures that were introduced in China in the 1970s, but by the standards of the DPRK this is a radical departure.

What I have tried to do in this section is to identify some key problems in the food production and distribution systems, highlight a number of changes that are urgently needed, and evaluate some of the beginnings that have been made to implement change. In the light of this extended discussion, I now what to ask what the most constructive and helpful contributions might be for the international community.

The Role of the International Community

The most crucial initial questions we need to ask about the role of the international community concern the goals and methods that various governments are now embracing in relation to the DPRK. Particularly important here are the perceptions of the governments of South Korea, Japan and the United States, especially in the light of the recent admission by Pyongyang that it has been actively developing a programme of plutonium enrichment. While it is still not entirely clear what the United States intends to do, the governments in Seoul and Tokyo have announced that they intend to continue their policies of constructive engagement with Pyongyang. It is my firm belief that the entire international community should try to help the DPRK as much as possible in its search for greater prosperity and security. In particular, I believe that it would be a serious mistake to attempt to use the present food situation to force the DPRK to make concessions. As Selig Harrison (1998) has put it:

> The United States should not seek to condition food aid or the relaxation of sanctions on specific economic reform measures. Surrendering to direct foreign pressure would only weaken Kim Jong Il's position and complicate the process of reform (Harrison, 1998, pp. 67-68).

However, he then goes on to argue that if it were to help with an international food aid effort, the US should make it clear that it will only contribute for the next two or three years. This he suggests would apply indirect pressure for reform. Here I part company with Harrison. I do not believe that the results of reform can be so rapid. I do not share the neo-liberal optimism that market reforms by themselves can deliver such immediate results, nor do I believe that "big bang" approaches can work in this situation (or indeed any other). The regime in Pyongyang does not have the experience or the resources to plan and implement a real process of reform. The key preconditions for reform

identified by Noland (2000) are simply not present, and help will be needed to develop these prerequisites. Certainly, the government is not able to provide to the farmers of the DPRK the resources and inputs they will need to turn around the current disastrous food situation. Food aid is certainly needed to allow change to take place in a more rational manner, in which short-term concerns for survival do not get in the way of more considered development. This may well take more than two or three years, and we need to be aware of that. But the methods for organising and distributing food aid are relatively well developed, given the political will and the necessary funds.

What will be more difficult to deign and organise is the process of long-term reform, development and assistance that is needed to allow the DPRK to be self-sufficient again in food, or at least have the necessary export income that might be necessary to overcome any shortfall. This is not just a question for the food system, of course, but for the total economy. However, in the more specific area of food, I have tried to identify some important needs for change. At the level of production the programme designed by the UNDP in consultation with the government in Pyongyang is a useful starting point, and I have pointed out similar priorities at other levels of the system. The complete unwillingness of the international donor community to respond to the UNDP's list of priorities for agricultural assistance presented in 1998 is surprising, perhaps short-sighted or even immoral. There can be no human security in the DPRK if the current levels of hunger remain, and without human security there can be no peace.

Land rehabilitation and repair are immediate priorities, along with the modernisation of irrigation systems and fertiliser factories. Then attention needs to be given to the improvement of inputs and techniques in all areas of production. This includes particular attention to the restoration and protection of the environment. Research in Africa and other parts of Asia has demonstrated quite clearly that poverty and hunger result in the rapid degradation of the environment, and

environmental improvements are one the most effective ways of immediately improving living standards.

Training and research are also of vital importance. As Babson (1999) has argued, the ability of the regime to respond to pressures (both internal and external) for reform is extremely limited. The knowledge of market systems and methods is almost non-existent, and isolation from the international community only makes this situation worse. The regime is forced to think first about the stability of the political system, and longer-term planning can only be considered when more security has been assured. Training, as Babson identifies, needs to be given particular priority. This involves greater exposure to the outside world and how it works. Skills in negotiating with the rest of the world need to be developed. Policy development and evaluation skills need to be nurtured.

I have attempted to show that the very serious food situation has been one of the most important catalysts for changes in policy in the DPRK. I would also argue that assistance from the outside world could effectively be concentrated on both the short-term and more systemic changes that are needed to deal with this serious famine. The highly confrontational and militaristic responses of the DPRK can only be modified if the regime feels less threatened. The food situation poses a significant threat to regime legitimacy, and the permanent and sustainable removal of this insecurity is an indispensable first step in the search for a more stable and prosperous future for the Korean peninsula.

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