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Market forces and food security: The case of developing Asia

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The world today has the capacity to produce more food than it can consume. However, millions of poor the world over are still unable to partake of this abundance of food supply, an irony most pronounced among low-income countries. The 1996 Rome Declaration states that food security exists only when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. This underscores the problem of food security today as primarily one of access and not only of availability.

Meanwhile, market forces are being unleashed throughout the world in sectors and ways that have a direct bearing on the food security problem as it poses itself today. These forces are manifested in two ways. First, trade barriers have gone down in agricultural commodities, including foodstuffs. The ratification of the General Agreement on Tariffs and Trade – Uruguay Round (GATT-UR) in 132 countries and the entry of the same into the World Trade Organization (WTO) signals an important epoch in global agricultural trade. In consonance with this development, several countries, especially in the Asian region, have moved away from policies aimed at achieving self-sufficiency in staple production; preferring instead to produce only part of their domestic needs while relying on imports for the balance. The 1996 World Food Summit also supports the view that food security can increasingly be met through imports and international trade in food. The FAO (1996b) has redefined food self-reliance

to mean ''reliance on trade to meet food needs'' where it once meant supplementing domestically produced food with trade.

To be sure, world trade could indeed facilitate availability and access to food, with its potential to widen the food supply pool and drive food prices down. However, subjecting national food systems to the globalization process also poses new challenges and dilemmas to shaping food security policies at the national and international levels. One of these is the problems associated with the possible displacement of millions of smallholder food producers who comprise the bulk of the population in developing countries.

Second, the nature of state intervention in local food and agricultural markets is being reshaped from a regime of direct market participation through price controls and production procurement to one of crisis management and buffer stocking. In an effort to meet the conflicting goals of promoting cheap food and raw material prices and protecting national food systems, many developing countries used to employ market restrictions through quantitative quotas, price controls, the procurement operations of national marketing agencies, and export taxes and other levies. With the promulgation of structural adjustment policies in the 1980s, many of these measures were scrapped in favour of more market-friendly measures.

This chapter focuses on the first of these forces and delves into food and markets in developing Asia. Developing Asia has been at the centre of the global stage, first with its rise as an economic power in the 1980s and 1990s, and subsequently the current episode of financial crisis weakening many of its economies. This region offers an interesting showcase of how market forces have an impact on welfare objectives relevant to food security.

Against this backdrop, this chapter discusses the nature of the global food problem and how market forces influence it, and then zeroes in on developing Asia to assess considerations and constraints that these forces cannot address by themselves. The first section presents an overview of global food supply and distribution, and tackles the issue of food insecurity in developing countries. Section two examines market forces and international regimes as they affect food security in developing Asia. Section three deals with the domestic dimensions involving institutional and resource-related constraints that shape food security problems in developing Asia. In the concluding section, the chapter suggests a variety of policy options to cope with food insecurity in developing countries.

Understanding the food security problem: Global empirical dimensions

This chapter begins by looking at two sets of trends to ascertain the nature of global food scarcity. The first concerns food production and how it has kept pace with population growth. The second involves the movement of real food prices which indicates how global supply is keeping pace with demand. The chapter then verifies how these food availability indicators compare with some food consumption statistics.

World trends in food production and demand

Grain production outpaced population changes in the 1970s – a trend that heightened in the 1980s but appears to have reversed in the first five years of the 1990s (see Table 12.1). Throughout the 1970s, change in production was greater than change in population in practically all parts of the world except South America and Africa. The African situation improved in the 1980s – as with the rest of the world except South America. The dramatic increases in South American cereal-sector productivity only bore fruit in the 1990s, when it was the only region in the world where change in production outpaced change in population. According to the FAO (1996a), a considerable increase in plant production between 1970 and 1990 was due to increased productivity and improved yields and, to a lesser extent, an increase in cultivated area. The slowing of grain production in the 1990s, on the other hand, can be attributed to the exhaustion of land frontiers, such that further increases in production are bound to be technology-driven.

The role of productivity in boosting production between 1970 and 1990 is mirrored by the trends in average annual percentage change in productivity (see Table 12.2). Between 1971 and 1990, productivity growth was rising for all the economic groups and continental groups except Europe and Africa. The first half of the 1990s, in contrast, is characterized by slowing down in annual productivity increases, except in South America.

Despite this apparent slowing in cereal production, food production and food production per capita indices continue to be on a general upswing for most of the developing world (see Figure 12.1). The important exception is Africa, where, given the primacy of roots and tubers in the people's diet, production statistics pertaining to cereals may not be as important as the per capita food production index. Food production and per capita food production indices in North America and Europe in 1995 fell, compared to their position in 1985, to points approximating their

Table 12.1 Average annual percentage change in production and population; 1971–1995

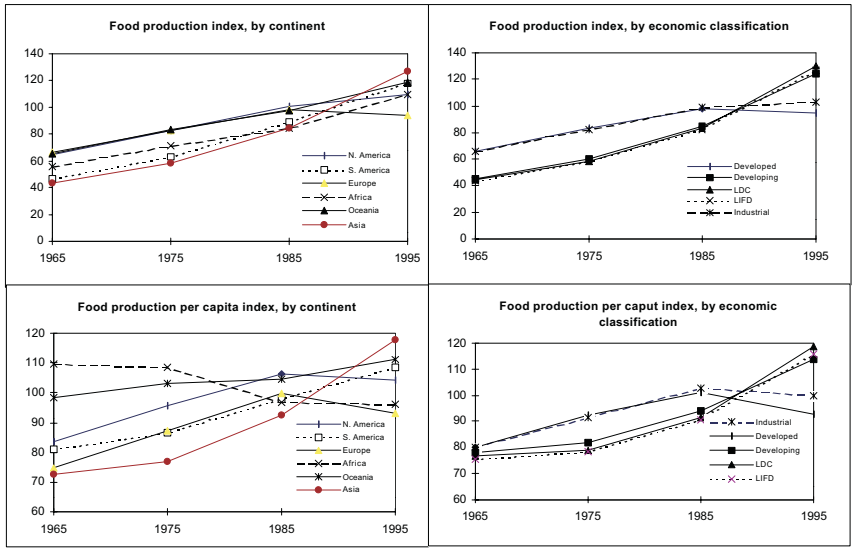
	Average annual % change in production			Average annual % change in population		
	1971–1980	1981–1990	1991–1995	1971–1980	1981–1990	1991–1995
North America	4.43	4.52	−0.19	0.97	1.01	1.02
South America	1.95	1.23	6.15	2.31	1.99	1.63
Europe	3.66	1.26	−0.67	0.52	0.33	0.25
Africa	2.22	3.11	2.43	2.71	2.84	2.71
Oceania	6.39	9.02	10.27	1.62	1.54	1.39
Asia	2.81	3.34	1.36	2.10	1.89	1.98
World	2.76	2.44	−0.45	1.85	1.74	1.49
developed	2.89	2.03	−3.05	0.83	0.70	0.51
developing	2.74	3.12	1.76	2.25	2.08	1.79

Source: FAO 1997

Table 12.2 Average annual percentage change in productivity; 1971–1995

	1971–1980 %	1981–1990 %	1991–1995 %
North America	2.01	3.82	1.21
South America	1.12	1.70	5.60
Europe	3.74	1.85	0.33
Africa	2.46	0.61	−0.17
Oceania	2.06	8.43	4.83
Asia	2.39	3.12	1.70
World	2.10	2.52	0.01
developed	1.83	2.81	−1.47
developing	2.38	2.62	1.51

Source: FAO 1997



Source: FAO 1997

Figure 12.1. Food production and food production per capita indices, 1965–1995

1975 positions. The decline for developed countries, however, bears minimal impact to their populations in as much as their supplies still increasingly exceed their energy requirements. In North America, for instance, food supply exceeds energy requirements by almost 50 per cent (FAO 1996a). Per capita indices follow the direction of food production

indices when countries are grouped according to their economic classification. However, continental grouping points to dramatic increases happening only in Asia and, to a lesser extent, South America.

Price movements

Trends and projections based on World Bank data suggest that the real price of food relative to industrial commodities has been on a downward trend throughout this century, declining by about 0.5 per cent every year. This implies that the global capacity to supply food has grown slightly more rapidly than global demand. The latest projections by the World Bank point to the continuation of this broadly balanced growth, with real prices in 2005 lower than those prevailing in the first half of the 1990s (Anderson et al. 1996).

However, there has been a spate of nominal increases in cereal prices in the 1990s. As with the slowing of cereal production, this has not gone unnoticed. The optimistic picture painted by the trends in production, population growth, and real prices prior to the 1990s is offset by the Malthusian warnings of Brown (1995), who projects that given expected declines in land and water availability for grain production in China, China would need more than 200 million tonnes of grain imports by the year 2030, a volume roughly equalling the current volume of global international trade in grain.

Three studies done independently by the World Bank, the FAO, and the International Food Policy Research Institute (IFPRI) – all taking into consideration concerns about land degradation, the conversion of agricultural land to industrial uses, and the limits to the expansion of irrigation – are far less pessimistic in their expectations of the capacity of producers, consumers, and policy-makers to respond appropriately to resource and environmental challenges (see Table 12.3). Small changes in grain self-sufficiency are projected, and the studies suggest that developing countries, including China, as a group would be importing only around 190 million tonnes from advanced industrial economies in 2010, doubling the volume of the early 1990s (Anderson et al. 1996).

The question of access

In view of these figures, the availability of food does not seem to pose any serious problem. As Table 12.4 illustrates, the proportion of the population who are food-deficient has been declining in all developing regions except inter-tropical Africa. However, has the availability of food ensured food security at the national and household levels?

Table 12.3 Grain self-sufficiency, various regions: Actual 1989–1991 and projected 2010

	Actual 1989–1991 %	Projected 2010, WB %	Projected 2010, IFPRI %	Projected 2010, FAO %
Advanced economies	128	136	124	128
Eastern Europe and former Soviet Union	88	105	102	102
All developing economies	91	86	88	89
East Asia	94	91	94	95
South Asia	100	90	97	97
Latin America	87	84	92	86
Sub-Saharan Africa	86	86	73	85
Middle East and North Africa	67	57	64	62

Source: World Bank from Mitchell and Ingco (1995), FAO from Alexandratos (1995), and IFPRI from Agcaoili and Rosegrant (1995) cited in Anderson et al. (1996).

Table 12.4 Estimates of food-energy deficiency in developing regions

Region	Period	% of food-energy-deficient persons in population	Number of food-energy-deficient persons (millions)
Inter-tropical Africa	1969–1971	38	103
	1979–1981	41	148
	1990–1992	43	215
Near East and North Africa	1969–1971	27	48
	1979–1981	12	27
	1990–1992	12	37
East Asia and South-East Asia	1969–1971	41	476
	1979–1981	27	379
	1990–1992	16	269
South Asia	1969–1971	33	238
	1979–1981	34	303
	1990–1992	22	255
Latin America and Caribbean	1969–1971	19	53
	1979–1981	14	48
	1990–1992	15	64

Source: FAO Sixth World Food Survey (1996) cited in FAO (1996a)

In reality, food availability has not been translated into food security. The absolute number of the hungry rose by as much as 17 per cent between 1980 and 1992. The trend is likely to continue. In 1992, 841 million people were deemed food-energy deficient – a figure comprising 20 per cent of the developing countries' population. The situation is most dire in the least developed countries where, despite an increase in global availability, per capita fat supply has risen only minimally, dietary energy supply has stagnated, and per capita protein supply has even declined.

What implications can be gleaned from these empirical trends? The first is that supply often has little to do with access. Food security continues to be a developmental problem and poverty remains the single most important obstacle to ensuring it at the national and household levels. The relative improvement in the performance of developing Asia compared to developing Africa in both production and, more importantly, consumption-side statistics points to the close relationship between economic development and the alleviation of hunger.

While supply cannot guarantee food security, the reverse is true enough. Food security cannot be attained without ample food supply. In view of continuing population growth, growing land scarcity, and mounting difficulties in achieving sustainable increases in food-crop yields, technological innovation remains a cornerstone in realizing long-run stability in food supply. For developing countries, the role of public investment in research and development can thus not be understated, as with the importance of institutions, infrastructure, and development of human resources in facilitating farmers' access to new technologies.

Finally, an increased involvement in international food trade is bound to be an important feature of the policy environment towards attaining food security goals. In a globalized food system, the fiscal capacity of nations to finance their food imports becomes a central issue. In developing countries where food producers are among the most food-insecure sectors, exposing their food markets to the vagaries of international trade poses new opportunities and challenges regarding their access to food.

Food and market forces – international regimes and national policies

The preceding section has demonstrated how the question of access is the central issue in food security. How, then, do market forces affect this problem? Food markets in developing countries have been traditionally protected. As the settlement of the GATT Uruguay Round (GATT-UR) has lifted the mercantilist overlay over the agricultural sector, however,

Table 12.5 Net trade balance in food (tonnes), 1965–1995

	1965	1975	1985	1995
Developed	(8,091,100)	15,294,000	40,766,000	106,323,800
Developing economies	13,142,870	(11,555,660)	(42,023,000)	(92,239,200)
Africa	3,272,740	(6,080,880)	(28,419,500)	(29,764,760)
Asia	(14,103,880)	(24,851,630)	(43,482,990)	(84,002,210)

Note: A negative trade balance points to net imports; positive points to net exports.
Source: FAO 1997

international market forces have begun to factor in the dynamics of food security in developing countries. This section is designed to elucidate the nature of agricultural liberalization followed by the GATT-UR agreement and trace impacts on objectives of food security in developing countries.

Trends in global food trade balances

Trends in global food trade balances point to the increased dependence of developing countries on food imports (see Table 12.5). Even though current levels of imports represent a minimal proportion of total consumption, the degree of dependence of developing countries on the international market, especially for grains, is expected to deepen. Rising income, especially in developing Asia, is expected to spur demand for both food and feed grains that may not necessarily be met by local production. The World Bank estimates that the developing countries' share in world food grains imports will reach 70 per cent by the year 2000.

Trends also suggest the dominant role of the developed world, despite falling rates of productivity and production, as a net food supplier – a role that is not likely to be relinquished in the near future. The World Bank envisages that the developing countries' share in world cereals exports will increase from 12.7 per cent in 1987 to only 14.4 per cent by 2000. Both the FAO and the World Bank posit that Argentina and Thailand are likely to remain the only significant third world suppliers of cereals. OECD countries, in contrast, are projected to increase their exports owing to their ecological, technological, and structural capacity (Brown and Goldin 1992).

The dependence of the developing world on developed countries for their food needs is not solely a result of natural comparative advantage

shaped by factor endowment. Developed countries enjoy a structural advantage in food production through extensive agricultural price-support systems that not only encourage intensive farming methods, but also provide price support for virtually unlimited output, thus generating unprecedented surplus production. Prior to the ratification of GATT-UR, the United States and the European Union spent more than US$20 billion per annum on agricultural subsidies (Watkins and Windfuhr 1994). It is through these price-support systems that developed countries have been able to shape their dominance in food and feed grains trade to this day. The United States controls over three-quarters of the world market for corn. It also produces over 80 per cent of corn substitutes, such as soy and sorghum. Around one-third of US agricultural land is said to be used to produce for export markets. In an average year, exports account for 25 per cent of corn production, 40 per cent of wheat production, and 30 per cent of soy production. The European Union is the second major player in the basic food grains trade. The United States and the European Union together account for almost 50 per cent of world market shares for wheat.

The GATT-UR agreement and agricultural trade liberalization

The signing of the GATT-UR in 1994 represented an important epoch for many developing countries, which have long protected their food sector from the vagaries of international trade. The GATT-UR marks a watershed, in that agricultural trade has hitherto escaped previous GATT rounds. More importantly, the GATT-UR was launched in 1986 just as the world was reeling from the slump in agricultural prices caused by unprecedented levels of surplus production in the face of depressed world demand. The agricultural subsidy systems in developed countries were partly responsible for the surplus production. It was envisaged that market liberalization under GATT would remove market distortions caused by such price-support systems (see Table 12.6). The market-oriented approach to agricultural policy reform, which was embodied in the GATT-UR agreement, was expected not only to police international trade disputes, but also to bring international agricultural production back in line with demand.

The GATT-UR agreement is not likely to resolve market distortions, however. Moreover, food insecurity in developing countries is not likely to be alleviated either. The mandated 20 per cent reduction in the domestic support level would actually contribute to distorting global agricultural and food markets by legally permitting heavy subsidization in the developed world. Such a reduction has already been made up for by technological edge and concomitant productivity gains. And it would

Table 12.6 Key features of the GATT-UR

Domestic support reduction	• Reduction of trade-distorting subsidies equal to 20 per cent of aggregate measure of support (AMS), using 1986–1988 as the reference period • Remarks: provision does not apply where AMS does not exceed 5 per cent of the total value of agricultural production for developed countries and 10 per cent for developing countries
Export subsidies reduction	• For developed countries, reduction of export subsidies by 21 per cent for each product from its 1986–1990 average • For developed countries, reduction of budgetary expenditure on export subsidies by 36 per cent over six years • For developing countries, reduction by two-thirds of the above figures over 10 years • Remarks: food aid and unsubsidized exports exempted
Improved market access	• For developed countries, tariffication of all import restrictions and reduction by 36 per cent • For developing countries, reduction for each tariff line by at least 15 per cent over six years, increasing to 24 per cent over 10 years • For developing countries, introduction of minimum access requirements beginning at 3 per cent of domestic consumption and rising to 5 per cent by the end of the agreement • Remarks: under certain conditions, developing countries exempt from tariffication commitment where primary staples are concerned

Source: Watkins and Windfuhr (1994)

also allow too much flexibility in production baselines and the conversion of price support into GATT-exempt direct payments (Watkins and Windfuhr 1994). For instance, under the ''Green Box'' provisions of the agreement, direct income subsidies to farmers have been exempt from reductions on the ground that such payments are ''decoupled'' from production and thus not ''trade-distorting.'' In reality, however, direct payments to European and US farmers are anything but decoupled from production because the profitability of the agricultural sector by and large hinges upon these transfers. Deficiency payments make up between one-fifth and one-third of US farm incomes (Bello 1997). The OECD estimates that each US farmer received an average transfer amounting to US$29,000 in 1995. The total subsidy given to EU farmers, US$97 billion, is equivalent to half the value of their production. The overall impact of

subsidization by the United States and the European Union is that commodities are exported at prices which bear no relation to the real costs of production. Since the United States and the European Union are major grain producers and exporters, this has serious consequences for developing countries, now required by the GATT-UR to eliminate trade restrictions in agriculture and foodstuffs. Prices at which export activity takes place are the residual outcomes of Northern farm policies. International prices, as a consequence, are depressed relative to domestically produced grain in most developing countries, where farmers, in contrast, are subject to negative producer subsidies (Bello 1997).

Threats to food security arise from the potential livelihood losses of smallholder farm producers in developing countries, who must directly compete with subsidized food imports from developed countries. The mechanized and subsidized food systems of the North obviously bear little semblance to the predominantly smallholder production of the South. For the latter to be able to compete in the global arena, big strides will have to be made by developing countries in terms of technological breakthroughs in increasing and sustaining productivity, human resource development, and agricultural infrastructural support. The dislocation, meanwhile, has serious implications for the poverty-reduction efforts of low-income countries, where agricultural production accounts for some two-thirds of employment. This argument is usually assumed away in cases where the poor are net buyers of food. Increased national food supplies through relatively cheaper food imports could render net economic welfare gains. However, these gains are justifiable only if the welfare losses of smallholder producers are properly compensated. It is in this context that compensating mechanisms as a social safety-net emerge as an important policy concern.

Food security also becomes problematic because of an unsustainable dependence on food imports. As developing countries rely more on the international food market, their capacity to finance imports serves as a critical factor in ensuring food supply for their populations. Given that most developing countries suffer acute balance-of-payments deficits, increased food imports will considerably strain their foreign payment positions, eventually undermining macroeconomic standing. The trade-off between food security objectives and economic growth underscores the contemporary dilemma of developing countries. As a matter of fact, improved food security in developing Asia is related more to its ability to procure from the international market when compared with sub-Saharan Africa.

It should also be noted that the impact of subsidization in the US and EU farm sectors is measured in terms of not only the foreign exchange losses and fiscal burden of food imports but also erosion of traditional dietary patterns in importing nations. In sub-Saharan Africa, for example,

imports of wheat and rice have been increasing by over 8 per cent per year, while production of local food staples such as cassava, sorghum, and millet has rapidly declined (Watkins and Windfuhr 1994). Gradual replacement of indigenous food groups by imported grain could severely undermine both nutritional balance and the cultural matrix embedded in traditional dietary patterns.

Beyond GATT and trade liberalization: The domestic front

It would nevertheless be wrong to overstate the role of Northern agricultural policies, and how the GATT-UR hinders food security in developing countries by institutionalizing such policies. Dilemmas of food insecurity in developing countries cannot be ascribed solely to exogenous variables such as GATT, agricultural liberalization, and subsidy in the North. Developing countries are equally to be blamed. Their urban-biased interventionist policies aimed at providing cheap food to underpin industrialization have marginalized the agriculture and food sectors. Policies associated with import-substituting industrialization (ISI) strategies, such as agricultural export taxation, the protection of manufactured goods, overvaluation of currencies, and skewed allocation of resources in favour of the urban, modern sector, are all seen to discriminate against the agricultural sector. Market reforms, such as those advocated by and enforced through the GATT-UR, could be conducive to correcting domestic distortions embodied in the ISI strategies and to enhancing food security objectives as long as they allow for the increased viability of the agricultural sector.

Freer flow of food imports could enhance national food security by assuring adequate supplies of food at cheaper prices. Freer trade could also help cope with food insecurity by facilitating faster agricultural growth and economic development. But food imports and freer trade, by and in themselves, cannot guarantee individual food security. Nor can food self-sufficiency be assured through freer market mechanism.

The Philippines' experience offers a classic example in this regard. The Philippines used to be self-sufficient in rice, but now as a result of agricultural liberalization has become a food-deficient developing country. Like some of its South-East Asian neighbours, the Philippines had to compromise food security by complying with the GATT-UR agreement as well as becoming a member of the World Trade Organization.

Food and markets in the Philippines

In 1994, the Philippine government concurred with the GATT-UR treaty and set the stage for liberalizing the importation of a wide range of agri-

cultural commodities, including foodstuffs. The expected influx of food imports to follow its ratification triggered a national debate on the future of food security. Furthermore, ratification came at a time of very weak performance in the agricultural sector. In the 1960s and 1970s, the Philippines' agricultural sector registered the highest growth rate among the developing Asian countries. In the 1980s and early 1990s, however, it recorded the worst performance. Trends in growth rates of rice, corn, sugar-cane, and coconut, the four most important crops of the Philippines, are telling. While sugar-cane enjoyed a surge in the late 1980s due to conducive world prices, the rest went through a growth slump from the 1980s onwards. In the same period, the poultry and livestock and, to some extent, the fishery sectors became the major sources of growth in the beleaguered agricultural sector.

Other trends paint a dismal picture in terms of the sector's ability to supply the needs of a burgeoning population. Trends suggest that the agricultural frontier might already have reached the point of diminishing return as the expansion of arable land and permanent crop acreage stagnated in the 1980s. Much of the stagnation in the 1990s reflects uncertainty in property rights due to the unsuccessful implementation of agrarian reform and the resultant conversion of farm lands into non-agricultural uses (Lim 1996). Although productivity in major crops has generally been on the upswing since the 1970s, there have been worrisome movements since the 1980s. Rice yield growth was fastest in the 1970s as a result of the introduction of the Green Revolution. But it has been relatively stagnant since the mid-1980s, although the levels are currently still in pace with yield levels in most Asian countries except China and Indonesia. Corn yields, on the other hand, grew fastest in the 1980s with the introduction of high-yielding yellow feed-corn varieties, but were still among the lowest in Asia. Meanwhile, coconut yields have not recovered their levels of the late 1970s and have largely deteriorated since then.

These trends, along with declining agricultural relative prices, have led to the drop in agricultural output and its relative importance in national output. However, the sector continues to be the single most important source of livelihood for a large portion of the national population.

The liberalization of the agricultural sector through the GATT-UR has posed a paradoxical outlook to the farm sector in the Philippines. On the one hand, it could ease food insecurity by facilitating food imports in the face of declining production and the bleak prospects for the sector to catch up with population growth and demand. On the other, given the proportion of the population dependent on the agricultural sector, especially in corn and rice, the liberalization could easily deform the structural foundation of the domestic farm sector, and therefore undermine long-term prospects for food security (Lim 1996).

GATT and other liberalization measures

By how much will the GATT-UR measures open the Philippine agricultural sector? The tariff rates committed by the Philippine government are generally above the tariff levels prior to the ratification (see Table 12.6). Minimum access volumes in rice and corn represent a minimal amount of consumption and past levels of imports. Much of the threat, however, stems from how the implementation guidelines allow for increasing these volumes, without consultations with the producers, whenever there is a perceived shortage in corn and rice (in other words, when projected price is more than the border price by a rate equal to the average of the out-quota and in-quota tariff).[1]

However, the liberalization of the Philippine agricultural sector must be appreciated in the context of the economy-wide deregulatory framework, the regional trade agreements that the Philippines has entered into, and the agricultural modernization programme. In the 1980s, the government embarked on economy-wide and sector-specific reforms under the auspices of the World Bank's structural adjustment programmes, which were designed to improve economic efficiency and increase growth, while minimizing fluctuations in price levels. These reforms were also meant to correct the inherent bias of trade policies for industry and against agriculture. They included trade policy reforms to remove quantitative restrictions, lower average and limited dispersion of tariffs, eliminate implicit and explicit taxes on traditional exports, and abolish price controls on food and other essential consumer goods; liberalization of regulations on foreign investments; financial liberalization including the decontrol of interest rates and more liberal banking regulations; tax policy reforms to minimize inefficiencies and inequities in the tax structure, improve tax administration, and raise tax revenues; privatization to shift resources from the government to the private sectors; and currency devaluation to reduce the deficit in the balance of payments (Clarete 1992).

A tariff reform programme (TRP) was introduced in 1981, carrying out comprehensive tariff reductions in batches of five years. By the turn of the century, the programme aims to limit clusters to just 3, 10, and 20 per cent, with the exception of agricultural products whose quantitative restrictions have been subject to tariffs. The spread is expected to be further limited to only two categories: 3 and 10 per cent by 2003 and 3 and 5 per cent by 2004. These goals fall well within, if not well in advance of and beyond, the commitments called for not only by the GATT-UR but also the ASEAN Free Trade Area (AFTA) and the Asia-Pacific Economic Cooperation (APEC). For example, efforts are now under way to get rice and corn off the exclusion list of the Common Effective Preferential Tariff (CEPT).

It has been said that the GATT-UR binds the Philippine government's

liberalization programme within an international framework. But it is also clear that the TRP is by far even more ambitious than the treaty.

Agricultural modernization

The Medium Term Agricultural Development Plan (MTADP) also provides impetus to the accelerated deregulation of the agricultural sector. Part of President Fidel Ramos's ballyhooed Philippines 2000 programme envisioned propelling the country towards Asian tiger growth rates. The MTADP aims at achieving two objectives: first, reducing by more than half the land currently used to cultivate corn and rice; and second, converting freed-up land for diversification to livestock and commercial crops, sectors being propped up for their potentials in the export market. To meet the country's food requirements, unprecedented growths in staple crop yields are being targeted. In corn, for instance, the programme is targeting tripling productivity rates before the end of the decade. The philosophy is to concentrate production where it is most efficient.

The failure of the government to address long-standing problems in the rural sector, such as agrarian reform and public investments in infrastructure and research and development, renders suspect the agricultural sector's ability to meet the productivity targets set by the programme. Nowhere is the failure more glaring than in the budgetary allocation the government sets aside for agriculture.

Public expenditure

Public expenditures in the agricultural sector went through a brief period of recovery in the late 1980s after bearing the brunt of contractionary policies in the 1970s. This quickly tapered off in the 1990s, with the share of expenditure on agriculture standing at a measly 4.5 per cent in 1995. A large chunk went to natural resources and environmental management, and rehabilitation of forest and fishery resources, as well as to rice price stabilization and the agrarian reform programme. Irrigation, to which close to 20 per cent of total infrastructure budget was allocated from 1974 to 1984, dropped sharply from the mid-1980s into the 1990s. Only about 30 to 40 per cent of public expenditure has been allocated for productivity-enhancing measures. Agricultural research is severely underfunded, with expenditure representing only 0.3 per cent of gross value added (GVA) compared to an average of 1 per cent among developing countries. Moreover, public expenditure continues to be disproportionately in favour of the rice sector, which accounts for less that 15 per cent of the agricultural GVA (David 1996).

Public expenditure allocations have not sufficiently focused on long-

term productivity-enhancing investments which can reverse the declining competitive advantage of the sector. Without the government amply investing in productivity-enhancing measures, the shrivelling of agricultural land utilized for cereal production could only translate to the increased role of cereal imports. Therefore, even if it is argued that the GATT-UR does not substantially open the agricultural market, a tariff reform programme that goes beyond the tariffs inscribed by the treaty and an agricultural modernization programme that gives priority to cash crops and livestock production seem to augur for the increased role of food imports in the future.

Market forces

Much of the debate around market-driven agricultural policy is couched in terms of arguing whether market forces are good or bad for the sector. But such a track often leads to emotional diatribes about the sins and virtues of protectionism versus free markets. Rather than falling into this ideological trap, this chapter seeks to raise three major concerns that a developing country like the Philippines has to address in the face of agricultural trade liberalization.

First, what is the actual market situation, specifically in those sectors where local production stands to compete? There is the possibility that free market tenets do not actually hold in specific global markets, thus rationalizing the placement of national protective measures until international distortions are corrected. For instance, a comparison of total transfer per full-time farmer and per capita income in South Cotabato, Bukidnon, and Cagayan Valley, major yellow-corn-producing provinces in the Philippines, shows how subsidies in the North have posed unfair competition and have grossly distorted the image of a level playing field in the agricultural world market. Per capita incomes in Cagayan Valley (US$350), Bukidnon (US$224), and South Cotabato (US$293), major rice and corn producers in the Philippines, represent less than 1 per cent of total transfer per full-time farmer in the United States (US$19,000) and the European Union (US$29,000) in 1994 (OECD 1995 and UNDP 1995, cited in Watkins 1996).

Second, what are the institutional arrangements that underlie the Philippine agricultural sector's ill performance? This emphasizes that institutional arrangements may be as important, if not more, as free market forces in determining the ability of the sector to compete in the global arena. If non-market bottlenecks in the agricultural sector – like the agrarian reform problem and the inadequacy of investment into rural infrastructure such as farm-to-market roads and post-harvest facilities

and into agricultural research and development that would increase rural productivity – are addressed properly, then the prospect of competing with food imports becomes less fearsome.

For example, the cost of marketing yellow corn in the Philippines is a major source of the said sector's cost disadvantage. While the marketing-to-total-cost ratio in Thailand stands at 27 to 32 per cent, the same falls within the range of 33 to 37 per cent in the Philippines (Setboonsarng and Rosegrant 1992). The sorry state of transportation infrastructure and storage facilities is the main culprit behind the high cost of marketing in the Philippines. The cost of bringing the produce from farm to user is very high, US$60 per tonne in the Philippines, compared to only US$12 in Thailand. Given that the yellow corn market is geographically segmented, the high cost of distribution makes it cheaper for the country to import yellow corn from Argentina, Thailand, and the United States than procure it locally.

Third, what safety nets are in place to alleviate problems and compensate the vulnerable sectors of food producers? This concern puts to the fore the idea that the distribution of benefits and losses is just as crucial as the projected efficiency gains from a policy of liberalization. The Philippines' GATT-related adjustment measures have been heavily criticized for lack of targeted safety-nets. Half of the 30 billion Philippines pesos (PhP) went to the infrastructure projects of the Department of Public Works and Highways. The Department of Agriculture and its affiliated agencies received less than 27 per cent of the total appropriation.

The more disturbing criticism is how some capital provisions of the GATT fund were appropriated for glaringly non-GATT adjustments-related projects. This goes to show that the fund earmarked for safety-nets was actually just a regular budget item in the General Appropriations Act with the budget title changed. No new appropriations were actually made expressly for adjustment measures. If the ''questionable'' projects (those projects that government would have implemented without the ratification of GATT) were stricken out, only PhP3 billion or 10 per cent of the figure allotted would be left for the fund (Montemayor 1995).

The Philippines case demonstrates that unruly market forces could easily disrupt the foundation of food security. But this is not to suggest the outright negation of market forces. Market liberalization ratified through the GATT-UR can significantly contribute to enhancing the agricultural sector in developing countries. Nevertheless, food producers in developing countries should also be properly and fairly equipped before they enter global competition. Correcting unfair subsidy provisions, realigning the institutional foundation, and ensuring social safety-nets for the displaced should be undertaken in tandem with the liberalization of

the agricultural market. Otherwise, food security in developing countries can severely deteriorate.

Non-market constraints to food security in developing Asia

It has been argued that global food supply meets global food requirements, and international trade is an increasing source of food supply for the developing world. It has also been noted that food security hinges on access to food. This is a major concern in Asia, whose share of the world population is 58 per cent but whose share in food production is about 40 per cent. Developing countries in Asia have achieved consistently increasing trends in food production, but they have also been consistent net food importers since 1965, threatening food security.

Factors threatening food security in developing Asia are not limited to market forces such as agricultural market liberalization. Non-market factors, such as institutional and resources constraints, have severely impeded achieving food security. Against this backdrop, this section focuses on the domestic, non-market foundation of food security in Asian developing countries. Common to these countries is pervasive poverty among the rural populace, whose livelihood is dependent on agriculture and related fields. They are food producers but, ironically, are food-insecure. Why is this so? What would enable them to achieve household food security? Can the market be a major factor to draw them out of food insecurity? Answers are elucidated by examining the nature of poverty, institutional constraints to access, and resource-related constraints to food production in developing Asia.

Rural poverty and social constraints

The bulk of the world's population lives in Asia – as do the bulk of the world's poor (73 per cent). High population growth and widespread poverty and illiteracy characterize the social landscape of the lower-income countries of Asia. Only a good reading of the complexity and enormity of the situation can lead each government to policies and programmes that ensure food security, development, and growth that promotes people's welfare.

Asia is afflicted by both urban and rural poverty, but rural poverty accounts for three-quarters of the total. The rural poor have less or no access to basic services compared to their urban counterparts. Of the rural poor, the majority depend on agriculture for employment and income; hence, the poorest of the poor are the landless farm workers. This sector constitutes 45 per cent of the rural poor in India and 40 per cent in Bangladesh.

Illiteracy

Across Asia poverty has no greater contributory factor than illiteracy. It is most pronounced as a social burden in South Asia. As late as 1990, illiteracy in the region still exceeded 50 per cent, with women bearing the brunt. More than 70 per cent of women aged 25 or older are illiterate (Bardhan 1996). This is also the region that has 40 per cent of the world's poor and persistently high annual population growth (2 to 2.8 per cent). A notable exception is Sri Lanka, with a population growth of 1.5 per cent and illiteracy of only 12 per cent. East Asia and South-East Asia have better records of literacy, but are these a comfortable basis for complacency?

Simple literacy tests (reading and writing) have served well as a convention in the world's campaign to eradicate this social malignancy. With today's global concerns about the economy and environment (the Uruguay Round, the WTO, the Earth Summit, and Agenda 21), simple literacy should be replaced by functional literacy (read, write, compute, and comprehend). Functional literacy data are not readily available; hence, a focus on the Philippines scenario is given in Figure 12.2.

The environmental stress: The pressures of landlessness and poverty

Poverty and illiteracy drove masses of migrants to subsist on resources in upland areas and forestlands where there is minimal access to basic services. A large portion of these migrants consists of the landless and near-landless (tillers of less than 0.5 ha). To give a perspective view, two countries are taken as examples – the Philippines and India.

The Philippine rural scenario displays a complex mix of problems: landlessness, poverty, and rapid growth of a labour force that lacks skills

In 1994, the Philippines recorded a high simple literacy of 95 per cent of the total population between the ages of 10 and 64 years. Behind this impressive record, however, is the reality of a huge workforce confined to jobs of low productivity because of functional illiteracy. Of the 1994 population of 48 million (10 to 64 years old), average functional literacy was 83.8 per cent; average for women was 85.9 per cent and for men, 81.7 per cent (NSO 1994). The more relevant information with respect to food security and sustainability is rural functional literacy (RFL) from which rural functional illiteracy (RFI) is calculated as RFI in per cent = 100 – RFL in per cent. On the average RFI yielded a distressing figure of 42 per cent. Across 14 regions in the country, RFI gave a wide range of 31.8 to 60 per cent. Thus, even the lowest RFI means that one of every three persons in rural communities is functionally illiterate.

Figure 12.2. Functional literacy in the Philippines

for non-farm jobs. Social vent came in the form of migration. One portion went to urban centres and further swelled the urban poor, a second portion went to sugar and coconut farms where wages are below subsistence, and a third portion went to the upland areas with slopes greater than 18 per cent. The magnitude of upland migration is reflected by the hectarage of cropped upland, which increased more than sixfold from 0.58 million hectares in 1960 to 3.92 million hectares in 1987 (Cruz et al. 1992). In 1991, less than 3 per cent of the total number of farm owners accounted for more than 30 per cent of total farmland.

Indigenous peoples in upland and forested areas have their native way of ecologically working with nature, although at subsistence level. In contrast the migrants tilled the soil like they did in the flatlands, and caused extensive soil erosion. Meanwhile, scarcity of fuelwood drove the farmers to cut down trees and shrubs within reach. Magnify the scenario a million times and visualize the extent of eroded lands, loss of biodiversity, and accelerated deforestation. The scarred land snuffs the hope of the millions of upland children for a better life. The Department of Environment and Natural Resources has well-meaning programmes on reforestation, rehabilitation of watersheds, and innovative management of protected areas, but it is constrained by inefficiency and the pace of implementation. Some NGOs do productive work with the migrants, but they are like a few grains in a bucket of sand.

The Indian rural scenario is dominated by the same mix of problems: landlessness, poverty, and an unskilled labour force, but at higher intensity. Landless farm workers make up 45 per cent of the rural poor. Migration to the forestlands also became a natural vent for these people. At the beginning of the 1990s, about 300 million rural poor depended on forest resources for livelihood (Poffenberger 1990). Forest cover was estimated to be 63.9 million hectares (MEF 1991). The ecological impact of converting forestland into farm lots by millions of inhabitants is aggravated by their huge daily requirements of fuelwood for cooking and fodder for livestock. About 100 million livestock grazed on forestland with a carrying capacity of only 31 million (Collins, Sayer, and Whitmore 1991).

Forestland degradation is indeed an immense problem, but India has been fairly successful in pursuing innovative approaches to forest management. Implementation of partnerships between inhabitants and forestry departments facilitated by NGOs is a recognized feat achieved after many years of conflict.

Poverty alleviation

Poverty reduction causes an equivalent rise in food security at household level. Hence, governments across developing Asia gave priority attention

to programmes on poverty alleviation. Based on their performance up to the early 1990s, Balisacan (1996) observed impressive annual rural poverty reduction (RPR) rates (1.38 to 2.19 per cent) for China, Indonesia, Malaysia, Thailand, Bangladesh, and India. Much lower annual RPR values (0.25 to 0.61 per cent) characterized Nepal, Pakistan, and the Philippines. Among countries in the first group, only China and Indonesia had annual RPR that slightly exceeded annual population growth (0.39 and 0.26, respectively). All the rest gave negative values, but the most negative were attributed to Nepal (−2.34 per cent), Pakistan (−2.19 per cent), and the Philippines (−2.05 per cent). Negative value indicates a net increase in the number of rural poor in spite of an often-cited achievement in poverty reduction.

In great contrast to the snail-paced RPR of these countries is the remarkable success of South Korea in handling its rural poverty. As early as 1970, South Korea had reduced rural poverty to 23.5 per cent, but strove further to reduce it to 6.5 per cent in 1988. Their determination to succeed was undaunted by the fact that 62 per cent of farms were less than one hectare in size.

The above consideration gave a priority role to the social and economic constraints of food security. Their role has always been masked by the dominant image of science and technology. Food producers who have been freed from social and economic shackles are better equipped to face biophysical and institutional constraints to food security.

Biophysical constraints

Food producers also have to contend with biophysical constraints to food production. Extension workers are useful agents but the farmers are the stakeholders. Biophysical constraints refer to the limiting effects of soil and water resources and agroclimatic conditions. Assessment and mapping of these constraints over agricultural lands in a geographic unit serve as a practical basis of policies, guidelines, and programmes for integrated management that may turn constraints into production assets. This is a perspective viewpoint on how relevant institutions perform their role in facilitating food production.

On a large scale, biophysical constraints are addressed by governments and corrective measures are implemented, otherwise food security is compromised. Typical examples of such programmes are infrastructure projects (large and small) to provide irrigation water to croplands over widespread drought areas and drain excess water in some waterlogged areas. In arid regions, desertification is one of the toughest problems that confronts government and public sectors. Practically speaking, it cannot be corrected by massive infrastructure investment but by the painstaking and slow process of establishing tree lines.

Table 12.7 Extent of major limitations for agriculture of soil resources in South-East Asia

Soil-related constraint	Percentage of land area	Area (million ha.)
No serious limitation	14	53.2
Mineral stress[a]	59	224.2
Excess water	19	72.2
Shallow depth	6	22.8
Drought	2	7.6

Source: Dent 1980

[a] Nutritional deficiencies or toxicities related to chemical composition or mode of origin.

In contrast to those biophysical constraints that are mitigated by government action, the soil constraints prevailing on farm lands are dealt with by farmers themselves. Resource-rich farmers are capable of overcoming constraints but poor families usually opt for subsistence farming by ignoring the situation. The latter option is a disastrous one on fragile lands.

For a cursory look at the extent of soil constraints in South-East Asia (Indonesia, Cambodia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam), the summary in Table 12.7 is useful. In over 380 million hectares, only 14 per cent of the land has no serious limitations. These are the prime agricultural lands. Serious limitations due to excess water (swamps, marshes, peat bogs, etc.), shallow depth (thin soil layers over bedrocks usually on steep slopes), and drought (sandy areas in arid climates) make land uneconomical to reclaim with current technologies.

The largest group of limitations (59 per cent) consists of various forms of mineral stress on plants, primarily due to soil nutrient deficiencies, nutrient imbalance, and toxicities of elements and substances. Some of these problems may be too severe to warrant reclamation but other problems can be corrected by technologies that have long been developed by agricultural researchers. The bottleneck is in their adoption and proper use by farmers. Again, poverty and functional illiteracy come into focus. They are the bottlenecks that can only be relieved substantially by an institutional framework designed to address social, economic, and technical needs/problems in their holistic occurrence and natural setting.

Institutional constraints

The issues of agriculture and food security are vital concerns to every agricultural country. A wide array of institutions have thus long been established, with wide-ranging functions such as agrarian reform, agricultural production and processing, credit, trade, education, research, extension, irrigation, and rural development. These institutions have

long-standing bureaucracies but development priorities are often set by incumbent officials of the state. Beyond political dependence, however, the institutions have, over the years, fortified their framework in a way primarily geared to the preservation of their functioning (existence) rather than their functional objectives. Adjunct to their preservation, the institutions do not formulate and pursue policies not in consonance with the interest of ruling political and business élites.

Some institutions may have undergone reorientation in some functions or even changes in name, but still preservation of their existence is paramount. The new-found objectives are often used to endear the institutions to the people instead of striving harder to make people benefit from the institutions.

Economic prosperity has long been the aspiration of poor nations. For many past decades, however, the aspiring nations have not recognized the path-dependent nature of development and the culture dependence of this path. An outstanding example is education and research. In spite of burgeoning poverty and illiteracy among their people, governments of poor nations relentlessly invested huge resources in higher education up to postgraduate degrees following the narrowly specialized fields of the agricultural sciences. Meanwhile, the huge masses of poor and functionally illiterate farmers have been merely treated as passive recipients of technology. Contrary to this, NGOs have shown that there are alternative and innovative ways and means of harnessing the rural poor as active partners in development.

Conclusion: Coping with food insecurity

In view of the above discussion, the issue of food security goes beyond the question of supply and food balances. Ample domestic production and international trade can significantly alleviate food insecurity in developing countries. But the issue at stake is an equitable distribution of food within nations. There is no food security without access to food. Market forces alone cannot fully assure people's access to food. They should be harnessed and supplemented by more innovative domestic and international institutional arrangements. By way of conclusion, four major policy agendas are suggested below.

Education and the role of small farmers

In the past, developing countries and assisting international organizations focused primarily on science and technology and infrastructure needs of agriculture and food production. Since the 1970s, science and technology have demonstrated the high yield potentials of a continually increasing

number of new breeds of plants and animals and new production technologies. Crop and livestock yields did increase, but there have been wide gaps between experimental plots and farmers' fields. Such yield gaps have been narrowed down by governments (like South Korea, Taiwan, and Japan) that gave equal attention to institutional, agrarian, and social reforms. Similar purposive reforms have not been pursued by most other countries in Asia. These are the countries whose yield gaps between experimental stations and farmers' fields remained wide. The few exceptions observed in recent years were achieved by governments that pumped in subsidies for production inputs.

In the light of empirical reality in developing countries, however, technology advances alone are not enough. One useful strategy would be to ensure that advances in science and technology are in the hands of farmers. Social and institutional reforms should now build up the knowledge and skills and productive capacity of food producers. The educational process requires innovative strategies and methodologies designed to cover tens or hundreds of millions of the rural populace. Non-farm skills should be apportioned to rural workers who are beyond the absorptive capacity of the agricultural labour force.

The educational process could be painstakingly slow due to low literacy, a dominating culture of passivity, and apparent hopelessness beyond subsistence. To follow traditional methods of non-formal education could defeat a noble purpose even at its initial stage. The educational process should explore creative, stimulating, and dynamic approaches; it should explore innovative strategies. The methodology should be participatory and evolutionary. Build-up of knowledge and skills should be relevant to prevailing resources and conditions in the locality; biophysical, social, cultural, and economic.

The education of small farmers is a key component of a broader strategy to ensure that agricultural and economic growth are linked to increases in household income. The baseline objective is to avoid growth-centric approaches that can result in negative boomerang effects. For instance, while the technology package spread by the Green Revolution did bring about unprecedented production increases in Asia, evidence also points to the fact that greater access to credit and fertilizer subsidies among larger farms shifted benefits to larger growers, victimizing small farmers. This illustrates fundamental limits to market solutions to food insecurity in developing countries. A visible hand of the state should be able to correct market failures (Gershman 1998).

Public investment and market participation

The sincerity of the state in embarking on a massive educational programme could be ascertained by carrying out simultaneous infrastructure

projects such as farm-to-market roads, irrigation or water-impounding facilities, and drainage systems. These are part and parcel of the state's overall development programme for the sustainability of agriculture and food production.

Granted that infrastructure projects and educational programmes are already in place, there is still one overriding and motivating force that could accelerate the people's quest for knowledge and skills. This is a visible access to a market system that provides fair prices and decent incomes to farm households. The motivating force of market opportunities on farmers' education has been a long-standing observation in Taiwan and Japan during the formative years of their agricultural development. Government-sponsored training courses were deemed inadequate by farmers who had been motivated by good market prices. They preferred to pay and enrol in certain specialized training courses that gave them additional skills and sharpened their edge of competitiveness.

In the same vein, it has long been a practice among farmers in rich countries to donate private funds for research and development on commodities of their choice. Such varying levels of quest for new knowledge and technical skills are practically motivated by profit. At the present time, however, the profit motive shares its prominence with sustainability concerns for the resource base that produces the food.

Forming new partnerships

The question of food security and sustainability cannot be solely dealt with by market forces and the state. There must be a new form of partnership among the state, farmers, and NGOs. NGOs in the field of agriculture have shown quite a successful track record in grassroots education, research and development, and other forms of extension services to the farm sector. For instance, a Philippine NGO, Farmer-Scientist Partnership for Development, which was established in 1986 to respond to farmers' needs for new rice cultivars, came out with a research-cum-training project where farmers developed more than 50 new rice cultivars. Aside from saving on time, money, and resources, the farmers could obtain unique knowledge and skill (rice breeding) on varied aspects of sustainable and diversified farm systems. Likewise, NGOs can play an effective role in enhancing food security and sustainability in developing countries.

Linking domestic and international arenas

While free market rhetoric is being used to fashion international free trade agreements, this chapter has shown that some elements go against

the spirit of genuine free market reforms. Developing countries in Asia should play a more active role in calling for steeper cuts in both explicit and implicit subsidies to agricultural exports from the OECD countries, principally the European Union and the United States. They must also be aggressive in invoking provisions of the GATT-UR to defend smallholder production. Japan and South Korea have been able to utilize sanitary and photosanitary considerations convincingly against the influx of chemically treated imported fruits and vegetables, and in the process assist their own fruit and vegetable growers (Bello 1997). The scheduled WTO review on the agricultural accord in 1999 offers an excellent opportunity for developing Asia to ventilate its agenda. The Cairns Group, a group that emerged during the Uruguay Round negotiations composed of the Philippines, Australia, New Zealand, Argentina, and other medium-sized agricultural exporting countries, is also a potential avenue for the articulation of the same. In addition, developing countries in Asia and the world should more actively seek coordinated efforts through the United Nations, the best venue through which structural reforms of the agricultural sector in developing countries can be assisted.

It has been observed that in poor countries which have achieved food security, the strategies "seem to be based upon creating the political, social and economic conditions under which ambitious programmes of public support are undertaken with determination and effectiveness" (Dreze and Sen 1989, cited in Gershman 1998). This chapter has outlined some of those conditions which are by no means complete. In the final analysis, food insecurity is as much a political concern as an economic one, which market-related reforms in trade and fiscal policies alone cannot comprehensively address.

Notes

1. The implementing guidelines of the minimum access volume (MAV) stand among the most criticized aspects of the agreement. Even as it is touted to be a "freer market" mechanism, its logic is not governed at all by free market principles. David (1996) cites how the guidelines tend to counter the spirit of tariffication in as much as (a) access to imports under MAV is not bid out but is based on historical market shares in the initial year, thus quota rents will accrue to those granted access; (b) whenever there is a perceived shortage as described in the introduction to this chapter, MAV will be increased but the increase will have to be approved by Congress; (c) the National Food Authority (NFA) is both an MAV consolidator and a member of the MAV management team, thus it can provide indirect pressure for importation to be coursed through it; and (d) all revenues derived from MAV in-quota tariff duties are earmarked by Congress for rural infrastructure, research, and development programme proposals coming from the private sector, including agricultural and agri-business groups representing the producers of commodities where quantitative restrictions have been lifted.

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