Chapter 4

Agricultural policy reforms in Asia: an overview of trends, issues and challenges[21]

by
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I. Introduction

The thirtieth anniversary of the beginning of Chinese agricultural policy reforms occurs at a time when the world economy is facing the daunting challenges of what may prove to be the greatest economic downturn since the Great Depression. These developments are calling into question the globalization processes and policy reforms that in recent times facilitated the embrace of globalization and enabled rapid growth in China and other Asian economies (e.g. India and Viet Nam). In particular, there is a strong upsurge of protectionism, just when an open international trading environment and global economic cooperation have become essential to avoid a contraction of trade that could aggravate the downturn and hamper recovery. It is imperative that we look at the past to draw lessons that can help prepare for the policy challenges ahead.

This paper reviews the agricultural policy reform process in the Asian region, focusing on major themes that have characterized policy reforms during the past three decades. It places the agricultural reforms in the broader setting of a strong shift towards pro-market and outward-oriented policy liberalization. Given the enormous diversity within Asia, any broad generalizations are hazardous and likely to mask pronounced intraregional differences. Nevertheless, some common elements and broad themes can be seen when looking at the region as a whole, though not all countries conform to any single generalization. This paper's primary focus is on Asian policy developments outside of China because the Chinese experience is covered in depth in other papers.

Chinese agricultural reforms marked the start of policy and institutional reforms that extended and deepened over the years to have a transformational impact on Chinese agriculture, the Chinese economy and the global economy. China's agricultural reforms had immediate and dramatic impacts on output, incomes and poverty alleviation and paved the way for policy changes throughout the economy which catapulted China from a sleeping giant to the economic powerhouse of the world. Arguably, China's successful transition to rapid growth was a powerful influence on other countries such as Viet Nam and India.

The most dramatic transformation in Asia has been its rapid industrialization in the past three to four decades. The focus of policy attention shifted away from agriculture, a trend that was probably influenced by the fact that real prices of staple foodgrains had declined for about two decades, following the successes of the Green Revolution; this generated some complacency in Asia that food

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[21] This paper draws on recent FAO studies on the impact of rapid growth in Asia for agriculture and food security (FAO, 2006a, FAO, 2006b, FAO, 2006c) and publications and research papers from the Distortions to Agricultural Distortions project of the World Bank, in particular, Anderson and Martin (2009). The interpretations, views and any errors in this paper are entirely the responsibility of the author. Without implication, thanks are due to Dr Purushottam K. Mudbhary, Rosemarie Edillion, Jayatilleke Bandara and Upali Wickramasinghe and several participants at the Beijing Policy Forum.

[22] This paper was prepared by Professor Sisira Jayasuriya, Department of Economics and Finance, La Trobe University, Melbourne, Australia.

crises were a thing of the past. The food price hike of 2008, though it turned out to be relatively short-lived, was a sharp shock and also highlighted to governments the enormous political sensitivity of increasing food prices. Indeed, some countries reacted with a degree of panic. Governments were quite willing to reverse their commitments to trade liberalization and adopt protectionist 'beggar thy neighbour' policies when faced with strong domestic pressure on the food front. This was demonstrated by the decisions of the Vietnamese and Indian governments to restrict rice exports.

Although agriculture's relative share in GDP has shrunk, it continues to be a major source of employment and livelihood for large numbers of people in rural areas (see Table 1 and Table 2).[23] While all developing countries must create effective strategies to cope with the challenges of globalization and development, agricultural policies – or any other policies specific to only one sector – can not provide all the answers. However, appropriate agricultural policies remain central to any successful development strategy. As pointed out by FAO (2006a: p. 1), "The significant changes that continue to unfold result not only from external influences but also largely from internal dynamics, particularly the nature and effective application of public instruments for governing the economies as a whole and the agriculture sector in particular."

Table 1: Structural changes in Asian economies: 1965–2004
(in percentages of GDP)

Country	Agriculture		Industry		Services	
	1965–69	2000–04	1965–69	2000–04	1965–69	2000–04
East Asia	34	10	29	42	34	48
China	39	14	35	46	26	41
Indonesia	49	16	16	45	35	40
Korea, Rep. of	30	4	22	35	48	61
Malaysia	29	9	27	49	44	42
Philippines	27	14	27	32	46	53
Taiwan (China)	20	2	34	31	47	67
Thailand	30	10	24	43	46	48
Viet Nam	NA	23	NA	39	NA	38
South Asia	43	21	18	24	39	55
Bangladesh	54	22	9	25	36	52
India	44	21	19	24	38	55
Pakistan	35	22	19	22	46	56
Sri Lanka	29	17	21	24	51	59

Source: based on Sandri, Valenzuela and Anderson, 2007.

[23] It is difficult to precisely estimate the size of the population that depends on agriculture for employment and income because figures from different sources vary and there are important definitional and measurement issues. The figures given here should be regarded only as indicative of rough orders of magnitude.

Table 2: Agriculture's share of employment: 1965–2004

Country	% share in total employment	
	1965–69	2000–04
East Asia	77	60
China	79	66
Indonesia	69	47
Korea, Rep. of	53	9
Malaysia	57	18
Philippines	60	39
Taiwan (China)	45	7
Thailand	81	55
Viet Nam	79	67
South Asia	74	57
Bangladesh	85	54
India	73	59
Pakistan	65	46
Sri Lanka	55	45

Source: Based on Sandri, Valenzuela and Anderson, 2007.

II. Globalization and agriculture

The industrialization of Asia in recent decades is reflected in the rapid growth and expanding share of industry and manufacturing in GDP, exports and employment.

The dynamics of globalization involve the progressive integration of national and global economies, including agricultural markets. Agricultural developments and policies influence the pace and scope of globalization while economic growth and globalization change the environment for domestic agriculture. In the normal pattern of economic development, agriculture contracts as a share of GDP and total employment while off-farm and non-farm employment in the manufacturing and service sectors expands. Associated demographic changes typically accelerate urbanization and population shifts from rural to urban settings.

Development generates pressure for sectoral and spatial labour movements which inevitably impose adjustment costs. Young and skilled workers are able to move with greater ease. If non-farm employment expands and agricultural productivity improves at the same time, the population shift and employment reallocation produce urban prosperity and higher rural incomes and there is a relatively smooth transition. This occurred in the 1970s in the Republic of Korea. In such circumstances, even a very rapid structural transformation can be managed without undue social stress or dislocation.

Globalization, structural transformations and the accompanying social and demographic changes also alter patterns of food consumption. Typically, demand increases for higher quality food and there are shifts in food preferences (e.g. greater demand for meat and for variety in foods). New demands rise from agro-based industries and world markets.

Globalization is a process that is quintessentially linked with market integration. Market integration allows better price transmission within internal agricultural markets and between internal and global markets. It provides new export opportunities and challenges, raising issues about accessing international markets and meeting quality and technical standards. Agricultural policy reforms have come to be seen as necessary for farmers and rural populations to enhance their competitive strength, capture the full benefits of integration with global markets and meet consumer interests.

Farmers need to face greater commercialization, shift from subsistence farming to an agri-business mode and establish links with and participate in more vertically integrated supply chains.

Climate change and environmental degradation have also emerged as pressing issues. The natural environment – on which agriculture and rural populations critically depend – is under threat from industrialization and agriculture. Clean air, water and arable land are becoming more scarce. Deforestation accelerates soil erosion, increases risks of floods and droughts and threatens biodiversity. These are national and global issues that demand concerted policy measures.

Reforms in recent years have been designed to remove constraints to increased efficiency and enhanced productivity, provide public goods cost-efficiently and address market failures by appropriate public action. However, new challenges are emerging. Globalization presents opportunities for accessing global commodity and factor markets, ideas and technologies. This enables faster economic growth; however, a country's economy, including its agricultural sector, is exposed to global economic shocks and fluctuations. While, in principle, access to external markets can provide a cushion against price volatility and domestic supply shocks, open markets can enhance import competition and increase price and income volatility. Sharp changes in prices, terms of trade, capital inflows and other shocks expose low-income rural populations in developing countries to potentially severe hardships. In the absence of viable safety nets and coping mechanisms, rural people, who sometimes live barely above subsistence margins, can be devastated by even transient adverse shocks that undermine their incomes and livelihoods.

Historical experience suggests that in such circumstances, countries turn inward and protectionism becomes stronger just when free international trade and international cooperation is needed to resist the trend towards trade contraction that deepens economic recessions. Responding to these new challenges effectively will be a daunting task.

III. Paradigm shifts in development strategy and evolution of agricultural incentives

The recent phase of policy liberalization occurred at a time when Asia was the most dynamic part of the global economy – despite the 1997 crisis that severely affected several countries. Even in the current global crisis, Asia appears to offer the best potential for a revival of economic growth on a global scale. Nine of the 13 economies in the world that have had sustained real per capita income growth over 7 percent for at least 25 consecutive years since the Second World War are from Asia.[24] Between 1980 and 2004, per capita GDP grew in East and Southeast Asia at 6.3 percent per year and in South Asia at 3.4 percent per year, which contrasts with the global average of 1.4 percent.[25] Exports, particularly labour-intensive manufactured exports, grew rapidly and agriculture's share in GDP contracted sharply. Asia's industrial growth in that period was 8.6 percent per year compared with the world's 2.5 percent. Though agriculture shrank as a share of GDP, in absolute terms agricultural growth was quite strong in Asia, growing at 3.1 percent per year compared with 2.0 percent per year in the world.

This growth was closely related to reforms that affected broader economic development and agricultural policies in most parts of the Asia-Pacific region. This reflected a major shift from inward-oriented, state-centred development policies to a more open, export-oriented market strategy. The key policy changes occurred over time, starting with Taiwan Province of China, Singapore and the

[24] Spence (2008), cited in Anderson and Martin (2009).

[25] East and Southeast Asia are defined as including China, Indonesia, the Republic of Korea, Malaysia, Philippines, Taiwan Province of China, Thailand and Viet Nam. South Asia comprises Bangladesh, India, Pakistan and Sri Lanka.

Republic of Korea in the 1960s and then moving to several Southeast Asian countries and China in the late 1970s, Viet Nam in the 1980s and India in the early 1990s. The outcome has been that Asian economies have become much more integrated with the global economy and, in times of global economic stresses, also much more vulnerable to global economic shocks and crises.

During the first three decades after the end of the Second World War, there were growing concerns about food security and widespread rural unrest and debates about the role of the state and the markets in agricultural policies. In most developing countries (with the exception of a few East Asian economies), development thinking was dominated by ISI policy which envisioned a central role for state intervention in economic activities as the dominant model of economic development. The Prebisch-Singer thesis, which observed the declining terms of trade for primary commodities (Prebisch, 1950; Singer, 1950), underpinned this strategy which was seen as a way to escape from the unequal distribution of gains from trade. The model of agricultural development to which most countries subscribed reflected the assumptions underlying the ISI strategy and focused on enhancing domestic production to meet internal market demands. There was deep pessimism about the long-term prospects for agricultural exports and all primary commodities.

This view of long-term price declines for primary commodities was tempered by a different, more Malthusian view about the prospects for basic food crops, particularly for major cereal grains such as rice and wheat. Increased food insecurity, including widespread shortages and even famines, was perceived as being a very likely result of increasing population and pressure on scarce land. Export agriculture was seen as lacking good long-term prospects. The strategy, therefore, was to reduce the importance of export agriculture in the economy, treating it essentially as a useful short-term source of revenue for expanding food agriculture and manufacturing industries.

The possibility of food shortages and high prices was a central political issue and food sector policies had to consider consumer interests. Policy was driven by the need to provide basic food at an affordable and reasonably stable price to consumers, many of whom lived in the cities or regions with chronic food deficits. A policy of low food prices immediately created tension with the policy of providing incentives for producers. This was addressed by input subsidies and direct market intervention to maintain high prices for producers and low prices for consumers. In conjunction with the general distrust of markets and the emphasis on the state's role in most Asia-Pacific developing countries, a complex system developed that included consumer food subsidies and the involvement of state trading enterprises in purchasing, storing, distributing and selling commodities and inputs.[26]

This was well illustrated in India, where a web of price interventions, trade restrictions, regulatory restrictions on markets and an array of subsidies contributed to numerous distortions and inefficiencies. Since the mid-1960s, food security, a strategic objective of the Government of India, has been achieved primarily through elaborate foodgrain policies including price supports and public procurement operations, price stabilization through buffer stocks, public foodgrain distribution and extensive controls on private trade (Umali-Deininger and Deininger 2001). State intervention was pervasive in all aspects of the agricultural economy, including agricultural markets. Domestic trade and marketing and international trade were regulated in many agricultural sectors with restrictions on domestic procurement, storage, movement and marketing, foreign trade and private sector access to establishing regional wholesale markets. State trading and distribution agencies (STEs), established to ensure food security, poverty alleviation and agricultural development, played

[26] Thailand was something of an exception, being a large exporter of rice, other commercial crops (such as rubber) and many other agricultural commodities. Export taxes on rice kept domestic consumer prices low and also provided significant government revenue. Myanmar (at the time Burma), whose agricultural economy displayed some important similarities to Thailand, had been a major exporter of rice in the past but ceased to be an important exporter by the 1960s.

a major role in many markets. The public distribution system (PDS) in key cereal grains – known as the Targeted Public Distribution System since reforms in 1997 – was enshrined as an instrument for achieving food security.[27] Many of these government interventions in India were found in other Asian countries as well, to varying degrees.

The outcome in most countries was a combination of high protection for import-competing industries and policy incentives for agriculture. This included providing support for basic food crops to enhance domestic production with the aim of attaining self-sufficiency and taxing the agricultural export sector to finance other sectors of the economy. This policy resulted in similar sectoral rankings in most countries. The high levels of import restrictions (and associated overvaluation of real exchange rates) combined with export taxes on agricultural exports tended to generate an "anti-agriculture bias".[28] Within the agricultural sector, there were different rates of assistance or implicit taxation. In relative terms, cereal grain production was favoured over commercial export crops and other sectors (e.g. livestock).[29]

Government support for import-competing food crop agriculture was visible throughout most parts of Asia (even though in some cases it did not fully compensate for the implicit taxes imposed by the ISI policies), particularly after the political instability that erupted in response to food price increases in the early 1970s. Cereal grain agriculture, particularly rice and wheat, benefited from government support. Governments undertook major investments in R&D, extension and irrigation and also provided extensive subsidies for inputs such as fertilizer. This effort enabled countries to exploit the new "green revolution" technologies generated at the International Rice Research Institute in the Philippines and the International Maize and Wheat Research Centre in Mexico. They very substantially increased yields, productivity and total production of rice and wheat in the region. However, issues about distributional equity arose, particularly in the early stages, because of the uneven spread of the Green Revolution.

There were differences among countries in a critical area of agricultural policy: land reform. Extensive land reforms were implemented in China, Viet Nam, the Republic of Korea and Taiwan Province of China. In China and, to a lesser degree, in Viet Nam, land reforms were followed by collectivization, while other countries (e.g. India) did not implement similar land reforms. Countries that implemented land reforms appear to have performed better once small holders were permitted to exercise individual initiative; thus, the initial surge in agricultural productivity and output in China and Viet Nam came after de-collectivization. In contrast, India continues to face formidable problems in achieving enhanced productivity because of land tenure issues.[30]

The move away from ISI strategies towards market and export-oriented policies altered the incentive structure in important ways. The new strategy generally included substantial import trade liberalization with reductions in tariff and non-tariff barriers for manufacturers and intermediates. Because of national development strategies, these reductions were generally not uniform; some industry sectors continued to enjoy high levels of protection. More liberal manufacturing trade policies also tended to lower exchange rate overvaluation, thus reducing a major source of anti-export agriculture bias. Growth accelerated in developing Asian countries as they began to exploit their comparative advantage in labour-intensive (and, in the case of resource-rich economies such as Malaysia and Indonesia, resource-intensive) industries. This accelerated poverty alleviation

[27] Gulati and Narayanan ((2003) provide a detailed analysis of direct and indirect subsidies to Indian agriculture that became a major drain on the public purse and a major contributor to India's chronic fiscal deficits.

[28] This finding by Krueger, Schiff and Valdes (1988) has been strongly confirmed in a recent study reported in Anderson and Martin (2009) for more countries and a more refined methodology.

[29] There have been significant outliers that did not conform to this general picture, reflecting the influence of specific political economy factors. An interesting example is sugar, which has been protected in many countries to assist producers at the expense of consumers.

[30] See FAO (2006b).

by creating new non-agricultural, off-farm job opportunities and also enabled larger transfers to rural regions in the form of improved infrastructure and other public goods. The overall impact of the broad shift in development strategy away from ISI was to reduce the anti-agricultural bias in policy and enhance allocative efficiency within the economy.

Anderson and Martin (2009) present detailed country studies that document this change in incentives and the reduction or elimination of the anti-agriculture bias of ISI policies as countries moved towards more liberal policy regimes. This is shown, for example, in the changing pattern of nominal rates of assistance to agriculture (see Table 3).[31] But what is interesting is that the change in development strategy and faster economic growth did not merely reduce the anti-agricultural bias in policy and lead to a neutral policy stance. In almost every country, it is possible to discern a tendency towards a new pattern of incentives that incorporated an overall bias in favour of agriculture. This is clearly seen in the trends of relative rates of assistance (RRAs) over time, which take into consideration economy-wide incentives, comparing the rates of assistance to agriculture with those to non-agriculture.[32] The weighted average RRAs for Asia were below -50 percent up to the early 1970s, but improved to an average of -32 percent in the 1980s, -9 percent in the 1990s, and 7 percent in 2000–04 (or 15 percent if the average is unweighted).[33]

Table 3: Nominal rates of assistance for agriculture 1955–2004
(in percentages)

	1955–69	1970–74	1985–89	2000–04
Northeast Asia	-42.8	-41.2	-25.7	11.9
Korea, Rep. of	-3.2	35.7	126.1	137.3
Taiwan (China)	-12.0	9.3	27.1	61.3
China	-45.2	-45.2	-35.5	5.9
Southeast Asia	NA	-8.8	-0.4	11.1
Indonesia	NA	-2.6	-1.7	12.0
Malaysia	NA	-9.0	1.3	1.2
Philippines	NA	-5.1	18.7	22.0
Thailand	NA	-20.3	-6.2	-0.2
Viet Nam	NA	NA	-13.9	21.2
South Asia	0.0	0.4	20.9	13.6
Bangladesh	NA	-16.0	11.7	2.7
India	0.1	0.2	24.9	15.8
Pakistan	NA	6.8	-4.0	1.2
Sri Lanka	-2.1	-16.3	-9.9	9.5

Note: i) Weighted average across products for each country
ii) For details and assumptions, see Anderson and Martin (2009)

Source: Based on Anderson and Martin, 2009.

[31] Nominal Rate of Assistance (NRA) used in this study is defined as the percentage by which government policies have raised gross returns to producers above what they would be without the government's intervention (or lowered them, if NRA<0), allowing for impact of transport, storage costs etc. NRA can take into account, to some extent, the impact of non-trade policy distortions such as input subsidies. In principle, the effective rate of assistance is a better measure but the NRA measure is less demanding of data and hence easier to compute. For more detailed information, see Anderson and Martin (2009).

[32] Relative rate of assistance (RRA) is defined in percentage terms as follows:

$RRA = 100\ [(1 + NRAag^t/100)/(1 + NRAnonag^t/100)\ -1]$

where $NRAag^t$ and $NRAnonag^t$ are the weighted average percentage NRAs for the tradable parts of the agricultural and non-agricultural sectors, respectively.

[33] See Table 1.17 and Figure 1.6 in Anderson and Martin.

A more detailed examination by agricultural product categories revealed that while the degree of dispersion in rates of assistance remained high within the sector, there was no tendency towards a bias in favour of export agriculture. In fact, the overall bias came overwhelmingly from increasing assistance for import-competing agriculture through higher than world (i.e. border) prices. As countries liberalized imports and stopped taxing export agriculture, they took steps to provide greater net assistance for import-competing agriculture (typically food). In other words, domestic consumers increasingly are being taxed to provide greater assistance to import-competing producers, imparting a strong anti-trade bias, although overall trade policies have become much less distorted.

IV. Trade policy and market reforms: challenges and constraints

Agricultural trade policy reforms continue to attract extensive attention.[34] Agricultural trade issues remain a contentious issue in WTO negotiations; at times they have generated friction and conflicts that have threatened to jeopardize the future of multilateral negotiations in the WTO framework. Often, agricultural trade issues are a source of friction in bilateral and regional negotiations on preferential trading agreements.[35] Countries applying for membership in the WTO, such as China and Viet Nam, have had to undergo protracted negotiations and have been forced to make significant market access concessions in order to gain membership (in contrast to older members who successfully resisted pressures to implement major import liberalization measures).[36]

There has been some progress in agricultural trade liberalization even though it has lagged behind progress in manufacturing. Agricultural trade in the region is more open than it was even a decade ago, although progress is uneven across commodity groups.[37] This is the case in India, where state monopolies in international trade have been abolished or drastically weakened in many agricultural commodities. For example, foreign trade in rice was liberalized beginning in 1994, although stringent controls were reimposed last year when rising world prices threatened to raise internal prices in India.

It is equally true that some apparent progress in trade liberalization masks the persistence of serious restrictions. After the UR, older developing country members of the WTO had the right to set their tariff bindings without reference to previous levels of protection and many of them used this right to set their bindings at very high levels (e.g. 150 or 250 percent), well above applied tariffs. This meant that they could agree to implement cuts in bound tariffs without much or any effect on applied tariffs and that they also were able to increase applied tariffs at times without violating WTO commitments. Perhaps even more important was the fact that many of the trade restrictions that provided protection did not come from tariffs but from various non-tariff barriers; both were less transparent and harder to get rid of through a process of tariff cuts.[38] As pointed out earlier,

[34] We do not survey the extensive literature on this subject because the audience here would be well aware of it.

[35] See, for example, the discussion of contentious issues in agriculture between Australia and China in negotiations for a free trade agreement by MacLaren (2009).

[36] When the changes that were required as part of China's accession to the WTO in 2001 (see WTO, 2001) were completed in 2004 at the conclusion of the transition period, the Chinese government's level of support for the agricultural sector was significantly lower than that provided in most of the OECD countries.

[37] Anderson and Martin (2009).

[38] These issues are well illustrated in Sri Lanka's food agriculture trade policies. From 1995, rice trade was supposedly subject to a tariff of 35 percent, but an import licensing requirement was imposed in July 2000. In July 2001, when domestic rice prices increased because of supply shortages, the government allowed the state agency, the Cooperative Wholesale Establishment (CWE), and private traders to import rice duty-free, waiving the 35 percent tariff. Then in January 2002, a specific duty of Rs. 7.00 per kg replaced the tariff but the CWE was allowed to import rice at a specific duty of Rs. 4.00 per kg. In March 2002, the licensing requirement was removed and the specific duty was raised to Rs. 5.00 per kg. These continued to change upward and in 2006, the specific duty on rice was increased to Rs. 20.00 per kg. (Bandara and Jayasuriya, 2009).

substantial progress in agricultural trade liberalization has been accompanied by a tendency towards increasing protection for import-competing agriculture (i.e. often the food sectors). Developing countries are following an already well trodden path; developed countries have demonstrated a strong reluctance to dismantle heavy subsidies and indirect protection for their farmers.[39] Closer examination of data also reveals that dispersion in the level of assistance within agriculture remains high and, in some cases, has actually widened. This suggests significant room for efficiency improvement by implementing policy measures to reduce the dispersion.

At times, the focus on trade liberalization has masked major problems related to market structures and regulatory restrictions which impede efficient price transmission and have serious efficiency costs and undesirable distributive implications. Even in the case where *ad valorem* tariffs are the only restriction and these are being lowered, significant trade restrictions and reduced market access to foreign competitors can continue. In principle, *ad valorem* tariffs should permit international and domestic prices to be linked. However, two impediments exist which prevent this pass-through: the first is the nature and extent of government intervention in domestic markets and the second is the nature of the competitive structure of the marketing chain. Each of these characteristics exacerbates what Kydd and Dorward (2003) refer to as vertical market failures. These failures are coordination failures among the groups in the marketing chain (e.g. agricultural input suppliers, producers, processors and distributors).

An imperfectly competitive domestic market structure can impede integration between markets and undermine the intended impact of trade liberalization measures which take effect at the border. This can be illustrated by considering a simple case of a firm that has a monopoly on imports and domestic sales. For simplicity, it is also assumed that there is no domestic supply, though this assumption can be relaxed easily, and that the country is a price taker in world markets. This means that the relevant marginal cost of imports is the exogenously given world price. Start with the case (see Figure 1) where there is an *ad valorem* tariff 't' on imports and a world price of P_w. If the import monopoly is a profit maximizer, it will equate marginal cost to marginal revenue and set the domestic sale price, P_t, higher than (1+t) P_w, the price at which it can import. Suppose there is trade liberalization and the tariff is removed. The price facing the firm falls by the full amount of the tariff, but the firm sets its domestic sale price at P_f. If the domestic market were fully competitive, the domestic price would have been (1+t) P_w before trade liberalization with imports Q_2. After trade liberalization, if there were no import monopoly, the domestic price would have fallen to world price P_w and imports would have increased to Q_1. But with the import monopoly, the price does not fall to P_w as the monopoly profit-maximizing price is higher at P_f and imports increase only to Q_f. As can be seen, the fall in the domestic price and the increase in imports are less than would have occurred if the domestic market structure were competitive. Further, actual market access granted to foreign competitors is much less than would appear from an analysis that assumes full pass-through of tariff cuts to domestic prices. In reality, preferential treatment in foreign and domestic trade is often granted – as was the case in India and Indonesia – to state trading enterprises which typically do not have the single goal of profit maximization. Hence actual outcomes following liberalization will be somewhat different, depending on the specific goals pursued by the firms.[40]

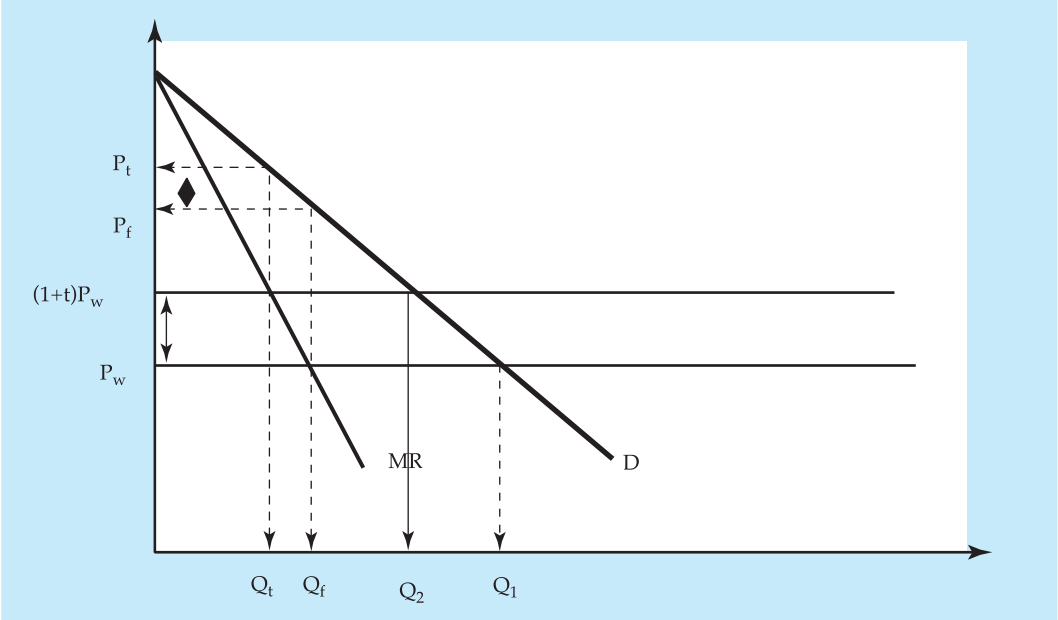
A recent modelling exercise of the operations of the Food Corporation of India (FCI), conducted as part of a wider study of Indian agricultural market reforms, highlights the importance of such "behind-the border" issues.[41] This exercise examined several reform options. The FCI has played a key role in achieving the government's objectives of promoting food security and self-sufficiency and it has been an integral feature of Indian agricultural policy for over 40 years. The FCI has been involved in procuring agricultural output, distributing food at low prices to the most vulnerable,

[39] The political economy of this phenomenon has received considerable attention in the literature. See, for example, Anderson and Hayami (1986).

[40] These are discussed in several papers by McCorriston and MacLaren (for example, 2005a, 2005b)

[41] McCorriston and MacLaren (2008)

Figure 1: Trade liberalization and domestic price: the case of a profit-maximizing import monopoly



managing stocks, allocating foodgrains between surplus and deficit regions in India and maintaining almost total control over imports and exports of foodgrains. The combination of potentially conflicting government objectives and the FCI's extensive role has resulted in a complex marketing system and there is considerable ongoing debate about the need to reform this system. Since the FCI has been an integral feature of the procurement and marketing system in India and has received criticism about its relative effectiveness in achieving the government's goals, the possibility of deregulating the marketing system and allowing private traders an increased role is an unavoidable yet contentious issue in the current environment.

Three broad conclusions were drawn from policy simulations that evaluated different forms of deregulation. First, deregulation by itself may not necessarily enhance welfare. A reform in which the state trading enterprise becomes more "commercially-oriented", (i.e. maximizes profits) is likely to exacerbate market distortions and reduce welfare unless complementary policies to ensure competitive outcomes are put in place. Second, there is no guarantee that welfare will increase by promoting private sector involvement while retaining the status of the state trading enterprise. The precise outcome depends on the extent of the exclusive rights that the state enterprise retains in the process of deregulation and the objective that it is pursuing. Third, separate policy instruments could be used to achieve the objectives of subsidized food for the poor and a minimum farm-gate price, while allowing greater freedom for private firms to participate in marketing wheat. This would produce a welfare outcome that comes close to total deregulation of wheat marketing.

Though the above analysis addressed the situation in India, the issue of achieving multiple policy goals is not confined to the food sector in India. Similar issues have provoked heated debates elsewhere, as in the discussions in Indonesia on liberalizing the international rice trade and determining the role of state trading enterprises, such as BULOG (Badan Urusan Logistic Nasional), in agriculture. It is very challenging to move beyond showing static gains from trade liberalization without considering the risks and uncertainty to formulate practical policy measures to address staple food prices that can be achieved at the least cost.[42] It is also important to recognize that

[42] See Newberry (1989) for an exposition of the basic theory on food price stabilization. Dorosh (2008) reviews international experience related to food price stabilization, although some of his conclusions may require rethinking in light of the 2007/08 food price hike and policy responses.

simplistic analyses can exaggerate the benefits from deregulation of international trade and abolition of special privileges enjoyed by state trading enterprises when they assume, as is commonly done, that such reforms would automatically lead to competitive domestic markets and full pass-through of international prices. In practice, international experience suggests that an oligopolistic market structure, rather than competitive markets, is the likely outcome of deregulation alone. If protectionist pressures intensify in the coming period, the need for much more rigorous analysis of such issues will be essential if the reform process is not to be jeopardized.

Attention needs to be focused on the cost of efficiently handling price volatility and related stabilization issues. To what extent can market instruments be relied upon to achieve greater price stability? Recent events in the agricultural markets and global economy have weakened governments' faith in market-based instruments.

V. Technical standards, supply chains and foreign firms

Quality standards in recent years have become more important as determinants of price and market access, particularly for processed foods. This is a reflection of deepening commercialization and global integration. This poses new challenges for policy-makers because attaining quality standards raises wider social, economic and political issues. Achieving high technical standards is often inadequate; at times specific production processes must be followed and standards must be certified, regularly reviewed and changed (i.e. usually upgraded). These are linked in practice to economies of scale, potential capital biases in technology, supply chains, modes of vertical integration (including contract farming), FDI and other forms of involvement of multinational corporations.[43]

The importance of regulatory reforms can be illustrated by considering the case of processed food exports. Asian countries, such as Thailand, play a prominent role and most others are attempting to increase their processed food exports. Quality issues in international markets are also relevant in domestic markets because of the rising demand for higher food quality and the "super marketization" of the food chain. The past three decades have witnessed a notable compositional shift in the world's food trade. The relative importance of "classical" food products (e.g. coffee, tea, sugar and cocoa) has sharply eroded as a result of the rapid expansion of trade in products such as fruits and vegetables, poultry, fish and dairy products which are exported after being subjected to technologically sophisticated processes. The share of this new dynamic export in total world food trade increased steadily from 27 percent in the early 1970s to over 60 percent by 2002/03.

Powerful demand and supply forces have underpinned the growing importance of processed food in world trade. On the demand side, the internationalization of food habits appears to play a key role. Imported processed items have become more important in consumption patterns in developed countries and among large sections of the populace in many developing countries. Factors such as international migration, the communications revolution and international tourism have contributed to this phenomenon. The increase in demand for processed foods has been supported by important supply-side developments (e.g. improvements in food technology, refrigeration facilities and transportation) which have allowed processed, highly perishable food items to be traded easily across national boundaries. The emergence of processed foods in world trade is a structural, rather than a passing phenomenon. It is deeply embodied in the ongoing process of global economic integration. This structural shift has also been aided by trade liberalization initiatives from world trade negotiations.

The future of this dynamic segment of the agricultural sector greatly depends on farmers' ability to access international markets, which requires compliance with food safety standards. Food safety standards are measures of compliance regulations enacted by governments to protect the health and

[43] See Athukorala and Jayasuriya (2003) for a review of trends.

safety of their citizens and their environment. Following the promulgation of the Sanitary and Phytosanitary (SPS) Agreement in 1994 as part of the outcome of the UR of world trade negotiations, these standards became popularly known as "SPS measures/standards".

Much attention has been focused in international negotiations to ensure that developed countries do not use SPS standards as hidden instruments of protection to deny market access to developing countries. However, it is becoming clear that firms in developing countries need to develop independent strategies to cope with the challenge of ever more stringent and changing food safety standards in developed country markets. Standards are changing at the entry point into these markets (i.e. at the border through government-mandated SPS standards) and also, even more importantly, among consumers and retail chains (e.g "supermarket" chains) who respond to (and sometimes set) consumer preferences. The implications for exporters in developing countries are clear: consumers and importing firms in developed countries increasingly will demand more stringent quality standards, regardless of what governments do. Further, the importers, unconstrained by any WTO agreements as to what standards they can demand from their suppliers, are free to ask for standards that best meet their market objectives. Thus, even if governments refrain from raising SPS bars higher at the border – thus allowing market entry – firms that can best meet desired market demand will penetrate the markets and expand market share.

Empirical evidence suggests that achieving higher standards and gaining market access may require close collaboration and partnership with large foreign multinationals, contract farming and other modes of integration into the supply chains. In some countries, such as India, these developments can take place only if wider regulatory changes are implemented. Such changes may include relaxing or removing restrictions on large domestic and foreign firms in agricultural production, permitting contract farming and instituting other measures that have wide-ranging social and political ramifications. Implementing policy reforms to enable producers to cope with the dynamic challenges of lucrative but intensely competitive markets is an urgent necessity. Balancing equity and nationalistic considerations with these market-based requirements is a challenging task.

VI. Agriculture and environment

There is a large and well-known body of literature about the link between agriculture and the environment, although it is not to be surveyed in this paper. However, there is a need to grapple with practical policy implications in Asia, where discussions about almost any major agricultural activity (e.g. opening new land for agriculture involving deforestation, the impact of agricultural practices on the environment because of the use of fertilizers and pesticides, or the indirect environmental impact from changes in land use patterns) involve the nexus between agriculture and the environment. Economic growth – faster in Asia than anywhere else in the world in recent times – increases demand for agricultural products. International trade, by altering relative prices and incentives, also contributes to changes in the level and type of environmental outcomes. The impacts of long-term climate change may already be affecting rainfall patterns, water flows and other key environmental inputs into agriculture. Agricultural policy needs to be carefully examined in the context of evolving international agreements and opportunities for global trade in environmental assets, which may present better alternatives than exploiting them for agriculture.

VII. Concluding remarks

Asia may be about to enter a period of great turbulence and economic difficulty, after having experienced a remarkable period of historically unprecedented growth and structural transformation. The importance of agriculture in the overall economy has contracted significantly in the past three to four decades. Nevertheless, agriculture remains a major source of employment and income in many parts of Asia (most notably in South Asia) and it is critical to food security in the region.

In line with the general direction of development policies, agricultural policies have become more pro-market and outward-oriented to varying degrees. However, the pace and scope of changes in agriculture have lagged behind those in manufacturing and services. There has been a tendency for governments to assist and protect import-competing agriculture through trade measures (even as overall trade policy has moved away from trade restrictions) and for such protection to vary greatly among subsectors.

Reform agendas will need to emphasize "behind-the border" issues. These include issues about market structure and regulatory interventions that constrain efficiency. Such interventions include restrictions on market entry, size-related barriers, contract farming, foreign-local partnerships, etc. These can inhibit agricultural producers' ability to cope with the pressures emanating from internal structural changes in the economy and from external competitive forces.

While not discussed in this paper in any substantive way, the implications of climate change and other environmental issues will pose major policy challenges for agriculture in the coming years. Difficult economic circumstances will make it harder to politically sustain long-term welfare and increase pro-environmental policies.

Asian countries owe their huge progress in recent decades to policies that opened their economies to the opportunities and challenges of the global economy. Agriculture has been moving in the same direction, though at a somewhat slower pace. In the period ahead, resistance to further liberalization is likely to deepen and pressures will emerge to even reverse the progress that has been achieved. If protectionist forces were able to wind back trade liberalization, it would be a highly undesirable development and would spill over into all areas of trade and broader global economic cooperation. This is probably a very good time to revisit the needs of agricultural producers facing the pressures of the global downturn and to explore more efficient means of assisting them through productivity-enhancing investments that have been in short supply because of past market and government failures.

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Chapter 5

Implications of trade liberalization for agriculture and farmers in China

by
Dr Ni Hongxing[44]

I. Introduction

China is a major developing agricultural country with a huge population of 1.3 billion. It has 940 million rural inhabitants and 500 million rural workers. Agriculture plays a crucial role in ensuring the food security of the nation and the livelihood of its rural residents. The agriculture sector is of paramount importance to rural employment and social stability in China. By 2005, agriculture accounted for 12.5 percent of GDP and 43 percent of employment in the country.

After accession to the WTO, China's agricultural trade, particularly imports, increased rapidly and its trade balance changed from surplus to deficit. The deficit is still expanding. With the appreciation of the renminbi and the overall balance of trade for all sectors, the deficit in agricultural trade is even more noticeable. Since obtaining full WTO membership, China's agricultural trade sharply increased from US$28 billion in 2001 to US$99 billion in 2008. A surplus of US$4.2 billion in 2001 changed to a deficit of US$4.6 billion in 2004, US$1.2 billion in 2005 and US$18.2 billion in 2008 (see Figure 2). China's agricultural product imports have increased by more than 20 percent annually on average since its entry into the WTO.

Against the background of continuing agricultural GDP growth and structural change driven by domestic and external factors, there are many different views on the causes, impacts and implications of rapid Chinese agricultural trade expansion. These differing views caused some confusion for policy-makers in designing and formulating agricultural trade policy. It is important to conduct a comprehensive study to estimate objectively the real impact of rising imports and exports and to identify the appropriate policy response considering socio-economic realities such as the urban-rural divide, subsistence-oriented production systems, lack of flexibility in resource allocation and labour immobility.

The objectives for this paper are to: i) assess the basic characteristics of farmers and the agricultural sector; ii) analyse the growth of agricultural trade and its impact on the food and agricultural sector; iii) generate guidelines for strengthening agricultural trade policy.

II. Nature of the agricultural sector

2.1 Crucial role in food security, livelihood security and social stability

Agriculture guarantees food security and provides the foundation for the existence and development of most of the country's population. It is of great importance to the national economy in China. In 1985, agriculture accounted for 29.8 percent of GDP and 62.4 percent of the nation's employees. By 2006, it accounted for 11.8 percent of GDP and 42.6 percent of all jobs (Table 1).

[44] This paper was prepared by Dr Ni Hongxing, Director-General, Agricultural Trade Promotion Center, Ministry of Agriculture, China.

Table 1: Agriculture's contribution to China's national economy
(in percentages)

Year	Share of agriculture in national GDP	Share of rural farm labour in total employment	Share of rural non-farm labour in total employment	Share of rural retail sales in total consumer goods	Share of agricultural tax in total revenue	Share of agricultural loans in total loans of financial agencies
1985	29.8	62.4	13.8	53.0	2.1	NA
1990	28.4	60.2	15.7	48.5	3.0	6.8
1995	20.8	52.2	18.4	43.2	4.5	3.1
2002	15.3	50.0	22.4	36.7	3.8	5.2
2003	14.6	49.1	23.8	35.0	4.0	5.3
2004	15.2	46.9	25.4	34.1	3.4	5.5
2005	12.5	44.7	26.9	32.8	3.0	5.9
2006	11.8	42.6	NA	32.5	1.0	5.9

Source: China Agricultural Development Report 2007, China Agriculture Press 2007.

2.2 Characteristic features of the farm

The household-based contract responsibility system was created in 1978 as part of agricultural reform. HRS gave farmers decision-making powers in production and management and, as a result, agricultural production in China has been dominated by the household farm. Agricultural production is predominantly family-based and characterized by diversified, subsistence-oriented activities; average farm size is only 0.5 hectares. In 2005, there were 252 million farming households employing 300 million out of a total of 504 million rural employees. The per capita annual income for rural residents was only RMB 3 255 (US$397)(Table 2).

Table 2: Rural population, farm size and per capita income by region, 2005

Region	Population (10 000)	Number of rural households (10 000)	Rural population (10 000)	Cultivated area per capita (mu)	Per capita income (RMB)	Per capita income per day (US$)
National	130 628	25 223	94 907	2.08	3 254.93	1.10
Beijing	1 536	142	382	0.69	7 346.26	2.49
Hebei	6 844	1 449	5 422	1.89	3 481.64	1.18
Shanxi	3 352	638	2 355	2.20	2 890.66	0.98
Heilongjiang	3 818	494	1 917	10.42	3 221.27	1.09
Jiangsu	7 468	1 593	5 322	1.12	5 276.29	1.79
Zhejiang	4 894	1 225	3 791	0.70	6 659.95	2.26
Shandong	9 239	2 050	7 030	1.38	3 930.55	1.33
Henna	9 371	2 026	8 000	1.53	2 870.58	0.97
Guangdong	9 185	1 541	6 452	0.66	4 690.49	1.59
Sichuan	8 208	1 979	6 904	0.96	2 802.78	0.95
Gansu	2 592	463	2 075	2.65	1 979.88	0.67
Xinjiang	2 008	224	990	4.11	2 482.15	0.84

Exchange rate: US$1= RMB 8.19; Unit of area *mu* = 0.06 ha.

Source: China Statistical Yearbook 2006, Statistical Yearbook for China's Rural Area 2006.

China's agriculture is diverse and regionally differentiated because of the country's varying climate conditions and small-scale agricultural production. Statistics show that wheat, rice and corn are still the most important grain products. These crops cover a large portion of the country's farm land and are important for domestic food security, farmers' livelihoods and local development. The provinces of Hebei, Anhui, Sichuan, Jiangsu and Hunan are the most important bases for rapeseed production, accounting for more than 60 percent of the rapeseed plantings in the country. China is a major cotton consumer and also is endowed with natural conditions for growing cotton. There are more than 100 major counties that derive more than 60 percent of their revenues from cotton production. Cotton products account for 58 percent of farmers' total income in Xinjiang Autonomous Region. Sugar is a daily necessity for many people and a basic raw material for industry. Sugar production has become a major enterprise in some western provinces and an important source of income growth for farmers. For example, in the major sugar cane planting areas like Guangxi Autonomous Region and Yunnan Province, 60 percent of the farmers have lifted themselves out of poverty by planting sugar cane. Animal husbandry is a leading industry for the rural economy, a major source of income and an important source of employment; it has contributed much to rural development. Between 1978 and 2005, the total production value of China's animal husbandry increased by an average annual rate of more than 17 percent.

2.3 The rural-urban divide

Despite steady growth in the Chinese economy in recent years, agricultural and rural development has lagged behind urban development. This is the dominant feature of the Chinese dual economy. Hidden unemployment is a serious problem in the farming sector; there are an estimated 150 million unemployed people. The per capita income per day for rural residents is only US$1.30. The ratio of incomes of rural residents to urban dwellers is 1 to 3.2 and the gap is widening (Table 3). Farmers have to face the formidable challenge of having low-income and no social security in most situations. This represents one of the toughest livelihood issues in China.

Rural poverty has been a persistent constraint to China's socio-economic development. Since the mid-1980s, the Chinese government has launched a number of well-planned and well-organized actions to alleviate poverty and it has made remarkable achievements in alleviating absolute poverty. Despite this, incomes are still low for the vast majority of rural residents. Apart from the 23 million who are absolutely impoverished, there are 50 million people who have just emerged from poverty and are still facing uncertainties. Based on the US$1 per day consumption standard, there are still from 150 to 200 million Chinese people living in poverty.

Table 3: Income comparison between urban and rural residents

Year	Index of GDP per capita	Urban per capita disposable income (RMB)	Index of urban income	Rural per capita net income (RMB)	Index of urban per capita net income	Ratio of urban income to rural income
1978	100.0	343	100.0	134	100.0	2.6
1995	398.6	4 283	290.3	1 578	383.7	2.7
2002	670.4	7 703	472.1	2 476	528.0	3.1
2003	733.1	8 472	514.6	2 622	550.7	3.2
2004	802.2	9 422	554.2	2 936	588.0	3.2
2005	878.9	10 493	607.4	3 255	624.5	3.2
2006	972.9	11 759	670.6	3 587	678.0	3.3

Source: China Statistical Yearbook 2007, China Statistics Press 2007.

2.4 Adequacy of production

Agricultural productivity has steadily improved since reform started in 1978. Grain and cash crop outputs have increased impressively and animal husbandry and aquaculture have developed quickly (Tables 4 and 5). As a result, China has made significant gains in domestic food security through its own efforts and has comprehensively developed its agriculture sector. Since the mid-1990s, the supply and demand pattern for agricultural products has undergone a historic change: long-term shortages of the past have evolved to fluctuations within a narrow band around basic self-sufficiency for most commodities. There are exceptions (e.g. soybeans, vegetable oil, wool and cotton) which are experiencing widening supply-demand gaps because of escalating consumption or re-export.

Table 4: Output of major agricultural products in China, 1978–2006
(in 10 000 tonnes)

Year	Grain	Cotton	Oilseeds	Fibre crops	Sugar cane	Beet-roots	Tobacco	Silk-worm cocoon	Tea	Fruits
1978	30 476.5	216.7	521.8	135.1	2 11.6	270.2	124.2	22.8	26.8	657.0
1980	32 055.5	270.7	769.1	143.6	2 280.7	630.5	84.5	32.6	30.4	679.3
2002	45 705.8	491.6	2 897.2	96.4	9 010.7	1 282.0	244.7	69.8	74.5	6 952.0
2003	43 069.5	486.0	2 81.0	85.3	9 023.5	618.2	225.7	66.7	76.8	14 517.4
2004	46 946.9	632.4	3 065.9	107.4	8 984.9	585.7	240.6	73.1	83.5	15 340.9
2005	48 402.2	571.4	3 077.1	110.5	8 663.8	788.1	268.3	78.0	93.5	16 120.1
2006	49 747.9	674.6	3 059.4	89.1	9 978.4	1 053.6	274.4	88.2	102.8	17 239.9

Source: China Statistical Yearbook 2007, China Statistics Press 2007.

Table 5: Output of livestock products
(in 10 000 tonnes)

Year	Meat	Milk	Sheep wool	Goat wool	Cashmere	Poultry eggs	Honey
2002	6 586.5	1 400.4	30.8	3.5	1.2	2 462.7	26.5
2003	6 932.9	1 848.6	33.8	3.6	1.4	2 606.7	28.9
2004	7 244.8	2 368.4	37.4	3.7	1.5	2 723.7	29.3
2005	7 743.1	2 864.8	39.3	3.6	1.5	2 879.5	29.3
2006	8 051.4	3 302.5	38.8	4.1	1.6	2 945.6	33.3

Source: China Statistical Yearbook 2007, China Statistics Press 2007.

It is difficult to ensure adequate agricultural supply because the per capita output of main agricultural products is low. In 2006, per capita consumption of grain in China was only one-sixth of that in the United States, Canada and Denmark. The per capita consumption of meat, eggs, milk and aquaculture products was also low. Based on the assumption that per capita consumption of grain will be 405 kg in 2010, total demand for grain in China is estimated to reach 550 million tonnes. Assuming that per capita consumption of grain will increase to 410 kg in 2020, total demand for grain is estimated to reach 590 million tonnes. The annual incremental consumption is expected to be from 3 to 4 million tonnes.

2.5 Resource-intensive and labour-intensive production

Agriculture is heavily dependent on natural resources, such as land and water, but China is resource-poor. Many of China's products are not competitive in the world market because of the country's large rural population, resource-deprivation and prevalence of small-scale subsistence farming. The

trend towards import dependence is a reflection China's limited comparative advantage in some agricultural products.

Currently, China is not competitive in producing resource-intensive items, such as corn, wheat, cotton and rapeseed. However, China may possess some competitive advantages in the production of labour-intensive commodities such as tea, fruits, vegetables and aquaculture products.

China's most productive characteristics include its abundant labour, special knowledge and skills and unique microclimate, soil and water environments. China could restructure its agricultural sector to take advantage of these characteristics, but doing so would be slow and costly because of the prevalence of subsistence farming, difficulty accessing export markets and scarcity of funding.

III. Agricultural trade

3.1 Commitments to WTO and the subsequent trade environment

In the process of its accession to the WTO, China made extensive and substantive concessions and commitments in agriculture. It opened the domestic market for agricultural products to a large extent. China lowered its tariff for agricultural products by 66 percent – from 54 percent in 1992 to 17.9 percent in 2001. The tariffs for 73 percent of agricultural products were reduced by more than 60 percent and tariffs on some products which were important to livelihoods were reduced by more than 50 percent. After the accession to the WTO, overall tariffs were lowered further from 17.9 percent in 2001 to 15 percent in 2005, a drop of 16 percent. The overall reduction amounted to 72 percent.

China's average tariff for agricultural products is currently 15.2 percent, which is lower than one-quarter of the world average. China's tariffs are much lower than those in the vast majority of countries; its tariff structure is flat with low tariff peaks. Forms of tariffs are simple and almost all tariffs are bound in *ad valorem*. Large tariff quotas exist for bulk agricultural products, such as grain, cotton and sugar. In-quota tariffs often fall between 1 and 5 percent and the maximum over-quota tariff is only 65 percent. China is among the countries with the highest level of market openness for agricultural products.

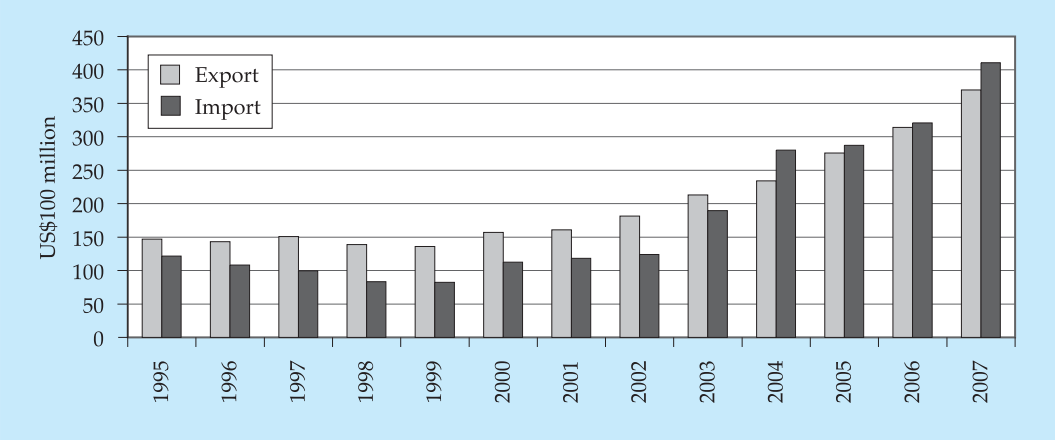
China's agricultural exports face a high degree of protectionism in foreign markets, particularly in developed countries. Some developed countries that are net importers of agricultural products and have weak agricultural competitiveness (e.g. Japan, Switzerland and Norway) have higher overall tariffs and extraordinarily high tariff peaks. Countries with overall lower levels of tariffs, such as the United States and Canada, often have high tariffs for goods under special protection. These tariffs are more targeted and effective. Tariffs are often very complex in all these countries.

3.2 Changing the course of agricultural trade

3.2.1 Import and export trade on the fast track

Since reform and accession to the WTO, China's agricultural trade has grown rapidly. Agricultural trade, including aquatic products, totaled US$78 billion in 2007, 13 times larger than in 1978, growing at an annual rate of 9.2 percent. Agricultural product exports in 2007 totaled US$37 billion, 14 times larger than in 1978, growing at an annual rate of 9.5 percent. Import of agricultural products in 2007 totaled US$41 billion, 12 times more than in 1978, growing at an annual rate of 9.0 percent (Figure 1). Agricultural trade as a proportion of total foreign trade is declining; agricultural product exports as a proportion of total exports dropped from 28 percent in 1978 to 3 percent in 2007.

Figure 1: China's agricultural products trade, 1995–2007

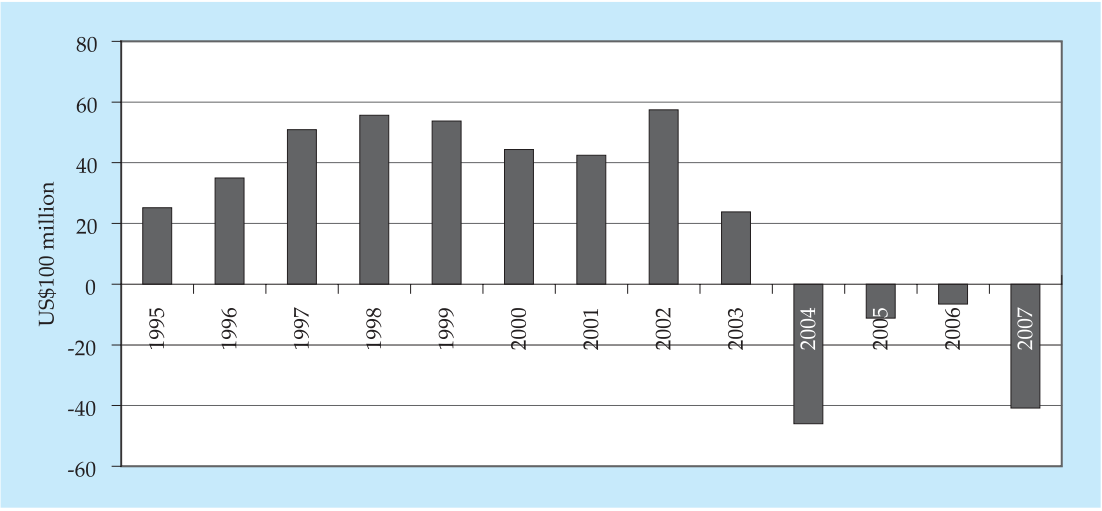


Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

3.2.2 Surplus to deficit in agricultural trade

Trade, particularly in imports, has increased compared with the years prior to China's accession to the WTO. In the six years before China's accession to the WTO, China's agricultural trade grew from US$25 billion in 1996 to US$28 billion in 2001 at an annual rate of only 2.1117 percent. After China's accession to the WTO, agricultural trade grew from US$31 billion in 2002 to US$78 billion in 2007, up 2.6 times and at an annual rate of 21 percent on average. Growth rates in 2003 and 2004 were 32 percent and 28 percent respectively. The growth rate for imported agricultural products was higher than for exports. In the six years prior to China's accession to the WTO, growth rates for the export and import of agricultural products were only 2.4 percent and 1.8 percent respectively. In the six years after China's accession to the WTO, the average annual growth rate for agricultural exports reached 15 percent, compared with 27 percent for agricultural imports. Agricultural imports grew by more than 50 percent in 2003 and 2004. Since 2004, China's agricultural trade balance has shifted from a surplus to a deficit and this is expected to remain (Figure 2).

Figure 2: Surpluses and deficits of China's agricultural products trade, 1995–2007



Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

3.2.3 Agricultural trade profile as a reflection of comparative advantage

China's main agricultural imports are edible oilseeds, cotton, edible oils and animal products (Table 6). Since China's accession to the WTO, its import of edible oilseeds surged from US$2.6 billion in 2002 to US$12.1 billion in 2007, accounting for one-third of total imports of agricultural products. Edible oilseed imports (of which 95 percent were soybeans) grew at an annual rate of 36.0074 percent. China also imports a large amount of edible oil, most of which is palm oil. Edible oil imports grew from US$1.4 billion in 2002 to US$6.7 billion in 2007, growing at an annual rate of 37 percent. China's import of cotton has also grown rapidly. Cotton imports grew from US$200 million in 2002 to US$3.5 billion in 2007 at an annual rate of 77.2587 percent. Animal product imports have also surged. Imports of animal skin and wool for the manufacturing sector have grown rapidly, accounting for approximately 60 percent of total animal product imports. Imports of animal offal and chicken feet and wings, much liked in the Chinese diet, have surged. Dairy products, top-grade beef and mutton and other high-value animal product imports have also experienced rapid growth. Since 2000, imports of animal products have exceeded exports, leading to a deficit of US$2.4 billion in 2007.

Table 6: China's import value of agricultural products, 1995–2007
(in 100 million US$)

	1995	2000	2001	2002	2003	2004	2005	2006	2007
Grain	36.1	5.9	6.3	4.9	4.6	22.3	14.1	8.4	5.4
Oilseeds	1.1	29.4	31.9	26.4	55.1	71.7	79.9	79.3	120.1
Vegetable oil	24.4	7.5	5.9	13.8	27.4	38.9	30.9	35.0	67.4
Cotton	14.2	0.9	0.8	1.9	11.9	31.9	32.2	49.2	35.4
Sugar	9.0	1.2	3.1	2.4	1.7	2.8	3.8	5.5	3.8
Fruits	0.8	3.7	3.4	3.8	5.0	5.9	6.6	7.6	9.5
Aquatic products	9.6	18.5	18.7	22.8	25.0	32.4	41.3	43.1	47.2
Livestock products	14.8	26.5	27.9	28.8	33.4	40.2	42.2	45.5	64.7
Total	122	113	118	124	189	280	287	321	411

Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

China's competitive agricultural products include vegetables, fruits, tea, aquatic products and animal products. Aside from aquatic products, vegetables are China's largest agricultural export. China's vegetable exports grew from US$2.6 billion in 2002 to US$6.2 billion in 2007, accounting for 15.12 percent of total exports of agricultural products. Fruit imports and exports increased, but fruit exports grew faster than imports, leading to an expansion of the trade surplus. Fruit exports in 2000 were US$720 million, compared with imports of US$370 million. By 2007, exports grew to US$3.75 billion and imports expanded to US$950 million. This gave rise to an expanded trade surplus of US$2.8 billion. The output of tea, one of China's competitive products, surged in 2004 and 2005 and the tea trade surplus in 2007 reached US$600 million (Table 7).

3.3 Agricultural exports

3.3.1 Export structure and growth

In 2007, China's agricultural exports were US$37 billion. Of this total, US$15.61 billion were from the cropping sector, US$4.05 billion were from the animal products sector and US$9.75 billion were from the aquatic products sector accounting for 42.2 percent, 10.9 percent and 26.3 percent respectively of the total exports of agricultural products. From 1995–2007, the share of exports contributed by the cropping sector was steady while the share of animal products declined and aquatic products increased (Table 8).

Table 7: China's export value of agricultural products, 1995–2007
(in 100 million US$)

	1995	2000	2001	2002	2003	2004	2005	2006	2007
Grain	1.4	16.9	11.0	17.2	26.7	8.4	15.3	11.7	22.0
Oilseeds	6.0	5.4	5.9	6.2	7.7	8.3	9.6	8.7	10.6
Tea	2.7	3.5	3.4	3.3	3.7	4.4	4.8	5.5	6.1
Flowers	0.3	0.3	0.3	0.4	0.5	0.6	0.7	1.0	1.3
Vegetables	21.6	20.8	23.4	26.3	30.6	38.0	44.8	54.3	62.1
Fruits	5.7	7.2	7.9	9.8	13.7	16.5	20.4	24.8	37.5
Aquatic products	32.9	38.3	41.9	46.9	54.4	69.7	79.0	93.7	97.5
Livestock products	28.3	25.9	26.7	25.7	27.1	31.9	36.0	37.2	40.5
Dry beans	3.6	2.3	2.8	3.2	3.6	3.3	3.9	4.1	5.4
Nuts	2.0	2.0	2.2	2.3	2.6	3.3	3.7	4.6	5.3
Total	147	160	161	181.5	213.2	233.9	275.9	314.2	370.1

Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

Table 8: Export structure of China's agricultural products, 1995–2007

	1995		2001		2007	
	Export value (100 million US$)	**Percent of the export total**	**Export value (100 million US$)**	**Percent of the export total**	**Export value (100 million US$)**	**Percent of the export total**
Grain	1.39	0.95	11.03	6.85	22.02	5.95
Tea	2.75	1.87	3.42	2.13	6.08	1.64
Flowers	0.27	0.19	0.34	0.21	1.28	0.35
Vegetable	21.64	14.73	23.42	14.56	62.14	16.79
Fruits	5.72	3.89	7.95	4.94	37.49	10.13
Aquatic products	32.94	22.43	41.85	26.02	97.54	26.36
Livestock products	28.30	19.27	26.67	16.58	40.46	10.93
Dry beans	3.59	2.44	2.84	1.77	5.43	1.47
Nuts	1.96	1.33	2.24	1.39	5.26	1.42
Total	146.86	100.00	160.87	100.00	370.08	100.00

Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

3.3.2 Export enterprises

Foreign-funded enterprises have become the driving force in the export of agricultural products. In 2005, they exported US$11.7 billion of agricultural products, accounting for 43 percent of the total export value of agricultural products and overtaking SOEs. The export of agricultural products by private enterprises as a proportion of the total exports of agricultural products increased from 7 percent at the beginning of the tenth five-year plan period to 25 percent in 2005. The share exported by state-owned and collective enterprises dropped to 32 percent. According to estimates by the Ministry of Commerce, exports of agricultural products from January to April of 2007 were US$4.68 billion by foreign-funded enterprises, US$3.67 billion by private enterprises and US$2.67 billion by SOEs. Foreign firms, domestic private enterprises and SOEs accounted for 42.47 percent, 33.30 percent and 24.23 percent respectively of the total export of agricultural products.

In the main agricultural export provinces, foreign-funded enterprises dominated. In 2006, exports of agricultural products in Shandong by foreign-funded enterprises, private enterprises, SOEs and collectives were US$4.74 billion, US$2.04 billion, US$840 million and US$480 million respectively,

accounting for 58.52 percent, 25.19 percent, 10.37 percent and 5.93 percent respectively of the total export value of agricultural products. During the first six months of 2007, foreign-funded enterprises in Liaoning Province led with an export trade value of US$690 million, accounting for 47.59 percent of the total export value. Private enterprises with export-import rights exported US$410 million, accounting for 28.28 percent of total export value and SOEs exported US$350 million, accounting for 24.14 percent of total export value.

3.3.3 Exports as a proportion of total production

Exported vegetables, fruits and other main items comprised a very small part of the domestic output (i.e. around 2 percent). Exports therefore had a limited effect on domestic prices, with the exception of tea (Table 9).

Table 9: Production and export of main export items
(in 10 000 tonnes)

Year	Vegetables			Fruits			Tea		
	Total output	Export volume	Export volume to total output (%)	Total output	Export volume	Export volume to total output (%)	Total output	Export volume	Export volume to total output (%)
2002	52 909	466	0.9	6 952	200	2.9	75	25	33.8
2003	54 032	551	1.0	14 517	267	1.8	77	26	33.9
2004	55 065	601	1.1	15 341	312	2.0	84	28	33.5
2005	56 451	680	1.2	16 120	365	2.3	93	29	30.7
2006	58 326	733	1.3	17 240	370	2.1	103	29	27.9

Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

3.3.4 Area of export crops as a proportion of total cropped area

While export crop area has increased as a proportion of total cropped area, it is still small and exports have played a limited role in promoting the restructure of the agricultural sector. In 2006, the vegetable growing area was 18.217 million hectares (11.6 percent of the total crop growing area), orchards comprised 10.035 million hectares (6.5 percent of the total crop growing area) and tea plantations amounted to 1.352 million hectares (0.8 percent of the total crop growing area). As the country with the largest population to feed, China's most important task is producing grain. But in recent years, the share of the grain growing area has declined; it still retains approximately 70 percent of the total crop growing area.

Table 10: Area of main export crops as a proportion of total crop area
(in 1 000 ha)

Year	Grain	Percent	Vegetable	Percent	Fruit	Percent	Tea	Percent
2002	103 891	67.2	17 353	11.2	9 098	5.9	1 134	0.7
2003	99 410	65.2	17 954	11.8	9 437	6.2	1 207	0.8
2004	101 606	66.2	17 560	11.4	9 768	6.4	1 262	0.8
2005	104 278	67.1	17 721	11.4	10 035	6.5	1 352	0.9
2006	105 489	67.2	18 217	11.6	10 123	6.4	1 431	0.9

Source: China Statistical Yearbook 2007, China Statistics Press 2007.

3.3.5 Impact of agricultural exports

The export of agricultural products adds value and contributes to employment, agri-business and structural adjustment in the agricultural sector. However, because exports represent only a small fraction of the total national output, their impact on the sector as a whole and on small-scale farmers has been very limited so far.

With a population of 1.3 billion, China has always considered food security to be of paramount importance. Faced with mounting staple food needs, the country is unlikely to divert large quantities of land from grains to vegetables and fruits. Export market constraints also act to limit the reallocation of resources towards the expansion of fruits and vegetables.

China's per capita land and water resources are limited. Its per capita arable land is less than 40 percent of the world average and its per capita water resources are only one-quarter of the world average. Resource shortages are a serious challenge to export agriculture although China has some comparative advantages in labour-intensive agricultural products.

The share of sown areas for major exports is unlikely to become significant in the future because of agricultural policy and resource and world market constraints. In addition, the government is looking to the industrial and service sectors to ameliorate the rural unemployment problem. Therefore, agricultural exports can play only a very limited role in improving resource allocation efficiency.

Agricultural exports make up only 5.4 percent of total agricultural output value and so their influence on domestic prices and farm income is limited. Only some vegetable, fruit and fish farmers in coastal areas can benefit from the export trade. Farmers in the central and western parts of the country and producers of bulk agricultural products are mostly excluded. Furthermore, exporters of agricultural products are largely foreign-funded enterprises which capture most of the value added in the export trade.

3.3.6 Agricultural export growth potential

As China gradually loses its edge in cheap labour, rising costs will weaken its price competitiveness. At present, domestic prices of grains (e.g. rice, wheat, corn and soybeans) are higher than world market prices. Also, China has been confronted with foreign non-tariff barriers in its export of food and agricultural products. New forms of trade barriers are increasing, such as "intellectual property rights barriers", "animal welfare barriers", "food anti-terrorism barriers", "green barriers" and "media barriers". Foreign technical barriers to trade have become the biggest obstacle to China's export of agricultural products.

3.4 Imports

3.4.1 Import structure and growth

China imported US$24.71 billion of crop products in 2007, nearly three times the amount in 1995; the annual average growth was 9.2 percent. Animal product imports totalled US$6.47 billion, four and one-half times the amount in 1995, with an average annual growth of 13.1 percent. Aquatic product imports were US$ 4.72 billion, five times greater than in 1995 with an average annual growth of 14.2 percent. Imports of grains and sugar dwindled and edible oilseeds, meal and bean dregs rose as a percentage of total agricultural product imports. From 1999 to 2003, the share of crop products in total agricultural products imports fell and the share of animal products climbed.

Edible oilseeds, vegetable oil, cotton, animal products and aquatic products are the main imported products and their respective import values in 2007 were US$12.01 billion, US$6.74 billion, US$3.54 billion, US$6.47 billion and US$4.72 billion, accounting for 29.2 percent, 16.4 percent,

Table 11: China's agricultural import structure

Product	1995		2001		2007	
	Import value (100 million US$)	Percent of total import	Import value (100 million US$)	Percent of total import	Import value (100 million US$)	Percent of total import
Edible oilseeds	1.06	0.87	31.94	26.99	120.06	29.22
Vegetable oil	24.36	20.02	5.92	5.00	67.41	16.41
Cotton	14.22	11.68	0.84	0.71	35.37	8.61
Sugar	8.98	7.38	3.13	2.65	3.77	0.92
Fruits	0.76	0.63	3.42	2.89	9.55	2.32
Aquatic products	9.62	7.91	18.75	15.84	47.22	11.49
Livestock products	14.77	12.13	27.85	23.53	64.70	15.75
Total	121.69	100.00	118.36	100.00	410.85	100.00

Source: China Customs Statistical Yearbook 2007, China Customs Press 2008.

8.6 percent, 15.8 percent and 11.5 percent respectively of the total import value of agricultural products. Imports of edible oilseeds experienced the sharpest growth, making up less than 1 percent of total agricultural product imports in 1995, 27 percent in 2001 and 29 percent in 2007 (Table 11).

3.4.2 Imports in comparison with production

Imports of soybeans, cotton and sheep wool grew rapidly and increased significantly in comparison with domestic output. Soybean imports were 177 percent of domestic production in 2006 and soybean consumption, which totalled 43.84 million tonnes, included 15.97 million tonnes of domestic output and 28.27 million tonnes of imported product. Cotton consumption (10.37 million tonnes) included 6.75 million tonnes of domestic output and 3.64 million tonnes of imports. Cotton imports were 54 percent of domestic production. Consumption of sheep wool (630 000 tonnes) consisted of 390 000 tonnes of domestic output and 300 000 tonnes of imports. Sheep wool imports were 88.7 percent of production.

As a result of rapidly rising consumption, stagnating domestic production and fluctuating world market prices, agricultural imports have affected domestic prices significantly.

3.4.3 Domestic and international prices

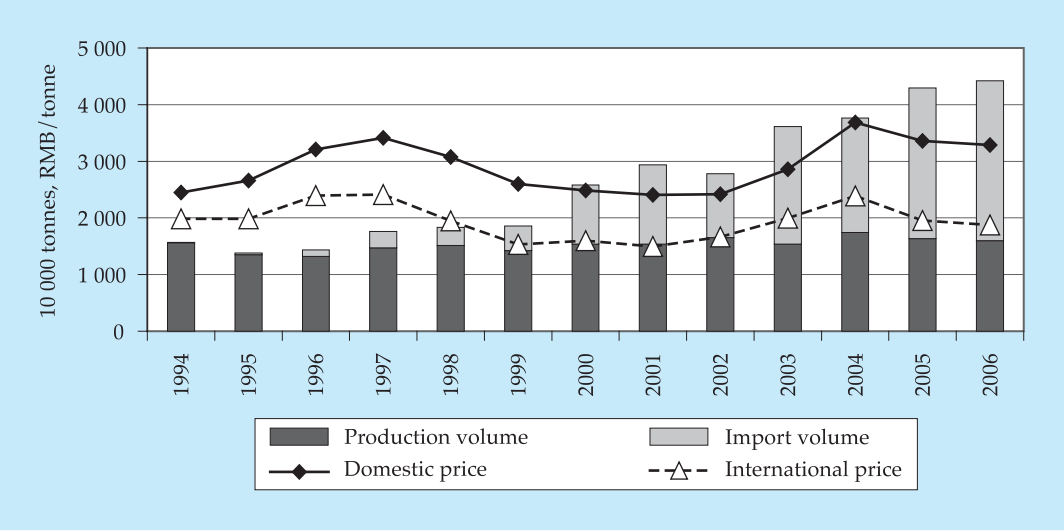
The domestic price for soybeans has been noticeably affected by the international price. It has been fluctuating from 2 500–3 500 yuan per tonne since 1994. The lowest price of 2 406 yuan per tonne occurred in 2001 (Figure 3). In US dollar terms, the domestic price fluctuated from US$200–300 per tonne (Table 12). The domestic cotton price has been moving in tandem with the international trend.

Table 12: Domestic and international prices of soybeans, 1994–2006

	1994	1996	1998	2000	2002	2003	2004	2005	2006
International price (current US$/tonne)	239	289	235	193	201	241	289	239	235
International price (current RMB/tonne)	1 982	2 395	1 946	1 598	1 667	1 998	2 389	1 956	1 879
Domestic price (current RMB/tonne)	2 447	3 208	3 074	2 485	2 418	2 858	3 683	3 359	3 286

Source: China Agricultural Development Report 2007, China Agriculture Press 2007.

Figure 3: Production, imports and prices of soybeans, 1994–2006



Source: China Agricultural Development Report 2007, China Agriculture Press 2007.

Table 13: Domestic and international cotton prices, 1995–2006

	1995	1997	1999	2001	2002	2003	2004	2005	2006
International price (current US$/tonne)	2 076	1 555	1 220	970	957	1 297	1 164	1 107	1 149
International price (current RMB/tonne)	17 232	12 872	10 100	8 032	7 920	10 742	9 639	9 078	9 194
Domestic price (current RMB/tonne)	14 709	14 093	7 624	7 571	9 568	14 938	10 906	13 071	12 131

Source: China Agricultural Production Cost and Yield Data 2007, China Statistics Press 2007; FAO, http://www.fao.org/es/esc/prices/CIWPQueryServlet.

3.4.4 Impact of agricultural imports on supply

The growth of agricultural product imports eased tight supply situations and permitted increased consumption. Resource-intensive products (e.g. oilseeds, vegetable oil, cotton, sheep wool and marine products) have accounted for large shares of agriculture imports since the 1990s. Cotton and sheep wool imports were in demand from the fast-growing textile industry. Also, oilseed imports have been favourable for the livestock industry. The overall effect is that imports permitted restructuring of the agricultural sector towards production of those commodities for which the country has comparative advantage because of its rich and abundant labour force and other unique natural resource endowments.

3.4.5 Impact of imports on production systems

Growing demand fuelled the growth of imports rather than affecting existing production noticeably. Expanding imports did influence the development of essential commodities (e.g. soybean, cotton and wool) to some extent. However, domestic producers who could have benefited from the rising demand largely did not because the imports stabilized prices. Consequently, production area and quality standards stagnated as more and better grade commodities were imported. From 1985–2006, soybean consumption rose nearly four times from 9.36 million tonnes to 43.84 million tonnes whereas its output only increased 52 percent from 10.50 million tonnes to 15.97 million tonnes. The area under soybean grew by only a fifth, from 7.7 million to 9.3 million hectares. Soybean production did not keep pace with demand (Table 14). From 2001–2005, cotton consumption increased by three

Table 14: Consumption and production of soybeans in China, 1985–2006

	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006
Consumption (in 10 000 tonnes)	936	1 006	1 342	2 561	2 909	2 752	3 584	3 728	4 253	4 384
Output (in 10 000 tonnes)	1 050	1 100	1 350	1 541	1 541	1 651	1 539	1 740	1 635	1 597
Import volume (in 10 000 tonnes)	0.1	0.1	30	1 042	1 394	1 132	2 074	2 023	2 659	2 827
Sown area (in 1 000 ha)	7 718	7 560	8 127	9 307	9 482	8 720	9 313	9 589	9 591	9 280
Yield (kg/ha)	1 360	1 455	1 661	1 656	1 625	1 893	1 653	1 815	1 705	1 721

Source: China Agricultural Development Report 2007, China Agriculture Press 2007.

Table 15: Consumption and production of cotton in China, 1985–2006

	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006
Consumption (in 10 000 tonnes)	380	476	553	420	537	497	570	829	836	1 037
Output (in 10 000 tonnes)	415	451	477	442	532	492	486	632	571	675
Import volume (in 10 000 tonnes)	0.02	42	79	8	11	21	95	198	265	364
Sown area (in 1 000 ha)	5 140	5 588	5 422	4 041	4 810	4 184	5 11	5 693	5 062	5 409
Yield (kg/ha)	5 140	5 588	5 422	4 041	4 810	4 184	5 11	5 693	5 062	5 409

Source: China Agricultural Development Report 2007, China Agriculture Press 2007; China Statistical Yearbook 2007, China Statistics Press 2007.

million tonnes. Eighty-six percent of this increase was met by imports and cotton production increased only slightly (Table 15).

The domestic wool price's dropped because of the large quantity of fine wool imports since 1998 and there was also a large decline in the inventory of fine-wool sheep. According to a survey in Yili, Xinjiang, the actual number of fine-wool sheep dropped by more than two-thirds from around 2.34 million sheep in previous years to 0.73 million in 2002. A survey in March 2006 indicated that there were no fine-wool sheep in traditional wool-producing areas (i.e. Zhaosu and Chabuchaer counties). Shandong used to have about 30 000 fine-wool sheep, but there were only about 4 000 in 2006. A 2002 estimate indicated that there were only 10.4 million fine-wool sheep in the nation and the output of crude fine wool was barely 41 000 tonnes, sharp declines from earlier historical levels.

3.4.6 Impact of imports on domestic price trends and farm income

Sizeable imports of oilseeds, vegetable oil, cotton and sheep wool are large compared with domestic production and account for a large proportion of consumption. Because the tariffs for these products were very low following China's accession to the WTO, imports of low-priced agricultural commodities noticeably affected domestic price trends. They contained the increases in prices and costs of labour and other inputs driven by escalating demand.

The price of soybeans, for example, fell by 42 percent from 3 414 to 2 406 yuan per tonne from 1997–2001. At the same time, the import volume of soybeans rose nearly four times from 2.88 million tonnes to 13.94 million tonnes (Figure 3). The domestic market price of soybeans could have increased significantly, driven by demand. Instead, it fell because of import expansion and farmers' profit margins suffered.

IV. Conclusions and policy implications

In the past three decades, especially in the period following China's accession to the WTO, the performance of the agricultural sector has been good. This can be seen in the rapid growth of agricultural GDP and farm incomes. The major driving forces (i.e. fast-rising demand, sound policy, institutional reform and strengthened state support) were mainly domestic; however, international agricultural trade was also influential.

The impact of agricultural exports and imports were different. Exports benefited certain regions, enterprises and farmers but they played a limited role in allocating resources, restructuring the agricultural sector and increasing farm incomes. They had limited impact because the scale of exports was small in comparison with total production and nationwide consumption. In contrast, agricultural imports played a larger role in determining supplies and prices on the domestic market and thus affected resource allocation and farm incomes.

While trade liberalization policies leading to expansion, restructuring and efficient allocation of resources may be important, they should consider the vulnerability of small-scale farmers and their lagging productivity in the short run. The following policy implications may be important as the country moves into the next stage of development.

To begin with, policies should recognize the indisputable fact that agriculture provides the foundation for national economic development. It does this by ensuring food security, promoting farmers' livelihood security and building social stability. In any trade liberalization initiative, care should be taken to avoid long-term damage to agriculture.

Agriculture in China is dominated by small subsistence-oriented family farms with relatively low incomes. Small-scale farmers' livelihoods have been proven to be vulnerable to international trade policy, especially opening up domestic markets to foreign competition. These constituents should have priority in trade policy formulation. It is essential to provide safety nets and state assistance to shift to new production systems.

Chinese society is characterized by a dual economy with high unemployment and low-incomes in rural areas that are in sharp contrast to the situation in urban settings. The state has accorded the highest priority to alleviating rural poverty in order to bridge the wide income gap. Agricultural trade policy should not inadvertently derail rural poverty alleviation.

China has severe resource constraints, environmental problems and the formidable task of feeding 1.3 billion people. There is little room for agricultural restructuring which is difficult and costly. These strategic considerations should rank as high as the goal of efficient resource allocation in trade policy.

Given China's huge population and relatively low-income status, national and household food security ranks highest in its list of goals. In pursuing food security, China should seek self-sufficiency in staple foods while using international markets to supplement production shortfalls, earn foreign exchange and generate employment from those commodities in which it has comparative and competitive advantages.

Trade policy-making should fully consider the difference between small farm subsistence-oriented production in China and commercial production systems in competing developed countries.

Finally, in trade negotiations, attention should be paid to protecting China's current limited tariff tool.

Chapter 6

Trade negotiations under the Doha Development Agenda: State of play

by
Yong-Kyu Choi[45]

I. Introduction

International agricultural trade was placed under a single set of international rules and regulations through the UR negotiations and the objective was substantial and progressive agricultural trade reform. The UR Agreement stipulated that a new round of negotiations on agriculture and services was to start in 2000 – the so-called "built-in agenda". The Doha Round was launched in November 2001. Developing countries, comprising two-thirds of the WTO membership, play an important role in the current multilateral trade negotiations and so the orientation of the Doha Round is towards developing countries. In this regard, the ongoing global economic crisis is sending mixed signals for international trade, necessitating review, evaluation and reformulation of negotiating positions.

II. Developments in a new round of negotiations

2.1 Doha Development Agenda (DDA)

The Doha Round began in November 2001. Negotiations on the modalities were initially supposed to be completed by April 2003 and country schedules were to be submitted to the WTO before the Cancun Ministerial Conference scheduled for 10–14 September 2003. The Doha Round was due to be finalized by 31 December 2004.

2.2 Cancun Ministerial Conference

Up until the Cancun Ministerial Conference of 10–14 September 2003, the WTO members failed to complete negotiations on modalities. The United States-European Community compromise draft was rejected by developing countries at the Cancun Ministerial Conference; the cotton-producing West African countries strongly objected to the compromise draft. Subsequently, the WTO members failed to agree on the modalities mainly because of a lack of leadership from the chairs, the United States and the European Union and because of objections from new influential negotiating groups like the G20 (a group of 23 developing countries making up 60 percent of the world's population) and G10 (a group of ten importing countries).

2.3 New initiative to restart the DDA after Cancun: the Framework Agreement

There was a change in the chairmanship in early 2004: Ambassador Oshima of Japan was elected the Chairman of the WTO General Council and Ambassador Groser of New Zealand was appointed the Chairman of the Agriculture Committee. As a result of renewed efforts by the WTO members, the Framework Agreement was adopted on 1 August 2004. This was the first agreed document since the launch of the Round.

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2.4 Post-Framework Agreement

The negotiations were active but slow-paced because of conflicting interests among negotiating groups including the G5 (Australia, Brazil, the European Union, India and the United States), G10, G20, G33 (a group of 33 developing countries seeking special products and SSMs) and G90 (a group of African, small island and other countries). They failed to agree on the so-called "First Approximation" by the 28 July Trade Negotiation Committee (TNC) and the 29 July 2005 General Council. Mr Lamy succeeded Mr Supachai as the WTO Director-General and Ambassador Falconer succeeded Mr Grocer as Chairman of the Agriculture Committee. They committed to concluding the modalities by the Hong Kong Ministerial Conference, scheduled for 13–18 December 2005, but they failed to reach agreement again.

2.5 Hong Kong Ministerial Conference

The Hong Kong Ministerial Conference of 13–18 December 2005 started with the blame game, which was especially directed towards the European Union's export subsidy and the United States' cotton subsidy. After prolonged and intensive negotiations, the Conference finally agreed on the elimination of the export subsidy by 2013, elimination of the cotton subsidy by 2006 and completion of the negotiation on modalities by April 2006. It was successful in reviving some momentum to continue the Doha Round, but important issues like market access were not even discussed.

2.6 Suspension of the negotiations

By April 2006, the modalities negotiation failed to bridge big gaps among interested groups on key issues like tariff reduction rates, sensitive products and domestic support reduction. Following the G8 Summit, the G6 (Australia, Brazil, the European Union, India, Japan and the United States) ministers met from 23–24 July 2006, but produced no agreement. What followed was the announcement of the "indefinite suspension of the DDA negotiations" on 24 July 2006, after which another blame game started among major players.

2.7 Restart of the negotiations and chair's draft papers

After a four-month break, Director-General Lamy gave the green light to restart the negotiations on 16 November 2006. Meanwhile, frequent informal contacts were made among major players like the United States, the European Union and India to find possible areas of agreement. Ministers from 25 member countries decided to restart the negotiations at the Mini-ministerial Conference in Davos on 27 January 2007. After intensive negotiations, the agriculture chair issued the first paper on 30 April 2007 and the second paper on 26 May 2007 to narrow the gaps among the members. The G8 leaders supported a quick end to the DDA on 8 June 2007 in St. Petersburg, Russia. To this end, the G4 (the United States, the European Union, India and Brazil) ministers met in Potsdam, Germany on 19–20 June, but they failed to produce any agreement. Director-General Lamy warned of the possible collapse of the negotiations.

2.8 Draft modalities and revisions (first – third)

Ambassador Falconer circulated the "Draft Modalities on Agriculture" on 17 July 2007. There were too many square brackets in the text and key numbers were provided in the form of ranges in the areas of MA, export subsidy (ES) and domestic support (DS). Members had different views about the text, but they generally accepted it as a starting point, or as the basis for negotiation, future work or work in progress. After the first revision (February 2008), second and third revisions (May 2008 and 10 July 2008) were issued for the Mini-ministerial Conference scheduled for 21–29 July 2008 in Geneva.

2.9 Mini-ministerial Conference

Major players made some concessions at the beginning of the Mini-ministerial Conference held in Geneva on 21–29 July 2008. The United States proposed a spending cap of US$15 billion in overall trade-distorting support, compared with US$13.0–$16.4 billion as stipulated in the modalities text. The European Union expressed its willingness to accept a 60 percent cut on farm tariffs compared with a 70 percent cut as provided in the text. The G10, except Japan, stated that 6 percent of tariff lines should be designated as "sensitive products".

On 23 July, Lamy held a marathon negotiation with trade ministers from the new G7 (the United States, the European Union, Japan, India, China, Brazil and Australia) in an attempt to tackle difficult issues in a question and answer session. The United States offered a ceiling of US$15 billion on overall trade-distorting support (OTDS); Brazil, China, Australia, the European Union and India said it should be US$13 billion. On the number of sensitive products, Brazil, the United States and Australia argued for 4 percent of total tariff lines, including 2 percent as payment for countries having tariffs above 100 percent; the European Union and Japan said the tariff rate quota (TRQ) should be set at 4 percent. Japan demanded that 8 percent of tariff lines be reserved for "sensitive products"; Brazil, the United States and Australia insisted that the expansion of TRQ for sensitive products be 5 percent of domestic consumption (compared with 4–6 percent in the text). On special products, China and India urged that 18 percent of tariff lines should be treated as "special products" with 5 percent having no cuts and the remainder subject to cuts below 10 percent (10–18 percent of number, 6 percent no cut with average reduction rate, 10–14 percent in the text). On SSM, India and China demanded a trigger of 110 percent while the United States and Australia demanded 155 percent and 165 percent respectively. On sectoral tariff elimination in non-agricultural market access (NAMA), the United States, Japan, the European Union and Australia said participation in at least three sectors was a "must", but China and India said that there should be no requirement to participate since the Doha mandate considers it to be voluntary.

On the night of Thursday, 24 July 2008, Mr Lamy circulated an informal proposal based on the discussions that included the following:

- a United States OTDS ceiling of less than US$15 billion;
- a 70 percent cut in the top tariff band combined with tariff capping on non-sensitive products;
- 4 percent of tariff lines as the number of sensitive products with an additional 2 percent payment;
- expansion of TRQ between 4 and 5 percent of domestic consumption.

2.10 Lamy's compromise draft text

On the morning of Friday, 25 July, Mr Lamy circulated his text to the 35 ministers at the "green room" meeting. Key agricultural points in Lamy's compromise draft text are listed below, followed by numbers in parentheses from the original text for comparison:

- The tariff cut in the top band for developed countries would be 70 percent (66–73 percent).
- The number of sensitive products for developed countries would be no more than 4 percent plus 2 percent with payment, with expansion of TRQ by 4 percent of domestic consumption.
- The number of special products for developing countries would be 12 percent of tariff lines (10–18 percent) with 5 percent subject to a "zero" cut (0–6 percent).
- The SSM trigger level would be 140 percent of base imports and the maximum number of tariff lines eligible for SSM would be 2.5 percent in any year.

- The special safeguard for developed countries would be eliminated by 1 percent and above, over seven years.
- The reductions of OTDS would be 80 percent for the European Union (75–85 percent) and 70 percent for the United States (66–73 percent).
- For the United States, the OTDS ceiling would be cut from the current US$48.2 billion to US$14.5 billion (the United States had proposed a ceiling of US$15 billion and the actual spending of OTDS in 2007 was US$9 billion).
- On NAMA, participation would be in two to three sectors.

Members' reactions to the compromise draft were quite different. India and G33 leader Indonesia strongly opposed the proposed SSM trigger of 140 percent. Many African countries, especially the Cotton Four, were displeased with the draft text, while the United States, New Zealand, Australia and Brazil supported Lamy's draft. Finally, Mr Pascal Lamy announced the collapse of negotiations on 29 July 2008.

2.11 Major reasons for failure

In the technical aspects of the compromise draft, there were significant differences between the United States and India and China. On the SSM trigger level, the United States wanted 140 percent while India wanted 120 percent. Regarding the sectoral liberalization, the United States wanted the participation of two sectors among chemicals, industrial machinery and electrical and electronics while China said participation should be voluntary as stipulated in the WTO mandate. Regarding the United States' OTDS ceiling, the United States proposed US$15 billion while Lamy suggested US$14.5 billion and China wanted an additional cut to make it less than US$13 billion.

In procedural aspects, there was a major lack of transparency. Discussions took place within G7 meetings. They were also insufficiently sensitive to other negotiating groups like the G33 and the African group.

In political aspects, it was premature to convene the Mini-ministerial Conference because there were too many issues to be resolved before the meeting. Among them, a "potential deal-breaker", like cotton, was not discussed at the meeting. Moreover, there was a lack of political will from major players amidst the growing negotiating power of developing countries.

2.12 From the collapse of the mini-ministerial meeting to the fourth revision of the modalities text

Following the collapse of the July mini-ministerial meeting, negotiations began again in the second week of September 2008. The aim was to minimize unresolved issues like SSM, tariff simplification, cotton and sectorals through G7, senior official and "green room" meetings to prepare for a ministerial conference in the middle of December 2008.

On 15 November 2008, a G20 declaration (in Washington, D.C.) gave a strong message to members to complete modalities negotiations of WTO-DDA during 2008. On 17 November 2008, Agriculture Chair Falconer asked members to show flexibility in response to the G20 declaration at an informal open-ended meeting, but it appeared that no flexibility was shown.

Director-General Lamy announced on 23 November 2008 that a ministerial meeting would be held to conclude negotiating modalities sometime between 10 December and 19 December 2008. However, members' positions on agriculture and NAMA did not change significantly through the end of November 2008.

On 27 November, Director-General Lamy signaled tentative dates of 13–15 December for the proposed ministerial meeting, but admitted a "risk of failure."

Senior United States congressmen, including Charles Rangel and Max Baucus, sent a letter on 2 December 2008 to President Bush urging him not to back plans for a WTO ministerial meeting, arguing that "no deal is better than a bad deal."

2.13 Fourth revision on modalities text and cancellation of ministerial meeting

The modalities text after the fourth revision of 6 December 2008 was not much different from the third revision. Following a series of urgent discussions with trade ministers of major players, Director-General Lamy announced the cancellation of the ministerial meeting he had intended to convene in December. This was mainly due to substantial differences in NAMA as well as SSM and cotton in agriculture.

III. Remaining issues to be resolved

Core issues to be tackled on agriculture include SSM (particularly trigger levels, remedy, spill-over and cross-check), tariff simplification, the number of sensitive products and cotton subsidy reduction. Regarding SSM, it would be important to bridge the gap between the positions of India and exporting countries, especially the United States. With regard to tariff simplification, it is noteworthy that the European Union still insists that only 80 percent of tariff lines could be converted into *ad valorum* tariffs. On the number of sensitive products, Japan and Canada insist on 8 percent and 6 percent of tariff lines, respectively, which is opposed by exporting countries. Also, the reduction rate of the United States' cotton subsidy is a key issue.

On NAMA, the issue of sectoral liberalization is the most contentious one to be addressed; it could be a possible deal-breaker.

IV. Future prospects

In order to ensure that DDA did not lose momentum, follow-up actions were underway in early 2009. A mini-ministerial meeting was held on the occasion of the Davos Forum (29–31 January in Davos, Switzerland). Ministers gave a vote of confidence to Mr Lamy to finalize the Round. An informal "green room" meeting, the so-called "carousel consultation", was initiated.

The new United States negotiating team will be available around June 2009. A new United States Trade Promotion Authority (TPA) is essential to accelerate the Round and the attitude of the new United States negotiating team is also very important to move the Round forward.

Other political events, like the forthcoming G20 Summit Meeting in London in April 2009 and the Indian general election in May 2009, are important to the Doha Round.

Two scenarios are possible. The optimistic scenario is that if agreement is reached on modalities by the end of 2009, submission of a country schedule and bilateral negotiations can be expected by June 2010. Then, ratification of the Doha Round Agreement should occur by 31 December 2010 and implementation would begin on 1 January 2011.

The pessimistic scenario is that if agreement on modalities is not reached by the end of 2009, it may take two or three more years to reach agreement. Members will then seek bilateral or regional free trade agreements.

V. Conclusion

In conclusion, strong political will, particularly from major players like the United States, India and China, is vital for the successful conclusion of the Doha Round. It should be noted that the multilateral trading system could be jeopardized if agreement is not reached in the near future. The seven-year-old round may then go into prolonged hibernation. So far, the multilateral trade negotiations have not failed. They may need more time to reach a successful conclusion.

Chapter 7
Global financial and food crises: a Malaysian's perspective

by
Larry Chee-Yoong Wong[46]

I. Introduction

High food prices from 2007 through mid-2008 spawned serious implications for food security, macroeconomic stability and even political stability in many countries, especially developing ones. Subsequently, the unfolding global financial crisis and economic slowdown have inadvertently pushed food prices down by about 40 percent; prices have settled at higher than pre-crisis levels, perhaps marking the end of the cheap food era. The financial crunch has also dampened the availability of capital at a time when accelerated investment in agriculture is most urgently needed. These dynamics have invariably culminated in a 'double whammy' to many countries, especially the poor and marginalized ones. However, beyond the gloom and doom, there are, as always, opportunities in times of crisis, particularly in the East.

In this regard, Moisi (2008) reminds the world that, "the torch of history seems to be passing from West to East" and, paraphrasing French President Francois Mitterrand, she suggests that "growth is in the East and debts are in the West. Furthermore, fear is in the West and hope is in the East." Consequently, recent developments may well provide a golden opportunity for Asian economies to show the way to global recovery by bringing back increased and shared prosperity in a more holistic, inclusive and sustainable development mode.

This paper considers the food and financial crises from a Malaysian perspective with an Asian orientation and optimistic slant, while incorporating a business dimension (given the increasing importance of public-private partnerships). Unfortunately, it is not sufficiently grounded empirically nor is it yet the result of rigorous analytics. This paper is also motivated by the author's urge to share some of his thoughts, aspirations and concerns at this forum.

It explores the interrelatedness of the unfolding financial and food crises and some of the accompanying policy challenges and their impact on and the increasing relevance of agriculture. The paper hones in on food security issues and new dimensions regarding the future of food from a Malaysian's perspective. It highlights Malaysia's time-tested strategic approach to food security and argues that although it has served the country well so far, Malaysia has to be cognizant of emerging trends and refreshing, innovative ideas and initiatives geared towards sustainable development and a better future for all. The paper emphasizes the need to get the balance right in making the necessary strategic adjustments as Malaysia moves with guarded optimism into the future.

The underlying theme of this paper is that it is prudent to recognize the interplay and linkages between the financial and food crises and to find opportunities and examine the relevance of Malaysia's strategic approach to food security, promises of biotechnology and agrifood supply chains and trading networks. It is also important to examine innovative ideas or initiatives to be able to get the right balance. This will involve balancing between "rolling with the punches" and exploiting the opportunities accompanying the crises with eyes firmly fixed on contributing to sustainable development at the local, national, regional and global levels.

[46] This paper was prepared by Dr Larry Chee-Yoong Wong, Senior Fellow, Institute of Strategic and International Studies (ISIS), Kuala Lumpur, Malaysia.

II. Linkages between the food and financial crises

> *"While people in the developed world are focused on the financial crisis, many forget that a human crisis is rapidly unfolding in developing countries. It is pushing poor people to the brink of survival. The financial crisis will only make it more difficult for developing countries to protect their most vulnerable people from the impact of rising food and fuel costs."*
>
> Robert Zoellick, President, World Bank, 2008

What has been and continues to be reported in the mainstream media is quite unsettling, to say the least. In late January, the IMF cut its world growth estimate for 2009 to 0.5 percent, the weakest pace since the Second World War. The United States, the European Union and Japan are in recession. Some say that the advanced economies are in depression. The United States' economy has lost 3.57 million jobs since the recession started in December 2007, its biggest employment slump of any economic contraction in the post-war period. The United Kingdom's economy will shrink this year by the most since 1946. Developing Asia, on the other hand, is still expected to expand by 5.5 percent this year, albeit at the slowest pace since 1998.

Addressing a gathering of central bankers from Southeast Asia in Kuala Lumpur recently, IMF Managing Director Dominique Strauss-Kahn said, "Stimulus packages alone will not succeed in dragging the global economy out of recession unless confidence is restored in the banking system."

It is interesting how outlook and perspectives have changed over the last year or so. It may be recalled that at last year's World Economic Forum in Davos, its president and founder Klaus Schwab declared, somewhat rhetorically, that they would address "what business can do to save the world". However, a year later the question most certainly seems to have been reversed to "what the state can do to save the business of finance". In many important ways, it now appears that it is the state that is called upon as the ultimate saviour of capitalism!

Despite massive government interventions (including stimulus packages) announced by advanced countries since the last quarter of last year, business confidence is still largely subdued. This was more than evident at the recently concluded World Economic Forum 2009 in Davos, Switzerland, attended by more than 40 heads of government and 2 500 business leaders. One after another, they ventured that bad days are still ahead and that one could not yet expect a light at the end of the tunnel.

Beyond this gloom and doom and despite not being able to be entirely insulated from the fallout from this financial tsunami originating in advanced countries, it is crucial for countries to chart courses that build on their inherent strengths, mitigate their weaknesses and ferret out and exploit selected opportunities that will undoubtedly accompany these crises. Towards this end, it is imperative that policy-makers fully understand the key linkages between the food and financial crises.

In retrospect, both new and ongoing forces drove up the prices of food commodities and food products, causing a major food crisis in 2007–2008. Population and income growth, rising energy prices and subsidized biofuel production have contributed to surging demand and consumption of agricultural products. At the same time, productivity and output growth have been restricted by natural resource constraints, sustained underinvestment in rural infrastructure and R&D over the last one to two decades, limited access to inputs and weather disruptions. The financial crisis in mid-2008, however, stemmed from fundamentally different causes – flawed regulatory regimes and sub-prime mortgage lending. The two crises have fed on each other. Fuelled with capital diverted from the collapsing housing market and lacklustre bourses, speculation in commodities and agricultural futures and ad hoc market and hastily cobbled trade policies, the level of volatility of commodity prices heightened.

Although the food and financial crises developed from different underlying causes, they are becoming inextricably linked in complex ways through their ramifications on financial and economic stability, food security and even political stability.

The food crisis has also added to general inflation and macroeconomic imbalances, to which governments must respond with monetary and fiscal policies. At the same time, the financial crunch and the accompanying economic slowdown have pushed food prices to lower levels by decreasing demand for agricultural commodities for food, feed and fuel. Furthermore, as capital becomes scarcer and more expensive, the expansion of agricultural production to address the food crisis has been somewhat curtailed.

Because the two crises are inextricably linked, a coordinated response is needed, especially to alleviate the "double whammy" on the poor and ride out this storm.

III. New challenges and opportunities for agriculture and food security

It is recognized that agricultural growth is a crucial element in resolving food price crises, enhancing food security and accelerating pro-poor growth. After almost two decades of policy neglect and underinvestment in public goods (such as agriculture R&D, rural infrastructure and information and monitoring), high food prices have provided some positive incentives for policy-makers, farmers and investors to increase agricultural production and productivity. At the country level, global price changes or volatility have been transmitted in varying degrees because of factors such as logistics and freight costs, domestic policies and market structure. However, most countries recorded general patterns similar to the global trends.

This variability in food prices often poses a problem for medium-term and longer-term planning. For example, farmers and investors in developing countries who took advantage of rising agricultural prices and invested in expanding production may now find themselves unable to pay off their debts because of falling output prices. As banks cut lending because of the financial crisis, broader plans for investment in agriculture on a sectoral basis or along entire supply chains are also at risk of being scaled back.

Consequently, it would be prudent to retrace the major drivers for the renewed interest in agriculture around the turn of the century and to consider how a self-elected net food importer like Malaysia addresses food security.

IV. Why was agriculture back on the agenda?

Since the turn of the century, interest in agriculture is resurging after about two decades (since the mid-1980s) of neglect or disinterest by academics, researchers, donor communities and some developing countries. This resurgence of interest was largely fuelled by a new understanding that growth in the agricultural sector plays a major role in overall growth and poverty reduction through the sector's linkages to manufacturing and services. These linkages are created through the supply chain and international trading network. They connect the poor to growth along the agrisupply chain.

There are four basic drivers of this renewed interest in agriculture:

- The agribiotechnology (or green biotechnology) revolution in the development of genetics (including genetically modified organisms (GMOs) and non-GMOs), microbiology and diagnostics, coupled with information and communications technology (ICT) and nanotechnology, will continue to revolutionize and push out agricultural production and

profit frontiers. The twenty-first century is touted as the "biology century" and there are great expectations that agribiotechnology can contribute greatly to innovations, cost reductions, productivity improvements, new processes and new products.

- The expansion of supply chains and trading networks means that future competition will no longer merely be between firms, but rather will be between supply chains and trading networks, comprising groups of companies intricately linked through partnership and strategic alliances at the various levels of the supply chain. They will provide linkages for agriculture to the manufacturing and service sectors in a broader and more holistic agri-business framework. In so doing, they will contribute towards local, regional and overall growth.
- The rise of supermarkets in Asia has transformed agrifood supply chains, especially food retail markets. There are new important opportunities for farmers to diversify into high-value crops with greater demand potential and capture some of the value-added being generated by the supermarkets and increasingly sophisticated and stochastic supply chains and international networks. They also increasingly connect farmers and other stakeholders more directly to changing consumer preferences and demand. Whether this is a boon or bane for farmers and stakeholders at different levels of the supply chain depends as much on public policies as on the ability of the farmers and stakeholders to be proactive and adaptable and work together.
- It is recognized that as urbanization occurs at unprecedented rates, economic growth generated by agriculture (and the value added along the supply chain) is the main vehicle for reducing poverty and preserving the environment in rural areas.

With the economic downturn, the construction and manufacturing sectors in most economies are expected to be the first to be affected and perhaps hit the hardest. However, within manufacturing there is general concurrence that food manufacturing is still expected to grow. Furthermore, especially in developing countries, the agriculture sector (and to a certain extent the informal sector) is expected to cushion the problem of rising unemployment. Agriculture, by its nature, has great propensity to soak up unemployment and diffuse related tension, largely due to the rural population's ability to share poverty.

Taken together, all of these factors are compelling many researchers and governments to re-examine the role of agriculture in economic development, reassess the sector's relative strengths and endowments and rebuild development plans and programmes. It is therefore important to better understand and track the drivers, especially in these turbulent times.

V. Promise of agribiotechnology

The advances in agribiotechnology are nothing short of staggering and promise much with the mapping of rice and other genomes and the spread of biotech crops. The twenty-first century has been touted as the "biology century" and agribiotechnology is expected to lead to "new agriculture" where plants and animals are endowed with new value-creating mechanisms. Consequently, there is focused R&D in biofarming (e.g. biotech crops, biofertilizers, biopesticides), biopharming (e.g. biofactories for insulin and vaccines), biofuels, bioplastics and bioremediation.

Teng (2007) contends that the reported crop biotech R&D to date is "just the tip of the iceberg". In the area of agronomic traits, there is progress in biotic stress (e.g. insect and disease resistance) and herbicide tolerance, abiotic stress (e.g. drought, cold, heat and poor soil tolerance), desired or hedonic quality traits (e.g. taste, shelf-life, nutrients, seedless), novelty products (e.g. oils, nutraceuticals) and renewable resources (e.g. biomass conversing, biofuels or energy farming). A more detailed listing of the possibilities is provided in Figure 1.

Figure 1: Crop biotech R&D to date – "just the tip of the iceberg"

- Agronomic traits
  - Biotic stress
    - Insect resistance
    - Disease resistance: viral, bacterial, fungal, nematode
    - Weed-herbicide tolerance
  - Abiotic stress
    - Drought, cold, heat, poor soils
  - Yield
    - Nitrogen assimilation, starch biosynthesis, O_2 assimilation
- Quality traits
  - Processing
  - Shelf-life
  - Reproduction: e.g. seedlessness
  - Nutrients (Nutraceuticals)
    - Macro: protein, carbohydrates, fats
    - Micro: vitamins, antioxidants, minerals, isoflavonoids, glucosinolates, phytoestrogens, lignins, condensed tannins
    - Anti-nutrients: phytase, allergen and toxin reduction
  - Taste
  - Architecture
  - Fibre
  - Ornamentals: colour, shelf-life, morphology, fragrance
- Novel crop products
  - Oils
  - Proteins: nutraceuticals, therapeutics, vaccines
  - Polymers
- Renewable resources: Biomass conversion, feed stocks, biofuels

Source: Adapted from Teng, 2007.

There are great expectations that agribiotechnology will contribute greatly to innovations, cost reductions, productivity increases, new processes and new products that will benefit mankind in general. However, these changes will unequally benefit different stakeholders in the supply chains, as is the case with all forms of technology.

VI. Management of supply chains and international networks

A central tenet of supply chain management (SCM) is that competition in the future will no longer be between firms but rather will be between supply chains, comprising groups of companies intricately linked through partnerships and alliances at various levels of the chain. A cursory review of the literature indicates that SCM has been applied from the perspective of an individual firm, related to a particular product or item (such as the supply chain for oil palm, rubber or rice) or from the perspective of an industry group or sector (such as grains and agrifood).

Because all components along the supply chain need not belong to one company or group, varying degrees of strategic alliances can be observed at the operational level – from loose structures (Joint Venture "at the door") to dedicated or designated suppliers (e.g. supermarkets) to cross investments. At the operational level, there is significant value being added along the entire supply chain. Furthermore, supply chains can reduce asymmetry of information at interfaces with each subsequent

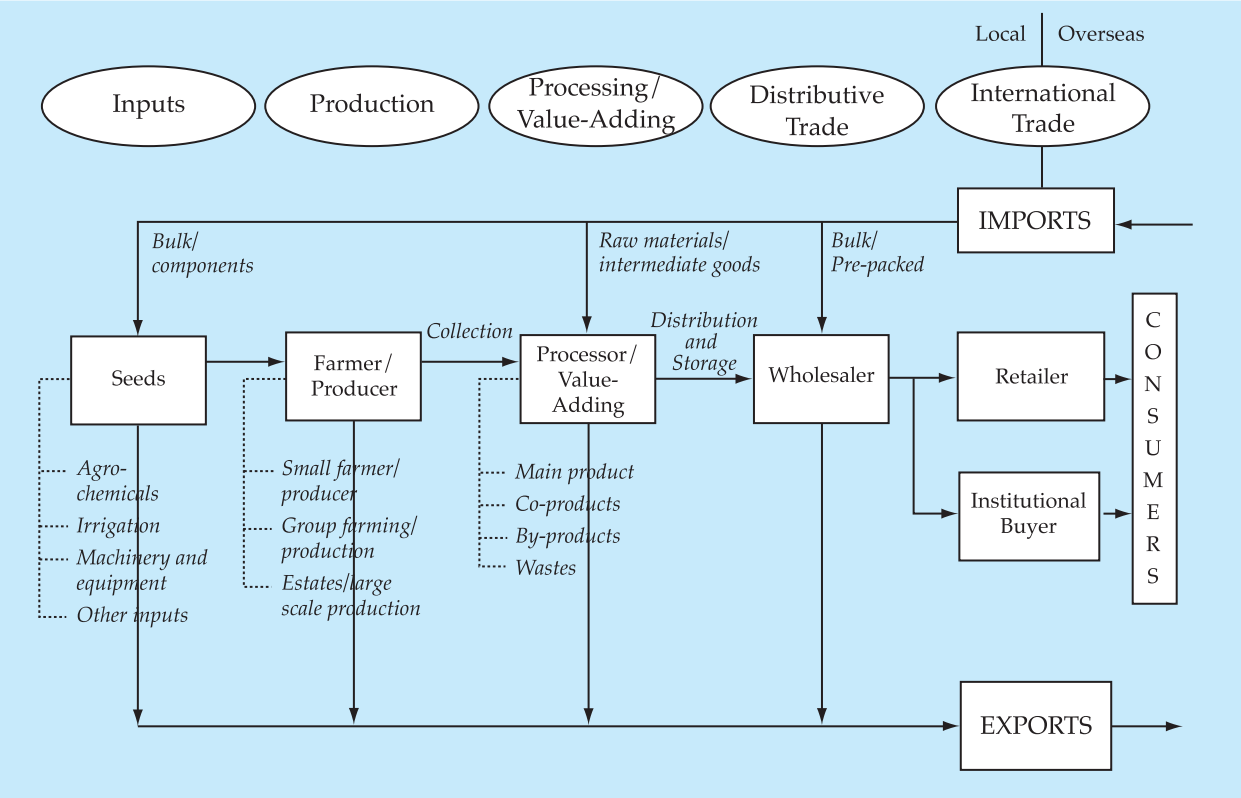
level, thereby reducing transaction costs, increasing feedback and improving response rates to changes in consumer preferences and tastes. This allows premiums to be captured. Of course, this information sharing is greatly facilitated, enhanced and even revolutionized by recent advances in ICT.

Empirical evidence suggests that margins can be shared amicably and sustainably along supply chains and that prices can be transmitted back to farmers and producers. Consequently, an appealing strategy is to hook up (or integrate) small-scale farmers and producers with increasingly sophisticated local supply chains (involving supermarkets) and more lucrative overseas markets, especially niche markets.

In Malaysia, supply chains can and will speedily exploit advances in biotechnology and its impending convergence with ICT and innovations. Similarly, there will be exponential growth, if and when the interconnectivity of supply chains is exploited, as is already happening with telecommunications and multimedia superhighways.

From a policy and institutional standpoint, most government interventions and programmes in Malaysia are overtly "production-centric" to such an extent that the farming and production subsystem is not well linked or integrated and is often out of sync with the post-harvest subsystem. As can be gleaned from the big picture of a generalized agrifood supply chain depicted in Figure 2, the power of supply chains is the value that can be added at each level of the chain when agriculture is viewed from its broader and more holistic agribusiness perspective. This allows agriculture to drive overall development by leveraging the inherent advantages and potential of nations at the levels of input, processing and wholesale, retail and international trade. Via its linkages in the supply chain, agriculture will also contribute to overall national economic growth from agro-based industries and their added value and from agro-based services and consultancies at all levels of the supply chain.

Figure 2: Agrifood supply chain – from 'seed to shelf': potential economic activities



This underlying rationale forms the cornerstone of the current Malaysian administration's re-emphasis of agriculture as an engine of growth. A key challenge, however, is to ensure or facilitate the orderly and balanced development of supply chains because, as with all chains, their strength (or competitiveness) is invariably determined by their weakest link. The potential economic activities and avenues for adding value along the entire agrifood supply chain, from "seed to shelf", are depicted in Figure 2.

In many important ways, Malaysia had a head start because agriculture was accorded very different treatment in the Ninth Malaysia Plan (2006–2010); the Plan included revitalizing the sector as one of its key aims and the sector featured strongly in each of the five key thrusts of the national mission. In 2004, the Ministry of Agriculture (MOA) was restructured and renamed the Ministry of Agriculture and Agro-based Industry (MOAAI) and then Chapter 3 of the Plan was entitled, "Strengthening Agriculture and Agro-based Industry". For the first time, the Plan presented and discussed growth, export and employment figures for agriculture and agriculture plus agro-based industry combined. The country also witnessed the introduction of the term "new agriculture" and MOAAI's tag line that "agriculture is business".

The Plan stated: "During the Ninth Plan period, the agriculture sector will be revitalized to become the third engine of growth. The emphasis will be on New Agriculture which will involve large scale

Table 1: Value added of agriculture and agro-based industry, 2000–2010

Commodity	RM Million (in 1987 prices)			% of Total			Average Annual Growth Rate (%)		
							8MP		9MP Target
	2000	2005	2010	2000	2005	2010	Target	Achieved	
Agriculture	**18 662**	**21 585**	**27 517**	**100.0**	**100.0**	**100.0**	**2.0**	**3.0**	**5.0**
Industrial Commodities	**11 033**	**13 278**	**15 521**	**59.1**	**60.6**	**56.4**	**0.7**	**3.8**	**3.2**
Oil Palm	5 860	7 915	10 068	31.4	36.7	36.6	3.4	6.2	4.9
Forestry and Logging	3 055	3 016	2 761	16.4	13.0	10.0	-5.6	-0.3	-1.7
Rubber	1 868	2 264	2 554	10.0	10.5	9.3	1.1	3.9	2.4
Cocoa	250	83	138	1.3	0.4	0.5	0.1	-19.8	10.8
Food Commodities	**7 629**	**8 308**	**11 996**	**40.9**	**39.4**	**43.6**	**4.0**	**1.7**	**7.6**
Fisheries	2 493	2 389	3 875	13.4	12.6	14.1	4.1	-0.9	10.2
Livestock	1 520	2 089	2 483	8.1	8.1	9.0	6.0	6.6	3.5
Padi	590	632	988	3.2	3.4	3.6	2.7	1.4	9.4
Other Agriculture	3 026	3 198	4 650	16.2	15.2	16.9	3.2	1.1	7.8
Agro-Based Industry	**13 584**	**16 928**	**22 221**	**100.0**	**100.0**	**100.0**	**4.0**	**4.5**	**5.6**
Vegetable and Animal Oils and Fats	2 526	3 639	5 614	18.6	21.5	25.3	6.3	7.6	9.1
Other Food Processing, Beverages and Tobacco	4 010	4 790	6 333	29.5	28.3	28.5	2.0	3.6	5.7
Wood Products including Furniture	2 934	2 972	3 761	21.6	17.6	16.9	0.6	0.3	4.8
Paper and Paper Products, Printing and Publishing	2 293	2 640	3 275	16.9	15.6	14.7	3.4	2.9	4.4
Rubber Processing and Products	1 821	2 887	3 238	13.4	17.1	14.6	4.7	9.7	2.3
Total Agriculture and Agro-Based Industry	**32 246**	**38 513**	**49 738**				**2.7**	**3.6**	**5.2**
Gross Domestic Product at Purchaser's Prices	**210 558**	**262 029**	**351 297**					**4.5**	**6.0**

Source: Department of Statistics and Economic Planning Unit.

commercial farming, the wider application of modern technology, production of high quality and value-added products, unlocking the potential in biotechnology, increased convergence with ICT and the participation of entrepreneurial farmers and a skilled workforce. The function of agricultural services will also be streamlined to enhance service delivery and efficiency." [9MP, p. 81]

Interestingly, agricultural value-added grew at 3 percent per year over the Eighth Plan period, higher than the target of 2 percent[47] as shown in Table 1. Agriculture and agro-based industry grew at 3.6 percent. Over the 9MP period, agriculture is expected to grow at 5 percent per year and agriculture and agro-based industry are expected to grow at 5.2 percent. In 2005, agricultural value-added was RM21.6 billion (in 1987 constant prices) (US$6.2 billion) or 8.2 percent of GDP, while agricultural plus agro-based industry value-added in 2005 was RM38.5 billion (US$11.0 billion) or 14.7 percent of GDP. This is targeted to increase to RM49.7 billion (US$14.2 billion) or 14.2 percent of GDP in 2010.

VII. Malaysia's strategic approach to food security

Food security, very much like love, means different things to different people and under different circumstances. Maxwell (1996) in his review encountered 32 different definitions! Be that as it may, the current widely accepted definition is, "food security exists when all people at all times have physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life". [48] Food security has three dimensions:

- availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports;
- access by households and individuals to adequate resources to acquire appropriate food for a nutritious diet;
- utilization of food through adequate diet, water, sanitation and health.

Malaysia has adopted a pragmatic strategic approach linking food security (mainly focused on rice which is the basic staple and a political crop) and economic growth (growth with redistribution) at the macro and micro levels. At the macro level, the approach involves leveraging policy control over the sectoral composition of income growth and stabilization of food prices. At the micro level, it involves rural development, focusing on:

- rural education and human resource development that is accessible to the poor and females;
- rural clinics, including health care and family planning;
- home economics and nutrition education.

Schematically, the strategic approach comprises three components (see Figure 3):

- rapid growth in the macro economy;
- poverty eradication through rural economic growth (i.e. "pro-poor" growth);
- stability of the food system.

The important thing is that the net result of adopting this pragmatic approach is that we consistently got the job done, despite using an approach sometimes frowned upon by some economists because of arguments regarding distortion and efficiency.

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[47] It should be pointed out that this 2 percent is the revised target adopted in the Mid-term Review (MTR) of 8MP, revised down from the original target of 3 percent. In retrospect, having achieved 3 percent annual growth is commendable recalling that in the 7MP, the original target for agriculture was 2.4 percent and it was revised down to 1.9 percent in the MTR; the final achieved rate was 1.2 percent.

[48] This definition was agreed at the World Food Summit, 1996 and endorsed at the follow-up summit of 2002.