REGIONAL TRADE AGREEMENTS AND FOOD SECURITY IN ASIA

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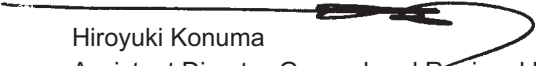
Foreword

Asia has seen a proliferation of regional trade agreements (RTAs) over the past two decades. Trade policy, including crossborder and regional trade, has come to prominence again in recent years in the context of food security because of food price spikes. RTAs have the potential for impacting on food security through their effects on trade flows and the resulting changes in the backward and forward linkages in national economies.

Asia is home to the largest number of food-insecure people in the world. Poverty and hunger are concentrated among small farmers who produce much of the food in this region. Can RTAs play positive roles in strengthening food security in Asia? If so, what kind of domestic policy mix is necessary for a country to benefit from trade liberalization in improving national food security? There is no single answer to these questions as each country has unique agricultural, food security and poverty profiles and face different market constraints. This publication reviews two major RTAs in the region and the experience of selected countries with these RTAs in relation to national food security. It also looks at some experiences outside the region as well as commodity-specific perspectives on RTAs. I believe these evidence-based case studies will help countries make more informed policy decisions.

The materials for this publication were originally prepared for the Asia-Pacific Policy Forum on Regional Trade Agreements and Food Security, which was jointly organized by the Food and Agriculture Organization of the United Nations (FAO) and the Agricultural Trade Promotion Centre (ATPC) of the Ministry of Agriculture of the People's Republic of China held on 25-26 October 2011 in Beijing, China. The Forum brought together international development agencies and trade experts from 14 countries. It is hoped that the findings of this publication will contribute to a better understanding of the implications of RTAs for food security and will offer a good basis for further research on this important topic.

Lastly, I would like to acknowlege my appreciation to Nanae Yabuki for her efforts who edited the entire volume in addition to contributing a paper.

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Abbreviations and acronyms

AANZFTA	ASEAN-Australia-New Zealand Free Trade Area
ACFTA	ASEAN-China Free Trade Area
ACPC	Agricultural Credit Policy Council (Philippines)
ADB	Asian Development Bank
AEM	ASEAN Economic Ministers
AERR	ASEAN Emergency Rice Reserve
AFMA	Agriculture and Fisheries Modernization Act (Philippines)
AFSIS	ASEAN Food Security Information System
AFSR	ASEAN Food Security Reserve
AFTA	ASEAN Free Trade Area
AHTN	ASEAN Harmonized Tariff Nomenclature
AIFS	ASEAN Integrated Food Security
AIFTA	ASEAN-India Free Trade Area
AJCEP	ASEAN-Japan Comprehensive Economic Partnership
AKFTA	ASEAN-Korea Free Trade Area
AMAF	ASEAN Ministerial Meeting on Agriculture and Forestry
AMPLE	Agricultural Multimarket model for Policy Evaluation
AoA	Agreement on Agriculture (WTO)
APP	Agricultural Perspective Plan (Nepal)
APTA	Asia-Pacific Trade Agreement
AQIS	Australian Quarantine and Inspection Service
ASEAN	Association of Southeast Asian Nations
ASEAN-6	Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand
ASEAN+3	ASEAN plus People's Republic of China, Republic of Korea and Japan
ASERCA	*Apoyos y Servicios a la Comercialización Agropecuaria* (Support Services for Agricultural Marketing) (Mexico)
BANRURAL	Rural Bank (Mexico)
BAS	Bureau of Agricultural Statistics (Philippines)
BBS	Bangladesh Bureau of Statistics
BIE	*Banco de Información Económica* (Bank for Economic Information, Mexico)
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
CAFTA-DR	Dominican Republic-Central America-United States Free Trade Agreement

CARP	Comprehensive Agrarian Reform Programme (Philippines)
CBN	Cost of basic needs
CEPA	Comprehensive Economic Partnership Agreement (India-Sri Lanka FTA)
CEPT	Common Effective Preferential Tariff (AFTA)
CGE	Computable general equilibrium
CIF	Cost, insurance and freight
CIS	Commonwealth of Independent States
CLMV	Cambodia, Lao PDR, Myanmar and Viet Nam
COE	Committee of Experts (SAFTA)
COFCO	Cereals, Oils and Foodstuffs Corporation (China)
COMTRADE	United Nations Commodity Trade Statistics Database
CONASUPO	*Compañía Nacional de Susbsistencias Populares* (National Company of Popular Subsistence, Mexico)
CONEVAL	*Consejo Nacional de Evaluación de la Política de Desarrollo Social* (National Council for the Evaluation of Social Development Policies, Mexico)
CoO	Certificate of Origin
CPD	Centre for Policy Dialogue (Bangladesh)
CS	Contracting States (SAARC)
CTH	Change in Tariff Heading
DAR	Department of Agrarian Reform (Philippines)
DCE	Dalian Commodity Exchange, China
DENR	Department of Environment and Natural Resources (Philippines)
EAERR	East Asia Emergency Rice Reserve
EHP	Early Harvest Programme
ENHRUM	*Encuesta Nacional a Hogares Rurales de México* (Nation Survey of Rural Households of Mexico)
ERS	Economic Research Service (United States)
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAPRI	Food and Agriculture Policy Research Institute (United States)
FCI	Food Corporation of India
FDI	Foreign Direct Investment
FIELDS	Fertilizer, Irrigation and other rural infrastructure, Extension and education, Loans, Dryers and other post-harvest facilities, and Seeds programme (Philippines)

FIRA	*Fideicomiso Institudos en Relación con la Agricultura* (Trust Funds for Rural Development) (Mexico)
FOB	Free on board
FTA	Free trade agreement, Free trade areas
GATS	General Agreement on Trade in Services (WTO)
GATT	General Agreement on Tariffs and Trade
GCC	Cooperation Council for the Arab States of the Gulf
GDP	Gross Domestic Product
GEL	General Exception List (AFTA)
GHI	Global Hunger Index
GMO	Genetically modified organism
GNP	Gross National Product
GVA	Gross value added
HS	Harmonized Commodity Description and Coding System (generally referred as Harmonized System)
HSL	Highly Sensitive List (AFTA)
IDR	Import dependency ratio
IFPRI	International Food Policy Research Institute
IGC	Inter-Governmental Committee (Nepal-India Bilateral Trade Agreement)
IGSC	Inter-Governmental Sub-Committee (Nepal-India Bilateral Trade Agreement)
IL	Inclusion List (AFTA)
IMF	International Monetary Fund
INEGI	*Instituto Nacional de Estadística Geografía e Informática* (National Institute of Statistics, Geography and Informatics) (Mexico)
IOR-ARC	Indian Ocean Rim Association for Regional Cooperation
IPCC	Intergovernmental Panel on Climate Change
ISA	Import substition agriculture
ISFTA	India-Sri Lanka Free Trade Agreement
ISI	Import substitution industrialization
JPEPA	Japan-Philippines Economic Partnership Agreement
LDC	Least developed country
LDRS	*Ley de Desarrollo Rural Sustentable* (Law for Sustainable Rural Development)
LGU	Local Government Unit (Philippines)
MAV	Minimum access volume
MDGs	Millennium Development Goals
MERCOSUR	*Mercado Común del Sur*, Southern Common Market
MFN	Most Favoured Nation (WTO)

MRA	Mutual recognition agreement
MTS	Multilateral trading system
NAFTA	North American Free Trade Agreement
NAP	National Agricultural Policy (Nepal)
NDDB	National Dairy Development Board (India)
NDRC	National Development and Reform Commission (China)
NFA	National Food Authority (Philippines)
NFIDC	Net food-importing developing countries
NIN	National Institute of Nutrition (India)
NLDC	Non-least developed country, Non-least developed contracting states (SAARC)
NLSS	Nepal Living Standard Survey
NPC	National Planning Commission (Nepal)
NPR	Nominal protection rate
NSCB	National Statistical Coordination Board (Philippines)
NTBs	Non-tariff barriers
OECD	Organisation for Economic Co-operation and Development
OGL	Open general licence
OMS	Open market sales (Bangladesh)
PDR	*Programa de Desarrollo Rural* (Programme for Rural Development) (Mexico)
PE	Partial equilibrium
PESA	*Programa Especial para la Seguridad Alimentaria* (Special Programme for Food Security) (Mexico)
PFDS	Public Food Distribution System (Bangladesh)
PIDS	Philippine Institute for Development Studies
PL480	Public Law 480 (Food for Peace) (United States)
PROCAMPO	*Programa de Apoyos Directos al Campo* (Programme for Direct Supports to the Countryside) (Mexico)
PRONASOL	*Programa de Solidaridad Nacional* (National Solidarity Programme) (Mexico)
PSA	Partial scope agreement
PSE	Producer support estimate
PTA	Preferential Tariff Arrangement (ASEAN)
PTA	Preferential trading arrangement
QR	Quantitative restrictions
R&D	Research and development
RDE	Research, development and extension
RoO	Rules of Origin
RTA	Regional trade agreement, Regional trading arrangement

SAARC	South Asian Association for Regional Cooperation
SAC	SAARC Agriculture Centre
SACU	Southern African Customs Union
SAES	South Asia Economic Summit
SAFTA	South Asian Free Trade Area
SAGARPA	*Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* (Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food) (Mexico)
SAGQ	South Asian Growth Quadrangle
SAIC	SAARC Agricultural Information Centre
SAPTA	SAARC Preferential Trading Arrangement
SECOFI	*Secretaría de Comercio y Fomento Industrial* (Ministry of Commerce and Industry) (Mexico)
SEDESOL	*Secretaría de Desarrollo Social* (Ministry of Social Development) (Mexico)
SFB	SAARC Food Bank
SIACON	Sistema de Información Agroalimentaria de Consulta (Agrifood Information Consulting System) (Mexico)
SIAP	*Servicio de Información Agroalimentaria y Pesquera* (Agrifood and Fishery Information Service) (Mexico)
SIPA	SAARC Integrated Programme of Action
SL	Sensitive List
SPA-FS	Strategic Plan of Action on Food Security in the ASEAN Region
SPS	Sanitary and phytosanitary
SSR	Self-sufficiency ratio
TBT	Technical barriers to trade
TC-ARD	Technical Committee on Agriculture and Rural Development (SAARC)
TCB	Trading Corporation of Bangladesh
TEL	Temporary Exclusion List
TLP	Trade Liberalization Programme (SAARC)
TNC	Transnational corporation, Transnational company
TRAINS	Trade Analysis and Information System (UNCTAD)
TRIPS	Trade-related Aspects of Intellectual Property Rights (WTO)
TRQ	Tariff-rate quota
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USDA	United States Department of Agriculture
VAT	Value-added tax

VDC   Village development committee (Nepal)
WFP   World Food Programme
WFS   World Food Summit
WITS   World Integrated Trade Solution (World Bank)
WTO   World Trade Organization

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Introduction and overview

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Regional trade agreements and food security: introduction and overview

Donald MacLaren and Nanae Yabuki

An Asia-Pacific Policy Forum on Regional Trade Agreements (RTAs) and Food Security was organized by the FAO Regional Office for Asia and the Pacific and the Agricultural Trade Promotion Centre of the Ministry of Agriculture of the People's Republic of China on 25-26 October 2011 in Beijing, China. The objective of this policy forum was to discuss the appropriate policy mix to enhance the positive contribution of regional trade agreements towards the realization of national and regional agricultural and food security objectives. This set of proceedings of the policy forum has been prepared to assist in better understanding the implications of regional trade agreements for the attainment of these objectives, and for learning from the regional, country and commodity-specific experiences.

This introduction and overview serves two purposes. The first part provides the background of the policy forum, focusing on the literature review of the several elements of the debate on how trade contributes to food security (section 1), and the economics of RTAs as a means for improving food security through the preferential liberalization of trade (section 2). The second part introduces this volume by synthesizing the analytical findings and policy recommendations contained in the case studies presented at the policy forum (section 3). The final section concludes with the key lessons learned from the case studies.

1. Food security, trade and global food markets

Food security exists "... when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." (FAO 2002). Underlying this definition of security, there are a number of variables that contribute to the economic conditions that signify the existence of food security. In summary, food security for the individual household requires: first, the physical availability of nutritious foodstuffs at all times; second, the economic means necessary to acquire food; and third, stability of access.

The domestic physical availability of staple foods depends positively on domestic production, on imports, perhaps on food aid, and on stock release, and negatively on exports and on post-harvest losses. Not only is the level of each of these variables important in determining domestic availability but so too is the variance of each. Although the physical availability of staples is stochastic, by comparison consumption needs are relatively stable. It is this difference in the two variables that makes achieving food security a challenge. Moreover, the variability in availability depends importantly on the extent to which availability is determined by imports and exports.

The second set of variables that are crucial for food security are household income and the level of prices. The Engel relationship plays a fundamental role in determining the extent to which individual households, as consumers, are vulnerable to price increases, highlighting the link between poverty and food insecurity. In poor societies, it is necessary to distinguish between households that are net suppliers and those that are net buyers of staples. Clearly, an upward domestic price spike benefits net suppliers but harms net buyers; a downward price spike harms net suppliers but benefits net buyers. Unless the government can introduce a policy instrument(s) that disconnects the producer from the consumer price, then any price movement has redistributive effects that force the government to make a choice between producers and consumers, i.e. between households that are net sellers and those that are net buyers.

As will be discussed, the ways in which governments intervene at the border and the choice of instrument behind the border, play an important role in determining the nature of the link between prices in international markets and producer and consumer prices domestically and, thus, the size of the price transmission elasticity. The size of this elasticity is fundamental to making inferences about the co-movement, if any, of domestic and international prices. After all, it is the prices faced by domestic households that are relevant in their decision making, not international prices *per se*.[1] But also important in determining this elasticity is the market structure along domestic supply chains, i.e. the extent of the market power of intermediaries, a topic that has not received the attention that it deserves.

Some countries pursue a policy of self-sufficiency as a means of achieving security in staple foodstuffs and using the international market only as an ad hoc residual source of food following a shortfall in domestic production, whereas others choose a policy of consistently greater openness to international trade. One reason for this difference in approach may be that for poor households, food production is a source of both food security and livelihood security. By opening up domestic producers to competition from imports, food availability is improved and prices fall but this outcome reduces livelihood security through lowering household income for

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[1] For elaboration of this point, see Ghoshray (2012).

net sellers of food. This conflict between types of households is a difficult one for governments to resolve. However, another effect of trade openness is the potential for greater stability in food availability and food prices. Thus, there is a trade-off between the reduced level of household incomes and the greater stability of food availability and prices.

The third aspect is stability of access. If the country attempts to be self-sufficient, then the variance of availability depends only upon the variance of domestic production (area multiplied by yield), upon the variance of losses along the supply chain and upon the variance of stocks. It is conventional to assume that domestic production is more variable than the availability of imports, whereas the role of stocks in stabilizing spot markets remains a controversial topic because of the ambiguous empirical evidence (see von Braun and Tadesse 2012, Table 8). Hence, it would be expected *ceteris paribus* that the availability of staples and their prices has a larger variance with a policy of self-sufficiency (autarky) than with a more open trade regime. If individuals are risk averse, this greater uncertainty is undesirable because it increases their vulnerability to insecurity. This conclusion undermines the argument of governments that use trade restrictions, both import and export, as a means of trying to stabilize the domestic market. Although self-sufficiency might appear successful in the short run as a stabilization policy, it fails in the longer run to provide that stability because trade restrictions foster greater uncertainty in food markets.

Nevertheless, greater openness to imports as a source of staples does leave the importing country vulnerable to the vagaries of the international market through the addition of two more, and interconnected, sources of uncertainty. These sources are: first, the level and the variability of volumes and prices in the international market; and second, changes in the trade policies of foreign governments that are linked back to the first source. International prices of agri-food products are characterized by trends and by volatility, with occasional upward and downward price spikes.[2] The size of these spikes, which are determined in part by the small short-run elasticities of demand and supply, may be exacerbated by speculative behaviour in futures markets and by changes in the trade policy of countries that are "large" in the sense of international trade.[3] It is these vagaries, which emanate from international markets and which spill over into domestic markets, that cause the linkage between trade policy and food self-sufficiency to be one of such significance.

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[2] See von Braun and Tadesse (2012) for graphs that illustrate these characteristics.

[3] For a discussion of the role played in recent years by speculation in futures markets and the relationship of futures prices to spot prices, see von Braun and Tadesse (2012). However, they acknowledge that the causes of these spikes are not well-understood. See also the role of speculation in the behaviour of maize prices by McPhail, Du and Muhammad (2012).

In particular, these spill-overs may cause some governments to eschew altogether a policy of free or freer trade in staple foods.

The various gains from trade are based on the assumption of well-functioning markets. In the case of the poor countries, this precondition is not readily found. For example, in such countries there is poor transport infrastructure, perhaps non-existent price signals and small quantities of marketed surpluses, all of which tend to create small local markets rather than a single, integrated national market. Thus, domestic prices do not necessarily respond to changes in international prices nor do individual households respond as assumed in theory because they do not receive the supposed new price signals. Therefore, the anticipated potential gains from trade need not be realized in practice. This is true also for the predicted food security gain in the case of an RTA.

It has long been recognized that the markets for agricultural and food products exhibit various forms of market failures. In the context of agrifood supply chains in developing countries, there is perhaps one that is more important than the others, namely, the uncertainty created by the variability of prices and quantities, which, in the presence of low household income, constraints on credit and/or lagged production response, can lead to food insecurity and livelihood insecurity, that is, to vulnerability (OECD 2009). It is also known that markets for risk are at best incomplete and at worst non-existent. Added to the difficulty for poor households that is caused by uncertainty, is the dual nature of food production – it is both a source of income and a source of food supply.

In response to the market failure caused by uncertainty, governments tend to intervene through the manipulation of producers' input and output prices, the manipulation of consumers' prices and of market structure. Often the instruments employed are used in combination. They include: input subsidies (to make inputs more affordable in the presence of credit rationing, to reduce the marginal costs of production, and to increase production); minimum farm-gate prices (to reduce down-side price risk and to increase livelihood security); food subsidies for the poor (to improve food security by making food more affordable); public storage stocks (to smooth consumption through time and to stabilize prices); statutory marketing boards (to reduce or to remove the buying power of the downstream sector through reducing the mark-up); and trade policy (to control the extent to which international prices affect the domestic market).

Food security has always been one of the prime objectives of development for all developing countries. In the past five years, this issue has also increasingly hit the headlines in the media every time food prices spike in the global markets. Thus, the consequences for poor households and especially those in poor countries of the substantial upward spike in the prices of agricultural commodities and foods that

occurred in 2007 and 2008 and again in 2010 and 2011 and which is recurring in 2012, has sparked renewed interest in this fundamentally important topic.[4]

The policy changes that occurred during the price spike of 2007 and 2008 when some governments imposed export taxes or export bans, exacerbated a situation in which food security was already under threat in importing countries.[5] This experience highlighted the fact that trade policy is not only contentious domestically, because of its internal redistributive effects, but also important internationally because of its consequences, sometimes detrimental, for other countries.[6] Sharma (2011) provides a comprehensive review of export restrictions during 2008–2011.

This outcome has led to discussion in the World Trade Organization (WTO) and elsewhere about how to make such policy interventions more sensitive to the needs of importing country members of the WTO.[7] However, such sensitivity is already required (although clearly not enforced) through Article 12 of the WTO Agreement on Agriculture, where it is stated that "the Member instituting the export prohibition or restriction shall give due consideration to the effects of such prohibition or restriction on importing Members' food security" (Article 12: 1(a)) and that the Member should provide the Committee on Agriculture in writing information about the duration of the measure (Article 12: 1(b)) (WTO 1995). It should be noted, however, that "[t]he provisions of this Article shall not apply to any developing country Member, unless the measure is taken by a developing country Member which is a net-food exporter of the specific foodstuff concerned." (Article 12: (2))

As discussed above, the validity of the superiority of free trade over various degrees of trade restriction depends upon a set of assumptions, one of which is the absence of uncertainty. Yet the central issue of the relationship between trade policy and food security is fundamentally one of uncertainty and incomplete markets. Although much of the economic analysis of trade policy is conducted in a deterministic and comparative static environment, the economic analysis of food security must be undertaken in a stochastic environment. This difference in assumptions makes the integration of the analysis of trade policy and food security a technically difficult one.

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[4] See, for example, the establishment of the Global Food Crisis Response Program in May 2008 that had the objective of providing help to countries badly affected by high food prices (World Bank 2008) and a detailed analysis of the causes and costs of commodity price volatility by von Braun and Tadesse (2012).

[5] For an analysis, see Ivanic, Martin and Mattoo (2011).

[6] In the context of international trade, Rodrik (1995, p. 1 458) has written that "[p]erhaps no other area of economics displays such a gap between what policy makers practice [*sic*] and what economists preach as does international trade. The superiority of free trade is one of the profession's most cherished beliefs, yet international trade is rarely free."

[7] At the recent informal talks in the WTO on agricultural trade, it appeared as is usual on matters to do with agriculture and food, that Members could not agree on how best to proceed on the issue of export restrictions (see Bridges Weekly Trade News Digest (2012) for a report on these talks).

International trade tends to increase the level of national income but it also increases the rate of growth of national income.[8] It can do so through improving total factor productivity. However, although these relationships may be true in a general sense, they are not necessarily true in the case of specific countries. For example, although economic growth in China reduced the number of undernourished people by almost 40 percent in the fifteen year period after 1990, economic growth in India over the same period was associated with an increase in undernourished people of 26 percent (FAO 2011). Therefore, other economic forces were in play and greater trade openness cannot be considered a sufficient condition for greater food security. Such a conclusion should not be a surprise: an increase in the rate of economic growth that is generated by increased international trade openness will only benefit the poor if it raises the marginal productivity of unskilled labour. This appears to be consistent with the experience in China but not in India.

2. Regional trade agreements and food security

Openness of the economy to trade can be achieved through unilateral trade liberalization, through membership of an RTA and through multilateral trade negotiations in the WTO. These three approaches are not mutually exclusive. During the decade since the Doha Round in the WTO was initiated, the number of RTAs in existence, the number being negotiated and the number being explored through framework agreements has expanded rapidly.[9]

Each approach has its advantages and disadvantages. For example, unilateral liberalization depends only on the government's political will to achieve trade reform and the country benefits through the usual gains from trade. The membership of an RTA may or may not lead to a national welfare gain, although there is a presumption that the outcome will indeed be a welfare gain.[10] The benefits of trade liberalization that are achieved through the reciprocity of multilateral negotiation are expected to be the largest because they accrue from expanding exports as well as imports. However, as the history of the Doha Round amply demonstrates, one of the

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[8] Lloyd (2011) reviewed the empirical evidence on the relationship between openness to international trade and economic growth and concluded that openness not only raises the level of national income but also provides an ongoing increase in the rate of growth of national income through "an increase in capital formation and to increased imports of fixed capital goods and intermediates." (p. 293). These results are consistent with new growth theory.

[9] The WTO has reported that, as of January 2012, 511 RTAs had been notified to it, counting goods and services agreements separately, although only 319 are in force (WTO 2012a). Details of these RTAs, as well as of non-reciprocal agreements, can be found in a newly-released data base (WTO 2012b).

[10] This theme is discussed more fully in the next section.

substantial costs of this approach is the time that it takes to reach agreement, if indeed one is reached at all.[11]

Regional trade agreements are formed to provide a framework for political cooperation and economic integration as well as solely for trade liberalization *per se*. For example, when ASEAN was formed in 1967 through the Bangkok Declaration, the focus was on economic cooperation and economic growth as a way of achieving a peaceful region (Tantraporn 2012).[12] By 1992, these countries had agreed to form the ASEAN Free Trade Area (AFTA). Similarly, in South Asia the SAARC Preferential Trading Arrangement (SAPTA) was introduced in 1995 as the beginnings of closer integration of the eight economies of that region. This Agreement was superseded in 2004 by the Agreement on South Asian Free Trade Area (SAFTA) (Mukherji 2012). In origin, both agreements can be seen as instruments essentially of international relations, later being extended to become trade agreements *per se*.

RTAs come in a variety of forms. The least onerous is a preferential trade agreement between at least two governments, an agreement in which each gives the other access on a preferential basis to its market for a specified range of goods through reducing MFN tariffs to lower levels. However, the most common form of RTAs is essentially consistent with the textbook definition of a free trade area (FTA). An FTA is an agreement in which the members reduce or eliminate tariffs and other barriers against imports from each other, while maintaining their individual pre-existing barriers on imports from non-members. For any specific traded good, the members of the FTA can be ranked from lowest to highest tariff. In order to prevent trade deflection, a situation in which a non-member will attempt to export to a member through the member with the lowest tariff, rules of origin are necessary. This essential feature of an FTA is discussed more fully below.[13]

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[11] To make a valid comparison across these three approaches, the benefits and the costs would need to be discounted because of the different time scales involved.

[12] For a recent account of ways in which to enhance regional cooperation in Southeast Asia, see Chirathivat, Sabhasri and Srisangnam (2012).

[13] There are three other forms of agreement. The first is a customs union that is more integrative than an FTA because it requires each member to adopt the same tariff on imports of a given good from non-member countries (i.e. a common external tariff). In theory, it assumed that there is free trade on goods within the customs union. The second form is a common market, an agreement in which not only are preferences provided for goods (with common external tariffs) and free internal movement of them, but there is also free movement of factors of production amongst members, i.e. for labour and capital. The fourth form of economic integration is an economic union, an agreement in which there is a common currency and in which there may or may not be coordination of fiscal policies.

The formation of FTAs has been permitted since Article XXIV of GATT 1947, subject to certain conditions, despite their inconsistency with the Most Favoured Nation (MFN) principle (Article I) (WTO 1995). These conditions cover the extent to which the pre-existing tariff levels on imports from non-members can be modified by the agreement, the time period over which transition to preferential rates should occur, and the proportion of tariff lines that should be subject to preferential rates. The second and third of these conditions remains an unresolved issue for the developed country members of the WTO even to this day.[14] For the developing country members, these two conditions are not relevant because of the Enabling Clause that was agreed during the Tokyo Round of multilateral negotiations in the GATT.[15] With the introduction of the WTO in 1995, FTAs that include provisions for services need to be consistent with Article V of the General Agreement on Trade in Services (GATS) (see WTO 1995).

A number of criteria are used to assess the effects of RTAs on the world trading system. The first is to count the number of notifications to the WTO.[16] The second is to calculate the proportion of international trade that is accounted for by countries that are members of RTAs.[17] The third is to investigate the welfare effects on member and non-member countries. There are two existence theorems that provide conditions under which members benefit and non-members are not harmed by the formation of an RTA. These theorems are associated with Kemp and Wan (1976) for customs unions and with Panagariya and Krishna (2002) for free trade areas. However, the assumptions on which these theorems are based are not consistent with Article XXIV of GATT 1994. For example, to ensure that non-members are not harmed by the RTA, both theorems depend on the pre-RTA vector of net imports being unchanged after the agreement is introduced. However, to achieve this outcome, the MFN tariff vector has to adjust. This is unlikely to be consistent with Article XXIV: 5(a) for customs unions and Article XXIV: 5(b) for free trade areas. To be consistent with these Articles, the MFN tariff vector would need essentially to be unchanged and the vector of net imports would need to change. This outcome would no longer ensure that no harm is done to non-members.

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[14] An attempt was made to resolve the meaning of such vague terms as a "reasonable length of time" in the "Understanding on the Interpretation of Article XXIV of the General Agreement on Tariffs and Trade 1994" (see WTO 1995).

[15] The full name is "Differential and more favourable treatment reciprocity and fuller participation of developing countries" (see WTO 2012c).

[16] Pomfret (2006) has criticized this approach on the grounds that some RTAs are much more significant and important than others.

[17] Pomfret (2006) has also criticized this approach because amongst countries with low pre-existing MFN rates, the volume of trade would already be high and not much influenced by the granting of additional reciprocal preferences.

The empirical assessment of RTAs follows one of two approaches. The first is an *ex ante* approach using a computable general equilibrium (CGE) model such as GTAP (see Hertel 1997). Using this approach, preferential trade liberalization is simulated for trade in goods and this permits changes in welfare and its components to be measured compared with the *status quo* or compared with some other benchmark.[18] Although this approach is appealing, because it allows for "clean" policy simulations, there is the weakness of its not being able to take into account liberalization in services, in foreign direct investment or in intellectual property. In practice, the users of this approach usually adjust the results of the simulations by *ad hoc* means to incorporate these features of modern RTAs.[19] Two further, and fundamental, weaknesses are that rules of origin cannot be taken into account, a topic that is pursued more fully below; and such models are based on the existence of properly functioning markets. As discussed above, in poor countries, such an assumption should probably not be made and, therefore, the results of policy simulations when applied to such countries may be quite misleading.

The second approach uses econometric methods to estimate gravity models that allow *ex post* the measurement of the effects of an RTA on bilateral trade flows. An advantage of the econometric approach is that any conclusions are based on empirical evidence: a disadvantage is that it is often difficult to isolate the effects of changes in trade policy from other contemporaneous policy changes. The use of gravity models in the context of RTAs is based on the concepts of trade creation and trade diversion introduced by Viner (1950). It is unfortunate that the commonly held misconception has arisen that trade creation is synonymous with an increase of social welfare and trade diversion is synonymous with a deterioration of social welfare. Whereas the former inference is correct, the second is false (see Lloyd and MacLaren (2004) for a proof). Thus, the welfare effects of membership of an RTA cannot be inferred from changes in bilateral trade flows after the agreement has been introduced.

Therefore, it is concluded that the economic assessment of the effects of RTAs on members and non-members remains bedevilled by a number of serious problems. However, in addition those mentioned above, there remains one other, namely the extent to which rules of origin cause trade to occur at MFN rates rather than at preferential rates.[20] To the extent that trade continues to occur at MFN rates, the

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[18] A description of various simulation experiments for the Asia-Pacific region is contained in Scollay and Gilbert (2001).

[19] For a discussion of the effects of these *ad hoc* adjustments, see Dee (2004).

[20] It has been observed by Augier, Gasiorek and Tong (2005) that "[r]ules of origin are usually ignored for two reasons: they are dauntingly complex and at first sight appear mind-numbingly dull." This complexity has increased in recent years as production fragmentation has become a feature in some manufacturing industries (see Arndt and Kierzkowski 2001). Nevertheless, rules of origin are important in determining the net benefits from RTAs that take the form of free trade areas.

benefits from the RTA are overestimated *ex ante* because it is assumed in CGE modelling that all trade between members occurs at preferential rates when in practice it does not.

There are two principal costs of RTAs that need to be included in any cost-benefit assessment of an RTA. First, for exporting firms, there are costs of proving to customs authorities that they have complied with the rules of origin; these costs differ across the different types of rules. There are three sets of rules used either separately or sometimes in combination, the two most important of which are change of tariff classification and percentage regional value added. The Productivity Commission (2004a) found evidence in the literature that compliance costs had been estimated to vary between 1.5 percent and 6.0 percent of the value of the product traded, and Manchin (2005) concluded that there exists a minimum threshold rate of 4 percentage points between the MFN and the preferential rate before firms will attempt to comply with rules of origin and seek the preferential rate. Therefore, if the margin between the MFN rate and the preferential rate is insufficient to cover the costs of the exporting firm in proving compliance with the rules of origin, then trade will take place at the MFN rate and the volume of trade between members of the RTA will be smaller than that assumed, as will be the size of the welfare gain (or loss).

The second cost arises if the importing country is a hub with several spokes because an item in the same tariff line that is imported from the different spokes and from non-members will be subject to different tariff rates. For example, ASEAN is a hub with spokes to China, Japan, Republic of Korea, India, Australia and New Zealand. But there are countries within ASEAN, e.g. Singapore, that are hubs with several spokes to countries that are not members of AFTA. Hence, the cost to the customs service of assessing the correct rate to apply to the same good but from different sources needs also to be accounted for in the cost-benefit calculus of RTAs.

The empirical evidence on the costs associated with rules of origin indicates that they are significant, that they vary depending upon the form that the rules take, and that the actual net benefits from increased trade are less *ex post* than those anticipated *ex ante*. The trade restrictiveness of the different systems of rules of origin that are found in RTAs was estimated by the Productivity Commission (2004b) through the construction of a restrictiveness index for a number of RTAs. On a scale of 0 to 1 (where 0 means not restrictive and 1 means totally restrictive) it found that NAFTA was the most restrictive with a score of 0.672 and the least restrictive was the Singapore-Australia FTA with a score of 0.228. The former uses a primary test of change of tariff classification whereas the latter uses percentage regional value content. Another RTA with a low degree of trade restrictiveness, and which uses a percentage test, is AFTA with a score of 0.312. Although rules of origin are necessary in free trade areas, they should prevent trade deflection in the least

trade-restricting manner. The strong conclusion to draw from the empirical evidence is that some systems are more restrictive than others and that there are net economic benefits being forgone unnecessarily.[21]

In a recent report (WTO 2011), substantial empirical evidence was presented that RTAs do not lead in practice to the economic benefits that would be expected *a priori*. For example, whereas on average each WTO Member is a member of 13 preferential trade agreements, only 16 percent of world trade in goods occurs at preferential rates. There are two principal reasons for this underwhelming outcome: the first is that most sensitive sectors, e.g. food and agriculture, remain sensitive in such agreements and are not liberalized to the same extent as for example manufactures; the second and more fundamental reason is the existence of rules of origin that are put in place to prevent trade deflection in agreements that take the form of free trade areas.[22] Not only do they prevent trade deflection but they do so to a much greater extent than is necessary. The empirical evidence leads to the conclusion that from an economic perspective the rush into the "spaghetti bowl" and the "noodle bowl" has been much misguided and has caused the focus of trade liberalization to shift away from multilateral trade negotiations in the WTO where, if successfully concluded, they would deliver substantially greater economic benefits while preventing discrimination in international trade.[23]

3. A synthesis

The objective in this section is to synthesize the authors' findings and to do so in the context only of the discussions made in sections 1 and 2 on food security and trade and RTAs, respectively. The papers are split into those that describe AFTA and SAFTA, and those that deal with elements of food security and trade policy in six countries. At the outset, it should be emphasized that the content of these papers is largely descriptive and that formal models, with the exception of the paper on Mexico, have not been used to determine the nature of the link between food security and trade policy in general and agricultural trade policy specifically. Therefore, it is not possible to draw any conclusions about the welfare effects for each country of its membership of an RTA.

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[21] For a further discussion and analysis of rules of origin, see Lloyd and MacLaren (2009).

[22] One potential consequence of the adoption and use of preferential tariffs is that the variance of these rates across all tariff lines will increase and will result in a decrease in welfare.

[23] It is worthwhile noting that in the Marrakesh Agreement it is stated that the parties to the Agreement subscribe to the objective of "the elimination of discriminatory treatment in international trade relations" (WTO 1995, p. 6). Yet it is clear that through the energetic pursuit of RTAs, governments are ignoring their obligations under this Agreement and, indeed, are increasing rather than eliminating discrimination in international trade.

AFTA and SAFTA

The synthesis of the two papers that describe AFTA and SAFTA will deal with: first, the objectives of these Agreements; second, the modalities used to achieve liberalization of trade in goods; third, the separate modalities for agrifood products; fourth, recognition on grounds of equity that special and differential treatment needs to be provided by the richer countries in each Agreement to the poorer countries; fifth, the rules of origin; sixth, the confounding of the consequent outcomes for each Agreement of a number of bilateral agreements entered into by some members of these RTAs and the confounding caused by contemporaneous changes in other economic policies that render almost impossible the identification of the link between the RTA and food security; and seventh, a comment on RTAs and food security. The inability to be definitive about the link between RTAs and food security has serious consequences for policy-makers who are using trade policy as a means of enhancing food security.

Objectives

The objectives of AFTA and SAFTA are similar. Each is designed to liberalize trade amongst members. "The ASEAN Free Trade Area (AFTA) Agreement is an outcome of the attempt by ASEAN member states to achieve trade liberalization in the region ... with the underlying belief that freer trade within the region would increase the region's competitiveness as a single production base for the global companies; hence attracting more foreign direct investment into the region." (Tantraporn 2012) In the case of SAFTA, "Article 3 of the Agreement brings out the objectives and principles of the Agreement. A principal objective is the elimination of barriers to trade and the facilitation of cross-border movement of goods between the territories of CSs [Contracting States]; promoting conditions for fair competition and ensuring equitable benefits to all CSs; [and] ensuring an effective mechanism for implementation of the Agreement and resolution of disputes." (Mukherji 2012)

It is important to note that the general objective of trade liberalization does not identify more open trade with the achievement of enhanced food security. For the members of each Agreement, at least one additional agreement has had to be negotiated to enhance food security independently of the RTA. One reason is that different countries have identified the means to achieve food security differently: some have used imports whereas others have pursued self-sufficiency. For the ASEAN countries, two agreements that deal directly with food security have been negotiated (Tantraporn 2012). They are the Agreement on Food Security Reserve, and the ASEAN Plus Three Emergency Rice Reserve. The former establishes the ASEAN Emergency Rice Reserve and the latter transforms the East Asia Emergency Rice Reserve into a permanent mechanism. In addition, there is a Summit declaration that adopts an ASEAN Integrated Food Security (AIFS) Framework to be implemented

in accordance with a Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS). This integrated framework seeks to ensure coherence of the various food security cooperation initiatives. For the SAFTA countries, the institutional arrangements for food security are much simpler. In 2007 an "Agreement on Establishing the SAARC [South Asian Association for Regional Cooperation] Food Bank" was signed that superseded an earlier agreement (Mukherji 2012). The objectives are to provide a food security reserve and to support members' efforts to enhance their own food security.

Modalities in general

The modalities for achieving trade liberalization are characterized by two salient features, each of which has a parallel in the Doha Round negotiations on agriculture. First, traded goods are placed into different categories ranging from "normal" to "highly sensitive". For each category, a range of final tariff rates is defined and a timetable is specified by which time these final rates are to be achieved. For AFTA, the time scale for manufactures was 15 years, beginning in 1992, but in 1994 this was reduced to ten years with a target range of final tariffs of 0 to 5 percent. In SAFTA, the time scale was also ten years for all products, except for those in a sensitive list but the importing country's final tariff rates were differentiated according to whether imports were coming from a least-developed member or a non-least-developed member. SAFTA is more ambitious in some respects than AFTA because of the harmonization of standards and the recognition of equivalence in testing and certification (Mukherji 2012, section 2). However, in both Agreements it is recognized that there is a need to reduce the incidence of NTBs.

In both Agreements most manufactures are classified as "normal" but most agricultural products, but especially staples such as rice, sugar and wheat, are classified as "sensitive" or "highly sensitive". Goods in the latter category have much lower levels of ambition with respect to trade liberalization both in terms of the final target levels of tariffs and the time scale over which liberalization is to occur. What is not clear from the evidence presented in the papers is whether or not this lack of ambition and sensitivity stem from an objective of governments to protect households that are net suppliers of foods from the adjustments that would be caused by more ambitious trade liberalization. However, it would be reasonable to infer that a greater reliance on imports as a source of staples is seen as undesirable and conflicts with the objective of some members to be self-sufficient in these products.

Modalities for agricultural products

At the time that AFTA was formed in 1992, unprocessed agricultural products were regarded as sensitive and not subject to the target final tariff rates of 0 to 5 percent. Yet, two years later it was agreed that they should be brought into the CEPT (Common Effective Preferential Tariff) (Tantraporn 2012). However, within the CEPT,

unprocessed agricultural products would be placed into one of three categories, those in the Immediate Inclusion List, those in the Temporary Exclusion List and those in the Sensitive List. The effect has been to make the unweighted average tariff lower than the MFN equivalent. In SAFTA, the same principle has been used. Each country has placed goods that it wants to protect from otherwise-agreed trade liberalization in a Sensitive List. But the operation of customs administration has been made more difficult because, for a particular tariff line, the rate applied depends on whether imports come from a Least-Developed member or a Non-Least-Developed member. The percentage of agricultural products in these lists range from 12 to 46 for imports from Non-Least-Developed members and 10 to 100 for imports from Least-Developed members (Mukherji 2012, Table 4). As Mukherji comments, these lists are excessively long and they deny members of the Agreement the possible gains from trade. Importing countries are denying themselves the opportunity to receive the gains from trade and they deny the exporting countries the opportunity to gain more foreign exchange and an increased rate of economic growth.

Special and differential treatment

The second feature of the modalities is the provision for special and differential treatment. Within each Agreement, the richer countries have been prepared to allow the poorer countries to reduce their trade barriers to a smaller extent and to do so over a longer time period. Whether it is really in the best interests of the poorer countries to delay moving towards substantially freer trade is a moot point. Special and differential treatment within AFTA is reflected in the differential treatment of four new members (Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam) from those of the original six (Tantraporn 2012). Special and Differential treatment in SAFTA extends beyond the extent and pace of preferential trade liberalization to the use of administered protection (e.g. anti-dumping and countervailing duties) (Mukherji 2012).

Rules of origin

It was noted in the previous section that rules of origin are fundamental to determining the extent to which the potential gains from preferential trade liberalization are realized. It was also noted that of the two principal sets of rules, the percentage regional value added rule tends to be the less trade restricting. In AFTA, the primary test is regional value added with a threshold of 40 percent, with cumulation allowed across ASEAN countries; whereas in SAFTA, both change of tariff classification, measured at the HS-4 level, and regional value added are used. For the latter, the critical percentage is 40 percent and with final processing carried out in the exporting country. However, regional cumulation is permitted and this lowers the regional percentage to 20 percent under specific conditions (Mukherji 2012, section 3).

Confounding of policies

There are two important sources of confounding that bedevil any *ex post* quantitative analysis of each of these RTAs that was designed to measure the effects of the RTA on food security. The first is the confounding effects of bilateral agreements entered into by individual members that are in operation contemporaneously with the RTA. For example, within SAFTA, India has bilateral partial scope agreements with Afghanistan and with Nepal, and has free trade agreements with Bhutan, with Nepal and with Sri Lanka. Similarly, within AFTA, Singapore has several bilateral agreements with countries that are not members of ASEAN, e.g. Australia and Chile. To help control for these other agreements, additional variables would need to be specified in any econometric analysis of the trade effects of either AFTA or SAFTA. However, disentangling the effects of one agreement from those of another would not be easy because of the relatively short time series of data available for estimation and the long phase-in periods for tariff reductions.

The second source of confounding is contemporaneous changes in other economic policies, whether macroeconomic or specific domestic instruments applied to the agricultural sector. For example, Tantraporn (2012, Table 14) provides a list of the policy measures used by individual governments in ASEAN countries to counteract the effects of rising food prices in 2007 and 2008. Although these changes are not directly related to the RTA, they do confound any attempt to measure the effectiveness of the food security measures that have been negotiated amongst the ASEAN countries.[24]

RTAs and food security

The four RTAs that have been described by Mukherji (SAFTA), Trantraporn (AFTA), Yunez-Naude (NAFTA) and Zhang (ACFTA) were not designed with food security as an objective. In the case of the countries that are members of AFTA and of SAFTA, additional agreements were negotiated that dealt directly with food security for individual members and the membership as a whole. In North America, food security is an issue only for Mexico and, therefore, only the Mexican government was involved in altering policies designed to ensure food security in the context of an RTA with its richer northern neighbours. Because of the existence of domestic agricultural policies and the effects that these have on domestic producer and consumer prices, it is very difficult in practice to isolate the effects, if any, of a country's membership of an RTA on its food security. Even if domestic policies did not alter domestic food prices from

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[24] Yunez-Naude (2012) has explained the changes in Mexican agricultural policy instruments that occurred after the implementation of NAFTA, especially those that were deemed necessary to maintain basic food security and which cannot be ignored in any analysis of the effects of NAFTA on food security in Mexico.

their international levels, the effect of membership of an RTA on food security would depend upon the direction of the subsequent movement of the prices of individual foods. It would be expected that for an importing country the domestic price of import-competing foods would fall and for an exporting country prices would rise, a downward movement benefiting net buyers and harming net suppliers and an increase benefiting net suppliers and harming net buyers.

Aspects of food security in Bangladesh, China, India, Mexico, Nepal and the Philippines

From the paper written for each country it is clear that each has idiosyncratic characteristics that render it misleading and therefore unhelpful to try to draw general conclusions about the role of trade agreements in enhancing the food security of each. Therefore, the objective in this subsection is to highlight the link for each country of its international trade regime and its food security, emphasizing where necessary the domestic policy instruments that are in place. The individual papers provide a rich source of information on how each country has dealt with the internal and external forces affecting its food security. To make the task manageable, a summary is given for each country of the evolution of its trade and food security policies. To the extent that common themes emerge, these are identified in section 4.

Bangladesh

Bangladesh has made some impressive gains in increasing domestic production of staple food products (Rahman and Iqbal 2012). Production of rice has increased threefold since independence in 1971 compared with a twofold increase in population. In the 1970s and 1980s, Bangladesh was dependent on food aid from international and bilateral sources in a significant way. Today the role of food aid is negligible. Despite this achievement, Bangladesh needs to import foodgrains because of periodic shortfalls in production, for stock augmentation, because of the consequences of natural disasters, and for ensuring overall food security (Rahman and Iqbal 2012).

For poor households, expenditure incurred for the purchase of rice accounts on average for 50 percent of the total household expenditure. With tariff rates at zero for staples, with the exception of refined edible oil, the government has no scope to deal with rising import prices through tariff reductions. In general, the price of foodgrains in the domestic market tends to follow the price of imported food. However, domestic and international prices are not fully linked because of policy interventions such as producer price supports, government procurement and sale at subsidized prices to the consumers. Private firms tend to import only when international prices are lower than domestic consumer prices (Rahman and Iqbal 2012). When this is not the case, it is the government that takes the initiative although it is the private sector that procures the imports. Food is stored in government-run warehouses and sold at

subsidized prices through open market operations, through the limited food rationing system and through programmes such as food for work. Thus, drawing conclusions with regard to the linkage between trade policy and food security is difficult because of the presence of these various domestic policy instruments.

As a member of SAARC and SAFTA, Bangladesh appears to view its relationship with fellow members also from the perspective of food security and as a potential insurance policy against export restrictions imposed by its trading partners. India is the principal source of rice imports for Bangladesh within the SAARC region. However, as happened during food price spikes in 2007 and 2008, surplus countries such as India tend to be guided more by their own domestic concerns at times of food shortages, price hikes and food-related emergencies. The idea of the SAARC Food Bank was floated with a view to address food security concerns from a regional perspective and approach. The modalities of the SAARC Food Bank are separate from the SAFTA agreement. It is interesting to note that it was felt necessary by members of the SAFTA to have a separate and additional agreement that focused exclusively on ways and means to enhance the food security of member countries. Perhaps it was recognized that the treatment of agricultural products in the modalities that were agreed as part of the SAFTA would not fully serve the purpose of alleviating the food security concerns of member countries. However, the SAARC Food Bank has faced formidable difficulties in becoming fully operational.

China

Trade liberalization and the soybean sector

The evolution of the soybean sector in China has been influenced by changes in both domestic policy and trade policy (Tian and Gao 2012). The domestic reforms of 1992 allowed farmers greater flexibility to respond to market price signals, and the later trade reforms that were necessitated by accession to the WTO in 2001 changed these signals considerably. The outcome was a greater geographical concentration of production in the Northeast and Central regions that coincided with the rise in importance of large-scale multinational firms that were engaged in the processing of soybeans. The change in trade policy, the role of the multinationals in the supply chain and the increased demand for processed soybean products by the livestock industry, gave rise to a substantial increase in imports of soybeans. These come principally from Argentina, Brazil and the USA.

The increased concentration in the supply chain created concerns for policy-makers. Their fear was that the objectives of the multinationals would not be consistent with the government's objectives of food security and market stability. On the latter concern, it has been shown in theory that a more concentrated market structure amongst intermediaries reduces the mean level of procurement prices although the concentration also leads to greater price stability (i.e. smaller variance).

As a consequence of changes in trade policy after 2001, it was found that the domestic wholesale price of soybeans and the international price have become aligned. Although the authors of the case study do not provide an estimate of the price transmission elasticity, it may well be close to unity.

The authors of the paper draw on their analysis of the evolution of the soybean sector to identify some implications that have more general applicability. First, reforms of trade policy need to be accompanied by reforms of domestic policies so that the benefits of freer trade can be maximized. Second, trade restrictions are not an effective way of dealing with domestic problems; this conclusion being an example of the well-known targeting principle of applied welfare economics. Third, given the importance of multinational firms as intermediaries in supply chains, there is a growing need for an effective competition policy. Fourth, the emergence of multinationals should be seen as a positive outcome of trade liberalization because in developing countries they allow access to the best market information, information that otherwise would not be known.

The consequences of the ASEAN-China Free Trade Area

Food security remains a priority for the national government of China despite the country's sustained and phenomenal rate of economic growth (Zhang 2012). For the Twelfth Five-Year Plan, agriculture is one sector that is being given priority with the objective of increasing the productivity of farms and securing grain self-sufficiency at 95 percent, i.e. at 540 million tonnes in 2015 compared with 521 million tonnes for the Eleventh Five-Year Plan.

The pursuit of food security needs to be seen in the context of China's trade policy and international obligations through various agreements. These include the WTO but also the RTA referred to as the ASEAN-China Free Trade Area (ACFTA). In it's framework agreement, one principle being followed is that the resulting trade liberalization should not undermine the members' food security.

In ACFTA, the rules of origin are based on the percentage regional value added with a threshold of 40 percent. Despite the simplicity of applying this rule to agricultural products, the case study also finds that only 13 percent of China's agricultural exports to ASEAN countries do so at preferential rates. One consequence has been that the "increase of exports to ASEAN members did not have much influence on China's agro-related industries, product prices and farmers' incomes." (Zhang 2012, section 4) To the extent that trade with ASEAN countries did increase, it appears to have done so in line with comparative advantage. China has increased exports of citrus fruit and apples, and has increased imports of tropical fruits. It is concluded in the ACFTA paper that the latter outcome has had substantial harmful economic effects in the Southeast region of China because this is an area that had increased

plantings of tropical fruits prior to the introduction of ACFTA and that found itself facing lower prices of imports from ASEAN countries. These trade effects demonstrate clearly that trade reform creates winners and, in the absence of adjustment assistance, losers.

India

In discussions about food security, attention is usually focused on foodgrains. In the paper on India, Gulati and Vishandass (2012) focus instead on edible oils but they also provide a link between these oils and foodgrains. In doing so, they also bring out very clearly how government intervention can create additional uncertainty, albeit unintentionally. During the 1960s, when the green revolution was in full swing, the area planted to wheat and rice expanded at the expense of coarse grains and edible oils. This change in the production mix of Indian agriculture caused an increase in imports of edible oils at a time when foreign exchange was scarce. By the late 1980s, the government chose to alter the direction of policy.

Two new objectives were introduced together with two instruments. The objectives were to increase domestic production of oils and to reduce the need for foreign exchange for imports. The instrument to achieve the domestic objective was the support of the wholesale prices of edible oils and the trade instrument was the quantitative control of imports. The outcome was an increase in the domestic price of oils relative to that of grains, and this then caused an increase in the area planted to oils at the expense of grains. The government later responded to the economic effects of its earlier intervention by allowing private firms to import, although subject to a counter-cyclical tariff. With domestic prices much above world prices, imports surged and a period of self-sufficiency in edible oils came to an abrupt end.

Since 2006, the government has continued to use trade policy in an effort to achieve domestic market stability. It reduced tariffs on imports of edible oils as world prices rose and it banned exports of wheat and rice in late 2007 as their international prices rose. The outcome was a surge of imports of oils and a surge in the level of domestic stocks of grains to levels well in excess of those specified as buffer stock norms, thereby risking spoilage owing to the scarcity of good quality storage facilities. Eventually, in 2011 the export bans on common rice and wheat were lifted.

These episodes in India of policy intervention and withdrawal amply demonstrate the difficulties that a government faces in trying to provide market stability in a stochastic environment without having either the necessary foresight to be able to get the timing correct *ex post* or being able to take into account the relationships in production and consumption across commodities. These failures cause further instability. By suddenly intervening in, or withdrawing from, markets, government itself can at times become an important source of uncertainty for private decision-makers, thereby causing unnecessary economic losses.

Mexico

The effects of NAFTA on Mexican agriculture need to be interpreted against the background of structural adjustment that had been occurring as a consequence of prior domestic policy reforms (Yunez-Naude 2012). For example, beginning in the late 1980s producer price support measures were withdrawn as were subsidies on inputs and the use of state trading enterprises in the domestic supply chain. Another source of structural adjustment was Mexico's membership of the GATT in 1986 that caused the removal of import licenses and their replacement by tariffs. Against this background, it was apparently assumed by the Mexican government that membership of NAFTA would not present problems for food security. It was believed that liberal reforms would have economy-wide effects that would increase incomes and reduce poverty. Indeed, over the past two decades since 1990 per capita food consumption has increased but so too have imports, whereas self-sufficiency has fallen. The author makes the important point that this outcome is of concern for food security because income inequality has not diminished and, in the absence of any welfare safety net, poverty remains widespread.

As with AFTA, ACFTA and SAFTA, agricultural trade liberalization in NAFTA has differentiated commodities by their political sensitivity. For commodities that were not regarded as sensitive in 1994, trade liberalization happened immediately. For sensitive commodities, imports were controlled through tariff quotas. Over time, the quotas were increased and the out-of-quota tariffs reduced until, by 2008, there was "free trade". By 2007, it was realized that trade liberalization on its own would not necessarily alleviate poverty and achieve food security. In that year, domestic legislation was introduced that was designed to protect the purchasing power of the poor and to increase domestic food production.

In summary, the introduction of NAFTA did affect those commercial farmers who produced crops that were uncompetitive with imports from the US but their incomes were protected in some cases by domestic policies, thereby reducing the extent of the fall in production.[25] Subsistence households, in contrast, maintained their production of staples despite prices that were reduced by NAFTA.[26] This latter finding is a very important one because it is counter-intuitive to those schooled in neoclassical production economics.

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[25] Commercial farms are defined as those farm households that make only decisions about production.

[26] Subsistence households are those that have to make decisions based not only about production but also about consumption.

Nepal

Food security in Nepal is focused on domestic production, on access by consumers to subsidized foods and on the food distribution system (Pandey 2012). Missing from this list is international trade and within trade policy, food security is not an objective.

Per capita cereal production has been decreasing at the national level with the most substantial decrease being in rice. To offset this decline, there has been an increase of imports and food aid. The reduction in domestic per capita production is associated with the deterioration in the nutritional status of the population. However, the usual measures of the well-being of children appear to present a mixed picture. For example, stunting and underweight measures improved between 2001 and 2006 whereas there was an increase in wasting over the same period.

The Nepalese government is constrained in how to respond to this deterioration in food security. Increasing productivity and production would be the main response, but this will happen only in the medium- and long-term periods provided investment and support are increased now. As a step in this direction, the government has formulated agricultural sector policies and investment plans with food production, especially in more remote areas in the hills, being given high priority.

The other response, especially for the short-term, is through international trade, the most important element of which is Nepal-India trade. Because of the porous border between these two countries, food products flow easily across the border and Nepal's food prices are strongly influenced by Indian prices. As food prices in India are relatively stable, Nepal has been a beneficiary. However, the downside is that Nepal is constrained in its pursuit of an independent price policy, e.g. to influence food production in Nepal. This situation is unlikely to change, especially because of the India-Nepal free trade agreement for primary products. One idea discussed in the Nepal paper is for Nepal to renegotiate with India the terms of that bilateral agreement which would exclude important food commodities such as cereals and oilseeds from duty-free access. The objective would be to provide some incentive or protection for food production in Nepal. However, even if such a provision were made in a re-negotiated agreement, it would be very difficult to implement because of the porous border and because of the large-scale informal trade that is very difficult to control.

The Philippines

The price spikes of 2007 and 2008 increased the political pressure on the government of the Philippines to continue to pursue a policy of self-sufficiency in staple foods (Briones 2012). According to Briones, such a target will be difficult to achieve physically and it may also make little economic sense. Increases in population and per capita consumption of staples cannot be matched by increases in domestic

production alone. Between 1990 and the mid-2000s, self-sufficiency in rice fell from 90 to 84 percent, whereas it increased to 87 percent in 2010. The attainment of self-sufficiency also depends on the level of prices faced by producers and some hold the view that higher prices in 2010 compared with earlier years can explain the increased self-sufficiency.

Imports of rice are controlled indirectly by the National Food Authority (NFA), although the actual act of importing is shared with private firms. The level of imports is decided each year by the NFA as a residual source of supply that fills the gap between anticipated domestic consumption and production. This form of intervention ensures that the price transmission elasticity is less than unity. But its value is further distorted by sales of rice to domestic consumers at subsidized prices.

The Philippines is a member of seven RTAs. In each case, various exceptions have been made for sensitive products, such as rice, that permit continued high levels of protection and for longer time periods than for non-sensitive products. Such exceptions have to be agreed by all parties to these Agreements and, thus, the position on rice adopted by the Philippines is by no means unique.

The author asserts that the policy of self-sufficiency has been unnecessarily costly and misguided. It has not only reduced the welfare of consumers of staple foods by raising consumer prices but the budgetary expenditures have starved other projects of necessary funds. Moreover, the policy has tended to freeze the allocation of resources in certain products, especially rice, it has discouraged diversification, and it has reduced rather than enhanced food security. On the basis of the analysis undertaken, Briones concludes that the Philippines would be better off economically and in terms of food security by emulating the more open trade policy of some members of the RTAs to which it is a party. In order to counter the argument that more openness equals more uncertainty and greater food insecurity, it is proposed that trade reform in food staples should be accompanied by the introduction of livelihood safety nets.

4.   Conclusions

Attainment of food security for all, as articulated in the Millennium Development Goals, is a prominent goal for all national governments as well as for the international community. What is debated is not the goal but the instruments to achieve it. One issue often raised is whether a policy of food self-sufficiency is essential and a "better" policy than one based on more open international trade. As is amply demonstrated in the papers presented at the Forum, different governments have adopted different positions in this debate, although the degree to which the results from quantitative economic analysis have helped to define their policy stance is not known.

From an economic perspective, the task of analysing a country's policy stance on food security and the role of international trade in achieving it is an extremely difficult one. International trade plays two distinctly different roles: the first is direct, namely as a source of foodstuffs; the second is indirect and operates through affecting the rate of economic growth. With regard to the first role, it has been noted that a policy of open trade will increase the level of food availability but there are two caveats. The first is that the international market may become an additional source of price instability and a cause of food price inflation as the domestic sector becomes more linked with the international market.[27] The second is that the country may not have the foreign exchange earnings required to sustain the necessary level of food imports on a continuing basis.

It should be noted from the summary evidence presented in section 3 that governments employ domestic instruments in conjunction with trade policy. The mix of domestic and trade instruments makes it difficult to measure the effect of trade policy *per se* on domestic food security and, as a consequence, it renders almost impossible the provision of trade policy advice that can be substantiated on the basis of empirical evidence.

Food security is also about minimizing the probability of disaster, where disaster can be thought of as a condition of extreme food insecurity for the poor in a population. This is not a new idea but one that goes back some 60 years to the development of the safety-first models that were developed in the context of the theory of the firm under uncertainty.[28] How international trade affects that probability will vary from country to country and over time. There are no easy policy solutions. However, one thing is certain, models that are based on the assumption of perfectly functioning national markets will only mislead if used to identify the most appropriate mix of trade policy and domestic policy to achieve food security in poor countries.

From the case studies of the individual countries, three lessons can be identified that have policy relevance beyond just these countries. First, the experience of China suggests that multilateral liberalization can have significant positive effects on patterns of production, on incomes and on food security whereas the gains from regional trade liberalization may be limited because of provisions such as the rules of origin. Second, it can also be concluded that changes in trade policy need to be accompanied by domestic policies to ensure that the potential benefits of trade liberalization on poverty alleviation and food security are realized in practice, as in

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[27] Whether or not improved links between the domestic and international markets is stabilizing or destabilizing depends on the sign of the covariance of the events that cause variability in each market.

[28] For a discussion of these and other models that deal with the modelling of risk and uncertainty in a developing country context see Roumasset, Boussard and Singh (1976).

China and Mexico. The implementation of such domestic policies would protect the losers and so make more open trade more feasible politically. And third, analyses show that gains from trade through RTAs are limited relative to those from the MFN route. One reason is that provisions such as the rules of origin limit the gains. The other reason is trade diversion, which also reduces gains by deflecting trade away from the most efficient sources of imports.

The spikes in international prices of staples in 2007 and 2008 and again in 2010 and 2011 highlight the need for international policy coordination in the design of additional trade rules. Although proposed on a number of occasions and in several forums in the intervening time period, the strengthening of the trade rules on export restriction would remove one unnecessary source of uncertainty for food importing countries. It is obvious from the events of that period that export policy became an additional source of uncertainty for importing countries as well as a source of price and quantity instability. In the absence of such a rule, some risk-averse governments may continue to employ the costly policy of food self-sufficiency. The spirit of cooperation that appears to exist within AFTA and SAFTA may allow the introduction of such a rule for this subset of countries and so provide the insurance policy necessary for more open trade and more stable prices of food products. This outcome is certainly desirable and it could be achieved even without the formal structure of an RTA.

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Part II

AFTA and country experience from the ASEAN region

2

AFTA and its implications for agricultural trade and food security in ASEAN

Apiradi Tantraporn and Vipada Tuchinda

1. Introduction

The Association of Southeast Asian Nations (ASEAN) Free Trade Area (AFTA) Agreement is an outcome of the attempt by ASEAN member states to achieve trade liberalization in the region. The Agreement was initially signed in 1992 by the original six ASEAN member states (ASEAN-6) – Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand – with the underlying belief that freer trade within the region would increase the region's competitiveness as a single production base for global companies and thus attract more foreign direct investment into the region. The Agreement was later joined by the newcomers, Viet Nam (1995), Lao People's Democratic Republic (Lao PDR) and Myanmar (1997) and Cambodia (1999), so that AFTA now includes all of the ten ASEAN member states.[29]

In order to achieve trade liberalization according to AFTA, the Common Effective Preferential Tariff (CEPT) scheme was created. It was an agreed effective tariff, preferential to ASEAN, to be applied to goods originating from ASEAN member states. The CEPT was the main mechanism used to reduce intraregional tariffs and remove non-tariff barriers over a 15-year period, commencing 1 January 1993. The goal of the scheme was to reduce tariffs on all manufactured goods to 0–5 percent by 2008.[30]

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[29] The latest development among ASEAN countries is their attempt to create a single market and production base among the member countries through the creation of an ASEAN Economic Community, which incorporates other agreements to achieve freer movements of trade in service, investment, capital and labour, in addition to the liberalization of trade in goods among member countries.

[30] Despite the word "Common" in the CEPT, it should be noted that AFTA is not a customs union, but merely a free trade agreement, meaning that ASEAN member states shall have common effective tariffs among themselves in AFTA, but the level of tariffs with non-ASEAN countries will continue to be determined individually.

This paper aims to provide an overview of AFTA, its mechanism to achieve trade liberalization (i.e. CEPT) and the impacts of AFTA on regional trade flows, in particular on intra-agricultural trade in ASEAN. The paper will also link the study of AFTA and its implications for ASEAN's agricultural trade to the issue of food security. The paper includes a brief introduction to the concepts that are relevant to the issues of food security, as well as some basic information on each country's agricultural sector and related government policies. In the final part of the paper, there will be some observations on the impact of AFTA for strengthening food security in the region through freer agricultural trade. In addition, because there are some other agreements that deal directly with the food security issue in the region, it should be useful to take a quick look at these agreements, especially those aspects of the agreements that are complementary to AFTA.

The paper concludes that although AFTA has resulted in a significant reduction of tariff rates on most agricultural products traded within the region, on the basis of the empirical data it is still difficult to say that AFTA has had a true impact on promoting intraregional agricultural trade. Despite its minimal effect on stimulating and promoting intraregional agricultural trade, AFTA should still be seen as a positive factor for promoting food security in ASEAN. However, sometimes this economic benefit of AFTA can be compromised by political factors that can hamper optimal outcomes of agricultural trade policy implementation in each country.

2. AFTA and CEPT: coverage on agricultural products

AFTA-CEPT overview

Regional trade agreements (RTAs) have become increasingly popular since the early 1990s, partly as a reaction to the limited progress on further liberalization that has been achieved under the multilateral trade negotiations in the World Trade Organization (WTO). AFTA was among those RTAs, signed by trade ministers of the ASEAN-6 on 28 January 1992 in Singapore. It was notified to the General Agreement on Tariffs and Trade (GATT) on 30 October 1992 under the "Differential and more favourable treatment reciprocity and fuller participation of developing countries" clause, also known as "the Enabling Clause", which refers to preferential trade agreements in trade in goods among developing-country members of GATT.[31]

Before AFTA, the ASEAN Preferential Tariff Arrangement (PTA) had been adopted in 1987 by ASEAN member states as a means to achieve tariff reductions within the region. The ASEAN PTA offered preferential tariff treatment, also known as

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[31] More details can be found at http://www.wto.org/english/docs_e/legal_e/enabling1979_e.htm

a Margin of Preference, to products originating from ASEAN states.[32] However, this arrangement achieved little success, as most tariff lines brought under the scheme were only those applied to goods with no significant trading volume in the region.

Learning from this unsuccessful experience, ASEAN member states determined that AFTA would achieve more substantial tariff reductions through the newly established CEPT mechanism. Unlike the previous PTA, AFTA set a clear goal right from the beginning that tariffs would be reduced to 0–5 percent for all manufactured goods. Another difference between the previous PTA and CEPT was that concessions under the latter were on a reciprocal basis, whereas those under the former were on an ASEAN MFN basis.[33] However, the key feature that made CEPT a more effective tariff-reduction mechanism was its coverage, which more or less included "substantially all the trade".[34]

At the onset of the CEPT implementation, an exception was made for unprocessed agricultural products from the original tariff-reduction scheme introduced in 1992. However, these products were later added to the CEPT scheme as ASEAN member states realized the need to arrive at commitments to liberalize trade in these commodities. The decision, in effect, brought most agricultural products under the legal regime of liberalization despite some exception clauses, which are to be elaborated later.

Originally, the time frame for tariff reduction under the CEPT was set at fifteen years, commencing in 1993, but two years after its initial implementation ASEAN member states agreed to shorten the time period to ten years.

In addition to the schedule of tariff reduction, Article 5 of the CEPT also included a time frame for a reduction of non-tariff barriers (NTBs).[35] Once a product is included in the CEPT, quantitative restrictions should be eliminated immediately upon the

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[32] All ASEAN-originating products under the PTA were given preferential tariffs, which were lower than the Most Favoured Nation (MFN) tariff rates of the ASEAN member countries, usually defined in terms of a percentage applied to the rate of an ASEAN country.

[33] Questions and answers on CEPT can be found at http://www.asean.org/communities/asean-economic-community/item/questions-and-answers-on-the-cept

[34] Since there has never been a definitive interpretation of what "substantially all the trade" means, countries have interpreted it according to their own interests. For example, the European Union has said that "substantially all the trade" should be interpreted as the liberalization of 90 percent of existing trade between the two sides, which means the duties applied to tariff lines accounting for 90 percent of the existing trade should be brought to zero.

[35] NTBs are border measures other than tariffs that effectively prohibit or restrict imports or exports of products within member states.

introduction of concessions and other NTBs should be removed within five years after the introduction of concessions.[36, 37]

There were four lists of products, each of which indicates different tariff reduction schemes. Member states had to decide which products were to be listed in each list. The four lists are explained below.

(a) **Inclusion List (IL)** refers to products that were required to have their tariffs reduced to 0–5 percent according to the stated time frame. This list was further divided into two subcategories, the Normal Track programme and the Fast Track programme.

The Normal Track programme (NT) includes products with the tariff reduction schedule as below:

- products with tariffs above 20 percent were to be reduced in two stages: first, to 20 percent within five years (by 1 January 1998); and subsequently, from 20 percent to 0–5 percent by 1 January 2003; and
- products with tariffs of 20 percent and below were to be reduced to 0–5 percent by 1 January 2000.

The Fast Track programme (FT) includes products that were scheduled to undergo an accelerated tariff reduction programme as below.[38]

- products with tariff rates above 20 percent were to have their rates reduced to 0–5 percent by 1 January 2000; and
- products with tariff rates at or below 20 percent were to have their rates reduced to 0–5 percent by 1 January 1998.

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[36] "Quantitative restrictions" refers to prohibitions or restrictions on trade with other member states, whether made effective through quotas, licenses or other measures with equivalent effects, including administrative measures and requirements that restrict trade.

[37] The Fourth AFTA Council requested that member countries submit information on measures that may constitute barriers to trade. Based on this information, customs surcharges and technical measures were initially identified as major NTBs affecting intra-ASEAN trade. A customs surcharge, also called surtax or additional duty, is an ad hoc trade policy instrument to raise fiscal revenue or to protect a domestic industry. Technical measures are those measures referring to product characteristics such as quality, safety or dimensions, including the applicable administrative provisions, terminology, symbols, testing and test methods, packaging, marking and labeling requirements as they apply to a product (http://www.aseansec.org/10099.htm).

[38] The Fast Track programme covers a set of 14 product groups: vegetable oils, cement, chemicals, pharmaceuticals, fertilizer, plastics, rubber products, leather products, pulp and paper, textiles, wooden and rattan furniture, ceramics and glass products, gems and jewelry products, and electronics.

(b) **Temporary Exclusion List (TEL)** refers to products for which tariffs would ultimately be lowered to 0–5 percent, but which are being protected temporarily by a delay in tariff reductions. These products would later be transferred into the IL for reductions in tariffs.

(c) **General Exception List (GEL)** refers to products which an ASEAN member state deems necessary for the protection of national security, public morals, the protection of human, animal or plant life and health, or protection of articles of artistic, historic or archaeological value (c.f. GATT Article XX).

(d) **Sensitive and Highly Sensitive Lists (SL and HSL)** contain unprocessed agricultural products, including commodities such as rice that were to be given a longer time frame before being integrated into the free trade area.

- Sensitive List (SL)*: For products in the SL, member states – with the exception of Cambodia, Lao PDR, Myanmar and Viet Nam (the CLMV countries) – needed to phase in sensitive products to the tariff reduction schemes under the CEPT beginning on 1 January 2001, with some flexibility but by no later than 1 January 2003, and their phasing in was to be completed by 1 January 2010.

  The applied tariff rates rather than the bound rates were used as the starting point for the tariff reduction of sensitive products, but they could not be applied for more than three consecutive years. The tariffs were to be reduced by a minimum of 10 percent. All sensitive products would eventually have ending tariff rates of 0–5 percent.

  The CLMV countries were allowed a longer time frame for phasing in their sensitive products to the tariff reduction schemes under the CEPT.

- Highly Sensitive List (HSL)*: For products in the HSL, member states were allowed more flexibility in determining the ending tariff rates.[39] In 2004, Indonesia and the Philippines were allowed to transfer sugar from their TEL to their HSL and SL. A further exemption for rice and sugar was also allowed in 2007 as member states recognized the political sensitivity of such products and because the domestic policy framework of each member state aims to achieve self-sufficiency for these products within the country.

In sum, ASEAN member states agreed to enact zero tariff rates on virtually all imports by 2010 for the ASEAN-6. At present, more than 99 percent of the products in the CEPT IL of the ASEAN-6 have been brought down to the 0–5 percent tariff range. All of the CLMV countries were required to sign the AFTA agreement in order to join ASEAN, but they were given a longer time frame – until 2015 – to meet AFTA's tariff-reduction obligations.

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[39] Annex 3 of Tariff Reduction for Highly Sensitive Products of the Protocol, states that the ending tariff rates for highly sensitive products shall be: Indonesia, 20 percent; Malaysia, 20 percent; and in case of the Philippines, the ending tariffs were to be determined within the CEPT framework.

TABLE 1:

CEPT time frame for all ASEAN state members

Country	Manufactured and processed agricultural goods			Unprocessed agricultural goods		
	IL	TEL	IL	TEL	SL
ASEAN-6	(NT)* 1993–2003	1996–2003	1996–2003	1997–2003	2001–2010
	(FT)** 1993–2000				
Viet Nam	(NT) 1996–2006	1999–2006	1999–2006	2000–2006	2004–2013
	(FT) 1996–2003				
Lao PDR and Myanmar	(NT) 1998–2008	2001–2008	2001–2008	2002–2008	2006–2015
	(FT) 1998–2005				
Cambodia	(NT) 2000–2010	2003–2010	2003–2010	2004–2010	2008–2017
	(FT) 2000–2007				

Note: * NT is the Normal Track programme.
   ** FT is the Fast Track programme.

Source: http://www.asean.org/communities/asean-economic-community/item/questions-and-answers-on-the-cept

On average, currently the ASEAN-6 have more than 99 percent of tariff lines in the IL at 0 percent.[40] Less than 1 percent of the tariff lines in the IL have import duties. For the CLMV countries, 46 percent of the tariff lines in the IL are already at 0 percent as of 1 January 2010; thus, 99 percent of tariff lines for the ASEAN-6 and 79 percent of tariff lines for all ASEAN member states are at 0 percent as of 1 January 2010 as shown in the table below.[41]

AFTA coverage on agricultural products

According to Article 3 of the Agreement on the CEPT for AFTA, the Agreement applies only to all manufactured products, including capital goods, processed agricultural products and other products falling outside of the definition of agricultural products. Unprocessed agricultural products were excluded from the 1992 CEPT

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[40] According to member country submissions to the ASEAN Secretariat in December 1993, there were a total of 44 095 tariff lines in the CEPT lists. However, it should be noted that member countries differ in the degree of disaggregation of their tariff lines. For example, the Philippines' tariff lines are disaggregated only up to the 8-digit level. Thailand uses a mix of 6-digit and 9-digit codes. All the other member countries use tariff codes at the 9-digit level. Countries using 6-digit or 8-digit tariff codes will necessarily have fewer tariff lines than countries using the 9-digit level.

[41] Data taken from the AFTA page of the Ministry of International Trade and Industry of Malaysia Web site http://www.miti.gov.my/cms/content.jsp?id=com.tms.cms.section.Section_8de83760-7f000010-72f772f7-f5047602

TABLE 2:

Number of tariff lines at 0% for ASEAN in the 2010 CEPT package

Country	Number of tariff lines			Percentage		
	0%	>0%	Total IL	0%	>0%	Total
Brunei Darussalam	8 223	–	8 223	100.00	–	100
Indonesia	8 625	16	8 641	99.81	0.19	100
Malaysia	12 265	66	12 331	99.46	0.54	100
Philippines	8 857	96	8 953	98.93	1.07	100
Singapore	8 300	–	8 300	100.00	–	100
Thailand	8 257	13	8 300	99.84	0.16	100
ASEAN-6	**54 557**	**191**	**54 748**	**99.65**	**0.35**	**100**
Cambodia	795	9 742	10 537	7.54	92.46	100
Lao PDR	5 891	2 323	8 214	71.72	28.28	100
Myanmar	4 992	3 258	8 240	60.58	39.42	100
Viet Nam	4 618	3 481	8 099	57.01	42.98	100
CLMV	**16 296**	**18 804**	**35 090**	**46.44**	**53.59**	**100**
ASEAN-10	**70 853**	**18 995**	**89 838**	**78.86**	**21.14**	**100**

Note: Tariff lines here refer to those in the ASEAN Harmonized Tariff Nomenclature 2007.

Source: AFTA tariff database (www.us-asean.org/aftatariffs.asp)

scheme. In Article 1 of the Agreement, unprocessed agricultural products are defined as:

(a) agricultural raw materials/unprocessed products that are covered under HS papers 1–24 of the Harmonized System (HS), and similar agricultural raw materials/unprocessed products in other related headings; and

(b) products that have undergone simple processing with minimal change from the original products.[42]

The Twenty-sixth Meeting of the ASEAN Economic Ministers in 1994 decided to include all unprocessed agricultural products in the CEPT scheme. In implementing this decision, member states agreed to divide unprocessed agricultural products into three lists:[43]

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[42] Data on inclusion of unprocessed agricultural products is available from the ASEAN Web site (www.asean.org/communities/asean-economic-community/item/inclusion-of-unprocessed-agricultural-products-2)

[43] Data on TEL is available from ASEAN Web site (www.asean.org/communities/asean-economic-community/item/inclusion-of-unprocessed-agricultural-products-2)

(a) **Immediate Inclusion List (IL):** Unprocessed agricultural products in the Immediate Inclusion List were to be transferred to either the NT or the FT by 1 January 1996. These products would have a tariff reduction schedule intended to bring their tariff rates down to 0–5 percent in 2003. Quantitative restrictions and other NTBs on these products must also be removed.

(b) **Temporary Exclusion List (TEL):** Products in the TEL could be kept out of the NT or the FT of the CEPT scheme only for a limited time. Any unprocessed agricultural product in the TEL was to be transferred to the IL in equal installments each year and be subject to the same tariff reduction schedule as other CEPT products. All of these products, however, were to be transferred into the IL by 2003.[44]

(c) **Sensitive List (SL):** It was universally accepted by the ASEAN member states that unprocessed agricultural products in the SL needed to be treated with greater flexibility with respect to liberalization because of their political sensitivity at the national level. It is worth noting that the products in the SL were not necessarily the same for each country.[45] The products in the SL would be treated under a special mechanism that allowed a longer time frame and the final tariff rates might not be reduced to the 0–5 percent range as for other products in lists in the CEPT. Despite the special arrangement, ASEAN member states still insisted that the tariff reductions for the products under the SL be greater than their Uruguay Round commitments.

Table 3 shows that most of the agricultural products under HS paper 1–24 have already been brought under the CEPT scheme. Among those, only 116 products are in the SL and HSL, whereas the tariffs of most of the agricultural products have been reduced according to the schedule set for products in the IL.

A study by Pasadilla (2006) showed that, overall, AFTA agricultural tariff reductions were a major improvement over their MFN equivalents. From Table 4, we can see that the unweighted average tariff rate under the MFN scheme is much higher than the CEPT rate in some countries – especially Thailand – whereas in Brunei Darussalam and Singapore, the differences between the MFN and the CEPT rates are somewhat insignificant. Another observation of the data in Table 4 is that, looking at the CEPT rates alone, ASEAN member states seem to commit through time to lower tariff rates.

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[44] By 1 January 1997, each member country was required to phase in, by equal installments, the unprocessed agricultural products in their TEL. By 1 January 2003, all these products in the TEL were to be in the CEPT Scheme, i.e. tariffs at 0–5 percent, with quantitative restrictions and NTBs removed.

[45] For example, for ASEAN-6, Brunei Darussalam had 14 products in its SL, Malaysia had 65 products, the Philippines had 64 products, Thailand had 7 products and there were none for Indonesia and Singapore.

TABLE 3:

Agricultural products under the CEPT scheme 2008

Country	IL	GEL	SL	HSL	Total	% coverage
Brunei Darussalam	1 220	74	0	0	1 294	94.28
Indonesia	1 228	50	0	16	1 294	94.90
Malaysia	1 698	58	0	0	1 756	96.70
Philippines	1 368	0	0	19	1 387	98.63
Singapore	1 271	0	0	0	1 271	100.00
Thailand	1 258	0	0	4	1 262	99.68
ASEAN-6	**8 043**	**182**	**0**	**39**	**8 264**	**97.33**
Cambodia	1 176	64	54	0	1 294	90.88
Lao PDR	1 256	15	0	0	1 271	98.82
Myanmar	1 268	3	23	0	1 294	97.99
Viet Nam	1 239	32	0	0	1 271	97.48
CLMV	**4 939**	**114**	**77**	**0**	**5 130**	**96.28**

Source: Compiled by the authors using data from the ASEAN Secretariat (www.asean.org/asean/asean-secretariat)

TABLE 4:

Comparison of MFN rate and the CEPT scheme (average rate) for agricultural products

Country	MFN average	CEPT average								
		2007	2008	2009	2010	2011	2012	2013	2014	2015
Brunei Darussalam	0.02	–	0.02	0.02	0.00	–	–	–	–	–
Cambodia	17.69	10.09	5.88	5.71	4.70	–	–	–	–	–
Indonesia	10.80	–	2.50	2.51	2.05	–	–	–	–	–
Lao PDR	19.06	–	9.97	4.28	3.87	3.37	2.62	2.12	1.56	0.04
Malaysia	3.15	–	1.20	–	–	–	–	–	–	–
Myanmar	9.21	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Philippines	–	–	3.35	3.35	1.78	–	–	–	–	–
Singapore	0.00	–	0.00	–	–	–	–	–	–	–
Thailand	25.57	1.52	1.52	1.42	0.05	–	–	–	–	–
Viet Nam	23.44	–	5.70	5.45	5.35	5.19	4.94	4.81	–	–

Source: Pasadilla 2006

However, despite a substantial cut in tariffs for most products, the same study also noted that there was some evidence of "tariff peaks" in AFTA, caused by particularly high tariff rates for certain agricultural products in the SL and HSL, including rice and sugar.[46] Because these products were regarded as some of the most important staple foods in the region that could be traded among ASEAN member states,[47] being put in the SL and HSL with substantially high tariffs could result in the overall effectiveness of the CEPT being compromised to promote freer trade of the main agricultural products in the region.

In addition to tariff reductions among member states, AFTA also attempted to achieve further trade liberalization by reducing other NTBs. However, the agreement did not include the issues of domestic support or export subsidies, as both of these issues were believed to be better handled at the WTO negotiations. This is because domestic support and subsidy measures are government measures that once implemented will affect not only ASEAN but also all of the WTO member countries.

In the next part of the paper, we will look at some empirical data on regional trade in order to explore the actual impact of AFTA on agricultural trade among ASEAN member states.

3.   AFTA implications for intra-agricultural trade in ASEAN

According to the data in Table 5, we can see the trade-oriented nature of ASEAN. The ratio of trade share to Gross Domestic Product (GDP) has been consistently more than 100 percent since the 1990s. Data in the same table also show that ASEAN trade with non-ASEAN countries continues to have a significant role in determining ASEAN's overall trade pattern. Despite a slight decline, the share of extra-ASEAN trade to total trade remains as high as 75 percent. This could imply that ASEAN economic integration is by nature an open regionalism, as the implementation of AFTA does not appear to have had any discriminating effects on trade with other regions.

Deeper exploration into the composition of the trade flows shows that trade in manufacturing products has always been a major part of the total trade share. On the other hand, the region's trade in agricultural products accounted for only about 5 percent of its total trade, at least during the period from 1995 to 2003 (Table 6).

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[46] For industrialized countries, tariffs of 15 percent and above are generally recognized as "tariff peaks". (Definition from Organisation for Economic Co-operation and Development Glossary of Statistical Terms).

[47]   As they include both the biggest rice producing countries such as Thailand and Viet Nam and the biggest rice importing countries such as the Philippines in the ASEAN region.

TABLE 5:

Share of international trade in the ASEAN economy 1998–2009

Indicator	Unit/Scale	1998	2000	2003	2007	2008	2009
Total trade	Value (USD million)	576 108	759 101	824 539	1 610 787	1 897 127	1 536 843
	Growth (y-o-y%)	-17.5	21.8	15.5	14.7	17.8	-19.0
Intra-ASEAN trade	Value (USD million)	120 918	166 846	206 732	401 920	470 112	376 207
	Growth (y-o-y%)	-19.4	25.8	29.3	13.9	17.0	-20.0
	Share of total trade (%)	21.0	22.0	25.1	25.0	24.8	24.5
Extra-ASEAN trade	Value (USD million)	455 190	592 255	617 807	1 208 867	1 427 015	1 160 636
	Growth (y-o-y%)	-17.0	20.7	11.5	14.9	18.0	-18.7
	Share of total trade (%)	79.0	78.0	74.9	75.0	75.2	75.5
Ratio to GDP	Share of trade to GDP (%)	119.9	126.8	114.8	123.5	125.4	102.7
	Export's share of GDP (%)	65.9	68.5	63.0	65.9	64.6	54.2
	Import's share of GDP (%)	54.0	58.3	51.8	57.6	60.8	48.5
Trade balance	Value (USD million)	57 194	61 180	80 575	108 820	57 946	84 135
	Exports (%)	18.1	14.9	17.8	12.7	5.9	10.4

Source: ASEAN trade statistics database as of September 2010 (www.asean.org/news/item/external-trade-statistics-3)

TABLE 6:

ASEAN trade in 1995, 2000 and 2003 (direction of ASEAN-6 trade)

Category	Imports			Exports			Percentage share of total trade		
	1995	2000	2003	1995	2000	2003	1995	2000	2003
A. ASEAN-6 Trade (USD million)									
ASEAN-6	53 244	72 511	75 393	69 518	87 634	88 476	20.23	29.25	29.61
ASEAN-10	54 900	75 237	79 140	74 994	94 047	96 504	21.41	30.92	31.74
Non-ASEAN	258 058	174 113	164 086	218 810	204 112	213 718	78.59	69.08	68.26
B. ASEAN-6 Agricultural Trade (USD million)									
ASEAN-6	2 997	2 792	4 097	4 021	3 909	5 101	1.16	1.22	1.66
ASEAN-10	3 536	3 292	4 523	5 224	4 767	6 003	1.44	1.47	1.90
Non-ASEAN	11 237	7 481	7 242	18 147	6 970	10 334	4.84	2.64	3.18

Note: Percentage share of the total trade means the sum between import and export in each category as a percentage of total trade of ASEAN in that particular year.

Source: United Nations Conference on Trade and Development Personal Computer Trade Analysis System (UNCTAD PC-TAS); Pasadilla 2006

During the same period of time, of the 5 percent of total agricultural trade of ASEAN, less than 2 percent was trade among the ASEAN member states; whereas 3 percent of the region's agricultural trade was with non-ASEAN trading partners. It should be noted that fats and oil, tobacco, sugars and cereals, including rice, were among the main agricultural commodities traded among ASEAN member states, as shown in Tables 7 and 8.

TABLE 7:

Total intra-ASEAN exports by HS paper product

(unit: 1 000 USD)

HS paper	Sector	1993*	1995	2000**	2003**
01	Live animals	75 826.6	180 060.6	138 058.4	97 757.1
02	Meat & edible meat offal	37 703.7	50 847.0	69 303.8	52 065.2
03	Fish	420 611.6	502 281.6	583 506.9	412 620.9
04	Dairy produce	71 411.4	136 325.5	224 886.7	328 747.0
05	Other animal products	1 934.4	2 677.5	12 910.8	12 345.3
06	Live trees	7 933.3	10 610.4	13 631.4	23 574.7
07	Edible vegetables	128 875.8	178 728.0	162 390.8	170 588.3
08	Edible fruit & nuts	112 055.2	172 457.0	235 178.2	166 800.8
09	Coffee, tea, spices	102 617.6	182 571.8	194 130.8	159 752.4
10	Cereals	251 472.6	525 877.2	372 437.4	509 932.3
11	Malt & wheat gluten	66 297.0	145 367.3	111 123.6	129 294.3
12	Seeds	62 228.6	68 770.9	64 358.1	62 702.3
13	Lac, gums & resins	16 974.8	19 547.4	14 183.6	15 993.6
14	Other vegetable products	9 736.1	12 566.0	7 451.2	6 602.5
15	Fats & oils	742 480.6	1 048 431.8	728 596.2	1 092 964.6
16	Prepared meat/fish	55 153.7	83 474.1	333 044.8	127 822.9
17	Sugars	150 628.5	331 547.9	153 656.9	516 732.0
18	Cocoa	102 586.8	192 863.3	194 440.9	405 086.3
19	Prep. cereals/flour/milk	121 537.6	187 474.6	249 338.1	415 632.2
20	Prep. vegetables/fruit/nuts	85 332.8	107 838.9	115 405.9	119 159.8
21	Misc. edible products	96 834.4	150 700.3	255 005.0	356 875.6
22	Beverages	151 988.6	220 954.8	288 598.0	439 948.5
23	Waste from food industry	68 472.3	74 029.3	120 736.9	208 949.2
24	Tobacco	334 785.3	641 580.2	749 301.6	656 939.2
Total exports		**43 681 091.9**	**70 178 879.9**	**95 267 541.1**	**100 318 802.9**
Total agricultural exports		**3 275 479.3**	**5 227 583.4**	**5 391 675.9**	**6 488 887.2**
Share of agricultural exports (%)		**7.50**	**7.45**	**5.66**	**6.47**

Notes: * Figures cover only Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand for the year 1993.

** Figures cover only Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore and Thailand for the years 2000 and 2003.

Source: Mangabat and Natividad 2007

TABLE 8:

Total intra-ASEAN imports by HS paper product

(unit: 1 000 USD)

HS paper	Sector	1993*	1995	2000**	2003**
01	Live animals	238 504.1	226 813.4	120 107.0	131 771.4
02	Meat & edible meat offal	36 617.3	35 384.7	27 893.1	32 779.5
03	Fish	320 044.0	409 416.3	401 122.0	543 126.1
04	Dairy produce	119 057.9	116 051.4	354 454.9	251 918.5
05	Other animal products	2 216.0	5 092.7	8 818.4	10 554.4
06	Live trees	34 136.8	44 433.6	37 724.3	35 519.5
07	Edible vegetables	108 214.4	128 960.5	148 733.9	150 073.5
08	Edible fruit & nuts	115 586.0	103 244.4	135 210.6	123 345.1
09	Coffee, tea, spices	100 595.4	173 969.3	197 541.0	106 727.2
10	Cereals	245 344.6	690 402.3	620 326.0	638 432.9
11	Malt & wheat gluten	60 263.9	152 896.7	107 633.4	119 933.6
12	Seeds	111 339.0	130 035.1	77 847.2	79 532.2
13	Lac, gums & resins	7 028.9	7 312.1	11 308.5	9 046.5
14	Other vegetable products	20 547.6	29 092.4	11 275.8	9 046.5
15	Fats & oils	715 872.1	667 089.9	433 544.2	711 921.4
16	Prepared meat/fish	51 292.4	56 126.7	102 525.4	93 737.7
17	Sugars	155 162.2	336 871.2	313 269.7	418 695.7
18	Cocoa	85 872.4	135 072.6	133 749.8	382 977.9
19	Prep. cereals/flour/milk	116 420.1	176 235.3	223 099.1	316 375.3
20	Prep. vegetables/fruit/nuts	84 254.3	82 359.0	63 897.5	78 347.1
21	Misc. edible products	79 039.8	126 575.9	190 357.8	337 531.7
22	Beverages	67 104.5	86 547.7	136 904.4	187 583.4
23	Waste from food industry	68 319.2	77 729.6	99 561.8	128 214.0
24	Tobacco	37 593.0	47 861.9	249 645.0	360 984.8
Total exports		**38 763 293.3**	**53 602 062.7**	**73 635 462.8**	**75 878 749.9**
Total agricultural exports		**2 980 498.6**	**4 045 574.7**	**4 206 550.9**	**5 266 007.1**
Share of agricultural exports (%)		**7.69**	**7.55**	**5.71**	**6.94**

Notes: * Figures cover only Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand for the year 1993.

** Figures cover only Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore and Thailand for the year 2000 and 2003.

Source: Mangabat and Natividad 2007

According to the data, from the implementation of AFTA until 2003, its impacts on agricultural trade within the region can be seen as minimal. It is not easy to weigh AFTA's impact on ASEAN's intra-agricultural trade from 2003 to the present because the tariffs of several main agricultural products that were placed in the SL by some ASEAN-6 countries were only reduced to 0–5 percent in 2010. In addition, some of

the main agricultural commodities, such as rice and sugar, were listed as highly sensitive by countries that are the largest importers of such commodities, namely the Philippines and Indonesia, which means that the products have even more flexibility both in terms of minimum rates and time frame for their tariff reductions. Such an exemption for the main agricultural products could be one explanation for the minimal impact of AFTA on intra-agricultural trade in ASEAN.

4.   AFTA and food security in ASEAN

This section of the paper will try to examine the implications of AFTA's impacts on intra-agricultural trade with respect to ASEAN's attempt to promote food security at the regional level. A few issues need to be considered, including some major concepts of food security, some background information on agricultural sectors in each ASEAN member state and related government policies. Other important agreements among ASEAN member states on food security issues will be examined briefly as well, and then some conclusions will be offered.

Food security: self-sufficiency versus self-reliance

Food security is an evolving concept that originated in the 1970s in response to the global food crisis at the time, and was focused on food supply – i.e. ensuring the availability and, to some degree, the price stability of basic foodstuffs at the international and national levels. After a few revisions and reports by international organizations such as the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme and the World Bank, the more recent definition of food security, defined at the World Food Summit in 1996, covers the demand side as well as the availability of food for vulnerable people. It is now generally accepted that food security exists "when all people, at all times, have physical, social and economic access to sufficient safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life." (FAO 2003).

With almost 870 million people worldwide chronically undernourished in 2010–2012, the total number of hungry people in the world remains unacceptably high. Of these, 65 percent (563 million) were living in the Asia-Pacific region. In Southeast Asia itself, the number of undernourished people has been declining steadily, from 134 million in 1990–1992 to 65 million in 2005–2007 (FAO 2012).[48]

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[48] FAO defines undernourishment as the condition of people whose dietary energy consumption is continuously below the minimum dietary energy required to maintain a healthy life and carry out light physical activity with an acceptable minimum body-weight for attained-height.

TABLE 9:

State of food insecurity in ASEAN

Region/ Subregion/ Country	Total popula-tion 2006–2008	Number of people undernourished							Proportion of undernourished in total population						
		1990–1992	1999–2001	2004–2006	2007–2009	2010–2012	Change so far	Progress towards WFS target**	1990–1992	1999–2001	2004–2006	2007–2009	2010–2012	Change so far	Progress towards MDG*** target
	millions	millions					%		percentage						
World	6 652.5	1 000	919	898	867	868	-13.2	▶	18.6	15.0	13.8	12.9	12.5	-32.8	(yellow)
Developed regions	1 231.3	20	18	13	15	16	na	na	1.9	1.6	1.2	1.3	1.4	na	na
Developing regions	5 420.2	980	901	885	852	852	-13.1	▶	23.2	18.3	16.8	15.5	14.9	-35.8	(yellow)
Southeast Asia	564.0	134	104	88	76	65	-51.2	▶*	29.6	20.0	15.8	13.2	10.9	-63.2	(green)
Cambodia	14.3	4	4	4	3	2	-37.8	▶	39.9	33.8	27.4	21.7	17.1	-57.1	(green)
Indonesia	224.7	37	38	34	28	21	-43.8	▶	19.9	17.8	15.1	11.9	8.6	-56.8	(green)
Lao PDR	6.1	2	2	2	2	2	-9.2	▶	44.6	39.5	33.4	29.4	27.8	-37.7	(yellow)
Malaysia	26.6	ns	ns	ns	ns	ns	na	na	<5	<5	<5	<5	<5	na	(green)
Philippines	88.7	15	16	15	14	16	5.4	◀	24.2	20.9	18.0	15.9	17.0	-29.8	(yellow)
Thailand	67.0	25	12	7	6	5	-79.8	▶*	43.8	19.6	11.2	9.5	7.3	-83.3	(green)
Viet Nam	86.1	32	17	13	11	8	-75.1	▶*	46.9	22.0	15.6	12.5	9.0	-80.8	(green)

Notes: The symbols and colour indicators show the progress that is projected to be achieved by year 2015, if current trends continue:
 ▶ Progress insufficient to reach the target if prevailing trends persist. (green) Target already met or expected to be met by 2015 or prevalence <5%.
na – not assessed/not applicable; ns – not statistically significant.
▶ Number reduced by more than 5%. ◀ Number increased by more than 5%. ▶* WFS target achieved.
** World Food Summit goal: between 1990–1992 and 2015 reduce the number of undernourished people by half.
*** Millennium Development Goal 1, target 1C: between 1990 and 2015 reduce the proportion of people who suffer from hunger by half.

Source: FAO 2012; population data are from FAO 2010

It should be noted that the interpretation of "food security" and the policy response to it varies for each ASEAN member state. This variation stems partly from the members' different stages of economic development. In general, low-income countries (Cambodia, Lao PDR and Myanmar) are more vulnerable to the possibility of food shortages, whereas high-income countries (Brunei Darussalam and Singapore) rely on trade to achieve food security as they are not sufficiently supplied by domestic agricultural production. The middle-income ASEAN countries (Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam), must confront the issue of how to secure low-priced food and at the same time keep farmers' income levels on par with those of urban workers (Bello 2005).

Differing demands for food security can explain why each country has different goals and why each pursues different policies to achieve a state of food security. On the one hand, a country can adopt a *self-sufficiency* approach, which means its policy tends to focus on having sufficient domestic production to feed the population. In general, a country with a self-sufficiency policy will not look to imports as a major source of domestic food supplies. Furthermore, it tends to favour small-scale enterprises for local food production and will support some simple and natural diets. On the other hand, a country can implement a policy based on the principle of *self-reliance*, which focuses more on the availability of various food items to meet the domestic demand. In the latter approach, international trade is generally considered essential to the food security strategy. Those who favour this approach normally support market liberalization and believe that food security involves generating enough foreign revenue from international trade as well as having access to the global market to purchase food (Chandra and Lontoh 2010).

Agricultural sectors in ASEAN

Despite the overall trend of a declining agricultural share of GDP in most ASEAN countries, the agricultural sector still plays an important role in the economies of some countries as a major employer of the total labour force, as illustrated in Table 10.

ASEAN countries in the table can be categorized into three groups, based on the criteria set by the World Bank in the World Development Report in 2008. The first group includes the agriculture-based countries, namely Cambodia, Lao PDR and Myanmar, whose agricultural sector accounts for 35 percent or more of the GDP. The second group, the transforming economies, consists of Indonesia, Malaysia, Philippines, Thailand and Viet Nam. The shares of agricultural sectors of these countries range from 10 to 21 percent of their GDPs, and seem to be steadily declining as a result of the expansion of the manufacturing and services sectors. The third group includes Brunei Darussalam and Singapore, whose agricultural shares in GDP are minimal, less than 1 percent of their GDP, because of their limited agricultural land.

TABLE 10:

Employment in agriculture (percentage of total employment)

Country/Year	1995	1998	2004	2006	2007
Brunei Darussalam	n/a	62.7	n/a	n/a	n/a
Cambodia	n/a	77.5	39.8	n/a	n/a
Indonesia	44.0	45.0	43.3	42.0	41.2
Lao PDR	85.4	n/a	n/a	n/a	n/a
Malaysia	20.0	18.8	14.6	14.6	14.8
Philippines	44.1	38.6	37.1	36.6	36.1
Myanmar	68.7	62.7	n/a	n/a	n/a
Singapore	0.2	0.9	0.8	1.3	1.1
Thailand	51.6	51.0	42.3	42.1	41.7
Viet Nam	n/a	64.8	57.9	n/a	n/a

Note: n/a – not available.

Source: www.nationmaster.com

TABLE 11:

Agriculture, value added (percentage of GDP)

Country/Year	1990*	1993	1995*	2006	2007	2008	2009
Brunei Darussalam	1.7	n/a	n/a	1	1	n/a	n/a
Cambodia	n/a	n/a	n/a	32	32	35	35
Indonesia	19.7	18.0	15.9	13	14	15	15
Lao PDR	n/a	n/a	n/a	35	36	35	n/a
Malaysia	19.4	16.0	13.9	9	10	10	10
Philippines	26.9	22.7	21.5	14	14	15	15
Myanmar	n/a	n/a	63**	n/a	n/a	n/a	n/a
Singapore	0.3	0.2	0.2	n/a	n/a	n/a	n/a
Thailand	14.2	12.2	10.9	11	11	12	12
Viet Nam	37.5	28.8	n/a	20	20	22	21

Notes: n/a – not available.

*Data in 1995 for Myanmar, Source: Asian Development Bank (www.adb.org)

**Data for 1990–1995, Source: ASEAN Secretariat (www.asean.org/asean/asean-secretariat)

Source: World Development Indicators (as of 15 Sept. 2011) (http://data.worldbank.org/data-catalog/world-development-indicators)

The majority of the labour force in the agriculture-based and transforming economies still works in the agricultural sector. Some are self-employed and doing petty jobs, sometimes unpaid labour for their family businesses, which cannot provide them with long-term financial stability.

Government policies on food security: the case of rice

This section explores government policies on food security in each ASEAN member state. The exploration will focus on rice, as it is one of the main staple foods, widely consumed by most households throughout the Southeast Asia region. The availability of rice to meet domestic demand is generally regarded as critical for achieving food security in this region. Table 12 suggests that rice is grown in most ASEAN countries.

TABLE 12:

Main agricultural products of ASEAN countries

Countries	Main agricultural products
Brunei Darussalam	Indigenous chicken meat, hens' eggs in shell
Cambodia	Rice, cassava
Indonesia	Rice, palm oil, natural rubber
Lao PDR	Rice, fresh vegetables
Malaysia	Palm oil, indigenous chicken meat, palm kernels
Myanmar	Rice, dry beans, indigenous chicken meat
Philippines	Rice, indigenous pig meat, bananas, coconuts, sugarcane
Singapore	Hens' eggs in shell, other birds' eggs in shell
Thailand	Rice, natural rubber, cassava, sugarcane
Viet Nam	Rice, indigenous pig meat, green coffee

Source: faostat.fao.org

However, Table 13 suggests that only a few countries, such as Thailand, Viet Nam and, to certain extent, Myanmar, seem able to consistently produce sufficient rice to feed their populations and sometimes have some excess for export. Indonesia is also a big rice producer but in some years its domestic production is insufficient and it needs to import more rice to meet domestic demand.

In Brunei Darussalam and Singapore, rice production is insignificant, so the policy for maintaining sufficient rice supply to meet domestic demand is straightforward: depend on importing rice from the global market. Malaysia and the Philippines are also rice-deficit countries, despite a considerable amount of rice production each year. Both Malaysia and the Philippines also need to import rice to meet domestic demand.

TABLE 13:

Cereal outlook in ASEAN in 2007

	Production (1)	Import quantity (2)	Stock variation*	Export quantity (3)	Domestic supply quantity (4)
	(1 000 tonnes)	(1 000 tonnes)	(1 000 tonnes)	(1 000 tonnes)	(1 000 tonnes)
Brunei Darussalam	1	330	12	0	343
Cambodia	5 010	82	-289	83	4 720
Indonesia	51 412	7 786	-2 874	293	56 031
Lao PDR	2 428	53	-444	23	2 014
Malaysia	1 667	6 156	-107	337	7 379
Myanmar	22 427	151	-1 667	573	20 338
Philippines	17 569	5 068	-1 946	46	20 645
Thailand	25 275	1 816	-1 393	10 065	15 633
Viet Nam	28 279	2 192	-1 263	4 651	24 557

Note: * Stock variation here is calculated by [(3)+(4)]-[(1)+(2)].

Source: faostat.fao.org

A look at government policies for food security in ASEAN shows that the issue has become increasingly important in most ASEAN member states. Yet when it comes to actual policy implementation, ASEAN governments cannot necessarily choose the most efficient options to achieve food security, given that there are other factors and policy goals that these governments might have to take into account. These goals may include avoiding vulnerability to increasing dependence on global access to food, maintaining the welfare of domestic rice farmers and/or maintaining food prices at an affordable level. Therefore, it is not surprising to see ASEAN governments tending to choose a mix of policy options to achieve food security.

For example, in response to the rising rice price in 2008, Malaysia, a rice-deficit country, chose to strengthen its rice-production capacity by growing large amounts of rice in Sarawak and encouraging some Malaysian private corporations to take up large-scale food-production ventures. Some questioned whether such a move by the government was economically worthwhile; however, it can be seen as an attempt by the Malaysian government to avoid depending too much on the international market to supply rice for its people (Lim 2009).

The Philippines is another rice-deficit country that cannot automatically resort to trade to become self-reliant in terms of rice. The government has to consider the effect on the domestic rice price, and hence on its rice farmers' welfare, if it were to open its market for rice imports. For these rice-deficit countries, the policies related

to food security can include reducing import tariffs, building up extra reserves, relaxing import restrictions, controlling prices via subsidies and/or promoting domestic production to achieve better self-sufficiency.

For Thailand and Viet Nam, the main rice exporters in the region, the policy options seem to be equally complicated. As much as the governments would like to earn foreign revenue by exporting rice, they also have to bear in mind that domestic rice farmers can be affected by rice price volatility in the global market. At the same time, they have to ensure that domestic rice consumers will not suffer from high rice prices or a rice supply shortage at home. A summary of policy measures taken by ASEAN governments to tackle the impact of a price spike in 2008 is shown in Table 14 below.

TABLE 14:

Policy measures taken by governments to reduce the impact of high prices

			Cambodia	Indonesia	Malaysia	Philippines	Thailand	Viet Nam
Consumer oriented	Tax	Taxes/Customs						
	Social	Food assistance						
		Food subsidies		✓		✓		
		Safety net and other						
	Market	Price controls		✓	✓			
		Release stocks	✓		✓		✓	
		Food procurement and other						
Producer oriented	Production support	Producer credit and other		✓	✓	✓		
	Market management	Minimum producer prices and other			✓	✓		
Trade oriented	Import	Import tariffs and other		✓				
	Export	Quantitative export controls	✓	✓				✓
		Export price control and tax measures		✓	✓	✓		

Source: FAO 2008

These various goals and policies on food security, when simultaneously implemented by the government of each country, can be far from complementary to each other at the regional level. For example, Viet Nam's decision to restrict rice exports during the food crisis in 2008 served to worsen the food shortage situation in food-importing countries, such as the Philippines. This suggested that ASEAN needed a more concrete cooperation plan to achieve regional food security. For this reason, ASEAN countries agreed on the ASEAN Integrated Food Security Framework and Strategic Plan of Action on Food Security in the ASEAN Region, the details of which will be elaborated, along with other ASEAN agreements on the food security issue, in the next sections of the paper.

Other ASEAN cooperation on food security

In addition to AFTA, ASEAN member states also have other agreements that aim directly at expanding their cooperation on promoting food security at the regional level. Some of these involve the cooperation of non-ASEAN members. The details of these agreements are elaborated in the following sections.

ASEAN Food Security Reserve (AFSR) Agreement and ASEAN Emergency Rice Reserve (AERR)

Since the 1970s it has been clear that the region is highly vulnerable to wide fluctuations in the production of basic foodstuffs and hence to instability of the region's food supply. This realization led the ASEAN ministers of foreign affairs to sign the AFSR in October 1979. This was the first agreement on food security among its members.

Under the AFSR, the AERR was established for emergency purposes, in case of unexpected fluctuations of domestic production and supply in any ASEAN member country. The reserve stock has increased to 87 000 tonnes of rice, as shown in Table 15. However, since implementation of the AERR, the reserve amount did not seem to increase enough to reach the level necessary to ensure food security in the region. Moreover, because of the insignificant volume of the rice reserve and the difficult

TABLE 15:

The ASEAN Emergency Rice Reserve System

Country	Reserved stock (metric tonnes)
Brunei Darussalam	3 000
Cambodia	3 000
Indonesia	12 000
Lao PDR	3 000
Malaysia	6 000
Myanmar	14 000
Philippines	12 000
Singapore	5 000
Thailand	15 000
Viet Nam	14 000
Total	**87 000**

Source: Bello 2005

request and delivery procedures, the reserve has never been utilized since its establishment (Dano 2007).

East Asia Emergency Rice Reserve (EAERR)

EAERR is a regional cooperation programme under ASEAN Plus Three. It is intended to provide food assistance and to strengthen food security in emergencies caused by disasters, and for poverty alleviation purposes.[49] Under this system, rice stocks are held mutually among the 13 countries, with the additional aim of supporting rice price stability in the region. Initially set up as a pilot project during the period 2004–2007, EAERR has been adopted as a permanent mechanism (ASEAN Secretariat 2009a).

A study by Dano (2007) made the observation that Japan, the major supporter of the EAERR, is actually the main beneficiary of the scheme. This is because it allows Japan to comply with its WTO commitment to liberalize its domestic market yet at the same time, by keeping rice stocks, to control the volume of rice in its domestic market, thus lessening the negative effects of increasing imports on its rice farmers. Another gain for Japan is its positive image among neighbouring countries, as the EAERR physical rice stocks stored in ASEAN member states can also be seen as Japan's rice food aid to other countries in cases of emergency (Dano 2007).

ASEAN Food Security Information System (AFSIS)

Another cooperative activity on the food security issue under the ASEAN Plus Three framework was the establishment of the AFSIS Project in 2002. The first phase of the project lasted five years, from 2003 to 2007. It was led and coordinated by Thailand, in particular, the Office of Agricultural Economics (OAE), Ministry of Agriculture and Cooperatives. The Statistics Department (SD), Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan was the donor through ASEAN Trust Funds.

The overall objectives of AFSIS are to facilitate food security planning, implementation, monitoring and evaluation in ASEAN through the systematic collection, organization, management, analysis and dissemination of food security data and information. There are four specific objectives as follows:

- to improve the capacity of human resources to develop and operate the AFSIS;

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[49] ASEAN Plus Three cooperation was an attempt to promote closer economic ties among ASEAN countries and China, Japan and Republic of Korea. In addition, ASEAN also tries to promote further economic integration in the region by including India, Australia and New Zealand, a cooperation known as the ASEAN Plus Six. However, apart from the EAERR mentioned here, no initiative under either ASEAN Plus Three or ASEAN Plus Six has directly touched upon the issue of promoting food security among the member countries.

- to improve the systems and methods of collection of food security information, including information on food production, imports and exports, market prices, consumption, stocks held by farmers and traders, and the crop growth situation in each country;

- to develop more reliable methodologies and techniques for estimating and forecasting the food supply-demand situation in the ASEAN region; and

- to develop an information network system to exchange and disseminate statistical data and information related to food security in the region in a timely manner.

Project activities focused on capacity building for the statistical personnel of all ASEAN member countries, especially with respect to human resources development and the development of information network systems.

As the end of the first phase of the project was approaching, the second phase of the project was prepared and endorsed by the AMAF + 3 Meeting in November 2007 in Bangkok. The second phase also has a duration of five years, from 2008 to 2012, with financial support from MAFF Japan. It continues the focus on strengthening food security in the region as well as continues the main activities of the first phase. Additional elements in the second phase include: early warning information, agricultural commodity outlook and mutual technical cooperation.[50]

ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS)[51]

In response to the recent developments of soaring food prices, the global financial crisis and an increasing concern about food security in the ASEAN region, ASEAN member states agreed in 2008 on the AIFS Framework and SPA-FS with the main goal of ensuring long-term food security and improving the livelihoods of farmers in the ASEAN region. The AIFS Framework and SPA-FS were adopted in 2009 and ASEAN leaders pledged to embrace food security as a matter of permanent and high-priority policy and to encourage partnerships with concerned institutions and agencies, dialogue partners and international organizations to pursue this important endeavour.[52]

The AIFS Framework and the SPA-FS can be seen as the latest attempt by ASEAN member states to come up with a comprehensive cooperation scheme that covers the most important aspects of food security. It adopts the food security

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[50] See more at AFSIS Web sites, http://afsis.oae.go.th/proj_bri.php and http://www.afsisnc.org/aboutus

[51] Information from ASEAN Secretariat (2008) (www.asean.org/asean/asean-secretariat)

[52] Information from ASEAN Secretariat (www.asean.org/asean/asean-secretariat)

definition of the World Food Summit in 1996, with an elaboration on three dimensions of the definition: 1) food availability, 2) food accessibility and 3) utilization. The Framework also states clearly that the initial priority commodities for food security for ASEAN include rice, maize, soybean, sugar and cassava.

FIGURE 1:

The components of AIFS framework

Component 1: Food security and emergency/shortage relief	**Component 2:** Sustainable food trade development
Strategic Thrust 1: Strengthen food security arrangements	**Strategic Thrust 2:** Promote conducive food market and trade
Component 3: Integrated food security information system	**Component 4:** Agricultural innovation
Strategic Thrust 3: Strengthen integrated food security information systems to effectively forecast, plan and monitor supplies and utilization for basic food commodities	**Strategic Thrust 4:** Promote sustainable food production **Strategic Thrust 5:** Encourage greater investment in food and agro-based industry to enhance food security **Strategic Thrust 6:** Identify and address emerging issues related to food security

Source: ASEAN Secretariat 2008

The AIFS Framework comprises four components supported by six corresponding Strategic Thrusts outlined in the SPA-FS. Each Thrust is supported by action programmes, activities, responsible agencies and work schedules, the details of which can be found in the appendix to the relevant ASEAN document.

The implementation of the AIFS Framework and the SPA-FS is through cost-sharing among the ASEAN member states, but they also receive additional financial and technical support from other partners and international organizations.[53]

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[53] Examples are FAO, World Bank, International Rice Research Institute, International Fund for Agricultural Development and Asian Development Bank.

5. Conclusion

As mentioned at the outset, the main objective of AFTA was to promote ASEAN as a single production unit to attract trade and investment from third parties into the ASEAN member countries. In this respect AFTA has succeeded to a certain extent. ASEAN trade with the world has grown significantly in the past decade. At the same time intra-ASEAN trade has grown at a slower rate, especially trade in agricultural products. To some extent this could be because most ASEAN member states are agriculture-based. However, rice, sugar, and fat and oils, which constitute main staple foods in ASEAN, are still considered products of high sensitivity in some ASEAN member states and are listed in the SL or HSL, to justify special treatment. Measures such as state trading and import quotas were used to help manage the flow of trade and to let the governments to control the market better.

As for the issue of food security in ASEAN, this paper has focused particularly on rice, because it is generally regarded as one of the most important staple foods in the region. Despite several cooperative mechanisms, at the time of the rice price crisis in 2008, there was evidence that ASEAN member states still relied on market mechanisms to build up their stockpiles to avoid domestic rice supply shortages, rather than on the cooperation agreements that provided stocks for emergency relief. Importing countries around the world stepped up imports far beyond their normal levels and some exporting countries imposed export controls to avoid domestic rice shortages. This sparked a rice crisis around the world. During this period, Thailand resisted strong domestic pressure to impose export controls, signaling that it was a reliable source of supply. As confidence returned to the market, exporters opened up their exports and importers slowed down their levels of imports, whereupon the crisis subsided and the market returned to normal.

It should be noted that in a globalized world a policy option taken by one country can have consequences for other countries around the world. One example can be seen in the case of border trade among Thailand and its neighbouring countries in the Southeast Asia region. Since a substantial number of agricultural products are sold and purchased at the borders of these countries, a policy intervention by one country can also send a price signal to farmers in other countries. For example, the launch of the new rice subsidy scheme in Thailand also signaled a higher price for rice not only in Thailand but also in Cambodia, Lao PDR and Viet Nam. Higher rice prices in Thailand would result in an influx of rice from neighbouring countries into Thailand through porous borders, which could lead to rising food prices in these neighbouring countries and possibly food shortage as an additional consequence. The contagious impact of a policy implemented in one country on the welfare of another country could be felt even more in the future when ASEAN countries move towards the completion of the ASEAN Economic Community in 2015. Trade can help to solve the problem of food insecurity by way of creating

greater opportunities for ASEAN members to procure food from around the world, including from within the region, but stronger cooperative efforts are still needed to enhance the sense of security among the populations of the member countries. In this respect, ASEAN should take a more serious look at how to manage a crisis in a time of food shortage. Closer coordination with other international organizations is also needed. Member countries have an important role to play to make this mechanism work successfully and there is a strengthened role for the ASEAN Secretariat.

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Trade agreements, food security and the Philippines: from import substitution industrialization to import substitution agriculture

Roehlano M. Briones

1. Introduction

Contrary to popular perception, the Philippines is no longer an "agricultural country". Nevertheless, agriculture remains a major source of livelihoods and supplies most of the food needed in the Philippines, which is the second most populous nation in Southeast Asia. Until recently the country was a net food exporter, i.e. total food exports exceeded total food imports (by value). Since 1988 the country has transitioned to a status of net food importer, i.e. total food imports exceed total food exports (by value).[54] This has created considerable policy tension over "food security", as the pursuit of economic gains from specialization and trade has magnified dependence on food sources outside the national territory.

Food trade is controversial in many countries. Pressure from anti-trade stakeholders has contributed to the impasse in trade negotiations in the World Trade Organization (WTO). The impetus towards market integration has been subsequently transmuted into various regional trade arrangements. In turn, these regional initiatives attract criticism similar to that raised against the expansion of international food trade, namely the dependence on foreign suppliers for satisfying domestic food needs. Although the Philippines has participated actively in both multilateral and regional trade agreements, it has met considerable internal resistance over its participation.

For the Philippines, the economic adjustment away from agriculture was initially driven in part by a policy bias favouring industry, which followed a strategy of import substitution industrialization (ISI). The recent protectionist backlash in favour of agriculture may be regarded as a parallel strategy of import substitution agriculture (ISA). The backlash has intensified following the food price crisis of 2008 that has induced policy-makers to set a goal of self-sufficiency for food staples by 2013. This paper aims to illuminate this debate on the food security impacts of the country's trade integration policies, as embodied in regional and multilateral trading agreements.

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[54] Data from FAOSTAT (faostat.fao.org)

The remainder of the paper is organized as follows: Section 2 provides a background of trends and patterns in Philippine agriculture; Section 3 discusses the policy environment affecting agriculture and food security, including trade policy in the context of international agreements; Section 4 evaluates the likely impacts of these trade agreements, based on a review of past studies, qualitative analysis of official statistics, and a scenario analysis based on the Agricultural Multi-market model for Policy Evaluation (AMPLE), a new supply-demand model of Philippine agriculture (Briones 2010); Section 5 concludes.

2. The state of Philippine food and agriculture

Salient features of the agricultural sector

The share of agriculture in Gross Domestic Product (GDP) declined gradually from 22 percent in 1990 to 17 percent in 2010 (Figure 1). Over the past two decades the share of manufacturing has been stable or has contracted slightly, whereas that of services has risen. Unlike its output share, agriculture had a fairly high employment share in 1990 (Figure 2), but this declined together with the output share, albeit at a much slower pace. Meanwhile, the share of services employment has climbed to nearly three-fifths by 2010.

FIGURE 1:

Shares in GDP by major sector 1990–2010, selected years, constant prices
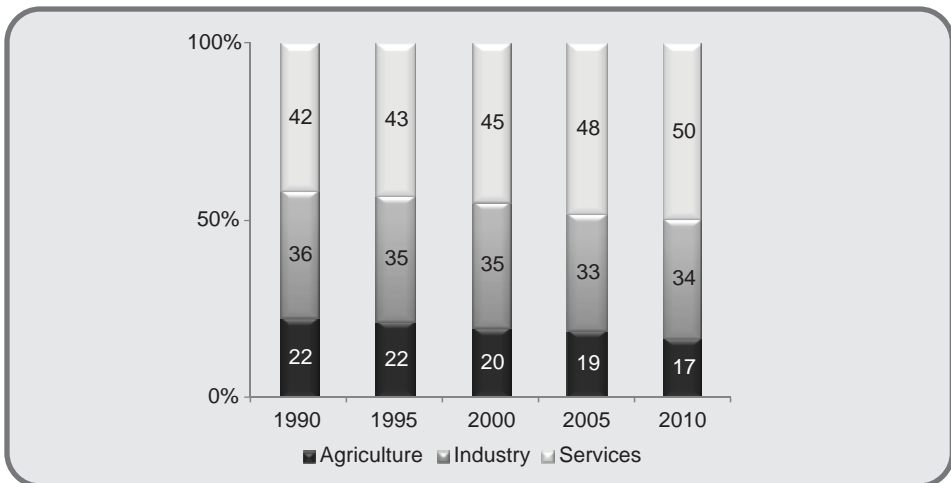
Source: National Statistical Coordination Board (NSCB) 2000, 2010

FIGURE 2:

Shares in total employment by sector 1990–2010, selected years, constant prices
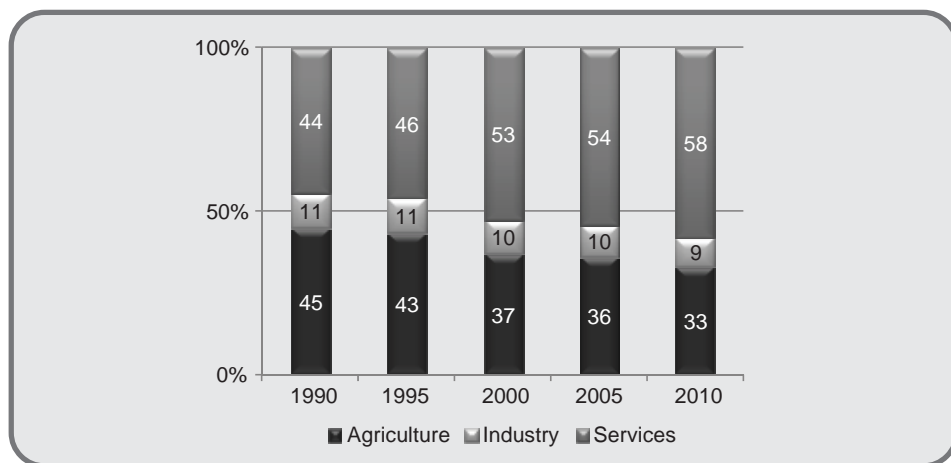
Source: NSCB 2000, 2010

TABLE 1:

Average annual growth of gross value added for agriculture and subsectors 1967–2010

	1967–1980	1981–1990	1991–2000	2001–2010
Paddy rice	4.5	2.6	3.9	2.7
Maize	6.0	3.5	0.1	3.4
Coconut	5.2	-4.6	0.6	3.9
Sugarcane	4.8	-1.6	3.9	0.0
Banana	13.6	-3.5	5.4	7.5
Other crops	7.2	1.5	1.1	1.3
Livestock	0.6	5.9	3.9	1.9
Poultry	8.0	6.5	5.5	3.3
Fishery	5.6	3.9	1.9	5.7
Total	4.0	1.2	1.9	3.1

Note: Latest estimate is from 2009.

Source: Bureau of Agricultural Statistics (BAS) 2011

The bulk of agricultural output still comes from crops, followed by fishery, with an almost equal share coming from livestock and poultry (Figure 3). Among crops, the top five accounted for 63.5 percent of gross value added (GVA) in 2010: rice, maize, coconut, banana and sugarcane (Figure 4). This exceeded the GVA share of the same crops in 1990, because of the expansion of rice and banana, offsetting the declines in sugarcane, coconut and maize. The trend in share defies the tendency for agriculture in developing Asia to diversify as it grows (Rosegrant and Hazell 2000).

FIGURE 3:

Shares in gross value added of agriculture, fisheries, and forestry, constant prices 2010
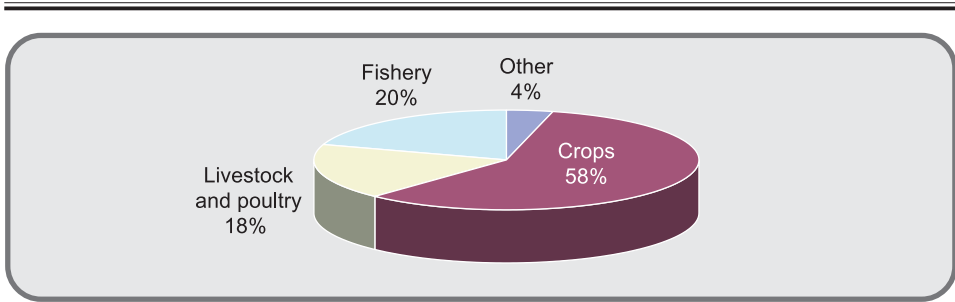
Source: BAS 2011

FIGURE 4:

Shares in gross value added of crops by type of crop 1990 and 2010, constant prices
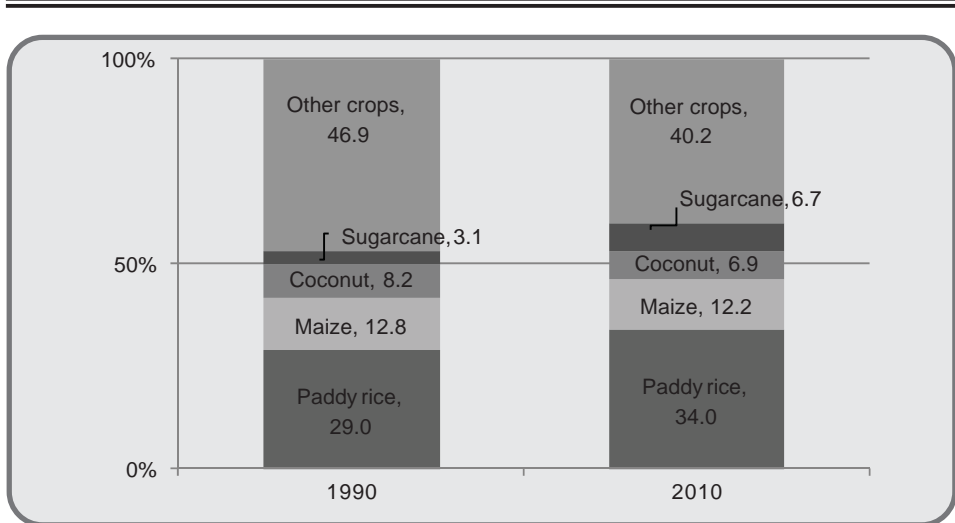
Source: BAS 2011

Based on area shares, the dominance of the major crops is even more pronounced. The four traditional crops – rice, maize, coconut and sugarcane – together account for 85 percent of total agricultural area harvested; rice accounts for over a third, whereas maize accounts for nearly a fifth. In terms of actual physical area the shares would be lower, of course, because of multiple cropping of rice and maize, but the pre-eminent position of the major cereals is quite undeniable. Data from BAS (2011) show that total physical area of agriculture in 2002 was 9.7 million hectares (ha), of which 50 percent was allocated to temporary crops, mostly rice and maize.

On the consumption side, Figure 5 shows trends in food energy intake per capita; this is a useful though admittedly one-dimensional indicator of national food availability. The country's per capita energy intake has been rising since the 1990s, approaching 2 600 kilocalories (kcal) per person by the late 2000s. This is still below the global average of about 2 800 kcal/person (as of 2007), but this is understandable, as per capita income in the Philippines is lower than the world average. According to the United Nations Development Programme (UNDP) (2011), the country's per capita income in 2009, adjusted for purchasing power parity is US$3 542, just over half of the global median. Per capita food energy intake ranges from 2 300 to 2 600 kcal/person for countries within the range of US$3 000 to US$4 000 income per capita (e.g. India, Indonesia, Mongolia).

FIGURE 5:

Per capita food energy intake 1990–2008 (kcal/person/yr)
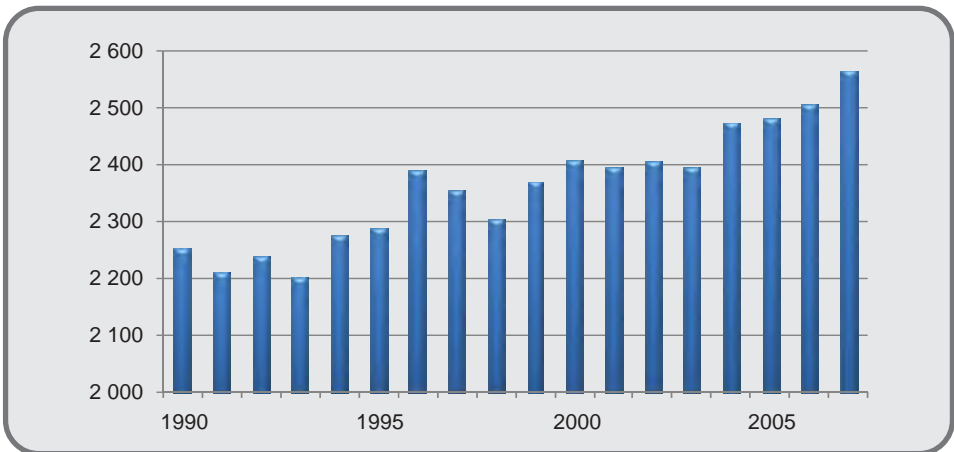
Source: FAOSTAT

A breakdown of consumption by item makes clear the dominance of rice in the Filipino diet (Table 2). In the Philippines, higher-income classes tend to consume more rice, and per capita income growth since 2000 has led to greater consumption of rice nationwide. This contrasts with household behaviour in Asia, in which rice appears to be an inferior good (Ito *et al*. 1989; Matriz *et al*. 2010; Timmer, Block and Dawe 2010). Other major foodstuffs have suffered a decline in per capita intake (maize, cassava, sweet potato), whereas chicken and milkfish consumption per capita has increased across income classes.

TABLE 2:

Per capita consumption of major food items in 2009-2010 (kg/yr) and change from 1999 to 2000 (%)

	All		Class A (upper)		Class B (middle)		Class C (lower)		Class E (Lowest)	
	Level	Change	Level	Change	Level	Change	Level	Change	Level	Change
Rice	119.1	12.6	118.6	12.1	122.6	8.1	121.4	15.2	111.4	14.7
Maize	7.1	-35.2	0.6	-94.8	2.2	-53.8	6.7	-41.6	13.4	-19.2
Sweet potato	4.1	-45.0	2.3	-69.0	3.4	-41.4	4.1	-49.3	4.8	-38.8
Cassava	3.1	-54.5	0.9	-86.4	1.9	-40.2	3.2	-57.0	4.3	-55.4
Pork	9.2	-18.5	18.1	61.1	13.9	-13.8	8.5	-21.2	5.1	-22.2
Chicken	7.9	5.5	15.5	108.3	11.9	8.1	7.3	3.7	4.4	5.0
Milkfish	4.2	47.3	9.6	234.5	6.9	58.9	3.7	41.3	1.9	16.3

Source: BAS 2011

To meet its rice demand, the Philippines has imported rice consistently (Dawe 2006). Self-sufficiency dropped from about 90 percent in 1990 to 84 percent by the mid-2000s, before recovering somewhat as a result of high world prices in the late 2000s (Table 3). Rising population and per capita intake have outpaced production growth, leading to a declining self-sufficiency ratio. Self-sufficiency in meat products declined over the period as well, but it was maintained for root crops and it even improved for maize.

The increasing reliance of the consumer on foreign suppliers for certain foodstuffs is partly the outcome of increasing trade and specialization (Figure 6). Exports have increased since the mid-1990s, doubling to over US$2 billion in 2010; however demand has been rising for commodities that are produced domestically at a higher relative cost compared with imports. Hence, imports have far outpaced exports, causing the food trade deficit to balloon to nearly US$4 billion by 2009, based on BAS data (2011).

TABLE 3:

Self-sufficiency ratios for major food items 1990–2009, selected years (%)

	1990	2000	2005	2010
Rice	91.0	92.7	84.0	86.7
Maize	93.4	91.0	98.7	97.1
Cassava	100.5	100.0	100.0	98.0
Sweet potato	100.0	100.0	100.0	100.0
Pork	99.9	97.4	97.8	94.9
Chicken, dressed	99.9	97.0	96.5	90.4

Note: Self-sufficiency ratio is the ratio of domestic production over domestic utilization.

Source: BAS 2011

FIGURE 6:

Exports (FOB) and imports (CIF) of food and live animals 1994–2009, in US$ millions
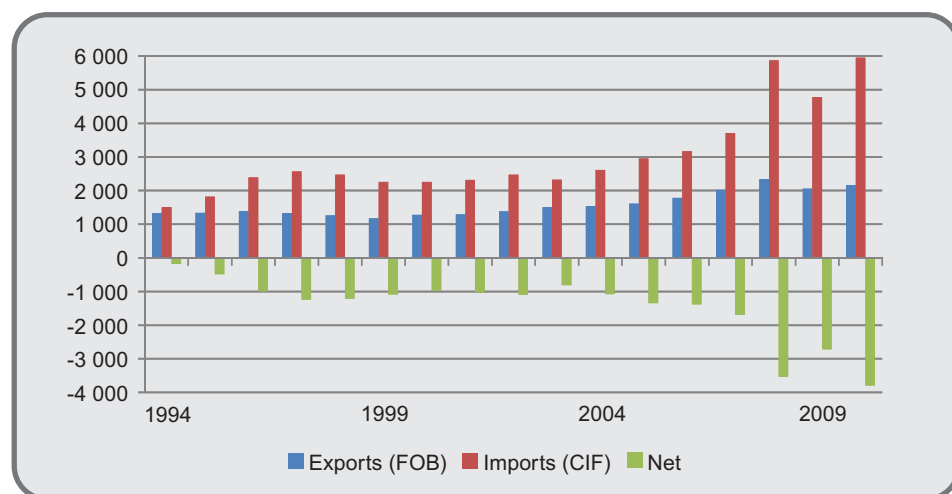
Source: BAS 2011

Household food security

National food availability is only one dimension of food security. Other dimensions are access and utilization at the household level. According to FAO (2009b), the share of undernourished persons in the population was 13 percent in 2005–2007, down from 24 percent in 1990–1992. Likewise, the prevalence of underweight children fell from 34.5 percent to 26.2 percent nationwide over the period 1990–2008. There

remains considerable room for improvement, however; accordingly, the Global Hunger Index rates the hunger situation in the country as "Serious" (von Grebmer *et al.* 2010).

As seen in Table 2, the breakdown of consumption by income class indicates the variation in food accessibility. Greater purchasing power of higher-income households is translated into higher levels of per capita intake of the main staple. Nevertheless, higher-income households spend proportionately less of their income on rice (Table 4). Conversely, lower-income households allocate a greater share of their income to rice; this renders poorer households especially vulnerable to price increases in rice, because of their low purchasing power.

TABLE 4:

Share of rice in total family expenditure by per capita income decile 2009 (%)

Decile	Share of rice
1	22.1
2	19.5
3	16.6
4	14.0
5	11.7
6	9.5
7	7.6
8	6.0
9	4.4
10	2.4
All households	7.8

Source: Asian Development Bank (ADB) 2010, using basic data from the Family Income and Expenditure Survey

Another dimension of the malnutrition problem is geographic (Table 5). The lowest prevalence of underweight children is observed in the relatively well-off regions, namely the National Capital Region and the Cordillera Autonomous Region. The highest prevalence is observed in underdeveloped regions such as the Autonomous Region in Muslim Mindanao and the Bicol region.

TABLE 5:

Prevalence of underweight children, aged 5 and below, 1990–2008, by region and selected years (%)

	1990	1996	2003	2005	2008
Philippines	34.5	30.8	26.9	24.6	26.2
National Capital Region	28.6	23.0	17.8	n/a	n/a
Cordillera Autonomous Region	24.8	27.9	16.3	n/a	n/a
Ilocos Region	35.2	26.0	28.9	n/a	n/a
Cagayan Valley	30.2	34.5	34.1	n/a	n/a
Central Luzon	28.0	25.3	21.7	n/a	n/a
Southern Tagalog	30.6	26.2	n/a	n/a	n/a
Bicol Region	41.3	37.6	32.8	n/a	n/a
Western Visayas	46.0	36.3	32.6	n/a	n/a
Central Visayas	40.7	32.2	29.4	n/a	n/a
Eastern Visayas	38.1	40.1	29.9	n/a	n/a
Western Mindanao	33.8	35.3	31.5	n/a	n/a
Northern Mindanao	31.0	31.5	24.3	n/a	n/a
Southern Mindanao	37.1	31.1	22.6	n/a	n/a
Central Mindanao	33.2	36.8	30.3	n/a	n/a
Caraga	n/a	34.4	30.2	n/a	n/a
Autonomous Region in Muslim Mindanao	31.3	29.7	34.0	n/a	n/a

Note: n/a – not available.

Source: NSCB 2011

3. The policy environment of Philippine agriculture

The country's policy environment for promoting agricultural development can be divided into market price support policies and other support policies, both of which are discussed below. The former are related to the economy and include measures such as exchange rate interventions, interest rate ceilings, taxation structure, and controls that raise or lower relative prices of imports and exports. Other support policies include measures conventionally associated with the promotion of agriculture financed by public spending, such as subsidy and capital formation. Lastly, we also cover policies related to land use and land reform.

Market price support

As noted earlier, the country's agricultural development was deeply influenced by its protectionist stance consistent with ISI, particularly in the 1950s and 1960s. The

peso was kept overvalued to maintain access to cheap imports for selected manufacturing sectors. Trade distortion intensified in the 1970s with the imposition of various trade monopolies and export taxes (David 2003).

Tariff cuts commenced in the early 1980s and the peso was devalued. Reform was unfortunately obscured by the economic crisis in 1983–1985, which culminated in the toppling of the authoritarian government. With the restoration of democracy in 1986, trade reform resumed: export monopolies and taxes were repealed, import quotas were relaxed or phased out, and tariffs were reduced. Nevertheless, another wave of protectionism gained momentum, this time in favour of agriculture. Peasant organizations, which had been instrumental in installing the new administration, assumed a more assertive role. The Magna Carta of Small Farmers of 1992 (RA 7607) reintroduced the regime of import restrictions. One may refer to this as the shift from ISI to ISA.

The hypothesis of rising protection for agriculture is supported by trends in the nominal rates of protection (Table 6). For all covered products, the average nominal protection rate (NPR) rose over the period 1990–2004. Protection increased sharply for rice and sugar but remained moderate for maize. As price pressures built up globally, the NPRs for cereals dropped, whereas for other crops NPRs actually rose by 2007 (not shown in Table 6). A strong sugar lobby ensures high domestic protection for sugar. Livestock and poultry producers with an interest in keeping maize prices low have opted to lobby for higher protection for their output (David, Intal and Balisacan 2009).

TABLE 6:

Nominal protection rates for agricultural products 1990–2007

	1990–1994	2000–2004	2007
Rice	20.9	50.7	27
Maize	62.6	54.5	32
Sugar	49.3	79.3	80
Beef	28.0	10.0	26
Pigs	25.1	-8.3	94
Chicken	56.5	52.1	27
All covered products	17.5	24.9	–

Note: In David, Intal and Balisacan 2009, the NPR is referred to as "nominal rate of assistance".

Sources: David, Intal and Balisacan (2009) for 1990–1994 and 2000–2004; Cororaton (2008) for 2007

In the case of rice, the primary instrument for protection is not tariffs but the import monopoly of the National Food Authority (NFA), enacted in the 1970s. The import monopoly becomes a de facto quantitative restriction on rice as the NFA determines annual imports based on anticipated domestic supply relative to demand. In recent years the NFA has shared import rights with private importers, initially with farmers' organizations and later with other commercial traders. However, determining the size of the quota and the allocation scheme remains the prerogative of the NFA.

Other support

In 1990, the Philippines government was struggling with both a balance of payments crisis and a gaping fiscal deficit. Government spending for agriculture accounted for just 3.3 percent of national spending, dipping to 2.7 percent by 1993 (Figure 7). Restoration of macroeconomic stability opened fiscal space for agriculture. Public outlays reached 30 billion pesos (2000 prices) in 1997, or nearly 5 percent of national spending. These levels would not be attained again until over a decade later.

FIGURE 7:

Public expenditures on agriculture (2000 prices) 1990–2010
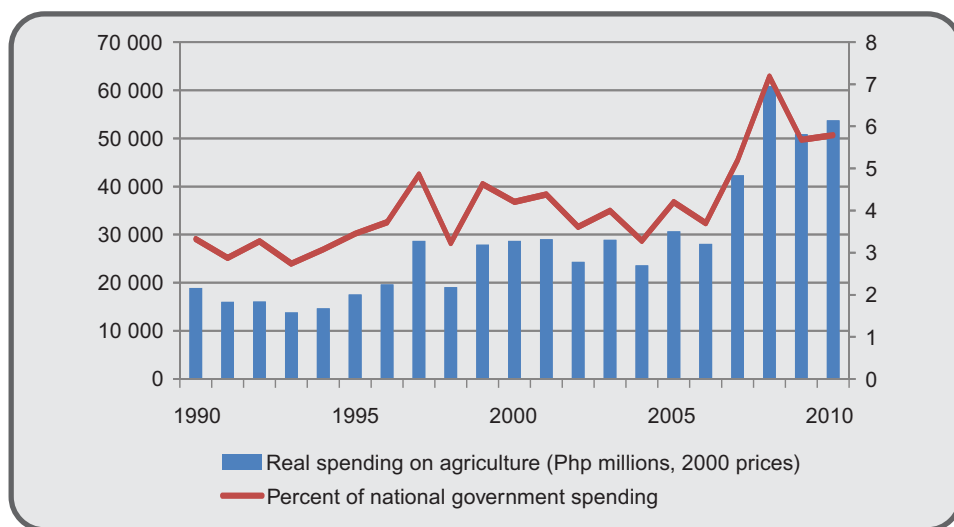
Source: BAS 2011

In 1997 another economic crisis constrained fiscal options and outlays for agriculture could not sustain the rising trend that had begun in 1993. The timing of the fiscal crunch was inauspicious, as the government had just passed a landmark piece of legislation known as the Agriculture and Fisheries Modernization Act (AFMA). The AFMA mandated a large additional outlay for agriculture but, as later observers

would lament, this went practically unfunded. Budgetary outlays would increase appreciably only a decade later, peaking at 60 billion pesos or over 7 percent of national spending in 2008.

Priorities for public spending on agriculture may be broadly categorized as follows (World Bank 2007):

- support for the market operations of the NFA;
- rice self-sufficiency; and
- production support, focused on subsidies and the provision of private goods, such as post-harvest equipment, agricultural machinery, fertilizers, seeds and credit.

Market operations of the NFA are almost exclusively devoted to rice procurement, mostly from abroad, along with the heavily subsidized sale of rice to consumers. These operations have been in perennial deficit, increasing the NFA debt to over US$4 billion (compared with the national budget for 2011 of about US$38 billion). On the other hand, the government has pursued rice self-sufficiency even in defiance of basic economic logic. The country is a high comparative-cost producer of rice, because of its inferior agroclimatic conditions relative to those of major rice exporters (Dawe 2006). Nevertheless, the bias for rice production was intensified with the price shock in 2008, leading to the implementation of the FIELDS programme (Fertilizer, Irrigation and other rural infrastructure, Extension and education, Loans, Dryers and other post-harvest facilities, and Seeds). The FIELDS programme ended in 2010, but its target of rice self-sufficiency by 2013 was carried over into the current flagship programme of the Department of Agriculture, the Food Staples Self-Sufficiency Road Map. Irrigation is currently the item receiving production support – and it is provided exclusively for rice-growing areas.

Production support has crowded out spending on services for more public benefit, such as research and development (R&D), extension and regulation (David 2003). Underinvestment in R&D in particular has been highlighted by several authors. Stads, Faylon, and Buendia (2007), for example, estimate the R&D intensity (ratio of R&D spending to agricultural GDP) to have been 0.46 in 2002, below the average (0.53) of all developing countries.

Aside from the choices for expenditure, the quality of services provided by expenditure programmes is also poor, because of weaknesses in the structure and capacity of the public sector (Habito *et al*. 2010). In the case of R&D, for instance, Gapasin (2006) notes gaps in the research, development and extension (RDE) system, including "the need to shift to demand-driven and market-oriented RDE; the highly complex, disperse and duplicating institutional arrangements and weak research-extension linkage … and the large human capital that needs to be reoriented to fit the shift towards market-oriented and demand-driven RDE" (p. 12). A series of evaluation studies on irrigation have shown a serious overestimation of benefits and

underestimation of costs for irrigation systems in the Philippines, particularly for the large national systems. This overestimation is attributed to an unanticipated decline in paddy prices, to an overoptimistic estimate of crop area served, to faulty design and to shortcomings in construction (David 2004).

Several reforms have been implemented since the 1990s to improve service delivery in agriculture. The first of these is the Local Government Code of 1991 that devolved agricultural extension and rural infrastructure provision and maintenance to local government units (LGUs). Consequently the role of LGUs in agricultural programmes has expanded considerably. National programmes have shown widespread willingness for LGUs to take the lead in consulting with affected communities, converging related services from different partners, and coordinating local plans and programmes. However, rural infrastructure has remained a critical gap in this devolution. Weaknesses in local planning, technical expertise and financial capacity have constrained LGUs from providing effective infrastructure (Esguerra 2006).

Meanwhile, reforms in agricultural credit have been pursued mainly through AFMA, which assigns a greater role for the private sector, prohibits credit provision by public agencies except government financial institutions, and promotes consolidation of agricultural programmes and adoption of market-determined interest rates. These reforms appear to have widened access to credit. According to small farmer surveys conducted by the Agricultural Credit Policy Council (ACPC), only 26 percent of farmers in the sample borrowed in 1991–1992 (Figure 8); of these, the majority borrowed from informal sources. By 2006, however, over half of the sample farmers borrowed, with the majority at that time relying on formal credit sources (ACPC 2011).

FIGURE 8:

Shares in the sample of small farmers by borrowing category 1991/92 and 2006/07 (%)
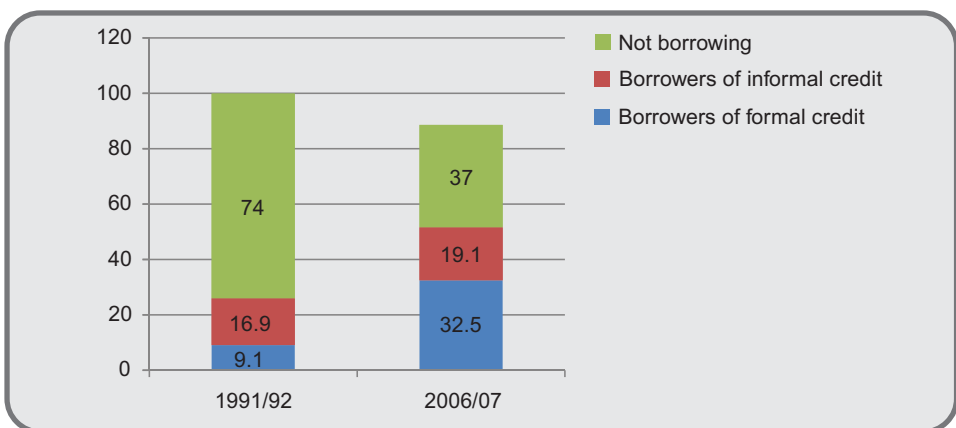
Source: ACPC 2011

Land policies

The defining agricultural land policy in the country is agrarian reform, of which the latest incarnation is the Comprehensive Agrarian Reform Programme (CARP), which began in 1988. CARP aims to promote social justice based on equitable distribution of land and to establish "owner-cultivatorship" as the basis of Philippine agriculture, and at the same time promote greater productivity of agricultural land. The original target of the programme was 8.2 million ha, of which 90 percent has been redistributed (Table 7). Notably of this target, only 3 million ha was actually private lands and the bulk consisted of government-owned lands (under the Department of Agrarian Reform or DAR) and public lands (administered by the Department of Environment and Natural Resources or DENR). The task of land reform is largely complete, with CARP now focused on pockets of private lands that have either resisted redistribution or whose ownership is poorly documented. The land reform programme, together with rapid population growth, has largely transformed the Philippine countryside into a smallholder system (landholdings of no more than 5 ha). Even large-scale plantation crops are mostly grown by small landowners, through various arrangements such as contract growing, lease agreement, or joint venture.

TABLE 7:

Target and accomplishment of the CARP as of end-2010

	Target	Accomplish-ment	Percentage of target
DAR			
Private agricultural lands	3 093 251	2 399 209	77.6
Non-private agricultural lands	1 335 106	1 803 816	135.1
DENR	3 771 411	3 194 293	84.7
Total	8 199 768	7 397 318	90.2

Notes:
1. Includes accomplishment under the extension phase of CARP from mid-2009.
2. Accomplishment may exceed 100 percent if the target scope underestimated the actual scope and accomplishment is sufficiently large as to exceed the target scope.

Source: DAR 2011

Trade agreements: the case of multilateral trade

As the agricultural protection movement gained ground in the early 1990s, the country embarked on the Uruguay Round of negotiations of the General Agreement on Tariffs and Trade. The Round culminated in the establishment of the WTO in 1994, and the Philippines joined in 1995. The WTO Agreement on Agriculture subjects Most Favoured Nation (MFN) tariffs to ceilings and a sets a timetable for reduction in

the ceilings. Members agreed to convert all quantitative restrictions into tariffs. The Agreement also provides, on a case-by-case basis, a minimum access volume (MAV) for a member's market, with tariffs for imports within the MAV (in-quota tariffs) bound at lower rates, compared with imports beyond the MAV (out-quota tariffs). Furthermore, each member may apply for special treatment for the primary staple. For the Philippines, the commodity under special treatment is rice, which remains under a tariff-rate quota as well as outright quantitative restriction.

David (1994) showed that for some key commodities the initial levels of bound tariffs (100 percent) were higher than the nominal protection rates. Even with reductions based on the commitment schedule, tariffs on agricultural products remain relatively high. By 2010, average tariffs for agricultural products were nearly double those for manufacturing because of the accelerated unilateral reductions for manufactured products (Table 8).

TABLE 8:

Weighted average of tariffs by sector, 1990–2010, selected years (%)

	Agriculture	Manufacturing
1990–1994	23.6	32.3
1995–1999	19.5	23.2
2000	16.6	18.7
2005	14.4	15.2
2010	11.9	6.2

Source: Tariff Commission (http://www.tariffcommission.gov.ph/trp.html)

The aggregation in Table 8 follows the standard practice of trade-weighting. A more detailed analysis is provided in Table 9. Based on the Association of Southeast Asian Nations (ASEAN) Harmonized Tariff Nomenclature (AHTN), the main lines are simplified as in the leftmost column. From the viewpoint of trade liberalization, the good news is that low tariff rates (1, 3, 5, 7 and 10 percent) cover the vast majority of agricultural products and moderate rates (15 and 20 percent) appear with relatively low frequency. Only a few products are listed under the high tariff rates.

The highest rate is 65 percent, for raw sugar; this is followed by rice and maize at 50 percent. The next tier is 40 percent, for major meat and vegetable imports, as well as cassava and coffee. The right-most column presents the cumulative share in output value by tier. The high tiers (40 percent tariff and above) account for as much as two-thirds of the value of agricultural output. The combination of rice, maize, and sugar accounts for over one-third. The products listed for the top tariff tiers are basically the same products that appear on the sensitive or even exclusion lists of the various regional trade agreements (RTAs), which are discussed in the next subsection.

TABLE 9:

Tariff tiers in percentage and corresponding product categories (AHTN), applied rates

Tiers (out-quota rate)	Product category	Cumulative percentage of output value
65	Raw sugar	3.0
50	Rice, maize	33.6
40	Pork, chicken, onion, cabbage, carrot, cassava, potato, coffee	65.6
25	Lettuce, broccoli, cauliflower	n/a
20	Assorted other vegetables	n/a
15	Assorted frozen fish products; fruits, groundnuts, pepper, oils	n/a
10, 7, 5, 3, 1	Other products	100.0

Notes: Output value is the average value of output (2008–2010) valued at 2000 prices; n/a – not available.

Source of basic data: Tariff Commission (www.tariffcommission.gov.ph) for tariffs; BAS (2011) for output

Trade agreements: the case of regional trade

Aside from the WTO, the Philippines has entered into seven RTAs, which are listed in Table 10. These agreements cover trade in goods towards the formation of free trade areas (FTAs); they also express general aims of cooperation in services and investment, as well as trade facilitation to reduce non-tariff barriers. ASEAN is clearly the hub of FTAs with neighbouring countries in Asia and the Pacific region.

TABLE 10:

Summary of regional trade agreements of the Philippines

Name of agreement	Acronym	Year established	Tariff reduction deadline
ASEAN Free Trade Area	AFTA	1992	2020
ASEAN-China Free Trade Area	ACFTA	2002	2018
ASEAN-Korea Free Trade Area	AKFTA	2005	2016
ASEAN-Japan Comprehensive Economic Partnership	AJCEP	2008	2018
Japan-Philippines Economic Partnership Agreement	JPEPA	2008	2018
ASEAN-India Free Trade Area	AIFTA	2010	2023
ASEAN-Australia and New Zealand Free Trade Area	AANZFTA	2010	2020

Source: http://www.asean.org/communities/asean-economic-community/category/free-trade-agreements-with-dialogue-partners

Tariff reduction programmes

The ASEAN Free Trade Area (AFTA) is the oldest FTA that the Philippines has joined. Under AFTA, the ASEAN countries agreed to implement a Common Effective Preferential Tariff (CEPT) of 0 to 5 percent. The CEPT defines an Inclusion List for fast-track elimination or reduction of tariffs. The ASEAN-6 (Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand) have already placed over 99 percent of tariff lines in this Inclusion List. Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV) were given more time to reach this target; by 2010, 46 percent of tariff lines in the Inclusion List for CLMV countries should be within this 0 to 5 percent tariff range. The AFTA also provides for a Sensitive List of commodities, which are given up to 2015 for inclusion in the CEPT. By 2015, tariffs on 98 to 100 percent of all tariff lines for all countries should be included (Tantraporn 2011). Finally, AFTA specifies a Highly Sensitive List of tariff lines, placed under a ceiling of up to 50 percent. For the Philippines, the tariffs on maize and sugar should fall to 5 percent by 2015, whereas the tariff on rice is kept at 35 percent.

The country has one bilateral free trade agreement (with Japan); negotiations are underway for trade agreements with the European Union, Pakistan and the United States of America. The Japan-Philippines Economic Partnership Agreement (JPEPA) provides for the removal of tariffs on 95 percent of Philippine exports to Japan by value, and over 90 percent of imported Japanese products are levied zero tariffs by the Philippines. As usual, agricultural commodities have remained a sensitive issue. Tariff elimination was deferred for more than half of Japan's imports of agricultural products. Excluded from elimination are tobacco, rice and rice-related products. However, many Filipino export items such as mango, coffee and beer were subject to zero tariffs immediately. Tariff elimination would take place over a period of five to ten years for products such as yellowfin tuna, skipjack and small banana. Meanwhile, the Philippines agreed to outright elimination of tariffs for crustaceans and for some fruits and nuts. It also agreed to reduce tariff rates to zero over a ten-year period for most agricultural products, including maize, sugar, vegetables and root crops (Medalla, Vidar-Vale and Balboa 2010).

The ASEAN-based regional agreements were initiated in 2002, with the launch of the ASEAN-China Free Trade Area (ACFTA).[55] Under ACFTA, average tariff levels have declined to 4.5 percent, compared with the MFN rate of 8.1 percent. The average tariffs in China for imports from ASEAN have fallen to 2.5 percent, compared with the MFN rate of 9.7 percent. The Philippines has negotiated both a Sensitive List and a Highly Sensitive List under ACFTA. Under the former, the tariff is reduced to 5 percent in 2018, whereas under the latter the tariff may be kept up to 50 percent

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[55] Discussion of ASEAN-based regional trade agreements draws heavily from www.dti.gov.ph as well as www.asean.org.

by 2015. Products with high MFN rates (rice, maize, sugar, some vegetables and root crops) fall under the Highly Sensitive List.

Similarly, the ASEAN-Korea Free Trade Area (AKFTA) requires the reduction or elimination of tariffs by 2010 under the normal track, and up to 2016 for tariff lines under the sensitive track. Both Republic of Korea and ASEAN-6 commit to reduce normal-track tariff lines to zero by 2010. Indonesia and the Philippines are given an extension up to 2012 to set zero tariffs for 10 percent of normal-track lines, whereas CLMV are accorded additional flexibility. The Philippines has included maize, vegetables and root crops under AKFTA, but has excluded rice and sugar.

The ASEAN-Japan Comprehensive Economic Partnership (AJCEP) provides for an FTA within ten years upon entry into force. This seems to overlap with the JPEPA; however, fewer tariff lines were offered for immediate tariff elimination under AJCEP compared with JPEPA.

Among the ASEAN dialogue partners, India has the highest rates of MFN tariffs. For the ASEAN-India Free Trade Area (AIFTA), the deadlines for tariff elimination have been pushed further back compared with the other FTAs (2014 for normal track 1, and 2017 for normal track 2). Tariffs on products in the Sensitive List would be eliminated by 2020–2023, and in the Highly Sensitive List by 2023. The Philippines was given greater leeway for tariff cuts: elimination is scheduled by 2019 for normal track 1, and by 2020 for normal track 2. The AIFTA is riddled with exclusions, largely as a result of sensitivities from the Indian side, although the usual exclusions from the Philippine side also apply. There is a provision for annual review of the exclusion list, however.

Among these agreements, the ASEAN-Australia-New Zealand Free Trade Area (AANZFTA) has the shortest timeline for tariff reduction: from 2009 to 2013, tariffs are to be eliminated for normal-track items. Sensitive List items are scheduled for elimination by 2015 or 2020. Under the Agreement, Australia and New Zealand commit to eliminate tariffs for all lines by 2020. The Philippines commits to eliminate 94.6 percent of tariff lines by 2020. Note that, on the side of Australia and New Zealand, MFN duties are mostly pegged at 0 percent (with a few at 5 percent or slightly higher).

Non-tariff barriers

The various regional agreements contain provisions on non-tariff barriers, generally reiterating the relevant WTO rules, with emphasis on the Agreement on Sanitary and Phytosanitary Measures (SPS Agreement). Under the SPS Agreement, members are required to harmonize their domestic SPS measures with international standards; in the case of food for example, these standards are codified in the Codex Alimentarius. Members may only apply more stringent standards based on scientific

evidence and risk assessment, and may not apply such standards in a way that unnecessarily restricts trade.

In practice, however, disputes have arisen because of the alleged trade-restricting SPS measures of some countries. For instance, the Philippines has filed a WTO dispute against Australia's import standards for fresh fruits and vegetables. At issue are Australia's quarantine measures described in www.dfat.gov.au/ba (Biosecurity Australia), such as mandatory de-crowning for pineapple and a number of requirements for importing fresh banana, ostensibly to prevent entry of plant pests and diseases such as moko, black sigatoka, freckle, mealybugs, armoured scales, spider mites and thrips. Banana growers have found these requirements too stringent; no permits have so far been issued. Quarantine requirements include:

- origin from areas with low pest prevalence;
- registration of export blocks;
- inspection of blocks and fruit, including by Australian Quarantine and Inspection Service (AQIS), application of quarantine conditions in the field, including packing houses;
- auditing and verification by AQIS of systems and processes used by the Philippines to certify any exports; and
- provision of detailed data and documentation by the Philippines for consideration by Australia prior to any exports to verify and validate quarantine measures supported by laboratory and field experiments and commercial trials.

4. Evaluating the impacts of trade agreements

Factors affecting the benefits from regional trade

The size of benefits from FTAs depends on a set of static and dynamic factors (Park and Estrada 2009). Static factors (and the patterns associated with greater benefits from FTA) include the following: size of FTA (larger size); initial size of trade within FTA (larger initial size); initial tariff structure within FTA (higher initial tariffs); substitutability of products between FTA members and non-members (more substitutable); evenness of economic development within FTA (more even); and proximity and transport networks (greater ease of transportation). Note that the significance of static factors may be affected by dynamic factors, as opening of new markets and wider market access improves competitiveness and spurs innovation. However, static factors are more easily quantified, and are invoked in the following discussion on the benefits of FTAs.

Cabalu and Alfonso (2007) apply shift-share analysis, which suggests that ASEAN trade shares increased post-AFTA but not at the expense of trade shares of non-ASEAN partners. From this result, they concluded that trade has been created rather than diverted. Trade shares are only one indicator of trade creation, however; the welfare impact of preferential trading agreements depends on a complex array of factors that make it difficult to isolate cause and effect (Broca 2011). A more quantitative approach attempts to evaluate these causal factors using econometric or trade simulation methods, which are discussed in the next subsection.

Past studies using quantitative modelling

An econometric approach to evaluating trade impact is taken by Calvo-Pardo, Freund and Ornelas (2009), who confirmed that the preferential tariffs under AFTA did increase trade within ASEAN. Incidentally, preferential tariffs also eroded the MFN tariffs of ASEAN countries, perhaps because of weakened lobbying by import-competing sectors, together with the attempt by governments to mitigate trade diversion.

For trade simulation a common approach is to use market equilibrium models. Javelosa and Schmitz (2006) apply a partial equilibrium model to analyse the impact of removing Australia's ban on banana imports from the Philippines. Their results indicate that removing the import ban would not only increase producer surplus of banana exporters in the Philippines, it would also raise economic welfare in Australia, as benefits from consumers more than offset losses to domestic banana growers. The size of the impact depends on the magnitude of the supply elasticity of Philippine bananas.

Computable general equilibrium (CGE) models have become a common tool for analysing the impacts of trade agreements *ex ante*. The earliest application of CGE modelling for the aforementioned FTAs is by Adams and Park (1995) for AFTA. The study finds that AFTA raises intraregional trade and is generally welfare-improving.

The JPEPA was likewise subjected to assessment using CGE (Cororaton 2004) on an *ex ante* basis. The scenario posits elimination of tariffs on manufacturing imports from Japan, together with an assumed 5 percent increase in prices of exports to Japan. The study finds that, whereas manufacturing expands, agriculture in the Philippines contracts. This is accomplished through exchange rate adjustment: as cost of production in domestic industry falls, the peso appreciates. Poverty levels decline, based on the usual measures (headcount, poverty gap, or squared poverty gap) for all households, as a result of declining relative prices and increasing factor incomes (Table 11). However, households in rural areas benefit least, urban households benefit more, and households in the national capital benefit most. The incidence of benefit does seem especially biased against the poor, as the magnitude

TABLE 11:

Changes in poverty measures based on trade simulation (percentage change from base)

	All households	National-capital households	Urban households	Rural households
Headcount	-0.9	-3.8	-1.4	-0.5
Poverty gap	-1.1	-3.2	-1.2	-1.0
Severity	-1.2	-3.4	-1.4	-1.1

Source: Cororaton 2004

of poverty is greatest among rural households and least among households in the national capital. The differences in the incidence of benefits are driven by the contraction of agriculture and the expansion of industry.

The ACFTA was likewise examined using a CGE model (Park, Park and Estrada 2009). From base year 2001, the study finds that agricultural production rises (average of 5 percent), even though total output of the Philippines declines slightly. Manufacturing of food preparations rises slightly, by 0.46 percent. The expansion of agriculture occurs despite a large 10.3 percent increase in imports, largely because of a massive 65 percent increase in agricultural exports. As in previous CGE studies, the impact on welfare is generally positive.

The foregoing studies cover existing FTAs. Potential FTAs for the Philippines have also been subjected to *ex ante* assessment using CGE models. The proposed FTA for ASEAN Plus Three (ASEAN plus People's Republic of China, Republic of Korea and Japan) has been analysed by Ando and Urata (2006). Output of the Philippines is expected to increase gradually by 1.9 percent, with both exports and imports rising by 13.1 percent and 21.6 percent, respectively. Welfare should increase for the Philippines, ASEAN and the ASEAN Plus Three. In per capita terms the benefits are modest (only US$2 per capita per year for the Philippines); however, with additional gains from capital accumulation (via investment flows) and reduced transaction costs (from trade facilitation and coordination), benefits can rise to US$34 per capita per year. These conclusions were supported by another CGE analysis for the same area by Mukhopadhyay and Thomassin (2008).

The possible bilateral FTA between the Philippines and the United States of America has been analysed by Rodriguez and Cabanilla (2006). The two scenarios most relevant to this paper are: 1) tariffs on United States imports are lifted; and 2) tariffs on United States imports are lifted except for agricultural products and food processing. The latter incorporates the usual exemptions of sensitive products from the FTA. In both cases they add a 1 percent increase in the price of exports to the

United States of America. Their analysis shows that, under either scenario, agricultural production and food-processing output generally rises. Output increases tend to be larger under the no-exemption scenario. In terms of welfare impact, gains are expected under either scenario; interestingly, welfare improvement of low-income households is slightly lower under a no-exemption scenario compared with the agriculture-exemption scenario (0.26 and 0.28 percent, respectively). This is understandable given that lower income groups may be drawing more of their livelihood from import-competing agriculture.

The foregoing discussion is based on a review of past research. In the following we present original analyses regarding the potential impacts of regional trade agreements, first based on a qualitative analysis focusing on size and trends in intra-FTA trade, and second based on a quantitative model of the agricultural sector adjusting to tariff adjustment resulting from trade agreements.

Assessing likely impacts based on direction of trade

Data on the direction of trade for food imports and exports of the Philippines are respectively shown in Table 12 and Table 13.[56] On the import side, clearly the dominant item is rice, followed by other cereals (e.g. wheat). The biggest source of imports is ASEAN (54 percent). This is because of the high dependence on ASEAN partners for rice as well as for miscellaneous edible preparations, oils, sugar and cereal products.

The other big sources of agricultural imports are other countries (35.3 percent), mostly from the European Union countries and the United States of America. China follows at 5.7 percent, with imports typically in the form of vegetables and fruits, as well as cotton. The other free trade partners are negligible sources of agricultural products. The table suggests that the largest increases in imports (in absolute terms) may result from reducing trade barriers for importing rice, oils, sugars, cereal products and food preparations from ASEAN. Next would be reducing trade barriers with China covering vegetables and fruits. Competitive pressures from imports on domestic producers would be greatest for rice, sugar and major vegetables, but they are excluded or remain protected under high trade barriers.

On the export side, top commodities from the Philippines are coconut oil and fruit (mainly banana and pineapple), followed by food preparations and fish. Philippine exports are mainly destined for markets in other countries, especially in the European Union and the United States of America. Among its free trade partners, the biggest share of exports goes to Japan, followed by ASEAN. Next to other countries, Japan

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[56] Attempts have been made to isolate as much as possible the edible products consolidated in Trademap. However, some edible products (such as coconut oil) may have chemical and industrial uses.

TABLE 12:

Food imports of the Philippines, average of 2008–2010, by commodity and source country (%)

	Share in total	Share in commodity, by source							
		ASEAN	China	Republic of Korea	Japan	India	Austra-lia	New Zealand	Other countries
All	100.0	54.3	5.7	0.7	0.6	0.8	2.0	0.5	35.5
Rice	38.9	93.6	0.2	0.0	0.0	0.2	0.0	0.0	5.9
Other cereals	17.6	0.9	0.7	0.0	0.0	0.1	5.8	0.0	92.5
Miscellaneous	11.8	46.9	6.5	1.4	1.5	0.8	0.9	0.3	41.6
Cereal products	5.5	42.3	2.4	0.6	0.3	0.4	3.7	5.6	44.8
Fats and oils	4.7	81.4	0.6	0.7	0.1	0.2	3.3	1.6	12.0
Sugar products	4.6	45.4	17.9	3.9	0.1	0.1	2.3	0.3	30.0
Fishery	3.6	13.9	22.8	6.1	9.6	0.1	0.2	0.3	47.0
Oilseed, etc.	3.3	24.7	4.7	0.2	1.8	9.5	3.3	0.3	55.4
Vegetable, etc.	2.6	21.2	22.6	0.2	0.1	0.1	1.6	0.8	53.3
Edible fruit, etc.	2.4	2.0	66.2	0.2	0.0	0.2	0.7	0.3	30.4
Others	4.9	40.9	11.0	0.1	0.1	4.3	3.8	0.7	39.2

Notes:
1. Average value of food imports for 2008–2010 was US$3 989 million
2. Complete commodity descriptors:
   - Rice — Rice
   - Other cereals — Other cereals
   - Miscellaneous — Miscellaneous edible preparations
   - Cereal products — Cereal, flour, starch, milk products
   - Fats and oils — Animal, vegetable fats and oils
   - Sugar products — Sugars and sugar confectionery
   - Fishery — Fish, crustaceans, molluscs, etc.
   - Oilseed, etc. — Oilseed, oleagic fruits, grain, etc.
   - Vegetable, etc. — Vegetable, fruit, nut, etc., food preparations
   - Edible fruit etc. — Edible fruit, nuts, peel of citrus, melons.

Source of basic data: www.trademap.org

imports the largest share of edible fruit as well as fishery items. Meanwhile, ASEAN is a major destination for coffee and assorted processed foods. Based on the direction of exports, the largest increases in exports (in absolute terms) may result from reducing trade barriers in importing countries and regions such as Japan, the European Union, and the United States of America, for edible fruit, coconut oil, meat and fishery products.

TABLE 13:

Food exports of the Philippines, average of 2008–2010, by commodity and destination country (%)

	Share in total	Share in commodity, by source							
		ASEAN	China	Republic of Korea	Japan	India	Austra-lia	New Zealand	Other countries
All	100.0	11.3	3.2	4.0	14.1	0.2	0.9	0.5	65.7
Coconut	30.7	3.3	5.4	0.6	5.1	0.4	0.0	0.0	85.2
Edible fruit, etc.	20.1	3.9	4.1	6.6	39.8	0.0	1.9	2.1	41.6
Vegetable, etc.	10.7	8.3	2.4	5.0	4.3	0.5	1.6	0.6	77.3
Meat	10.1	2.5	0.4	0.1	1.4	0.0	1.1	0.0	94.5
Fishery	9.7	7.7	1.8	2.5	26.8	0.0	0.2	0.0	61.0
Coffee	6.4	69.0	0.0	21.4	3.3	0.0	0.0	0.0	6.3
Sugar products	4.2	32.5	0.1	4.4	8.2	0.0	0.6	0.1	54.1
Cereal products	3.6	26.3	1.4	2.8	2.5	0.0	1.8	0.6	64.6
Miscellaneous	2.8	19.8	2.6	1.3	6.7	0.4	3.7	0.7	64.9
Oilseed, etc.	0.9	21.7	13.1	2.9	1.3	3.0	2.2	0.5	55.3
Others	0.9	16.6	2.6	2.2	55.6	0.5	1.0	0.1	21.3

Notes:
1. Average value of food exports for 2008–2010 was US$3 154 million
2. Complete commodity descriptors:

Coconut	Coconut, coconut oil
Edible fruit etc.	Edible fruit, nuts, peel of citrus, melons
Vegetable, etc.	Vegetable, fruit, nut, etc. preparations
Meat	Meat, fish and seafood preparations
Fishery	Fish, crustaceans, molluscs, etc.
Coffee	Coffee
Sugar products	Sugars and sugar confectionery
Cereal products	Cereal, flour, starch, milk products
Miscellaneous	Miscellaneous edible preparations
Oilseed, etc.	Oilseed, oleagic fruits, grain, etc.

Source of basic data: www.trademap.org

To examine changes in the direction of trade over time I selected the average of 2001–2003 as the base (2001 being the earliest year for Trademap data). I took the ratio of import (or export) share by country and commodity in the recent period over the same import (or export) share in the base period. The resulting ratios for imports and exports are shown respectively in Table 14 and Table 15.

TABLE 14:

Ratio of import shares by type of commodity and source, 2008–2010 and 2001–2003

	Ratio of shares in total	Ratio of shares in commodity, by source							
		ASEAN	China	Republic of Korea	Japan	India	Austra-lia	New Zealand	Other countries
All	1.0	2.2	0.7	0.9	1.2	0.1	0.4	0.4	0.7
Rice	3.2	1.4	0.2	0.0	na	0.0	0.0	na	0.5
Other cereals	0.5	1.6	0.1	4.3	15.5	0.0	2.7	0.0	1.2
Miscellaneous	0.9	1.1	3.5	2.7	1.4	1.2	0.4	1.3	0.8
Cereal products	0.8	1.0	0.4	0.9	0.9	1.9	0.3	1.2	1.3
Fats and oils	1.3	1.1	1.4	2.2	0.3	0.4	0.7	0.5	0.7
Sugar products	0.8	1.5	2.1	0.5	0.3	0.1	0.3	0.4	0.7
Fishery	1.0	0.6	3.0	2.2	1.8	0.2	0.9	0.1	0.8
Oilseed, etc.	0.4	3.0	0.4	1.0	1.5	4.5	2.1	5.9	0.7
Vegetable, etc.	0.7	2.7	1.3	0.6	0.1	0.3	0.2	0.1	0.9
Edible fruit, etc.	1.2	0.2	1.2	0.5	0.1	0.3	0.3	2.7	0.9
Others	0.5	2.3	0.5	0.3	0.5	1.5	0.2	0.5	1.2

Notes:
1. Complete commodity descriptors are found in Note 2 of Table 12.
2. Ratio of import shares is computed by taking the share by country and commodity in 2008–2010 over the same import share in the base period (2001–2003).
3. "na" or "not applicable" implies import share of zero in the base period.
Source of basic data: www.trademap.org

Among commodities, on the import side the share of rice has increased dramatically; other commodities show decreases in share, except for fats and oils, and edible fruit. On the export side, the overall share of coconut has increased, followed by meat, sugar and cereal products. The spectacular increase in coffee export share reflects its minuscule base in 2001–2003.

Next I considered the major trading partners. In the case of ASEAN, its total share in Philippine imports has more than doubled, increasing in particular for oilseeds, vegetables and rice. Likewise, the share of exports to ASEAN in total food exports has grown, which is impressive considering that the export share to ASEAN was already substantial (7.7 percent) in the base period. Both the import share from China and the export share to China have fallen; among the commodities, however, there has been a sharp increase in the export share of fish to China. Japan's share in Philippine food imports has increased, led by rising import share of cereals (other than rice and maize). However, Japan's overall share in Philippine food exports has declined. The total share of imports from other countries has fallen, whereas the export share has remained unchanged (the share ratio remains at 1.0).

TABLE 15:

Ratio of export shares by type of commodity and destination, 2008–2010 and 2001–2003

	Ratio of shares in total	Ratio of shares in commodity, by destination							
		ASEAN	China	Republic of Korea	Japan	India	Austra-lia	New Zealand	Other countries
All	1.0	1.5	0.9	1.1	0.7	2.9	1.5	1.6	1.0
Coconut	1.3	0.3	1.2	0.5	1.2	4.0	43.4	0.1	1.1
Edible fruit, etc.	0.8	3.4	0.5	1.0	0.9	0.0	1.8	1.9	1.2
Vegetable, etc.	0.9	17.4	na	na	na	na	na	na	0.8
Meat	1.6	0.2	0.8	0.3	0.2	13.3	3.0	6.4	1.1
Fishery	0.6	2.0	8.9	0.3	0.7	na	0.8	20.8	1.2
Coffee	774.5	4.1	na	13.7	na	na	0.0	na	0.1
Sugar products	1.1	1.5	0.1	2.4	1.9	1.2	2.5	16.7	0.8
Cereal products	1.1	0.6	1.3	1.6	0.8	0.1	1.5	3.8	1.3
Miscellaneous	1.0	1.3	3.1	1.4	0.4	0.9	1.3	2.9	1.1
Oilseed, etc.	0.4	2.4	1.5	0.4	0.2	25.1	1.0	1.0	0.8
Others	0.2	1.9	1.8	2.6	2.1	1.8	0.5	0.2	0.4

Notes:
1. Complete commodity descriptors are found in Note 2 of Table 13.
2. Ratio of export shares is computed by taking the share by country and commodity in 2008–2010 over the same export share in the base period (2001–2003).
3. "na" or "not applicable" implies import share of zero in the base period.

Source of basic data: www.trademap.org

For minor trading partners, improved access to Philippine markets from the various trade agreements has not been accompanied by rising shares of imports from these partners. However, improved access to markets of minor trading partners has been accompanied by rising export shares to these countries, particularly to Australia, India and New Zealand. Exports to Australia received a rapid increase from coconut; coconut has also played a major role in exports to India, although oilseeds and meat have also emerged as exports to that country.

Assessment based on market equilibrium analysis

Intra-FTA trade patterns and trends provide some indication of the expected impacts of FTAs. We expand on this analysis with simulations of trade policy impact using AMPLE, for which a detailed description is available in Briones (2010). Unlike a CGE model, AMPLE is a multimarket, partial equilibrium model confined to the agricultural sector. AMPLE is capable of projecting changes in production, consumption, exports, imports and prices for 18 agricultural subsectors (11 for crops, 3 for livestock, and

4 for fisheries). The baseline (a three-year average of annual data centred on 2008) is presented in Table 16.

One limitation of AMPLE is that imports are not distinguished by country of origin, so all tariff adjustments are MFN rate adjustments. To simulate the impact of a preferential tariff, I assume that each country of origin maintains a fixed share in the value of imports of a given commodity. Hence, the resource allocation effect of

TABLE 16:

Baseline data for AMPLE (average of 2007, 2008 and 2009)

	Quantities (thousand tonnes)				Prices (Pesos/kg)		Tariff rates (%)
	Imports	Exports	Pro-duction	Con-sump-tion	Pro-ducer price	Con-sumer price	
Rice	1 997.3	0.5	16 440.7	11 276.3	13.3	32.3	50
White maize	0.0	0.0	2 366.2	1 919.0	10.9	18.2	na
Yellow maize	159.3	1.1	4 533.5	0.0	10.3	–	50
Coconut	0.0	1 615.0	15 280.0	842.2	4.5	81.6	na
Sugarcane	0.0	246.0	23 923.2	2 016.3	1.9	33.5	65
Banana	0.0	2 018.6	8 395.0	5 993.7	8.8	15.1	–
Mango	0.0	22.5	893.1	818.4	20.7	57.1	–
Other fruit	0.0	257.5	2 339.3	1 956.8	5.6	70.4	7
Cassava	0.0	0.9	1 952.1	526.7	5.3	6.6	40
Vegetables	130.4	8.6	1 171.1	1 195.7	15.6	41.5	15
Poultry	48.5	3.8	1 189.3	1 234.0	108.8	112.4	40
Swine	74.2	0.0	1 617.1	1 691.3	92.3	153.1	40
Other livestock	45.4	0.0	184.0	229.4	94.4	199.3	9
Freshwater fish	0.0	0.0	484.1	469.4	52.5	80.5	–
Brackishwater fish	1.1	7.8	302.1	202.7	374.6	135.8	15
Seaweed	0.0	25.5	1 637.2	0.0	1 164.6	–	–
Marine fish	3.6	7.2	2 496.0	1 618.8	28.8	82.4	6

Notes:
1. The zero imports under sugarcane follow the practice in the supply and utilization accounts of BAS.
2. The residual category "other crops" is omitted.
3. Importers have been given 100 percent tariff subsidy since 2008; however, the MFN tariff is maintained as having an equivalent effect to the rice import quota.
4. na – not applicable.

Source: Author's calculations

a preferential tariff can be approximated by some reduction in the MFN rate.[57] Care should be exercised in interpreting the results, as a straightforward application of preferential rate adjustment to MFN rate adjustment would overestimate the effects of the former. Meanwhile, to model increased market access for Philippine exports some equivalent export price shock (as exemplified in some of the CGE literature) may be applied.

In defining the scenarios, I define commodities as "sensitive" if the baseline MFN rate is 30 percent or higher. The scenarios are as follows:

Scenario I: halving of tariffs on non-sensitive commodities, with a 1 percent increase in export prices across the board; this represents the conventional type of RTA in which sensitive commodities are typically excluded, and limited leeway is given in terms of market access.

Scenario II: halving of tariffs on non-sensitive commodities, reduction of tariffs on sensitive commodities to 30 percent, with an increase of 5 percent in export prices; this represents a more radical type of RTA in which sensitive commodities are included and reciprocal gains in market access are extended.

Results of Scenario I (conventional RTA) are shown in Table 17. (Note that import or export responses may be exaggerated by the small values in the baseline.) Imports of non-sensitive commodities all show an increase. Non-sensitive commodities (except fish) also show increases in consumption. Major exports – coconut, sugar, banana and mango – show substantial increases, as well as concomitant increases in production; output of other non-sensitive commodities also responds positively. There are minor adjustments in the output of sensitive products, with a decline observed for maize, sugar and poultry, as a result of multisectoral reallocation.

Results of Scenario II (radical RTA) are shown in Table 18. As expected, the changes are far more dramatic compared with those in Scenario I, with some effects even reversing direction. The major export items, namely coconut, banana and mango (except other fruit) all post a sharp export response, with concomitant increases in production and export price; however consumption falls with the increase in consumer prices. Yellow maize is among the commodities that undergo a surge in imports, together with a decline in output and producer price. As swine and poultry are sensitive products, tariff reduction tends to raise pork and chicken imports; this

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[57] This may be rationalized as follows: there is a representative consumer in the importing country, with a preference for the imported commodity distinguished by country of origin. Furthermore, this preference follows a Cobb-Douglas utility function. From these assumptions, fixed import shares may be directly inferred.

TABLE 17:

Results of Scenario I, in percentage change from the baseline

	Imports	Exports	Pro-duction	Producer price	Con-sumption	Consumer price
Rice	0.8	0.1	0.1	0.2	0.3	0.1
White maize	–	–	-0.5	-2.7	-0.5	-2.7
Yellow maize	-1.9	0.7	-0.2	-0.5	–	–
Coconut	–	1.8	0.8	0.8	-1.0	0.4
Sugar	–	0.3	-0.2	-3.0	-0.2	-3.3
Banana	–	2.4	0.3	0.6	-0.3	0.5
Mango	–	1.8	0.6	0.8	0.6	0.7
Other fruit	0.0	0.0	0.0	0.0	0.0	0.0
Cassava	–	-7.8	5.5	7.0	6.8	7.1
Vegetables	1.6	-1.2	0.8	1.0	0.9	0.4
Poultry	-1.1	0.9	-0.3	-0.6	-0.3	-0.6
Swine	0.5	–	0.1	0.2	0.1	0.2
Other livestock	6.4	–	0.2	0.4	1.1	-0.2
Freshwater fish	–	–	-0.5	-1.7	-0.5	-1.7
Brackishwater fish	6.1	-1.0	-1.4	-2.8	-1.4	-3.0
Seaweed	–	0.5	0.5	1.0	–	–
Marine fish	5.2	-1.1	0.4	0.8	1.1	0.8

Note: '–' denotes a negligible quantity set to zero in the model baseline data.

Source: Author's calculations

tendency is partially offset by the boost in domestic production (and contraction of pork and chicken imports) resulting from availability of cheaper imported feed. The increase in imports for animal products is substantial but not as large as for the import crops.

The shift to cheaper imported maize feed is not favourable for the cassava industry, despite the increase in exports (from their small levels in the baseline). Production and producer price both decline, together with the consumer price, and consumption falls, perhaps as a result of substitution effects.

The adjustments for rice demonstrate the opportunities and problems arising from radical RTAs. For this crop, the import surge is greatest, at 35 percent. Consumers enjoy a sharp decline of 8 percent in the consumer price; hence, consumption increases by 6 percent. However, imports also crowd out domestic production (which declines by 4 percent) and the prices received by farmers fall by 5 percent. This explains the vociferous opposition of farmers to reducing trade barriers

TABLE 18:

Results of Scenario II, in percentage change from the baseline

	Imports	Exports	Pro-duction	Producer price	Con-sumption	Consumer price
Rice	34.9	-3.9	-4.4	-4.9	6.3	-7.6
White maize	–	–	-0.4	-2.1	-0.4	-2.1
Yellow maize	22.7	13.5	-3.1	-7.6	–	–
Coconut	–	9.2	3.7	3.9	-6.1	1.9
Sugar	–	0.4	0.1	1.7	0.1	1.5
Banana	–	9.2	1.9	3.6	-0.2	3.1
Mango	–	17.4	1.7	2.0	0.6	1.8
Other fruit	0.0	0.6	-0.1	-0.1	-0.7	-0.3
Cassava	–	10.0	-6.2	-7.7	-7.4	-7.8
Vegetables	2.6	-2.4	1.6	2.0	1.7	1.4
Poultry	8.9	1.4	-0.5	-0.9	-0.4	-1.0
Swine	14.0	–	-0.3	-0.7	-0.2	-0.8
Other livestock	-4.0	–	-2.6	-5.2	-2.8	-5.0
Freshwater fish	–	–	1.2	3.9	1.2	3.9
Brackishwater fish	23.3	1.7	1.5	3.1	1.6	3.0
Seaweed	–	2.5	2.5	5.0	–	–
Marine fish	5.8	-1.5	0.5	1.0	1.4	1.0

Note: '–' denotes a negligible quantity set to zero in the model baseline data.

Source: Author's calculations

on rice imports, objecting on the basis of food security, narrowly equated with food self-sufficiency. However, what is given up by the existing policy is significant improvement in access to food for the poor, i.e. a sacrifice of food security in its broader sense.

5. Conclusion

Stakeholders and policy-makers in the Philippines generally agree that food self-sufficiency and food security are equivalent. Recent trends in market volatility, especially the world price crisis affecting rice in 2008, have provided further motivation towards self-sufficiency in food staples. However, the self-sufficiency policy has proven to be costly. High nominal protection rates imply that, for the most part, rice consumers in the country are paying a premium over the world price. Moreover, public spending on agriculture is concentrated on costly rice subsidy and irrigation development programmes. Agricultural resources are trapped in the production of

traditional crops, constraining diversification into activities that would yield greater returns to farmers, and for which prospects for global competition are more promising. Ironically, the high cost of food and the moribund farm livelihoods caused by the food self-sufficiency policy are inimical to both short-term and long-term food security at the household level.

The country needs to embrace global markets as a path towards achieving food security. Ideally, this would be pursued through multilateral trade liberalization; however, WTO negotiations have stalled. Considering the heavily politicized nature of these negotiations, as a practical matter multilateral trade liberalization may have to be accomplished through bottom-up expansion of RTAs, in which the Philippines has been quite active.

Import and export linkages are significant for some FTA partners and, in general, trade linkages have been increasing for most free trade partners in recent years. Increasing trade cannot be attributed solely to the establishment of an FTA but it is likely that the FTAs provide a healthy business climate for promoting trends in market expansion. Among the current RTAs, integration with ASEAN, China, and Japan appear to offer the biggest gains, as do proposed FTAs with the European Union and the United States of America.

Nevertheless, residual protection in domestic policy is typically carried over into various exception clauses in RTAs and so the effect on agricultural trade is likely to be muted. As shown by multimarket analysis, one explanation for persistent protection is the contraction effect on import-competing subsectors caused by deeper liberalization. Reform should therefore be accompanied by appropriate safety measures to offset losses to producers as a result of global competition, as well as to defuse political resistance to lowering trade barriers. With such measures in place, agricultural trade policy in the Philippines may actively embrace regional and multilateral trade agreements as indirect yet powerful instruments for promoting household food security.

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4

The China-ASEAN Free Trade Area and its influence on Chinese agriculture

Zhang Xiaowan

1.   Introduction

The Chinese government envisions free trade agreements (FTAs) as new opportunities to open up the economy to the outside, to speed up domestic reforms, to promote integration into the global economy and to strengthen economic cooperation with other economies. By the end of 2011, a total of ten FTAs had been signed and had come into effect. In Asia, China and the Association of Southeast Asian Nations (ASEAN 10) signed the Agreement on Trade in Goods (July, 2005), the Agreement on Trade in Services (July, 2007) and the Agreement on Investment (October, 2009); China and Pakistan signed an FTA (July, 2007) and the Agreement on Trade in Services (October, 2009); China and Singapore signed an FTA (covering goods, services and investment, January, 2009). In Latin America, China and Chile signed an FTA (October, 2006) and the Agreement on Trade in Services (August, 2010); China and Peru signed an FTA (covering goods, services and investment, March, 2010); and China and Costa Rica signed an FTA (covering goods, services and investment, August, 2011). In the South Pacific region, China and New Zealand signed an FTA (covering goods, services and investment, October, 2008). Moreover, the Central Government of China signed the Closer Economic Partnership Arrangement (covering goods, services and investment, June and October, 2003) and its Supplements (I–VIII, signed from 2004 to 2011) with the Government of Hong Kong Special Administrative Region and with the Government of Macao Special Administrative Region. Negotiations are still underway between China and the Gulf Cooperation Council (including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) and between China and Australia, China and Iceland, China and Norway, and China and Switzerland. China and India have already completed joint research on a Regional Trade Arrangement, and China and the Republic of Korea have completed joint research on an FTA. China, Japan and the Republic of Korea are undertaking joint government, industry and academic research on an FTA. In addition to all these, China also joined the Asia-Pacific Trade Agreement (see Table 1).

TABLE 1:

Free trade agreements already signed by the People's Republic of China (December, 2011)

Partner countries	Agreement names	Coverage	Date of signature	Date of entry into force
China and ASEAN (10)	Free Trade Agreement	Goods and cooperation	November 2004	July 2005
	Agreement on Trade in Services	Services	January 2007	July 2007
	Agreement on Investment	Investment	August 2009	October 2009
China and Bangladesh, India, Lao People's Democratic Republic, Republic of Korea, Sri Lanka	Asia-Pacific Trade Agreement*	Goods	November 2005	September 2006
China and Chile	Free Trade Agreement	Goods and cooperation	November 2005	October 2006
	Agreement on Trade in Services	Services	April 2008	August 2010
China and Pakistan	Free Trade Agreement	Goods and investment	November 2006	July 2007
	Agreement on Trade in Services	Services	February 2009	October 2009
China and New Zealand	Free Trade Agreement	Goods, services and investment	April 2008	October 2008
China and Singapore	Free Trade Agreement	Goods, services and investment	October 2008	January 2009
China and Peru	Free Trade Agreement	Goods, services and investment	April 2009	March 2010
China and Costa Rica	Free Trade Agreement	Goods, services and investment	April 2010	August 2011

Note: * The full name is First Agreement on Trade Negotiations among Developing Member Countries of the Economic and Social Commission for Asia and the Pacific. Formerly called the Bangkok Agreement and signed in July, 1975 in Bangkok by Bangladesh, India, Lao People's Democratic Republic, the Philippines, Republic of Korea, Sri Lanka and Thailand, it was the only reciprocal tariff agreement among developing countries in the Asia-Pacific region. China entered the Agreement in May, 2001. All members agreed to renew the text of the Agreement in November, 2005 and changed its name to Asia-Pacific Trade Agreement. Members at present include Bangladesh, China, India, Lao People's Democratic Republic, Republic of Korea and Sri Lanka, and they will implement tariff reductions agreed in the third round of negotiations after members finish their internal legal procedures of approval.

Source: Author's compilation based on various sources from the Government of China

ASEAN consists of ten member states, with a total area of 4.48 million square kilometres, of which only 14 percent is arable land. It has a population of 576 million people and a total Gross Domestic Product (GDP) of US$1 506.2 billion (World Bank 2011). Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand are the original ASEAN members (ASEAN-6); the economies of these countries are further developed than the economies of the newer members, Cambodia, Lao PDR, Myanmar and Viet Nam.

Agriculture plays an important role in the GDP of ASEAN members. Table 2 shows that the share of added value of agriculture in GDP in Indonesia, Malaysia, the Philippines and Thailand is about 10 percent to 18 percent, and the share of rural population in these countries is about 29 percent to 66 percent. The newer members are traditional agricultural countries. Their share of added value of agriculture is around 35 percent except in the case of Viet Nam. Rural population accounts for about 70 percent to 80 percent of the population (see Table 2).

TABLE 2:

National economy and agricultural economy in ASEAN members 2010

Members	Population (10 000)	Rural population (10 000)	Share of rural areas (%)	GDP (US$100 million)	GDP per capita (US$)	Added value of agriculture (US$100 million)	Share of added value of agriculture in GDP (%)
Brunei Darussalam	40.7	10.2	25	107.3	26 852	1.1	1.0
Cambodia	1 413.9	1 102.8	78	113.4	802	39.7	35.0
Indonesia	23 000.0	10 810.0	47	7 065.6	3 039	854.9	12.1
Lao PDR	643.6	437.6	68	74.9	1 164	26.2	35.0
Malaysia	2 791.4	809.5	29	2 378.0	8 519	237.8	10.0
Myanmar	5 049.6	3 383.2	67	n/a	n/a	n/a	n/a
Philippines	9 361.7	3 183.0	34	1 995.9	2 132	355.3	17.8
Singapore	514.0	n/a	n/a	2 227.0	43 324	n/a	n/a
Thailand	6 813.9	4 497.2	66	3 188.5	4 679	382.6	12.0
Viet Nam	8 836.2	6 362.1	72	1 035.8	1 172	217.5	21.0

Note: n/a – not available.
Source: Compiled by the author using statistics available from http://data.worldbank.org

Exports of agricultural products from ASEAN to China are primarily from four members, Indonesia, Malaysia, Thailand and Viet Nam, and account for 85 percent of the total ASEAN agricultural trade with China. These countries have the advantage of agricultural resources and competitive agricultural prices. Their agricultural exports account for more than 90 percent of ASEAN's total agricultural exports. Because

Brunei Darussalam and Singapore lack the land resources suitable for agricultural production, the percentage of the workforce engaged in agriculture and that sector's contribution to GDP are less than 1 percent. These countries import almost all of their agricultural products. The newer ASEAN members have rich arable land and great potential for agricultural development, but agricultural trade volumes are still small (see Table 3).

TABLE 3:

Agricultural trade values of ASEAN members 2010

Unit: US$ million

Members		Import	Export
ASEAN-6	Brunei Darussalam	n/a	n/a
	Indonesia	13 280	25 860
	Malaysia	13 380	23 180
	Philippines	6 870	3 960
	Singapore	10 450	7 720
	Thailand	10 040	26 690
Newer ASEAN members	Cambodia	350	90
	Lao PDR	n/a	n/a
	Myanmar	n/a	n/a
	Viet Nam	6 180	12 200

Note: n/a – not available.
Source: COMTRADE

A comparison of China's tariffs on agricultural products with those of ASEAN members, not including specific duties, reveals that the simple average Most Favoured Nation (MFN) tariffs in 2003 were (in descending order) as follows: Thailand, 30.6 percent; Viet Nam, 21.9 percent; Cambodia, 20.7 percent; Lao PDR, 18.7 percent; the Philippines, 13.1 percent; Indonesia, 9.0 percent; Malaysia, 8.3 percent; Brunei Darussalam and Singapore, 0 percent (see Table 4). ASEAN members also have a number of tariff-rate quota (TRQ) products. For Thailand, there are TRQs for potatoes, onions, garlic, tea, corn and rice. An additional 23 agricultural products are also subject to tariff quota management with a low in-quota tariff, but a high out-of-quota tariff. For instance, the in-quota tariff for imported corn is 20 percent whereas the out-of-quota tariff is 73.8 percent. Malaysia subjects 19 imported livestock products, vegetables and other agricultural products to tariff quota management, with out-of-quota tariffs of 160 percent.

In addition, the ASEAN countries lack a unified set of standards for both sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT). The

TABLE 4:

Agricultural tariff rates structure of ASEAN members 2003

	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam
MFN (%)	0	20.7	9.0	18.7	4.1	8.3	13.1	0	30.6	21.9
0		3.3	13.7	0	63.7	6.9	0		2.9	13.3
0 < 5		0	77.3	30.8	10.4	50.0	45.5		12.0	16.3
5 < 10		36.7	0	0	0	0	22.4		3.7	0
10 < 15		0	3.1	18.9	6.6	1.8	12.9		7.3	13.9
15 < 20		20.1	1.0	0	2.5	37.5	0		0	0
20+		39.9	4.3	49.9	10.7	3.8	19.0		67.6	47.6

Source: World tariff profiles (www.wto.org)

existence of different quarantine inspection measures and technical standards results in barriers to agricultural exports from China to ASEAN.

Although the multilateral system of international trade is developing slowly, through the Doha Round negotiations in the World Trade Organization (WTO), regional trade cooperation is booming. ASEAN-China economic and trade relations became closer following the Asian financial crisis. It was against this background that China and ASEAN started to discuss regional economic and trade cooperation, establishing the ASEAN-China Free Trade Area (ACFTA).

The Framework Agreement on Comprehensive Economic Co-operation ("the Framework Agreement") between ASEAN and China was signed on 4 November 2002 and the Early Harvest Programme (EHP) was signed in 2003 and implemented on 1 January 2004. The Agreement on Trade in Goods was signed in November 2004 and implemented in July 2005. Starting from this date, both sides implemented zero tariffs on more than 7 000 goods at the HS[58] 6-digit Code. Starting from 1 January 2010, 90 percent of the total goods traded between China and ASEAN-6 (Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore and Thailand) were to have zero tariffs. China's tariff rates on goods from ASEAN were to decrease from 9.8 percent to 0.1 percent. The newer ASEAN member states – Cambodia, Lao PDR, Myanmar and Viet Nam – agreed to implement zero tariffs on 90 percent of their trade by 2015.

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[58] Short for International Convention for Harmonized Commodity Description and Coding System.

The Agreement on Trade in Services of the Framework Agreement was signed in January 2007 and implementation began in July 2007. In the first package of the Agreement, 12 sectors in ASEAN committed to open further to each other, with more liberalizing offers than those made in the Doha Round negotiations.[59] In China, five sectors committed to further opening, including commercial services, construction, environmental protection, physical culture and transportation. According to the provisions of the Agreement, the two sides were to start negotiating a second package of specific commitments when the Agreement entered into force. On 28 November 2011, they signed the Protocol on Enforcement of the Second Package of Specific Commitments under the Agreement of Trade in Services, which entered into force on 1 January 2012, after each country completed its internal legal procedures. Compared with the first package, China made adjustments in such sectors as commercial services, telecommunication, construction, distribution, finance, tourism and transportation, based on China's commitments to the WTO. Meanwhile, ASEAN members have covered more sectors in the second package, which are more open than their commitments to the WTO, and many of their offers are more preferential than those made in the WTO Doha Round negotiations.

The negotiation on the Agreement on Investment of the Framework Agreement was completed in November 2008; the Agreement was signed in August 2009 and implemented in October 2009. By 1 January 2010, implementation of ACFTA was completed as planned. This was the first FTA that China had ever signed and it covers an area with a population of 1.9 billion people, a GDP of US$6 trillion and international trade valued at US$4.5 trillion.

2. Agriculture in China: production and policies

Overview of the agricultural sector in China

China is a major developing agricultural country with a population of 1.335 billion. Of this number, 713 million live in rural areas; the total rural labour pool amounts to 500 million people (NSBC 2010). Although China's economy has been growing rapidly, its overall development level is still low. Agriculture is still of great importance

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[59] These offers were as follows: Singapore: commercial services, distribution, finance, entertainment, sports, leisure services, insurance, engineering, advertisement, non-armed security services, civil aviation and highway transportation. Malaysia: commercial services and transportation. Thailand: presence of natural persons, construction and engineering, Chinese education, medical care tourism and catering, and maritime cargo handling. The Philippines: energy, commercial services, construction and engineering and tourism. Brunei Darussalam: tourism and transportation. Indonesia: construction, engineering, tourism and energy services. Cambodia, Myanmar and Viet Nam: same as the WTO commitments for commercial services, telecommunication, construction, finance, tourism and transportation. Lao People's Democratic Republic: banking and insurance.

to the national economy and plays a crucial role in ensuring national food security, security of farmers' livelihoods, rural employment and social stability. In 2002, agricultural production accounted for 13.7 percent of GDP and 50 percent of the national labour force. By 2010, agricultural production accounted for 10.2 percent of China's GDP and 36.7 percent of jobs in the country. Chinese agricultural exports accounted for 3.1 percent of total exports, and agricultural imports accounted for 5.2 percent of total imports (see Table 5). The agricultural output consisted of 58.4 percent crops, 4.3 percent forestry, 24.7 percent livestock, 9.6 percent fishery and 2.9 percent services.

TABLE 5:

Agriculture's contribution to China's national economy 1980–2010

Unit: percent

Year	Share of agriculture in the GDP	Share of agricultural employment in total employment	Share of rural off-farm employment in total employment	Share of rural retail sales of consumer goods in total sales	Share of agriculture imports in total imports	Share of agriculture exports in total exports
1980	30.2	68.7	4.8	65.7	32.4	24.2
1985	28.4	62.4	13.5	56.5	12.1	24.5
1990	27.1	60.1	13.4	53.1	16.1	17.2
1995	20.0	52.2	18.7	40.0	9.3	9.4
2000	15.1	50.0	21.0	38.2	5.0	6.3
2001	14.4	50.0	21.6	37.4	4.9	6.0
2002	13.7	50.0	22.4	35.8	4.2	5.6
2003	12.8	49.1	23.8	35.0	4.6	4.7
2004	13.4	46.9	25.4	34.1	5.0	3.9
2005	12.1	44.7	26.9	32.8	4.3	3.6
2006	11.1	42.6	32.2	32.5	4.1	3.2
2007	10.8	40.8	32.4	32.3	4.3	3.0
2008	10.7	39.6	30.5	32.0	5.1	2.8
2009	10.6	38.1	31.5	32.8	5.2	3.3
2010	10.2	36.7	31.5	31.9	5.2	3.1

Source: NSBC 2011

Climate

The complex and diverse climate conditions in China are a result of its vast territory, unique geographical position, topography and geomorphology. In northeast and northwest China, the annual accumulated temperature ranges from 2 500 °C to

3 500 ºC and generally there is one crop a year. In the north China plain and the northern parts of the middle and lower reaches along the Yangtze river, the annual accumulated temperature ranges from 4 000 ºC to 5 000 ºC and farmers usually harvest two crops a year or three crops every two years. In the southern parts of the middle and lower reaches along the Yangtze river, annual accumulated temperature ranges from 5 000 ºC to 7 000 ºC and farmers grow three crops a year, on average. In the southern parts of the Nanling mountains, the annual accumulated temperature ranges from to 7 000 ºC to 8 000 ºC and crops may grow all year round.

Operation system

In 1978, as China began to implement reform and a policy of opening up, a household responsibility contract system was adopted in rural areas. Under the condition that rural land should be always owned by farmers' collectives, a two-tier scheme, combining centralized management and decentralized management on the basis of a household contract responsibility system, was gradually established as the fundamental rural operation system of China. This scheme has given farmers greater freedom to make decisions regarding production and management. In China, agricultural production is predominantly family-based, with an average farm size of only 0.5 hectare, because agricultural resources per capita are very limited – for example, farmland per capita is less than 0.1 hectare (see Figure 1) and water resources per capita are only one fourth of the world average.

FIGURE 1:

Changes of per capita average cultivated land in China over 30 years

Unit: hectare per person
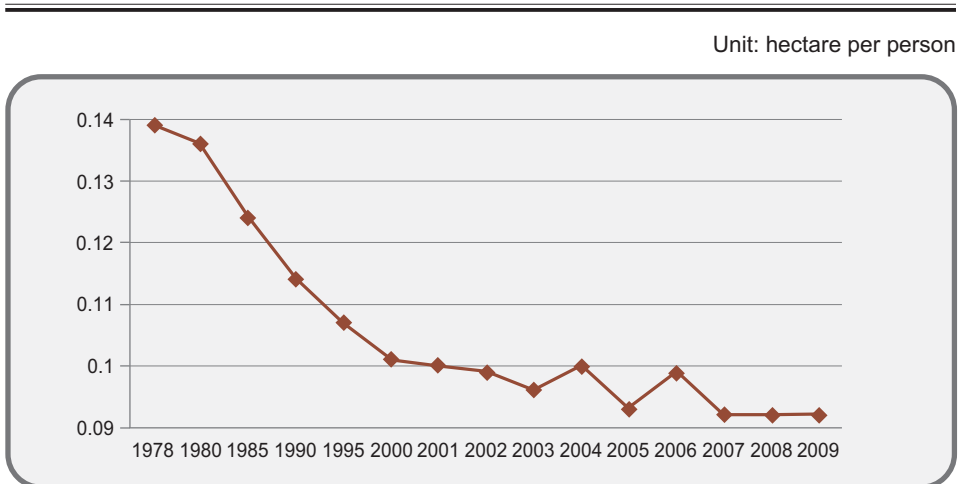
Source: NSBC 2010

Production and income

Agricultural productivity has steadily improved since 1978. The outputs of grain and cash crops have increased significantly; animal husbandry and aquaculture have also developed quickly (see Figures 2, 3 and 4). China has largely solved the problem of domestic food security through its own efforts and has brought about comprehensive development of its agricultural sector. China has made progress in its efforts to increase farmers' incomes, reduce poverty and promote rural economic development. Since the mid-1990s, the pattern of supply and demand for agricultural products has undergone a historic change: long-term shortages of the past have evolved to fluctuations within a narrow range, close to basic self-sufficiency for most commodities.

FIGURE 2:

National outputs of grain production in China 1949–2010

Unit: 10 000 metric tonnes
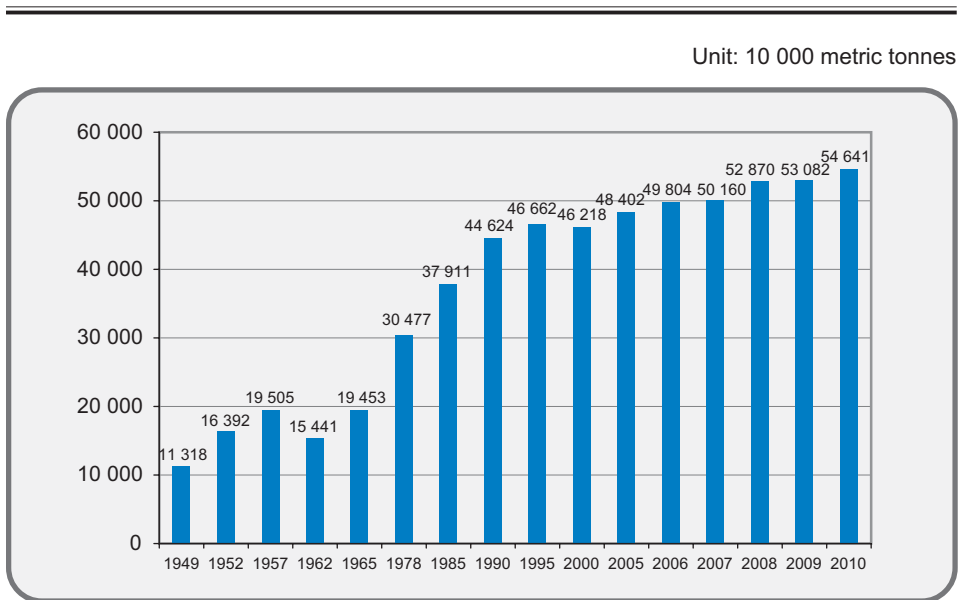
Source: NSBC 2011

FIGURE 3:

National output of major cash crop products in China 1978–2010

Unit: 10 000 metric tonnes

	1978	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cotton	217	271	415	451	477	442	532	492	486	632	571	753	762	749	638	596
Oilseed	522	769	1 578	1 613	2 250	2 955	2 865	2 897	2 805	3 066	3 077	2 640	2 569	2 953	3 154	3 230
Sugar	2 382	2 911	6 047	7 215	7 940	7 635	8 655	10 293	9 642	9 571	9 452	11 460	12 188	13 419	12 277	11 675
Fruit	657	679	1 164	1 874	4 215	6 225	6 658	14 375	14 517	15 341	16 120	17 102	18 136	19 220	20 396	21 401

Source: NSBC 2011

FIGURE 4:

National output of major livestock and aquatic products in China 1978–2010

Unit: 10 000 metric tonnes

	1978	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Meat	856	1 205	1 927	2 857	4 265	6 014	6 106	6 234	6 443	6 609	6 939	7 089	6 866	7 279	7 650	7 926
Egg	n/a	256	535	795	1 677	2 182	2 210	2 266	2 333	2 371	2 438	2 424	2 529	2 702	2 741	2 763
Milk	n/a	114	250	416	576	919	1 123	1 400	1 849	2 368	2 865	3 303	3 633	3 781	3 735	3 748
Aquatic products	465	450	705	1 237	2 517	3 706	3 796	3 955	4 077	4 247	4 420	4 584	4 748	4 896	5 120	5 373

Source: NSBC 2011

Owing to the diversity of agricultural resources and climatic conditions, as well as the small scale of production, the commodity mix of China's agricultural production differs across regions. China Agriculture Statistics show that wheat, rice and corn are still the most important grain products for China. Covering a good portion of the country's farmland, these grains are critical not only to national food security but also to the livelihoods of farmers, and they are the mainstay of local development. The provinces of Hubei, Anhui, Sichuan, Jiangsu and Hunan constitute the most important rapeseed production base, accounting for more than 60 percent of rapeseed planting areas. China is a major cotton producer and consumer; there are more than 100 major cotton-producing counties, in which more than 60 percent of revenue comes from cotton production. Income from cotton production provided 58 percent of farmers' total incomes in Xinjiang Autonomous Region in 2010. Sugar production has become a key sector in some western provinces and the most important source of income for farmers in those regions. In the major sugarcane planting areas, such as Guangxi Autonomo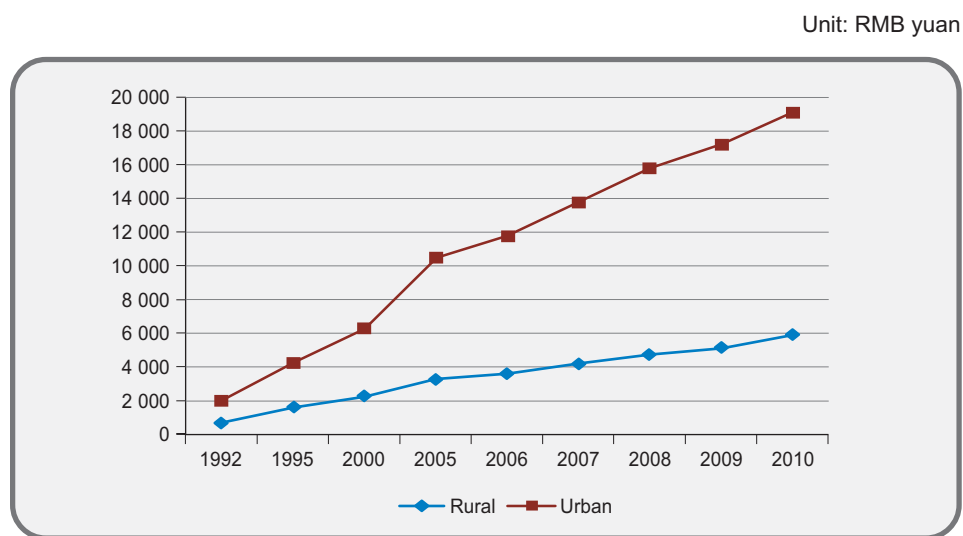us Region and Yunnan province, 60 percent of the farmers have lifted themselves out of poverty by planting sugarcane (MOA 2011a).

FIGURE 5:

Income gap between urban and rural areas in China 1992–2010

Unit: RMB yuan

Source: China Statistical Yearbook 2010

Despite steady growth of the Chinese economy in recent years, because of the dual economy agriculture is hindered by hidden unemployment, low per capita income for farmers, and a large income gap between rural residents and urban dwellers. As a consequence, the agriculture sector and rural development still lag behind economic

development in other sectors and regions. Hidden unemployment is a serious problem in the farm sector and some estimate that the number of unemployed people could be as large as 150 million. For rural residents, per capita income per day is only US$1.30; the ratio of incomes of rural residents to urban dwellers in 2010 was 1 to 3.2 and, to make matters worse, the gap is still widening (NSBC 2010) (see Figure 5). In most cases, farmers have to face the challenge of low incomes in the absence of essential social security. This represents one of the toughest livelihood issues in China.

Food security

Nowadays, many countries attach great importance to food security. China, a country with a very large population and a high aggregate demand for food, has tended to rely on internal self-sufficiency in order to ensure its food security. Two important policy issues in China are ensuring food availability for urban residents and persuading farmers to grow grain crops in order to earn a reasonable income under market-oriented economic conditions. Nationwide, farmers – except those in poverty or badly affected by natural disasters – have as their first priority the production of enough grain to feed their own households and therefore, in general, a food shortage does not exist in rural areas. A survey undertaken in 2005 in poverty-stricken counties in western China showed that only 2.11 percent of total farm households were short of food. Another survey in 2010, of farmer households in 152 poverty-stricken villages in nine provinces in western China, also showed that farm households with a shortage of food accounted for less than 1 percent of the total. Urbanization continues as a large number of farmers migrate to the cities. This turns them from net food producers into food consumers, thereby leading to a substantial increase in total consumption of food that goes through markets. At the same time, there is increasing consumer demand for more vegetables, fruits, livestock products and raw grain materials.

Competitiveness

Agriculture is heavily dependent on natural resources such as land and water. Because of such factors as the high proportion of population that is rural, the wide gap between urban and rural development, the limited resource availability and the small scale of farming, agricultural production in China lacks competitiveness. This is especially true of the bulk commodities that are intensive users of land and water (e.g. corn, wheat, cotton and rapeseed). As a consequence, per capita output of these main agricultural products is low and it is difficult to guarantee an adequate supply. Moreover, the restructuring of agriculture is difficult; it requires time and it is costly because there is limited suitable land available.

However, some products, which are produced in certain parts of the country or which sell in some particular markets, could have a competitive advantage. For example, China may possess some competitive advantage when it comes to the production of miscellaneous grain crops, horticultural products and aquatic products, because they are labour-intensive to produce and production is difficult to mechanize.

Trade

Trade liberalization has meant direct competition with large farms in developed countries, in both domestic and international markets. Chinese small-scale farmers, who are clearly at a disadvantage, have to face this reality. In 2010, agricultural trade value in China increased to US$122 billion, making China the third largest trader of agricultural products. The shift of agricultural trade balance from surplus to deficit – a change that may become permanent – reflects the overall level of competitiveness of China's agriculture. Agricultural exports from China are mainly of labour-intensive products such as aquatic products, vegetables and livestock products. These products accounted for 28 percent, 20 percent and 10 percent, respectively, of China's total agricultural exports in 2010. The percentage of imports of livestock and cereals has gradually fallen, especially in the case of cereals. Cotton imports have increased in recent years and this has had negative effects on domestic growers. The increase of cotton imports caused the domestic cotton farmgate price to fluctuate greatly. For instance, in seven out of ten years, from 1999–2008, the change of China's cotton farmgate price from one year to the next was approximately 20 percent, and in three of those years the change was 30 percent. Cotton farmers' incomes fluctuated greatly as well and their motivation to grow cotton was diminished. China's cotton imports in 2010 accounted for more than 30 percent of the total consumption (MOA 2010). Import of edible oilseeds and edible oil also increased very rapidly. In 2010, China imported 54.97 million metric tonnes of soybean, which was three times the domestic production. In the same year, China also imported 8.26 million tonnes of edible oil. China's soybean and edible oil import dependency rates are now 80 percent and 60 percent, respectively (see Figure 6 and Tables 6 and 7).

FIGURE 6:

Agricultural imports and exports in China 2001–2010
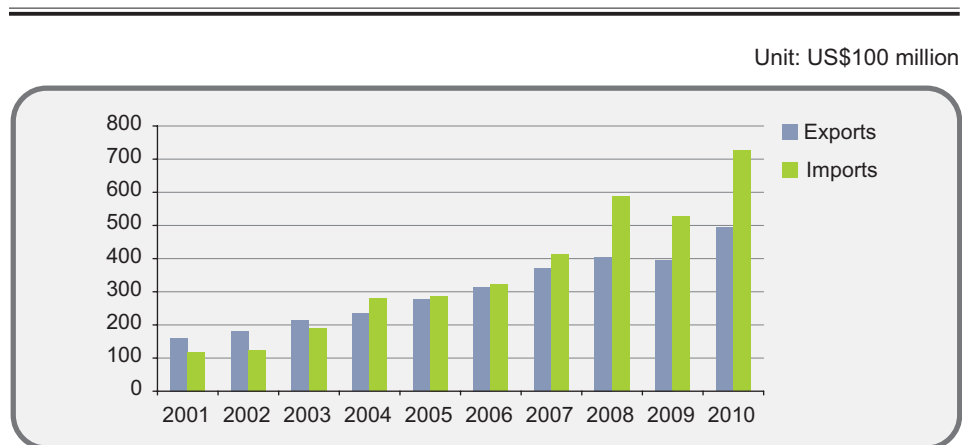
Unit: US$100 million

Source: China Customs Statistics (www.comstoms.gov.cn)

TABLE 6:

China agricultural export by products 2000–2010

Unit: US$100 million

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cereal	20.6	15.3	22.0	32.2	15.2	23.3	20.9	33.3	21.4	19.8	21.6
Oilseeds	5.6	6.4	6.5	8.0	8.6	9.9	9.1	11.3	14.8	11.9	12.5
Tea	3.6	3.5	3.4	3.8	4.5	5.0	5.7	6.4	7.2	7.4	8.3
Flowers	0.3	0.3	0.4	0.5	0.6	0.7	1.0	1.3	1.4	1.8	2.0
Vegetables	21.1	23.7	26.6	30.9	38.4	45.4	54.8	62.8	65.2	68.8	99.9
Fruit	7.2	8.0	9.9	13.7	16.5	20.4	24.8	37.5	42.3	38.4	43.6
Aquatic products	38.2	41.8	46.8	54.2	69.5	79.2	93.7	97.6	106.8	108.0	138.4
Livestock	25.9	26.7	25.7	27.1	31.9	36.0	37.3	40.5	44.1	39.1	47.5
Total	**157.0**	**160.9**	**181.6**	**213.3**	**233.9**	**276.0**	**314.2**	**370.1**	**405.3**	**396.3**	**494.2**

Source: China Customs Statistics (www.comstoms.gov.cn)

TABLE 7:

China agricultural import by products 2000–2010

Unit: US$100 million

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cereal	6.6	7.1	6.1	6.2	24.5	16.3	11.3	8.2	10.6	13.3	21.8
Oilseeds	29.4	32.2	26.4	55.2	71.8	80.0	79.5	120.4	228.9	206.9	265.4
Edible oil	7.5	5.9	14.1	27.4	38.9	30.9	35.0	67.4	97.1	72.6	82.3
Cotton	1.4	1.2	2.0	12.2	32.4	32.5	49.8	35.8	35.7	22.1	58.5
Sugar	1.8	3.8	2.8	2.2	3.4	4.5	6.2	4.8	4.2	4.8	10.3
Fruit	3.7	3.5	3.8	5.0	5.9	6.6	7.7	9.7	12.1	16.5	20.3
Aquatic products	18.5	18.7	22.8	25.0	32.4	41.3	43.0	47.2	54.1	52.6	65.4
Livestock	26.5	27.9	28.8	33.5	40.3	42.3	45.6	64.7	77.3	66.0	96.6
Total	**112.7**	**118.5**	**124.7**	**189.7**	**280.5**	**287.8**	**321.7**	**411.9**	**587.9**	**527.0**	**725.7**

Source: China Customs Statistics (www.comstoms.gov.cn)

Current agriculture policies

From the beginning of the twenty-first century, China has adopted guidelines for agriculture and rural development, in the context of overall economic development. The guidelines are intended to accommodate changes in agriculture and rural areas during the industrialization of China's economy. The national government has established pro-farm policies and measures to strengthen the position of agriculture as the foundation of the economy, to increase farmers' incomes.

On food security

Since the 1980s, China has adopted a series of policies and measures that favour grain production and has gradually established a food security policy system that conforms to the rules of the market economy. First, demand is to be met largely by domestic production, with the self-sufficiency rate for grain maintained at above 95 percent, which is an important contribution not only to domestic food security but also to the world's. Second, the policies include implementing the Governor's Grain Bag Responsibility System, whereby the provincial government and executive governor are responsible for the grain supply in the province: ensuring total grain-planting areas, improving per-unit yield, increasing grain reserve, keeping the balance between supply and demand, and stabilizing grain prices. Third, the central government aims to support grain production. National investment and subsidy policies will favour the main grain-production areas and grain farmers, as they are the priority for governmental support. The central government will reward and subsidize the large grain producing counties so as to encourage local governments to develop grain production. Fourth, the policies will promote technical innovation and extension to increase yields. And finally, policies will strengthen the protection of farmland and of water resources, as well as other basic requirements for agricultural production, in order to improve the physical infrastructure for grain production.

On farmland protection

Because arable land is comparatively scarce, China has adhered to a fundamental policy of farmland protection through specifying laws and regulations, including the Constitution of the People's Republic of China, the Land Administration Law, the Rural Land Contract Law, and the Regulations on the Protection of Basic Farmland. Protection is implemented in the following way: First, during a certain period, the government identifies eligible farmland as basic farmland, based on the overall land-use plan, taking into account both the demand for farm products and socio-economic growth. Second, it implements the most stringent farmland protection policies. Facing the grave challenges of both a shrinking area of farmland and a decline in fertility since the 1990s, the Chinese government has decided to implement the most stringent farmland area preservation system, such as occupying basic farmland with non-agricultural construction which is not a mandatory national key construction project is prohibited. Finally, the government encourages farmers and rural collective economic bodies to invest in the land in order to improve its fertility and productivity and thereby to improve its quality.

On taxation

Before the rural tax and fee reform, China had an agricultural production taxation policy that included an agricultural tax, an agricultural special products tax, an animal husbandry tax, an animal slaughter tax, etc. In 2000, the government initiated rural

tax reforms that would have far-reaching consequences. First was the decision to rescind the agricultural tax, which started with reduction of the agricultural tax rate in order to alleviate farmers' burden, and culminated in total rescinding of the tax nationwide in 2006, as indicated by the abolition of the Agricultural Tax Regulation. Second, in 2004, China rescinded taxes on all agricultural special products except for tobacco. The third tax to be rescinded was the slaughter tax; in 2006, the Provisional Regulations Concerning the Slaughter Tax was officially repealed. Fourth, in 2005, China rescinded the animal husbandry tax across the board. Compared with the year 1999 (before the rural tax reform), a total of 125 billion RMB yuan was removed from the tax burden on farmers, which amounted to RMB 140 yuan per farmer, a tangible benefit for the more than 700 million farmers.

On subsidy

Since 2004, to keep up with changes in socio-economic development and noting the experiences of other countries, China has started to explore an agricultural subsidy system that conforms to WTO rules. The core of the system is "the four subsidies". The first is the direct subsidy for grain producers, which is given to farmers according to the grain area that they cultivate. It targets the main grain-producing regions and has replaced the previous grain market subsidy. The second is the subsidy for production materials, which is calculated according to the price changes of essential farm inputs such as diesel and fertilizer, so as to offset the increased cost of the inputs used in grain production. The third subsidy provided by the central government is to encourage the use of improved crop varieties. The fourth subsidy is to encourage farmers to purchase state-of-the-art tools and machines in order to promote mechanization of production. In 2010, the four types of subsidies from the central government amounted to 122.6 billion RMB yuan (MOA 2011a).

On agroproduct price protection

Since the 1980s, China has gradually opened its agricultural market. In 2004, when the grain purchase market was freed from state monopoly, all agricultural products, except for tobacco and silkworm cocoons, were opened to the market. Price is determined by the market, and the function of the market in resource allocation comes into play. As well as playing by the market mechanisms, China started to develop price protection policies for grain and other important agricultural products. Since 2004, along with promoting reform of the grain circulation system and opening the grain market, China introduced a floor price purchasing scheme for wheat, rice and other staple grain crops in the major producing regions. The state allows qualified state enterprises to purchase grains from farmers at a minimum purchase price set by the state when market prices are lower than the state minimum purchase price, and such purchases will only stop when the market price stabilizes at, or above, the state minimum purchase price. This scheme encourages farmers to increase inputs

into grain production because they know that when production increases their selling prices will not go below the costs of production. The minimum support price safeguards the interests of farmers and secures grain supply. In 2011, the minimum purchase prices for three kinds of rice in south and north China were RMB yuan 2.04, 2.14 and 2.56 per kilogram, respectively.

On agricultural trade

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 tariffs for agricultural products by 66 percent – from 54 percent (MFN) 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 that were especially important to livelihoods were reduced by more than 50 percent. After accession to the WTO, overall tariffs were lowered further, from 17.9 percent to 15.7 percent in 2005, a drop of 16 percent. The overall reduction amounted to 72 percent. Currently, China's simple average tariff for agricultural products is 15.2 percent. Almost all are bound in *ad valorem* terms, a structure which is flat with few tariff peaks. China has abolished non-tariff border measures, has converted non-tariff measures into tariffs and has adopted tariff reductions and "binding". TRQs are applied to wheat, rice, corn, cotton, sugar, wool, natural rubber and some other important agricultural products. In-quota tariffs often reduced to 1 percent to 5 percent and the maximum out-of-quota tariff is 65 percent. The TRQs are allocated to both state trading enterprises (e.g. Cereals, Oils and Foodstuffs Corporation, or COFCO) and private traders. Agricultural export subsidies were abolished. China is among the countries with the highest level of market openness for agricultural products.

Generally speaking, the policy space preserved for China's agricultural trade policy to develop has been very much restricted. The world grain market is at present characterized by volatility, uncertainty and high risks, so Chinese domestic agricultural policy will have to continue to ensure food security through increasing agricultural productivity and domestic grain production. National food security needs the international market but does not rely on it, and the aim of China's agricultural trade policy is to enhance support and protection in order to maintain sustainable food security.

Main task for China's agricultural development, especially for food security during the Twelfth Five-Year Plan (2011–2015)

According to the Twelfth Five-Year Plan for National Economic and Social Development, China is at a stage of accelerated industrialization, urbanization and internationalization, and sustainable socio-economic growth will require stronger support to agriculture. China will continue to consider the issues of agriculture, rural

areas and farmers as top priorities. China will continue to fortify agriculture as an economic foundation, seek a path to agricultural modernization with "Chinese characteristics", and promote integrated urban and rural socio-economic development through the mechanisms of industry nurturing agriculture and urban areas supporting rural areas.

During the years of implementing the plan, the government will promote the stable development of grain production and guarantee national food security by enhancing the productivity of the main grain-production areas and improving yield, quality and efficiency. The self-sufficiency rate is to be kept above 95 percent and grain output is to be sustained at over 540 million metric tonnes by 2015 (average output in Eleventh Five-Year Plan (2006–2010) was 521 million metric tonnes). The production of major grain products is to maintain a stable increase. The outputs of cotton, oilseeds and sugar-bearing crops are to reach 7 million, 35 million and 140 million metric tonnes respectively (average outputs in Eleventh Five-Year Plan were 6.96 million, 29.1 million, 112.9 million metric tonnes, respectively), whereas outputs of vegetables, fruits and other products are to remain stable with the expectation of some growth. The outputs of meat, eggs, milk and aquatic products will reach 85 million, 29 million, 50 million and 60 million metric tonnes, respectively (average outputs in the Eleventh Five-Year Plan were 73.6 million, 26.3 million, 36.4 million and 49.4 million metric tonnes, respectively). The farmland protection scheme will be strictly implemented to ensure the size and fertility of farmland. The total area of farmland will be maintained at 120.3 million hectares by 2020. Steps will be taken to improve the fertility of medium- and low-yield farmland, thus enhancing the capacity of agriculture to prevent and mitigate natural disasters (MOA 2011b).

During the years of the plan, the Chinese government will also enhance innovation and the translation of technical findings to field use. Efforts will be made to accelerate the construction of national agricultural science and technology innovation bases and regional farm research and development (R&D) centres. These will promote R&D and extension of crop, livestock and fisheries breeding and propagation technologies, as well as technologies in feeds and animal feeding, epizootic prevention and control, resource use efficiency and pollution control. They will also expand the use of fine varieties, such as super-hybrid rice, and intensify new plant variety protection.

3.   The main elements of ACFTA

Under ACFTA, reducing the tariff of agricultural products is described in the Early Harvest Programme (EHP) and the Agreement on Trade in Goods, including products in the EHP, other "normal" products and "sensitive" products as defined in the Agreement on Trade in Goods.

Tariff reduction/elimination in the EHP

The Framework Agreement between ASEAN and China was signed in 2002. In order to benefit from the FTA early, the two sides agreed to an EHP by reducing tariffs on some selected products that would benefit both sides; it was implemented on 1 January 2004.

Reduction of tariffs in the EHP covers agricultural products in Chapters 01–08 in Customs Tariff, including more than 600 products at the 6-digit tariff line, such as live animals, meat, aquatic products, dairy products, vegetables and fruits (see Table 8).

TABLE 8:

Tariff lines at HS 6-digit level included in EHP

	Members	**Number**
1	Brunei Darussalam	597
2	Cambodia	539
3	China	593
4	Indonesia	595
5	Lao PDR	406
6	Malaysia	599
7	Myanmar	579
8	Philippines	214
9	Singapore	602
10	Thailand	581
11	Viet Nam	547

Source: http://fta.mofcom.gov.cn/topic/chinaasean.shtml

The modality of tariff reduction/elimination for tariff lines placed in the EHP was as follows: from 2004 on, China and ASEAN-5 (Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand) would start to reduce the tariffs on products designated in the EHP and eliminate them by 2006. The three newer ASEAN members, Cambodia, Lao People's Democratic Republic and Myanmar, would begin to reduce their tariffs in 2006 and eliminate them in 2009. Viet Nam would begin to reduce its tariffs in 2004 and eliminate them in 2008. The Philippines would eliminate tariffs all at once in 2006. Under a special arrangement, China and Thailand eliminated the tariff on vegetables and fruits on 1 October 2003.

Tariff reduction/elimination on "normal" products in the Agreement on Trade in Goods

After implementation of the EHP, China and ASEAN signed the Agreement on Trade in Goods, in which more than 7 000 products at the HS 6-digit level that had been excluded in the EHP were classified into groups of "normal" products and "sensitive" products. Normal products were the products whose tariff was to be eliminated and they were classified into two categories: "Normal Track" and "Normal Track Two". For ASEAN members, the average MFN tariff for agricultural products in the Normal Track was about 10 percent to 15 percent.

For Normal Track products, the tariff rates were to be eliminated in four steps after the Agreement entered into force. Higher applied MFN tariff rates would be reduced by larger amounts and over a shorter time period, whereas lower tariff rates would be reduced by smaller amounts over a longer time period, in order to ensure a stable reduction on the tariffs of all products.

China and ASEAN-6 were to reduce tariff rates to 0 to 5 percent for at least 40 percent of tariff lines in the Normal Track not later than 1 July 2005, and the tariff rates for at least 60 percent not later than 1 January 2007. They were to eliminate all tariffs not later than 1 January 2010, with flexibility to have tariffs on some tariff lines – not exceeding 150 tariff lines – eliminated not later than 1 January 2012 (see Table 9).

TABLE 9:

Modality of tariff reduction/elimination on Normal Track ASEAN-6 and China

Applied MFN tariff rate (%)	ACFTA preferential tariff rate (Not later than 1 January)			
	2005*	2007	2009	2010
< 5	Standstill		0	0
5 < 10	5	5	0	0
10 < 15	10	8	5	0
15 < 20	15	8	5	0
20 +	20	12	5	0

Note: * The first date of implementation was set at 1 July 2005.

Source: http://fta.mofcom.gov.cn/topic/chinaasean.shtml

For newer ASEAN members in the Normal Track, more detailed categories of the product tariffs were defined, reduction was milder and the time from the start of tariff reduction to the final elimination was longer. The tariff rates were to be reduced to 0 to 5 percent not later than 1 January 2009 for Viet Nam, reduced not later than 1 January 2010 for Lao People's Democratic Republic and Myanmar, and not later than 1 January 2012 for Cambodia, for at least 50 percent of its tariff lines. Cambodia, Lao People's Democratic Republic and Myanmar were to eliminate their respective tariffs no later than 1 January 2013 on 40 percent of tariff lines and are to eliminate them entirely no later than 1 January 2015 (see Tables 10 and 11).

TABLE 10:

Modality of tariff reduction/elimination on Normal Track Viet Nam

Applied MFN tariff rate (%)	ACFTA preferential tariff rate (not later than 1 January)							
	2005	2006	2007	2008	2009	2011	2013	2015
< 5	Standstill							0
5 < 7	5	5	5	5	5	5	0–5	0
7 < 10	7	7	7	7	5	5	0–5	0
10 < 15	10	10	10	10	8	5	0–5	0
15 < 20	15	15	10	10	10	5	0–5	0
20 < 25	20	20	15	15	15	10	0–5	0
25 < 30	25	20	20	15	15	10	5	0
30 < 35	30	25	25	20	17	10	5	0
35 < 45	35	30	30	25	20	15	5	0
45 < 60	40	35	35	30	25	15	10	0
60 +	60	50	40	30	25	15	10	0

Note: * The first date of implementation was set at 1 July 2005.

Source: http://fta.mofcom.gov.cn/topic/chinaasean.shtml

TABLE 11:

Modality of tariff reduction/elimination on Normal Track Cambodia, Lao People's Democratic Republic and Myanmar

Applied MFN tariff rate (%)	ACFTA preferential tariff rate (not later than 1 January)							
	2005	2006	2007	2008	2009	2011	2013	2015
< 5	Standstill							0
5 < 7	5	5	5	5	5	5	0–5	0
7 < 10	7	7	7	7	7	5	0–5	0
10 < 15	10	10	10	10	8	5	0–5	0
15 < 20	15	15	15	15	15	5	0–5	0
20 < 25	20	20	15	15	15	10	0–5	0
25 < 30	25	25	25	20	20	10	5	0
30 < 35	30	25	25	20	20	10	5	0
35 < 45	35	35	30	30	20	15	5	0
45 < 60	40	35	35	30	25	15	10	0
60 +	60	50	40	30	25	15	10	0

Notes: * The first date of implementation was set at 1 July 2005.

    ** Myanmar will be allowed to maintain ACFTA rates at no more than 7.5 percent until 2010.

Source: http://fta.mofcom.gov.cn/topic/chinaasean.shtml

The modality of tariff rate reductions and elimination in Normal Track Two is similar to Normal Track but the tariff rates of less than 5 percent remain at that level for a longer period of time before being eliminated. For China and ASEAN-6 – with flexibility to retain tariffs on some tariff lines, not to exceed 150 tariff lines – these were to be eliminated not later than 1 January 2012. In China, these tariff lines include pastry, cakes, preparations of vegetables and some fruit containers, for which most of the applied MFN rates are over 25 percent. The newer member states have flexibility to retain tariffs on some tariff lines, not exceeding 250 tariff lines, and these are to be eliminated not later than 1 January 2018.

Tariff reduction on "sensitive" products in the ASEAN Trade in Goods Agreement

"Sensitive" products are products that are given a longer time period over which to experience a reduction in tariffs. This special treatment is given because of concern for the economic development of the domestic industry. For both China and ASEAN-6, the number of these products is subject to a ceiling of 400 tariff lines at the HS 6-digit level and 10 percent of the total import value, based on trade statistics for 2001. For Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam, the ceiling is 500 tariff lines. The tariff lines considered sensitive products are further classified into Sensitive List (SL) and Highly Sensitive List (HSL). For products classified as SL, tariffs will be reduced ultimately to a low level, whereas for products classified as HSL, tariffs will be reduced ultimately to a level that is still higher than SL or EHP products. However, tariff lines for HSL products are to be subject to the following ceilings: for China and ASEAN-6, there should not be more than 40 percent of the total number of tariff lines in the SL or 100 tariff lines at the HS 6-digit level, whichever is lower; for Cambodia, Lao People's Democratic Republic and Myanmar, there should not be more than 40 percent of the total number of tariff lines in the SL or 150 tariff lines, whichever is lower.

According to the Agreement, for China and ASEAN-6 the modality for tariff reductions for products in the SL would reduce the applied MFN tariff rates to 20 percent not later than 1 January 2012, with a subsequent reduction to 0 to 5 percent not later than 1 January 2018. For Cambodia, Lao People's Democratic Republic and Myanmar, the reduction in tariffs for products in their respective SLs is to be 20 percent not later than 1 January 2015, with subsequent reductions to 0 to 5 percent not later than 1 January 2020. For Viet Nam, tariffs are to be reduced not later than 1 January 2015, to a rate to be determined not later than 31 December 2004. These tariff rates are to be subsequently reduced to 0 to 5 percent not later than 1 January 2020. The modality for tariff reductions for products in the HSL of China and ASEAN-6 are to reduce the HSL to not more than 50 percent not later than 1 January 2015; the newer ASEAN members are to reduce the HSL to not more than 50 percent not later than 1 January 2018. China's HSL includes corn, rice, wheat flours, sugar, vegetable oils, wool and tobacco (see Table 12), and most of these are regulated under the TRQ (see Table 13).

TABLE 12:

The main products on the Sensitive Lists in ACFTA

Member	Sensitive List	Number of tariff lines	Main products
China	SL	23	Coffee, pepper, wheat, broken rice, pineapples, containers, tobacco, wool, not carded or combed
	HSL	36	Corn, rice, soybean oil, palm oil, sugar, cotton, carded or combed
Indonesia	SL	12	Cloves, soybean oil, shrimp, yeasts, baking powder, preparations of a kind used in animal feeding, tobacco
	HSL	13	Maize, rice, soybean, sugar, ethyl alcohol
Malaysia	SL	0	
	HSL	22	Fowls of the species Gallus domesticus, meat and edible offal of the Gallus domesticus, fresh or chilled, eggs of hens and ducks, milk and cream, not concentrated, not containing added sugar or other sweetening matter, rice, tobacco
Philippines	SL	20	Leeks and other alliaceous vegetables, ginger, mauze starch
	HSL	41	Live swine and Gallus domesticus, meat, fresh or chilled, vegetables, maize, not for seeding, rice, sugar
Thailand	SL	8	Preparations of vegetables and fruit, preparations of a kind used in animal feeding
	HSL	52	Dairy produce, potato, shallots, garlic, coconuts, coffee, tea, pepper, maize, rice, soybean, soybean oil, palm oil, sugar, tobacco, silk
Lao PDR	SL	75	Live swine, live poultry, reptiles, psittaciformes, chilled bovine meat, meat of swine and poultry, fresh or chilled, eggs of hens and ducks for breeding, vegetables, nuts, fruits, rice
	HSL	16	Spirits
Cambodia	HSL	18	Sugar, preparations of vegetables, spices, beer, tobacco
Myanmar	SL	133	Coffee, green tea, maize, rice, vegetable fats, preparations of fishes and meat, sugar, preparations of vegetables and fruit, spirits, tobacco, silk, yarn waste
	HSL	0	
Singapore	SL	1	Ethyl alcohol of an alcoholic strength by volume of less than 80 percent volume
	HSL	1	Beer made from malt

Note: SL: Subsequently reduced to 0–5 percent not later than 1 January 2018, HSL reduced to not more than 50 percent not later than 1 January 2015.

Source: http://fta.mofcom.gov.cn/topic/chinaasean.shtml

TABLE 13:

Agroproducts MFN tariff rates by items of ASEAN members

	EHP		NT		NT2		SL		HSL	
	Max	Average	Max	Average	Max	Average	Max	Average	Max	Average
Thailand	60	27.8	60	21.1	30	30	30	21.6	65	32.1
Philippines	40	11.2	45	7.7	n/a	n/a	40	20.2	65	33.9
Malaysia	30	3.7	30	4.1	n/a	n/a	n/a	n/a	40	4.9
Viet Nam	40	21.0	100	21.8	100	31.9	100	66.0	100	45.3
Myanmar	15	10.2	30	5.3	15	4.6	40	13.2	n/a	n/a
Lao PDR	40	24.2	40	7.9	40	24.4	40	28.3	40	34.8
Cambodia	35	11.6	35	13.6	35	15.5	35	16.3	35	16.5

Note: n/a – not available.

Source: Created by the author according to the Agreement of Trade on Goods under ACFTA (data available at fta.mofcom.gov.cn/topic/chinaasean.shtml)

Some other elements of ACFTA

Implementation of WTO agreement on the application of SPS and agreement on TBT

There are no uniform standards in WTO agreements on SPS and TBT; therefore members of the WTO are allowed to adopt measures according to their own conditions, so long as they are consistent with these agreements. The WTO TBT agreement recommends that members adopt international standards that do not change the level of protection in domestic markets, whereas the WTO SPS agreement allows members to adopt higher levels of protection than the international ones, as long as they have a scientific basis. However, all ACFTA members have retained the commitments required of them by the WTO SPS and TBT agreements. This outcome arises because most of the applied non-tariff measures are on agricultural products, especially SPS, which accounts for a large proportion of non-tariff measures. It is inevitable that some members will use SPS and TBT illegally to protect their domestic markets. Given this possibility, coordination of SPS and TBT between China and ASEAN members is very important to them.

Rules of origin (RoO)

Rules of origin in ACFTA are based on "value added criteria". Products deemed to be "originating" and eligible for preferential concessions include two types. The first are products that are wholly obtained or produced in the territory of any party of the ACFTA; most agricultural products, especially those in the EHP, are of this type. The second are products not wholly produced in ACFTA but which have not less than 40 percent of their content originating from any party in ACFTA.

Safeguard measures

For the sake of protecting domestic industry in all parties of ACFTA from serious impacts of trade liberalization, safeguard measures are stipulated in the Agreement on Trade in Goods of the Framework Agreement. These measures allow all parties to take safeguard measures when import surges of any particular product from the other parties of ACFTA cause or threaten to cause serious injury to the domestic industry of the importing party. To avoid abuse of safeguard measures, the Agreement also stipulates restrictive conditions on their use by all parties. First, according to the Agreement, safeguard measures may only be applied on a product within the transition period, which normally ends five years from the date of completion of tariff elimination/reduction for that product. Second, "Any ACFTA safeguard measure may be maintained for an initial period of up to three years and may be extended for a period not exceeding one year. Notwithstanding the duration of an ACFTA safeguard measure on a product, such measure shall terminate at the end of the transition period for that product."[60] This stipulation is obviously stricter than that in the WTO Agreement on Safeguards. Third, quantitative restrictions cannot be used as ACFTA safeguard measures and increase of the tariff rate applicable to the product can only be to the level of the WTO MFN tariff rate when the safeguard measure is applied to the product. This stipulation shows that more restrictions are placed on the application of safeguard measures in ACFTA than in the WTO, to avoid abuse that will essentially hinder the trade and reduce the benefits produced by ACFTA. Fourth, ACFTA safeguard measures cannot be used simultaneously with WTO safeguard measures.

Characteristics of free trade rules in ACFTA

Agriculture tariff reduction in ACFTA shows the following characteristics:

● Regarding tariff reduction, the degree of free trade for agricultural products in ACFTA is high. In October 2003, China and Thailand eliminated their tariffs on fruits and vegetables. The EHP was implemented by China and nine ASEAN members in 2004 (the Philippines implemented it in 2006), reduction of tariffs in the EHP covers agricultural products in Chapters 01–08 in the Customs Tariff, including more than 600 products at the 6-digit tariff line. An early and substantial reduction of tariffs for agricultural products reflected a distinct willingness on all sides to push ACFTA forward.

● The principle of "gradual, differential reduction of tariff" for agricultural products has been applied. ACFTA provides special and differential treatment for newer ASEAN members in the tariff reduction/elimination process. For instance, for newer members tariffs are to be reduced to zero for products listed as Normal

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[60] fta.mofcom.gov.cn/topic/chinaasean.shtml

Track six years after they are to be reduced for the older members, the range of tariff reductions for products on Sensitive Lists is greater, and the rate of reduction is lower.

● The trade liberalization process (tariff reduction) does not harm the production of basic products and food security in the region. Agricultural production in China and in most of the ASEAN members is of the traditional type, i.e. involving small farmers who could be easily hurt in the process of trade liberalization. Thus, arrangements for sensitive products in ACFTA are intended to avoid – or to protect agricultural production from – sharp import surges caused by the reductions in tariffs.

4. Influence of ACFTA on China's agriculture

Agricultural trade between China and ASEAN has developed rapidly since 2004 as a result of increased demand and tariff reduction. The effect of this increased trade is very significant.

**Influences on the agricultural trade of China**

There has been a rapid increase in bilateral agricultural trade. Since the implementation of the EHP and the Agreement on Trade in Goods, the value of agricultural trade between China and ASEAN members has increased rapidly. The trade value increased from US$5.01 billion in 2003 to US$18.41 billion in 2010, representing an increase of 267 percent, the average annual increase being 20.5 percent, which is 3.6 percent higher than the level of China's overall trade growth in agricultural products. China's imports from ASEAN increased from US$2.65 billion in 2003 to US$10.94 billion in 2010, the average annual increase being 22.4 percent. Over the same period, China's exports to ASEAN increased from US$2.36 billion in 2003 to US$7.48 billion of 2010, the average annual increase being 17.9 percent (see Figure 7 and Table 14)**.**

The agricultural trade deficit has increased year by year. Trade between the two sides was balanced before the establishment of ACFTA, but China's deficit in 2004 was US$1.6 billion, which increased to US$3.46 billion in 2010. As the growth rate of imports is much higher than that of exports, China's trade deficit to ASEAN has continued to grow (see Table 15).

FIGURE 7:

Agricultural trade values between China and ASEAN members 2000–2010

Unit: US$ million

Value of import and export
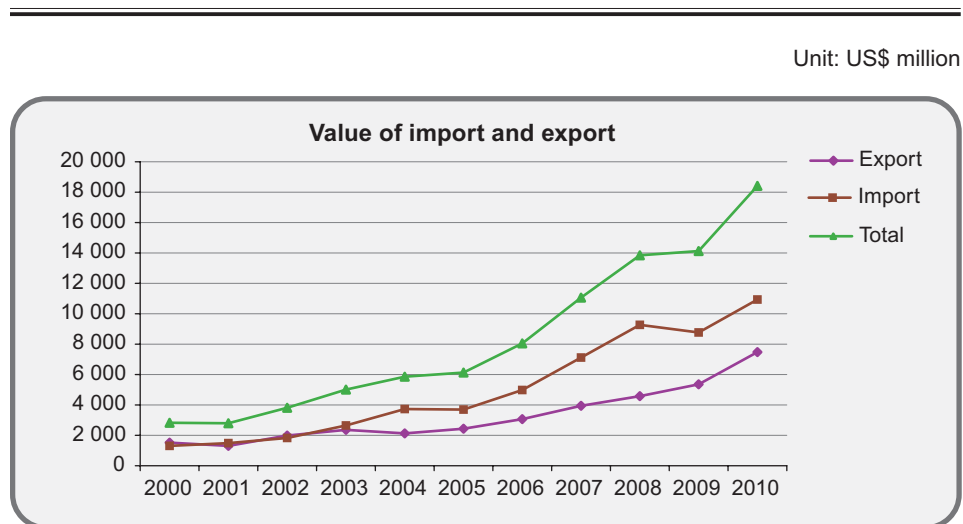
Source: China Customs Statistics (www.comstoms.gov.cn)

TABLE 14:

Agricultural trade values between China and ASEAN members 2000–2010

Unit: US$ million

Year	Export	Import	Total
2000	1 519	1 306	2 825
2001	1 305	1 490	2 795
2002	1 986	1 829	3 815
2003	2 359	2 651	5 010
2004	2 129	3 730	5 859
2005	2 436	3 697	6 133
2006	3 069	4 981	8 050
2007	3 943	7 120	11 063
2008	4 579	9 268	13 847
2009	5 359	8 767	14 126
2010	7 477	10 937	18 414

Source: China Customs Statistics (www.comstoms.gov.cn)

TABLE 15:

Agriculture trade balance in China with ASEAN 2000–2010

Unit: US$ million

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Balance	213	-185	157	-292	-1 601	-1 261	-1 912	-3 177	-4 698	-3 408	-3 460

Source: China Customs Statistics (www.comstoms.gov.cn)

The share of trade with ASEAN in China's total agricultural trade has grown. The share of agricultural exports to China in ASEAN's total agricultural exports has continued to rise, because the rate of growth of ASEAN's agricultural exports to China is faster than ASEAN's overall rate of growth of total agricultural exports. In addition, the rate of growth of China's agricultural exports to ASEAN is slower, which is consistent with China's overall export growth of agricultural products. However, because of faster import growth by China from ASEAN, the total bilateral trade in agricultural products rose from 12.4 percent of China's total agricultural trade in 2003 to 15.3 percent in 2010. The percentage of agricultural trade in total trade between China and ASEAN was 4.11 percent in 2009, only an increase of 0.7 percent over 2003. China's agricultural imports from ASEAN and exports to ASEAN accounted for 14 percent and 11 percent of the total agricultural imports and exports respectively in the same period, whereas in 2010 they were both 15.1 percent. ASEAN was the third largest export market for Chinese agricultural products in 2003 and has become the second largest since 2008. ASEAN's position as China's significant agricultural trading partner has been solidified (see Tables 16 and 17).

TABLE 16:

Sources of China's agricultural imports 2000–2010

Unit: percent

Year	ASEAN	USA	EU	Brazil	Argentina
2000	11.6	23.0	10.4	5.2	6.9
2001	12.6	23.6	8.0	6.6	8.8
2002	14.7	21.8	7.1	9.2	7.1
2003	14.0	26.4	6.7	11.2	11.9
2004	13.3	27.4	5.5	10.2	9.6
2005	12.9	23.4	7.0	10.5	10.4
2006	15.5	23.6	6.7	11.9	7.5
2007	17.3	22.2	6.8	11.8	12.6
2008	15.8	24.5	6.3	15.0	14.3
2009	16.6	26.6	6.5	16.0	6.6
2010	15.1	25.7	6.8	14.8	7.9

Source: China Customs Statistics (www.comstoms.gov.cn)

TABLE 17:

Destinations for China's agricultural exports 2000–2010

Unit: percent

Year	ASEAN	USA	EU	Japan	Hong Kong SAR
2000	9.7	7.5	11.5	34.6	12.2
2001	8.1	7.8	12.5	35.7	11.8
2002	10.9	9.3	10.0	31.6	11.5
2003	11.0	9.8	11.1	28.2	10.6
2004	13.3	10.2	11.5	31.7	11.6
2005	8.8	10.7	12.9	28.8	10.0
2006	9.8	12.2	14.2	26.2	8.9
2007	10.7	11.9	14.9	22.6	8.7
2008	11.3	12.7	15.9	19.0	9.0
2009	13.5	12.0	14.6	19.4	9.4
2010	15.1	11.8	14.0	18.5	9.1

Source: China Customs Statistics (www.comstoms.gov.cn)

The structure of China's agricultural trade with ASEAN shows complementary characteristics. The export advantages of Chinese horticultural products and aquatic products have been brought fully into play. China has advantages over ASEAN countries in export of temperate fruits (including citrus, apples and pears) and vegetables. Since the implementation of ACFTA, the products exported to ASEAN are mainly labour-intensive products such as vegetables, temperate fruits and aquatic products. Since 2004, the share of export value of these three kinds of products in the total agricultural export value has been increasing year by year. In 2009, their shares in total agricultural exports to ASEAN were 25.2 percent, 20.2 percent and 14.4 percent, respectively; in 2010, the shares were 32.9 percent, 17.1 percent and 13.8 percent, respectively; and the export values of these products were US$2.46 billion, US$1.28 billion and US$1.03 billion, respectively in this year. The average annual rates of increase of temperate fruits and vegetables exported were 27 percent and 25 percent, respectively, over the period from 2003 to 2010. Citrus and apples are the main export fruits from China. In 2010, their values and export share percentages were US$400 million and 31.8 percent and US$380 million and 29.8 percent, respectively. Aquatic products exported in 2003 were valued at US$150 million and by 2009 had reached a value of US$1.35 billion. The export of freshly-frozen fish and frozen shrimp saw significant increases. However, exports of cereals and livestock products dropped rapidly (see Table 18).

TABLE 18:

Export value and percentage of main agricultural products to ASEAN 2000–2010

Unit: US$ million

Year	Vegetable	%	Fruit	%	Aquatic	%	Livestock	%	Cereal	%	Total
2000	130	8.6	148	9.7	54	3.6	110	7.2	508	33.4	1 519
2001	175	13.4	144	11.0	63	4.8	134	10.3	241	18.5	1 305
2002	282	14.2	197	9.9	120	6.0	145	7.3	525	26.4	1 986
2003	349	14.8	258	10.9	185	7.8	124	5.3	669	28.4	2 359
2004	470	22.1	316	14.8	346	16.3	135	6.3	129	6.1	2 129
2005	584	24.0	392	16.1	359	14.7	138	5.7	144	5.9	2 436
2006	800	26.1	449	14.6	397	12.9	171	5.6	234	7.6	3 069
2007	939	23.8	563	14.3	384	9.7	196	5.0	551	14.0	3 943
2008	1 025	22.4	892	19.5	643	14.0	194	4.2	67	1.5	4 579
2009	1 353	25.2	1 084	20.2	771	14.4	183	3.4	42	0.8	5 359
2010	2 460	32.9	1 275	17.1	1 031	13.8	249	3.3	51	0.7	7 477

Source: China Customs Statistics (www.comstoms.gov.cn)

The products imported by China are mainly land-intensive products, such as palm oil (valued at US$5.5 billion), cassava (US$1.2 billion) and tropical fruits (US$1.06 billion), which accounted for 50.3 percent, 11 percent and 9.7 percent of total agricultural imports in 2010, respectively. Imports are concentrated on single products, from single market sources. Palm oil is the main edible oil imported from ASEAN countries by China, accounting for almost 100 percent of China's imports. ASEAN has become the major source of palm oil for China; palm oil imports by China accounted for about 90 percent of the edible oil exported from ASEAN since 2002. Both volume and value are rapidly increasing. For instance, the import value of palm oil in 2010 was US$4.69 billion, which was an increase of 11.5 percent compared with that in 2009. The palm oil comes mainly from Malaysia, Indonesia and Thailand. The import value of palm oil from these three countries in 2010 was US$3.52 billion, US$2.95 billion and US$2.5 billion, accounting for 32 percent, 27 percent and 23 percent of the total imports of palm oil from ASEAN (see Table 19).

Increased trade was only visible between China and a select number of ASEAN members. China's exports mainly go to Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam, and imports mainly come from Indonesia, Malaysia and Thailand. Altogether, these latter countries account for 82 percent of total agricultural imports to China from ASEAN. The bilateral deficits with Indonesia, Malaysia and Thailand were US$1.23 billion, US$1.84 billion and US$942 million in 2009 (see Table 20).

TABLE 19:

Import value and percentage of main agricultural products from ASEAN 2000–2010

Unit: US$ million

Year	Edible oil	%	Potato	%	Fruit	%	Grain	%	Total
2000	525	40.2	22	1.7	167	12.8	116	8.9	1 306
2001	521	35.0	153	10.3	190	12.8	109	7.3	1 490
2002	934	51.1	142	7.8	204	11.2	80	4.4	1 829
2003	1 588	59.9	194	7.3	243	9.2	97	3.7	2 651
2004	2 043	54.8	343	9.2	309	8.3	255	6.8	3 730
2005	1 997	54.0	420	11.4	342	9.3	200	5.4	3 697
2006	2 525	50.9	620	12.4	399	8.0	298	6.0	4 981
2007	4 051	56.9	660	9.2	485	6.8	233	3.3	7 120
2008	5 805	62.6	390	4.2	644	6.9	218	2.4	9 268
2009	4 651	53.1	888	10.1	929	10.6	233	2.7	8 767
2010	5 502	50.3	1 202	11.0	1 063	9.7	288	2.6	10 937

Source: China Customs Statistics (www.comstoms.gov.cn)

TABLE 20:

China and ASEAN agricultural trade by countries 2009

Unit: US$10 000

|	Export		Import		Trade balance
	Export value	%	Import value	%	
ASEAN	535 984	100.00	876 784	100.00	-340 801
Brunei Darussalam	735	0.14	6	0.00	730
Cambodia	1 426	0.27	640	0.07	785
Indonesia	105 097	19.61	228 016	26.01	-122 919
Lao PDR	628	0.12	2 939	0.34	-2 311
Malaysia	122 820	22.91	307 052	35.02	-184 233
Myanmar	7 648	1.43	16 889	1.93	-9 241
Philippines	72 592	13.54	23 394	2.67	49 198
Singapore	44 610	8.32	42 894	4.89	1 717
Thailand	85 818	16.01	180 054	20.54	-94 235
Viet Nam	94 609	17.65	74 901	8.54	19 709

Source: China Customs Statistics (www.comstoms.gov.cn)

Trade increases are considerably influenced by the different modalities of tariff reduction. Imports by China of products in its HSL, such as palm oil, account for more than 50 percent of imports and they are not affected by tariff reductions because of the high demand and the comparatively low tariff (e.g. the import duty on palm oil is 9 percent on MFN rates). In 2010, imports of palm oil were valued at US$4.69 billion, which amounted to an increase of 90 percent over the value in 2003, and accounted for more than 40 percent of total agricultural imports from ASEAN. There has not been much change in trade in Sensitive List (SL) products, such as wool and cotton. Imports of products listed in the EHP increased very rapidly. Imports increased by 37 percent, to US$1 billion in 2004, the year of EHP implementation, to US$2.18 billion in 2008, and to US$3.77 billion in 2010. Imports of products in the Normal Track had been valued at less than US$500 million annually before the tariff reduction in 2004 when EHP was implemented, and there has been a steady increase after the reduction. The trade value reached US$1.0 billion in 2007 and exceeded US$1.8 billion in 2010. Imports of products listed in the Normal Track Two, whose tariffs can be kept at 5 percent for a certain period of time, also increased to some extent after the ACFTA was implemented (see Figure 8).

FIGURE 8:

Increases in trade values by different methods of tariff reduction, 2000–2010

Unit: US$100 million
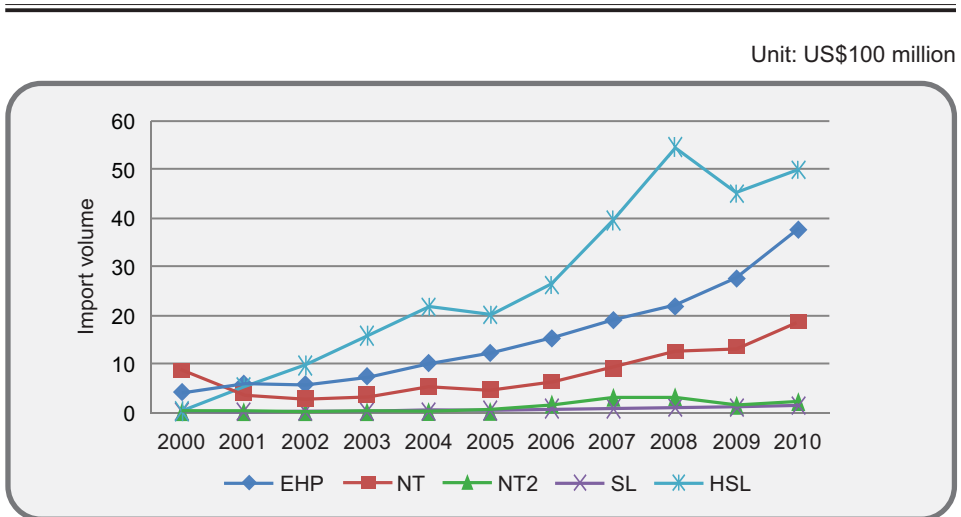
Source: China Customs Statistics (www.comstoms.gov.cn)

Influences on agricultural production, supply and farmers' incomes in China

ACFTA has helped to improve the product mix of Chinese agriculture and to promote trade based more fully on comparative advantages. Jiangxi province exported the most citrus and Shaanxi province exported the most apples to ASEAN members. Production structures of related industries in these two provinces have been improved; brand cluster effects and their international competitiveness have been greatly strengthened. Shaanxi province is the biggest producer of apples in China. According to the working report of the Shaanxi Reform and Development Commission, after a ten-year period of rapid, consistent and healthy development, the fruit industry shows many advantages, the most obvious being the increased production scale of the industry. In 2010, there were 566 700 hectares of apples in Shaanxi, producing 8.05 million metric tonnes, with more than 90 percent of the apple trees being high-quality, well-known varieties. Construction of an export base for green and organic apples is progressing steadily. The annual rate of increase in exports of apples has been greater than 10 percent for ten consecutive years.

The increase of exports to ASEAN members did not have much influence on China's agriculture-related industries, product prices or farmers' incomes. The China Customs Database statistics show that China's export prices for apples and citrus have shown a stable increasing trend during the period 2000–2010; the planting area of apple trees and their level of production in Shaanxi province also increased, but the income of fruit farmers fluctuated over this period. The average income of fruit farmers in the years 2003, 2004 and 2008 decreased greatly, compared with that in 2002. Because fruit exports only account for 3 to 4 percent of the total production, the increase of agroproducts exports to ASEAN members and increased unit values did not have an effect on China's domestic markets (see Table 21).

ACFTA has helped to ease the pressure on resources and the environment in the domestic supply of agricultural products. Large imports of palm oil and other resource-intensive products into China have eased the pressure on the supply of agricultural products such as edible oil and tropical fruit caused by people upgrading their diets. The consumers' choice for food is now much wider. Because of China's increased demand for imports, prices of the relevant products imported from ASEAN have increased rapidly. Although the percentage of palm oil from ASEAN in China's import of edible oil has been unchanged, the unit price in 2010 has almost doubled since 2003. This fact indicates that the export income of these exporting counties has increased greatly (see Table 22).

The farmers who planted tropical fruits were significantly affected by imports from ASEAN. Consider the case of longan. In 2009, the area of longan planted in China (the world's largest producer) and its corresponding production accounted for 70 percent and 60 percent of world plantings and production, respectively (MOA 2009b). The longan production and processing industry in Guangdong, Guangxi,

TABLE 21:

The production and prices of apples in Shaanxi province 2002–2009

Year	Planting area (1 000 ha)	Output (1 000 MT)	Yield (MT/ha)	Value (100 million yuan)	Farmgate price (yuan/kg)	Net income (yuan/ha)
2002	369.0	3 921	10.6	44.7	1.14	11 610
2003	401.5	4 617	11.5	47.6	1.03	10 260*
2004	412.1	5 552	13.5	65.5	1.18	9 507
2005	426.3	5 601	13.1	n/a	n/a	n/a
2006	462.2	6 499	14.1	104.6	1.61	19 134
2007	484.9	7 015	14.5	162.7	2.32	37 785
2008	530.9	7 455	14.0	141.6	1.90	20 448
2009	564.9	8 051	14.3	188.3	2.34	55 045

Note: * National average in 2003.

n/a – data not available.

Source: MOA 2009a

TABLE 22:

Unit price change of main import products from ASEAN 2000–2010

Unit: US$/MT

Year	Palm oil	Cassava	Banana	Longan	Durian
2000	328	86	244		601
2001	280	79	214	488	558
2002	382	81	207	438	471
2003	435	82	211	543	594
2004	485	100	239	633	614
2005	412	126	280	511	635
2006	447	125	299	506	633
2007	723	143	333	563	674
2008	988	198	382	631	668
2009	655	146	363	614	634
2010	827	209	366	663	869

Source: China Customs Statistics (www.comstoms.gov.cn)

Fujian, Hainan, Sichuan and Yunnan provinces has contributed greatly to regional economic development and to increasing farmers' incomes. In Guangxi for example, the longan share was 13 percent of the total value of output of fruits in 2008. On the other hand, in ASEAN member states, there is a wide variety and good quality of tropical fruits, as well as long-term supply, low costs and low prices. Therefore,

China's imports from ASEAN increased rapidly during 2000–2010. As ACFTA took effect, it lowered the prices of imported tropical fruits in the local market and prices of longan decreased rapidly, from RMB yuan 10 000/metric tonne in 2000 to RMB yuan 2 000–3 000/metric tonne in 2004, and RMB yuan 3 600/metric tonne in 2008. The incomes of local fruit farmers decreased substantially and some even had to operate at a loss. In Fujian province in 2005, the number of longan farmers decreased from 16 320 to 13 000 households. Demand by domestic processing enterprises for fresh fruits and other raw fruit materials from local markets is falling because of the lower prices of fresh fruits and fruit materials imported from ASEAN. Imports of processed fruits and fruit products created great pressure on the competitiveness of the domestic fruit processing industry and profits in the local industry are very much affected (see Table 23).

TABLE 23:

Longan planting areas of China 2000–2009

Unit: 1 000 hectare

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	470.3	448.0	457.0	435.5	441.7	405.8	397.0	387.6	395.8	387.5

Source: MOA 2009b

Influences on China's agricultural liberalization

On investment

ASEAN countries have already become key destinations for investment by China's enterprises as a result of the improved environment for investment, promising markets and geographical advantages. The increase of investment has been very rapid, although the total value of investment is not large. Provinces in China that share borders with ASEAN member countries are cooperating with their neighbours, having worked out the Action Plan for Development of Agriculture Natural Resources. The key areas for foreign direct investment from China are in the production of natural rubber, sugarcane, cassava and bananas, and the processing of some of these products. According to the statistics from the Yunnan Provincial Department of Agriculture, agricultural enterprises in Yunnan are able to invest freely and conveniently in ASEAN because of the Agreement on Investment of the Framework Agreement. The projects already underway include agricultural technology demonstrations and training and crossborder animal disease prevention and control. As of the end of 2009, the Yunnan provincial government had approved more than 30 enterprises from ASEAN members to invest in Yunnan, with contracted investment of about US$300 million and actual investment of approximately US$150 million. This sum accounted for 20 percent of the total foreign investment in agriculture in the

province. The investment came mainly from Malaysia, Singapore and Thailand. The provincial government also approved about 50 companies from Yunnan to invest in agriculture production in ASEAN, with contracted investment of about US$600 million, and actual investment of about US$350 million, accounting for 85 percent of the province's total agricultural investment in foreign countries. The investment mainly went to Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam.[61]

On agricultural cooperation

Under the framework of ACFTA, China has invested 15 million RMB yuan into 36 agricultural cooperation projects involving human resources development, agricultural technology experiments and demonstrations, agricultural technical exchange, and commercial and trade cooperation with ASEAN members during 2008–2010. China has actively participated in the East Asia Emergency Rice Reserve and, jointly with ASEAN member countries, it has implemented an action plan to strengthen food security in the region. In addition, China has also actively participated in the international development programme of the Greater Mekong subregion on food security, crossborder prevention and control of animal and plant epidemics and diseases, rural renewable energy, and the application of agricultural information and exchange of agricultural technologies. Since 2008, under the China-initiated framework of the Action Plan for Improving Comprehensive Grain Productivity, China has cooperated with Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam in developing demonstration fields for high-quality crops.

On competitiveness

The similarity between the export destinations of China and of ASEAN members is very high. For instance, the mix of Chinese agricultural products exported to third markets is similar to that from ASEAN members. Aquatic products and vegetables exported from China often compete with those from Thailand and Viet Nam.

Issues and challenges

In provinces such as Guangxi and Hainan, many farmers who planted large areas of tropical crops, such as litchi and longan, incurred heavy losses caused by the import surge. This was a result of the lack of accurate information and good judgment about the changes in both domestic and international markets. The production and livelihoods of these farmers were badly affected by these losses. Readjustment of the mix of crops needs more investment and technology, but there are not enough remedial measures or assistance to help farmers and related industries recover from losses that have stemmed from trade liberalization.

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[61] Department of Commerce, Yunnan Province (www.bofcom/432345564227567616/index.html).

Import and export inspection and quarantine standards are not uniform, resulting in an increase in trade frictions. Although zero tariffs promote the growth of trade between China and ASEAN members, divergences and disputes on the inspection technologies applied, especially on the issue of chemical residues in agricultural products, have risen considerably. This has resulted in a series of frictions in agricultural trade, because China and ASEAN members have not formed unified import and export inspection and quarantine standards. Since 2003, more than 60 percent of Chinese enterprises exporting apples have encountered pesticide residue investigation and other SPS measures imposed by ASEAN members. The international financial crisis exacerbated the negative effects of explicit or invisible trade barriers, to some extent offsetting the tariff reductions and other preferences in the FTA.

Chinese enterprises do not make full use of preferential policies such as tariff reduction. According to ACFTA policies, any Chinese agricultural products with Preferential Tariff RoO Certificates in ACFTA, issued by China Entry and Exit Inspection and Quarantine Institutions, should be treated as duty-free or at the preferential tariff by the customs authorities at the point of entry to ASEAN members. However, because Chinese enterprises lack a good understanding of the rules in ACFTA, only 13 percent of the trade value of products exported to ASEAN members by China in 2010 was treated at preferential tariff rates. Statistics in Yunnan showed that among more than 2 300 import and export enterprises of different kinds registered in Yunnan Entry and Exit Inspection and Quarantine Institutions, only about 700 enterprises used Preferential Tariff RoO Certificates in 2010. This fact means that the preferential trade policy of tariff reduction and elimination in ACFTA is not fully implemented, with the consequent loss of potential benefits from membership in ACFTA.

5. Concluding remarks

The agriculture sector is of paramount importance to China's food security and to the livelihood of 700 million rural residents. Despite the steady growth of the Chinese economy as a whole in recent years, the country's huge population, limited agricultural resources and low agricultural productivity, have made it necessary for the Chinese government to maintain its long-standing priority of ensuring the effective supply of agricultural products. Chinese farmers, except those in poverty or badly affected by natural disasters, will first of all produce enough grain to feed themselves, so there is generally not a food shortage in rural areas in China. However, food security is an issue for urban residents because it depends in part upon farmers being willing to grow grain crops and to earn reasonable incomes from doing so under market-oriented economy conditions. At present, the farmers benefit from the government's agriculture support policies, which encourage production of grains and other major agricultural products. Although these policies have been successful for grains, they

have been less successful for the production of oilseeds, cotton and some other agriculture products for which imports are needed. Agricultural trade in this sense plays a significant role in agricultural and rural economic development.

Up to now, ACFTA involves the most member countries and the largest aggregate economy of the FTAs implemented by China. China and most ASEAN members are developing countries and agriculture in these countries plays an important role in GDP. Meanwhile, their agricultural sectors are at the same stage of development and have similar basic foundations. There are more than two billion people in the region, who provide a huge market demand. These conditions have provided motivation and laid a solid foundation for the liberalization of agricultural trade. Reducing tariffs on agricultural products in ACFTA is provided under the EHP and the Agreement on Trade in Goods, which includes products in the EHP as well as normal products and sensitive products in the Trade Agreement on Goods. Because of the different stages of its members' economic development, ACFTA provides special and differential treatment for the newer ASEAN members in the tariff reduction/elimination process. The liberalization process in agricultural trade between China and the six older ASEAN members has occurred more rapidly than with the four newer members, and the scope of the latter has been less ambitious as well. The reduction or elimination of tariffs on Chinese agricultural products in ACFTA has been greater than in China's FTAs with other countries.

The establishment of ACFTA has promoted agricultural trade in the region, although RoO have restricted the extent to which trade has expanded. Member countries in the region benefit from trade complementarities. The increased rate of growth of agricultural trade between the parties was higher than the growth rate during the same period of time between each party and the rest of the world. China's trade deficit with ASEAN is increasing. The products exported by China to ASEAN members are mainly labour-intensive products such as vegetables, temperate fruits and aquatic products, and those products imported by China are mainly land-intense products, such as palm oil, cassava and tropical fruits. Increased trade occurred only between China and certain ASEAN members. China's exports mainly go to Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam, whereas imports come mainly from Indonesia, Malaysia and Thailand. The size of the trade increase is significantly influenced by the different modes of tariff reduction. Imports of products listed in the EHP increased very rapidly. With the exception of palm oil, imports of products on China's HSL did not change much, because tariffs on HSL products didn't change. Imports of palm oil itself, with a trade value accounting for more than 50 percent of imports from ASEAN, increased rapidly because of increasing domestic demand and the low tariff rate applied.

ACFTA has helped to improve the product mix of China's agriculture and generated some gains by utilizing comparative advantages. However, these gains have probably been small because of the limited increase in export demand from

ASEAN countries. Farmers who planted tropical fruits in the southeast coastal provinces were badly affected by imports of these products from ASEAN, but there were not enough remedial measures or assistance provided to farmers and related industries to stem the losses and reduce the harm done by trade liberalization. The similarity of export destinations from China and ASEAN members to third countries is very high for some products, such as aquatic products and vegetables, which has led to increased competition for exports of these products.

Import and export inspection and quarantine standards are not uniform, resulting in an increase in trade frictions.

Chinese enterprises do not make full use of the preferential tariffs provided through ACFTA.

Investment in agriculture and agricultural cooperation between China and ASEAN countries has increased quickly and it continues to deepen, but achieving better mechanisms for cooperation and consultation remains a goal for the future.

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Part III

SAFTA and country experience from the SAARC region

5. SAFTA and food security in South Asia: an overview

6. An analysis of Bangladesh's food security concerns: nature of the problem and potentials of SAFTA-RTA

7. Nepal-India bilateral trade agreement: implications for agriculture and food security

SAFTA and food security in South Asia: an overview

Indra Nath Mukherji

1.   Introduction

The World Trade Organization (WTO) came into being in 1995 but Regional Trading Arrangements (RTAs) have continued to proliferate. Referring to this trend, the WTO states:

> Regional Trade Agreements (RTAs) have become a very prominent feature of the Multilateral Trading System (MTS). The surge in RTAs has continued unabated since the early 1990s. As of 15 January 2012, some 511 notifications of RTAs, counting goods, services and accessions separately, have been received or notified to the GATT [General Agreement on Tariffs and Trade]/WTO. Of these, 370 notifications were notified under Article XXIV of the GATT 1947 or GATT 1994; 36 under the Enabling Clause; and 105 under Article V of the GATS [General Agreement on Trade in Services]. At that same date, 319 agreements were in force. These WTO figures correspond to 393 physical RTAs (counting goods and services together), of which 214 are currently in force *(*WTO: Regional Trade Agreements).[62]

> All RTAs constitute some form of a preferential trading arrangement (PTA), although the nature of integration varies considerably among them. One can identify at least five forms of market integration among RTAs/PTAs. Under the mildest form of PTA the Contracting States (CSs) offer a preferential margin with respect to trade barriers for products imported from other CSs, relative to their Most Favoured Nation (MFN) rates.[63] In this case the preferences are exchanged under the so-called Enabling Clause included in the 1979 Decision on Differential and More Favourable Treatment, Reciprocity and Fuller Participation of Developing Countries. These PTAs, which are not available to developed-country members of the WTO, do not adhere to

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[62] World Trade Organization (available at http://www.wto.org/english/thewto_e/minist_e/min01_e/brief_e/brief20_e.htm).

[63] The Most Favoured Nation (MFN) clause as enshrined in Article I of GATT is the central organizing rule embodying the principle of non-discrimination. It requires that the best tariff and non-tariff condition extended to any member of GATT must be automatically extended to every other member.

any lines for phase-out of restrictions on trade of goods among them, nor do they define how much of their mutual trade needs to be liberalized.[64] CSs with disparate levels of development, as well as trade regimes, find this an acceptable instrument for initiating regional trade liberalization, and this arrangement constitutes a step towards accelerated regional trade liberalization, culminating in a free trade area.

Under a free trade area the CSs eliminate all trade restrictions on their mutual trade, but maintain restrictions on trade with non-CSs at levels they deem appropriate, i.e. at pre-existing levels.

When all CSs decide on a common external tariff, the arrangement is transformed into a customs union. Special provisions were made in Article XXIV of the GATT to permit the operation of free trade areas or customs unions under principles designed to induce the trade-promoting effects of integration schemes and minimize their trade-diverting effects. The main purpose of an RTA should be to facilitate trade in goods between the constituent countries and not to raise barriers to trade with other WTO members that are not parties to the RTA. Article XXIV requires that "substantially all trade" between constituent members be covered by the RTA and implemented in a "reasonable length of time*".*[65]

The fourth stage of an integrative arrangement arises in the form of a common market, in which all CSs agree to allow not only free movement of goods and services but all the factors of production, including capital and labour.

The most comprehensive form of economic integration is characterized as an economic community under which, in addition to all the features of a common market, the CSs decide to establish a common currency and coordinate their monetary, fiscal and exchange rate policies.

The Agreement on SAARC Preferential Trading Arrangement (SAPTA), signed in 1993 and in operation since 7 December 1995, represented the first stage of an integrative arrangement among the member countries of the South Asian Association for Regional Cooperation (SAARC). Encouraged by the progress made by SAPTA negotiations, SAARC leaders at the Tenth SAARC Summit in Colombo in 1998 decided to set up a Committee of Experts to draft a treaty on a South Asian Free Trade Area (SAFTA). The treaty was expected to establish legally binding schedules

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[64] http://www.wto.org/english/thewto_e/minist_e/min01_e/brief_e/brief20_e.htm

[65] There is no agreement among members about the meaning of "substantially all trade", as many agreements exclude sensitive areas such as agriculture and textiles. With respect to the term "reasonable length of time", the 1994 Understanding on Interpretation of Article XXIV states that the "reasonable length of time" ... should exceed ten years only in "exceptional cases." (See http://www.thecommonwealth.org/shared_asp_files/uploadedfiles/54198A83-736D-4D36-B484-27400E267BCE_SATPaperforComsecCompleteJano6.pdf).

for freeing trade among the SAARC countries and to provide a predictable and transparent timeline for achieving a free trade area in the South Asian region. However, given the growing political tensions in the region, this work could not be accomplished at that time.

A landmark development in trade liberalization in the region was achieved during the Twelfth SAARC Summit, held in Islamabad from 4 to 6 January 2004. Among other measures, an Agreement on SAFTA, symbolizing the second stage of regional integration, was finally signed. The Agreement superseded the SAPTA Agreement of 1993. However, the National Schedule Concessions exchanged under the SAPTA framework would remain available to the CSs until completion of the Trade Liberalization Programme (TLP). The Agreement became effective on 1 January 2006, upon completion of formalities, including ratification by all CSs and issuance of a notification thereof by the SAARC Secretariat.

2. Framework of the agreement

Objectives and principles

Article 3 of the Agreement describes the objectives and principles of the Agreement. Primary objectives include: eliminating barriers to trade and facilitation of crossborder movement of goods between the territories of CSs; promoting conditions for fair competition and ensuring equitable benefits to all CSs; and ensuring effective mechanisms for implementation of the Agreement and resolution of disputes.

The principles of SAFTA envisage that the Agreement will be governed in accordance with member countries' obligations to the WTO and any other Treaties or Agreements to which its CSs are signatories. In addition, the special needs of the Least Developed Countries (LDCs) will be recognized by adopting concrete preferential measures in their favour on a non-reciprocal basis (see Article 3.1(f) of the Agreement).

Trade liberalization programme

Article 7 describes the TLP. Under this programme the SAFTA CSs have committed to phase out tariffs over a ten-year period, originally beginning in January 2006 (extended to July 2006). Unlike SAPTA the phase-out will be across the board (except for the Sensitive Lists negotiated under SAFTA), based on the current level of tariffs of all non-sensitive products. Reductions will proceed in two stages, although at different paces for LDCs and for Non-Least-Developed Countries (NLDCs).[66]

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[66] Under SAARC, LDCs are Afghanistan, Bangladesh, Bhutan, Nepal and Maldives. The remaining CSs, i.e. India, Pakistan and Sri Lanka are NLDCs.

During the first phase, covering the first two years (2006–2008):

- LDCs will reduce tariffs to a maximum of 30 percent (tariffs already below 30 percent will be reduced by 5 percent annually); and
- NLDCs will reduce all tariffs to a maximum of 20 percent (tariffs already below 20 percent will be reduced by 10 percent annually).

In the second phase of implementation (2008–2016):

- LDCs will reduce tariffs to between 0 and 5 percent over eight years (until 2016) at a rate of no less than 10 percent annually; and
- NLDCs will reduce tariffs to between 0 and 5 percent by the third year (2009) for products from LDCs and over five years (until 2013) for the remainder at a rate of no less than 15 percent annually. Sri Lanka is allowed six years (until 2014) to complete this phase.

Article 7.2 of the Agreement, however, provides for accelerated tariff reduction, such that CSs are not precluded from immediately reducing their tariffs to between 0 and 5 percent, following an accelerated schedule of tariff reduction.

Article 7.3 mentions Sensitive Lists[67] that CSs need to work out to ensure that such products are not initially subject to regional trade liberalization. These products are to be reviewed every four years or sooner as may be decided by the SAFTA Ministerial Council, established under Article 10, with a view to reducing the number of items on the Sensitive Lists.

Article 7.4 carries a provision on non-tariff and para-tariff measures. Under this Article, CSs are required to notify the SAARC Secretariat of all non-tariff and para-tariff measures to their trade on an annual basis. These measures shall be reviewed by the Committee of Experts, established under Article 10, to examine their compatibility with relevant WTO provisions. The Committee will recommend the elimination or implementation of these measures in the least restrictive manner in order to facilitate intra-SAARC trade.

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[67] In the WTO negotiations on agriculture the number of sensitive products each government may select is to be negotiated. Even for these products, there has to be "substantial improvement" in market access, which can partly be achieved by creating or expanding tariff quotas. Providing for additional flexibility to developing countries, the negotiations provide for additional entitlement to self-designate special products based on the criteria of food security, livelihood security and rural development. Under SAFTA there are no benchmark criteria to determine how many products can be included on any CS's Sensitive List. These products are to be reviewed every four years or earlier as may be decided by SAFTA Ministerial Council, established under Article 10, with a view to reducing the number of items in the Sensitive List. (See WTO: Agriculture Negotiations: Backgrounder (August 2004 framework: market access).

The SAARC CSs have initiated measures to speed up further trade liberalization.

The Working Group on Reduction in the Sensitive Lists under SAFTA has completed its task of reducing the Sensitive Lists by 20 percent. Maldives has reduced its Sensitive List from 681 tariff lines to 152 tariff lines (78 percent reduction) and India has reduced its Sensitive List for LDCs from earlier 480 tariff lines to only 25 tariff lines (95 percent reduction). The number of products covered in the Sensitive Lists of Member States before and after 20 percent or more reduction is given in Table 1.

TABLE 1:

Number of products covered in the Sensitive Lists of SAARC member states

Member state	Number of products in the earlier Sensitive Lists	Number of products in the revised Sensitive Lists (phase-II) with effect from 1 January 2012
Afghanistan	1 072	850
Bangladesh	1 233 (LDCs)	987 (LDCs)
	1 241 (NLDCs)	993 (NLDCs)
Bhutan	150	150
India	480 (LDCs)	25 (LDCs)
	868 (NLDCs)	614 (NLDCs)
Maldives	681	152
Nepal	1 257 (LDCs)	998 (LDCs)
	1 295 (NLDCs)	1 036 (NLDCs)
Pakistan	1 169	936
Sri Lanka	1 042	845 (LDCs)
		906 (NLDCs)

Source: SAARC Secretariat (see http://saarc-sec.org/areaofcooperation/detail.php?activity_id=35)

Further reductions in the Sensitive Lists under SAFTA is being urged by SAARC leaders. Accordingly, the Seventh Meeting of the SAFTA Committee of Experts, held in Islamabad from 14 to 15 February 2012, decided to form an ad-hoc Working Group on Reduction in the Sensitive List under SAFTA (Phase III). The Working Group would devise modalities of reduction in the Sensitive List.

The following phase-out period for the tariff lines to be taken out of the Sensitive Lists has also been agreed to as presented in Table 2.

TABLE 2:

Phase-out period for the tariff lines to be taken out of Sensitive Lists

(Base rate: Tariff as on September 2010; date of implementation: 1 January 2012; for Nepal 1 August 2012)

		Tariff reduction: 0–5%
NLDC to NLDC	3 years	
Sri Lanka	6 years	6 years
LDC to all contracting states	8 years	8 years
NLDC to LDC	3 years	3 years

Source: SAARC Secretariat (see http://saarc-sec.org/areaofcooperation/detail.php?activity_id=35)

Special and differential treatment for least-developed contracting states

Article 11 of the Agreement provides for special and differential treatment for LDCs. Article 11(a) calls for special regard to the least-developed CSs when considering the application of anti-dumping and/or countervailing measures. Article 11(d) of the Agreement provides that special consideration should be given by CSs to requests from LDCs for technical assistance and cooperative arrangements designed to assist them in expanding their trade with other CSs. A list of possible areas of such technical assistance has been incorporated under Annex II of the Agreement.

Article 11(e) of the Agreement further provides an appropriate mechanism to compensate LDCs for their loss in customs revenue following TLP. A mechanism by which NLDC CSs will provide compensation over a period of four years from the implementation of TLP to LDC members for loss in customs revenue for non-sensitive products has been incorporated under Annex III of the Agreement.

Additional measures

Article 8 of the Agreement calls for additional measures to facilitate the promotion of intra-SAARC trade. These include harmonization of standards, reciprocal recognition of tests and accreditation of testing laboratories of CSs and certification of products. It further calls for simplification and harmonization of customs clearance procedures, provision of transit facilities, etc.

Outside the framework of SAFTA, the SAARC CSs have embarked on a Customs Action Plan on Cooperation, Uniformity and Harmony for simplification and transparency in customs administration. Its overall objective is to move towards simplification, harmonization and uniform application of customs procedures by member administrations so as to contribute effectively to the development of trade within the region. The intention is to progressively implement the provisions of the Simplification and Harmonization of Customs Procedures (from the Kyoto

Convention), maintaining cognizance of the review being undertaken by the World Customs Organization. The aim is to develop a coordinated approach to the development of key customs procedures across the membership, in particular relating to the use of standard forms for customs declarations, introduction of simplified forms for customs clearance and exchange of information.[68]

The Action Plan further seeks effective implementation of the WTO Agreement on Valuation, which provides for exchange of information on legislative developments and, where required, assistance in implementation of the Agreement. The Agreement also seeks uniform application, updating and promotion of the Harmonized System of classification. In pursuance of these objectives, the Action Plan calls for promotion of bilateral or multilateral agreements on customs cooperation among member administrations to offer mutual administrative assistance for the prevention, investigation and repression of customs offences.[69]

3. Constraints and limitations of TLP

Long phase-out period

SAFTA represents the endeavour of SAARC member states to move towards a higher stage of trade liberalization by moving from preferential trading under SAPTA to a free trade area under SAFTA. By moving from a positive list approach to a negative[70] one, SAFTA can overcome the protracted nature of negotiations prevalent under SAPTA. However, it is generally believed that the phase-out period of ten years has been somewhat prolonged even for LDCs, and even after ten years CSs may choose to retain their tariff levels at 5 percent. The ongoing and proposed trade liberalization at the multilateral level, such as under WTO, will cause both agricultural and manufacturing tariffs to fall further, thereby reducing preferential margins in all preferential trading arrangements. In this context the SAFTA provision under Article 7.2 would enable NLDCs to further accelerate their tariff schedules downwards. India's decision to remove tariffs for LDCs one year in advance of the schedule (i.e. by 2008) is a step in the right direction.

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[68] Customs Action Plan on Cooperation, Uniformity and Harmony for Customs Administrations of SAARC Member Countries, SAARC Secretariat, Kathmandu.

[69] Ibid.

[70] Under the Negative List approach all products above a defined threshold tariff level are brought down to that level (except Sensitive Products) through successive phase-out periods until a free trade area is reached. In contrast, under a Positive List approach only products listed under a CS's National List of Concessions are subject to tariff cuts.

Long Sensitive Lists

The length of the Sensitive Lists under SAFTA is a matter for concern. A Sensitive List of 20 percent of tariff lines defined at 6-digit level of classification under the Harmonized System has been the accepted norm for the CSs under SAFTA. This allows several key trading items to be placed on the respective Sensitive Lists of CSs for exemption from TLP. The Sensitive Lists in SAFTA are, in general, even longer than those of bilateral free trade areas in the region. To illustrate: although 884 items are on India's Sensitive List for NLDCs under SAFTA, only 419 items are on this list under the India-Sri Lanka Free Trade Agreement (ISFTA). It is important to recognize that up to 53 percent of total imports of South Asia are subject to Sensitive Lists. The LDCs have placed between 64 and 74 percent of total trade on Sensitive Lists. Likewise, Sensitive Lists of fellow SAARC members restrict 47 percent of Sri Lankan exports and 57 percent of Indian and Maldivian exports. By contrast, Pakistan has excluded only a little over 17 percent of its imports by value from SAFTA members under TLP (Weerakoon and Thennakoon 2006).

This makes the attainment of a free trade area in South Asia impossible.[71] CSs need to seriously consider effectively pruning their Sensitive Lists so that no more than 10 percent of their bilateral trade is contained in them. This is particularly important given that they have adequate trade defence measures to deal with unexpected surges in their imports adversely affecting their balance of payments issues or causing substantial injury to their industries. India's recent initiative to drastically reduce its Sensitive List for LDCs needs to be similarly pursued by all other CSs promptly and effectively to add further impetus to the TLP.

Competing regionalism

The urgency for SAFTA to assert its relevance is particularly pressing because of the proliferation of competing free trade agreements in the region. The ISFTA became fully operational by 2008 whereas the Pakistan-Sri Lanka Agreement became fully operational by 2010. Moreover, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) includes five SAFTA members[72] that are also part of the transregional FTA. It goes beyond SAFTA to include investment and trade in services and also contains a provision for fast-track liberalization. In particular, India's increasing involvement, bilateral as well as transregional, is likely to have an impact on preference erosion for other SAFTA Members[73] (de Mel 2007).

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[71] Paragraphs 8(a), 8(b) of Article XXIV of GATT stipulate that "duties and other restrictions of commerce" are "eliminated with respect to substantially all the trade between the constituent territories of the union" for both customs union and a free trade area.

[72] These countries are India, Bangladesh, Nepal, Bhutan, and Sri Lanka.

[73] India is in the process of negotiating free/preferential trading arrangements with several regions/countries, such as the Cooperation Council for the Arab States of the Gulf (GCC), the Southern Common Market (MERCOSUR), the Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation (BIMSTEC), the Association of Southeast Asian Nations (ASEAN), the Southern African Customs Union (SACU), and with Republic of Korea, Japan and Chile. It is also considering signing FTAs with the European Union and the United States of America.

Using the WTO source, the following five Bilateral Free Trade Agreements/ Partial Scope Agreements (PSAs) can be identified in South Asia.[74]

TABLE 3:

WTO classification of bilateral preferential trading arrangements in South Asia

Agreement Name	Coverage	Status	Date of signature	Date of entry into force	Type	Notification under	Date of notification
The Agreement on Trade and Commerce between India and Bhutan	Goods	In force	28 July 2006	29 July 2006	Free Trade Agreement	Enabling Clause	30 June 2008
India-Nepal Treaty of Trade	Goods	In force	27 October 2009	27 October 2009	Partial Scope Agreement	Enabling Clause	02 August 2010
India-Afghanistan Preferential Trade Agreement	Goods	In force	06 March 2003	13 May 2003	Partial Scope Agreement	Enabling Clause	08 March 2010
India-Sri Lanka Free Trade Agreement	Goods	In force	28 December 1998	15 December 2001	Free Trade Agreement	Enabling Clause	17 June 2002
Pakistan-Sri Lanka Free Trade Agreement	Goods	In Force	01 August 2002	12 June 2005	Free Trade Agreement	Enabling Clause	11 June 2008

Source: World Trade Organization (see http://rtais.wto.org/ui/PublicPreDefRepByRTAName.aspx).

It will be observed that all intraregional Bilateral Preferential Trading Arrangements in South Asia that are currently in force have goods-only coverage. These Agreements were signed (or renewed) between 2002 and 2009 and implemented between 2001 and 2009. The Agreements between India and Bhutan, India and Sri Lanka, and Pakistan and Sri Lanka are Free Trade Agreements (FTAs), whereas those entered between India and Nepal, and India and Afghanistan are PSAs. All indicated Bilateral Free Trade Agreements have been notified to GATT/ WTO under the Enabling Clause.

The trade agreement between India and Bhutan is in the nature of an FTA with no Sensitive Lists. Movement of cereals and basic foodstuffs are not inhibited by

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[74] Under a Free Trade Agreement substantially all trade is made free, whereas under a Partial Scope Agreement a selected number of products are made free or granted preferential treatment.

tariff restrictions. The absence of any specific rules of origin also makes bilateral trade flows smoother between the bilateral trading partners.[75]

Trade between India and Nepal is in the nature of a PSA: exports from Nepal to India are free whereas the latter levies tariffs on Indian exports to Nepal (albeit at preferential rates). However, it is important to note that both countries have agreed, on a reciprocal basis, to exempt the import of primary products from basic customs duty as well as from quantitative restrictions. Currently, 16 products/product groups are so exempted.

Pandey (2011) referring to a study by Nepal's Central Bank, points to the co-movement of Nepalese consumer prices and Indian consumer prices, particularly of food products, implying that the bilateral trade agreement, by allowing the free movement of goods across borders, provides a unified market. The agreement also provides exemption from export restrictions by India upon request by the Government of Nepal on a case-by-case basis. This has contributed to price stability in Nepal by dampening price effects in a time of low production and supply in Nepal.

Of the five bilateral FTAs mentioned above, India constitutes the hub in four, with Afghanistan, Bangladesh, Bhutan and Nepal as spokes. Along with bilateral networks of trade agreements, all these countries (as well as Pakistan, which has a bilateral FTA with Sri Lanka) are also members of the SAFTA regional trade agreement. Bangladesh, India and Sri Lanka are also members of the Asia-Pacific Trade Agreement (APTA).[76] Thus, depending upon the nature of products exchanged for concessions, any overlap among them will tend to move trade to the partner country offering the best terms with respect to rules of origin, tariff and non-tariff preferences and trade facilitation measures.

Shallow regionalism

SAFTA has failed to keep pace with the times, because its focus has been concentrated on tariff reductions with modest efforts at trade facilitation. As tariffs have been falling globally, as a result of bilateral, regional and multilateral initiatives over the last three decades, the emphasis on protection has shifted from tariffs to

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[75] The possible reason for an FTA with Bhutan without any RoO (but not with Nepal, another LDC) could be the absence of import-competing industries in the former country, whereas a restrictive foreign direct investment policy in the country allows little scope of trade deflection to India of third-country products.

[76] Asia-Pacific Trade Agreement, (initially known as the "Bangkok Agreement", was initiated under the auspices of the UN Economic and Social Commission for Asia and Pacific. The Agreement, which was signed in July 1975, included three South Asian countries – India, Bangladesh and Sri Lanka – as well as the Republic of Korea and Lao People's Democratic Republic as original signatories. The People's Republic of China acceded to the Agreement as the sixth member in 2001.

less transparent non-tariff and para-tariff measures.[77] There is a high incidence of non-tariff barriers in this region, impeding the flow of intra-SAARC trade. Even within SAFTA, trade between India and Pakistan continues to be governed by a bilateral trade regime in which Pakistan allows access for only a limited number of Indian goods under its Positive List approach.[78] On the Pakistani side, a general perception exists among Pakistani exporters that Pakistan's exports to India are affected by technical barriers to trade (TBT) and sanitary and phytosanitary (SPS) barriers, particularly in textiles and in agroproducts, two sectors in which Pakistan possesses export potential. The presence of several standard-setting bodies in India with a multiplicity of rules and regulations and certifying agencies also creates confusion among Pakistani exporters (Mamoon 2010). Thus the actual trade potential between India and Pakistan continues to remain highly untapped. In Sri Lanka, over 400 items are subject to licensing, mostly for health, environment and national security reasons. The Sri Lanka Standards Institution operates a compulsory import inspection scheme, covering 102 products as per regulation (Mukherji 2010). Even with respect to tariffs, India's shift from *ad valorem* to specific duties, particularly on a wide range of textile fabrics and ready-made garments, makes it very difficult for Bangladeshi and Pakistani business interests to enter the Indian market, particularly in low-value textile products.

As noted earlier, Article 7.4 in SAFTA carries a provision for CSs to notify the SAARC Secretariat of all non-tariff and para-tariff measures (Engman 2006) on their trade on an annual basis, and these will be examined by the COE to assess their compatibility with relevant WTO provisions. However, the COE may merely recommend their removal, which is not mandatory.

It is widely acknowledged that a larger market resulting from trade liberalization in the region will make foreign direct investment more attractive, given the expanded size of the regional market. Also, given the strong linkage between trade and investment, SAARC needs to adopt a harmonized investment area for the region. Instead, SAFTA merely calls for removal of restrictions on intraregional flows of investment.

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[77] In the United Nations Conference on Trade and Development (UNCTAD's) Trade Analysis and Information System (TRAINS) database, para-tariffs are described as "other measures that increase the cost of imports in a manner similar to tariff measures, i.e. by a fixed percentage or by a fixed amount, calculated respectively on the basis of the value and the quantity". These can consist of service fees, additional import surcharges, or other fees levied on imported products inside the market (Engman 2006, p.70).

[78] According to a joint press statement by the Commerce Ministers of India and Pakistan issued at the end of the former's visit to Pakistan, from 13 to 16 February 2012, it has been agreed that Pakistan would normalize its trade relations with India by moving from a Positive List approach to a small Negative List by February 2012, and this would be phased out by the end of the year. Thereafter, only the SAFTA Sensitive List would be relevant. (see Joint Press Statement of Commerce Ministers of Pakistan and India (available at http://commerce.nic.in/whatsnew/Joint_Press_Statement_CM_Pak_India_Feb_2012.pdf).

Furthermore, the exclusion of services from the SAFTA Agreement until recently is another gap that needs to be addressed, given that services constitute 49 percent of South Asian Gross Domestic Product and are the fastest growing form of trade in the world. In a significant development, the SAARC Agreement on Trade in Services was ratified at the Sixteenth SAARC Summit held in Thimphu (Bhutan) from 28 to 29 April 2010. However, the negotiating process for schedules of specific commitments has been too slow given that, as of now, only four of the eight SAARC CSs have ratified the Agreement. There exists considerable scope for liberalization of services in sectors such as aviation, telecommunications and information technology. In addition, services liberalization in tourism, health, education and a number of other professional services holds considerable potential for economic benefits. Experience gained from ongoing negotiations proposed under the India-Sri Lanka Comprehensive Economic Partnership Agreement could be of immense relevance for similar negotiations under SAFTA (Institute of Policy Studies 2003).[79] The negotiations could take the Positive List approach and initially target a few agreed-upon sectors such as tourism, air services and higher education. This would call for greater cooperation among regulatory bodies, given the significant asymmetries that exist in the services standards among member countries of the region. Mutual recognition agreements (MRAs) would also be required to harmonize standards in the region (de Mel 2007). It is encouraging to note that a study has been commissioned by the SAARC Secretariat to assess the potential for inclusion of trade in services in the SAFTA Agreement.

The South Asian region is characterized by high transaction costs in mutual trade, which nullifies the advantages of geographical proximity. The landlocked nature of two South Asian countries, Nepal and Bhutan, suggests the need for a regional transit treaty involving Bangladesh, Bhutan, India and Nepal, which could assist in reducing the transaction costs in intraregional trade.

Rules of origin

SAFTA rules of origin (RoO) are contained in Annex IV of the Agreement. Rules 8 and 9 are the most relevant provisions of the Agreement. Rule 8 establishes that a product will satisfy the RoO requirements if there is a Change in Tariff Heading

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[79] A Joint Study Group (JSG) was set up in April 2003 to widen the ambit of ILFTA to go beyond trade in goods to include services and to facilitate greater investment flows between the two countries. The report of the JSG on Comprehensive Economic Partnership Agreement (CEPA) was submitted in October 2003. Based on the recommendation and conclusion of the JSG, CEPA negotiations were started in February 2005 and concluded in July 2008, after thirteen rounds of negotiations. Both sides had decided to sign the CEPA during the Fifteenth SAARC Summit held in Colombo but, because of reservations expressed by the Government of Sri Lanka, both sides have still not signed the Agreement. See India-Sri Lanka Comprehensive Economic Partnership Agreement (CEPA) negotiations (2010) (available at http://news.alibaba.com/article/detail/international-trade-special/100354872-1-india—sri-lanka-comprehensive-economic.html).

(CTH) at 6-digit level of classification under the Harmonized System if the domestic value addition is at least 40 percent (35 percent for Sri Lanka and 30 percent for LDC members), and if the final processing of the product takes place in the exporting country. Under Rule 9, "regional cumulation", the domestic-value addition requirement is lowered to 20 percent of the final value of the products if at least 50 percent of foreign inputs are from SAARC countries (SAARC Secretariat).

4. Coverage of agriculture

In this paper the coverage of agriculture will follow the definition provided in the WTO definition of agriculture.[80] This has been provided in Annex Table A.2 of this document, listing the products to be included under agriculture.

The SAFTA text makes no specific reference to the role of agriculture, except that it lists those products, including agricultural products, which appear on the SAFTA Sensitive Lists.

Table 4 presents the number of products on SAFTA Sensitive Lists for LDCs and NLDCs. It will be seen that nearly all SAARC countries have a large number of agricultural products on their Sensitive Lists for both NLDCs and LDCs. The overall share of such products on Sensitive Lists is quite high, ranging from 46 percent for Sri Lanka to around 12 percent for Bangladesh and Pakistan. India has drastically reduced its Sensitive List to only 25 products, all of them being agricultural products.

TABLE 4:

Number of agricultural products on SAFTA Sensitive Lists

Contracting states	NLDCs			LDCs		
	Agri-products	Total Sensitive List	% of total	Agri-products	Total Sensitive List	% of total
Bangladesh	151	1 254	12.0	151	1 449	10.4
India	309	868	35.6	25	25	100.0
Maldives	181	681	26.6	181	681	26.6
Nepal	357	1 295	27.6	357	1 257	28.4
Pakistan	145	1 169	12.4	145	1 169	12.4
Sri Lanka	482	1 043	46.2	482	1 043	46.2

Note: India drastically brought down its Sensitive List for LDCs to 25 products, *vide* customs notification No. 99/2011, dated 9 November 2011.
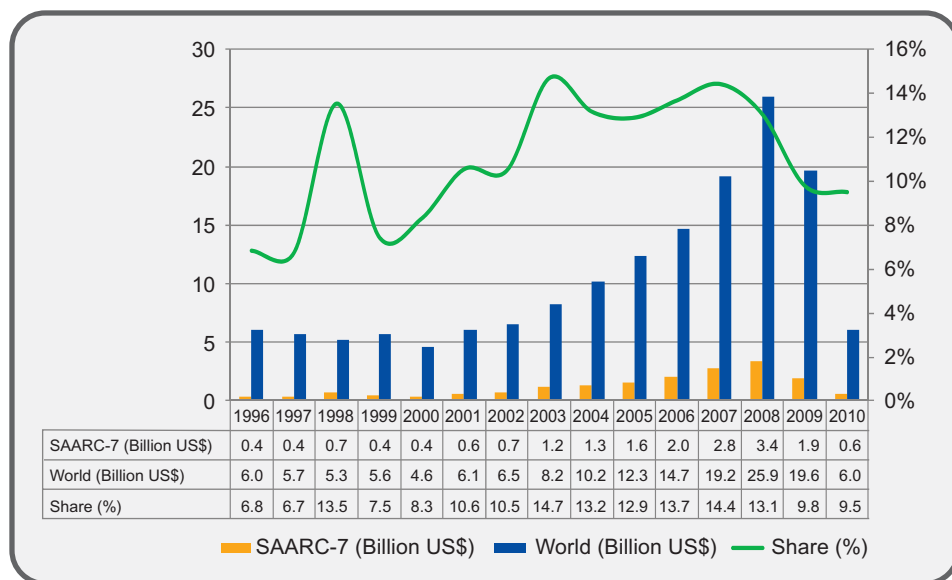
Source: Compiled from SAARC Secretariat

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[80] As raw jute (HS 5303) is not included under the WTO definition, this product has been excluded.

An analysis of the proportion of tariff lines for commodities on the Sensitive Lists indicates that textiles and textile products account for as much as 34.2, 24.1, 31.6, and 36.9 percent of the tariff lines on the Sensitive Lists of India, Pakistan, Bangladesh and Nepal, respectively. Similarly, vegetable products account for 20.2, 10.8, and 19.1 percent of the tariff lines on the Sensitive Lists of India, Nepal and Sri Lanka, respectively. These two groups of products are of export interest to many South Asian countries so their exclusion from trade liberalization makes the attainment of a free trade area in this region a very distant goal indeed (Taneja and Sawhney 2007).

The flow of trade in agricultural products among SAARC CSs and with the world is presented in Figures 1 and 2. Because of insufficient data for Afghanistan and Nepal, trade flows of only six SAARC countries could be analysed. The data availability of these countries is presented in Annex Table A.1.

FIGURE 1:

Intra-SAARC exports of agricultural products

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
SAARC-7 (Billion US$)	0.4	0.4	0.7	0.4	0.4	0.6	0.7	1.2	1.3	1.6	2.0	2.8	3.4	1.9	0.6
World (Billion US$)	6.0	5.7	5.3	5.6	4.6	6.1	6.5	8.2	10.2	12.3	14.7	19.2	25.9	19.6	6.0
Share (%)	6.8	6.7	13.5	7.5	8.3	10.6	10.5	14.7	13.2	12.9	13.7	14.4	13.1	9.8	9.5

Source: Author's estimates based on COMTRADE using WITS database

FIGURE 2:

Intra-SAARC imports of agricultural products

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
SAARC-7 (Billion US$)	0.1	0.1	0.3	0.4	0.2	0.4	0.7	1.1	1.0	1.3	2.0	2.5	1.8	1.1	1.3
World (Billion US$)	2.1	2.5	3.8	4.8	3.0	4.2	6.5	10.0	11.1	12.4	14.2	18.3	16.8	16.8	7.7
Share (%)	3.3	4.2	8.6	7.8	6.1	9.6	11.4	10.9	8.8	10.4	14.3	13.7	10.7	6.4	17.4

SAARC-7 (Billion US$)　　World (Billion US$)　　Share (%)
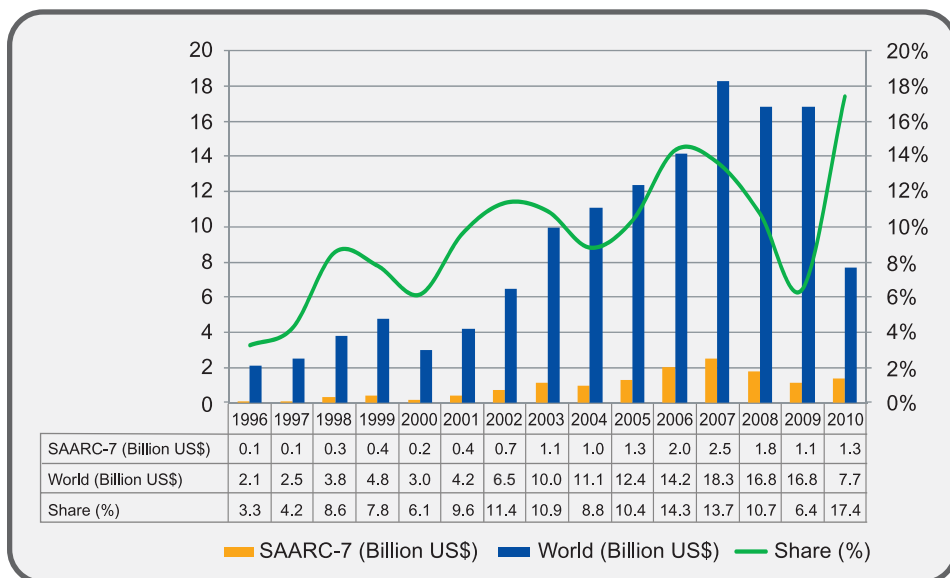
Source: Author's estimates based on COMTRADE using WITS database

The data reveal that world exports from SAARC-6 countries increased from US$6 billion in 1996 to US$26 billion in 2008. Following the global financial and commodity crisis in 2007 and 2008, this value plummeted to US$6 billion in 2010. During the same period, exports from SAARC-6 to the region increased from US$0.41 billion in 1996 to US$3.39 billion in 2008 and thereafter declined to US$0.57 billion in 2010. The share of intra-SAARC-6 agricultural exports in global agricultural exports peaked in 2003 and 2007 to over 14 percent and declined to 9.5 percent in 2010.

Figures for agricultural imports reveal that world agricultural imports of SAARC-6 countries increased from US$2.11 billion in 1996 to US$18.26 billion in 2007, declining thereafter to US$7.70 billion in 2010. Similar to the trend in exports, regional imports from SAARC-6 countries increased from US$0.07 billion in 1996 to US$2.49 billion in 2007, declining to US$1.34 billion in 2010. In terms of percentage share, regional imports of agricultural products from SAARC-6 countries increased from 3.26 percent in 1996 to 14 percent in 2006 and 17 percent in 2010.

The details of intra-SAARC trade in agricultural products are presented in Annex Table A.3.

Joint action for food security

SAFTA does not specifically mention any collective measure for food security. However, an "Agreement on Establishing the SAARC Food Bank" was signed in New Delhi on 3 April 2007 by the foreign ministers of the SAARC countries, excep for the Kingdom of Bhutan, which was represented by the minister for labour and human resources.

The Agreement, which superseded the "Agreement on Establishing the SAARC Food Security Reserve," has two objectives: (a) to act as a regional food security reserve for the SAARC member countries during normal times, food shortages and emergencies; and (b) to provide regional support for national food security efforts, foster inter-country partnerships and regional integration, and tackle regional food shortages through collective action.

Other salient provisions of the Agreement include establishment of a reserve of foodgrains (rice and wheat), maintenance of quality of the reserve, withdrawal of foodgrains, procedures for the release of foodgrains from the reserve,[81] replenishment of the reserve, procedures for the withdrawal of foodgrains by a member country from its own share of the reserve, determination of price, institutional arrangements, and functions of the Food Bank board.

The prices and terms and conditions of payment with respect to foodgrains would be subject of direct negotiation between the concerned member countries, based on guidelines for price determination to be approved by the Food Bank board. The Agreement sought to rationalize and improve provisions on the procedures for withdrawal and release of foodgrains.

Under the Agreement, the Food Bank has been authorized to start functioning with a total reserve of 241 580 metric tonnes of foodgrains made up of the following contributions: India (153 000 tonnes), Bangladesh (40 000 tonnes), Pakistan (40 000 tonnes), Nepal (4 000 tonnes), Sri Lanka (4 000 tonnes), Bhutan (180 tonnes) and Maldives (200 tonnes).

Quoting a SAARC official, the local news agency United News of Bangladesh reports that the two-day meeting of the Food Bank board at Dhaka deliberated on ways to make the SAARC Food Bank (SFB) effective and operational for supplying food during emergencies and addressing food shortages. But the SFB is not yet able to reserve adequate foodgrains to ensure regional food security. The meeting proposed

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[81] Under Article V, each member country shall be entitled, on the conditions and in accordance with the procedures laid down in Article III, Article VI and/or Article VIII, to draw on foodgrains forming part of the Reserve in the event of a food emergency and/or shortage. Article VI lays down the procedure for the release of food grains from the reserve.

increasing the strategic reserve at the SFB to 400 000 metric tonnes from the present 241 580 metric tonnes, and this may later be increased to 1 million metric tonnes.

The factors that reportedly influenced the meeting to arrive at the decision to increase the strategic reserve to 400 000 metric tonnes are: (a) the rapid growth of population, outpacing declining agricultural land in the South Asian region; (b) the increasing number of hungry people, putting the future of food security at risk in the South Asian region; and (c) the inadequacy of the SFB to address a food crisis during any emergency.

Although these concerns of the board must be considered, the fact remains that the need to make the SFB effective and operational early must not be undermined. Critics say the earlier SAARC Food Security Reserve set up in 1988 failed to deliver anything because of the lack of political will in certain quarters in the SAARC. Many analysts are still expressing doubt and uncertainty given "the backdrop of inordinate delay in putting the joint food security stock in business."

The fourth meeting of the board of SFB was held in Dhaka on 27-28 October 2010. This followed three earlier meetings, the first and the second of which were held in Colombo in October 2008 and February 2009, and the third in Kabul in November 2009. These meetings took place prior to launching any activities of the SFB. In its editorial of 30 October 2010, The Daily Star (Dhaka) wrote:

> The advantages of the food bank would be initiation of low prices of the products and deferred payment system for the people in the emergency situations. Transportation cost would also be less, as the food reserve will be available in different places in border areas of the member nations.

Anyway, it is the expectation of about 23 percent of the world population living in South Asian region, particularly of about 40 percent of world poor and 35 percent of the world's malnourished here, that the SFB will rise to the occasion to materialise the objectives of the Agreement on Establishing SAARC Food Bank.

5. Trade flows: global, interregional and regional

Annex Tables A.4.1 to A.4.6 present global, interregional, and intraregional exports from SAARC member states over two decades, from 1990 to 2010.

Afghanistan

It will be seen that over this period, Afghanistan's export share with the European Union fell drastically, from 62 percent in 1990 to 11 percent in 2010. Since 2000 its export share with Commonwealth of Independent States (CIS) countries has gone

up. Nearly half of its exports are destined for the SAARC region. Within this region, Afghanistan's predominant market is almost equally divided between India and Pakistan.

Bangladesh

The European Union accounted for around 50 percent of Bangladesh's market share in 2010. Since 2000 Bangladesh's market share in the European Union has gone up by ten percentage points. About a quarter of Bangladesh's market share is with the North American Free Trade Agreement (NAFTA), this share having gone down marginally since 2000. The share of the SAARC region was only 2.9 percent in 2010, having gone up marginally since 2000. In this region, India provides the predominant market, its share having gone up from about half in 2000 to over three quarters in 2010. Pakistan is next in terms of importance for Bangladesh, its share having fallen from 37 percent in 2000 to 16 percent in 2010.

One of the factors leading to a rise in India's share in exports from Bangladesh to the SAARC region has been India's offer of duty-free imports from LDCs and, in particular, the reduction of India's Sensitive List for LDCs under SAFTA from 865 to 480 products.[82] In addition, India has increased, on a bilateral basis, its quota for duty-free import of garments from Bangladesh by 2 million pieces to 10 million – and also removed the countervailing duty on jute. In addition, 54 textile items have been made duty-free.[83]

India

Annex Table A.4.3 shows the distribution of India's global, interregional and regional trade. One observes a rising share of Africa, Association of Southeast Asian Nations (ASEAN), Cooperation Council for the Arab States of the Gulf (GCC), and Near East regions, accompanied by a perceptible decline in the European Union and NAFTA regions. Since 2000 the share of market in the SAARC region has remained about 5 percent. Bangladesh has been India's predominant market in the region, followed by Sri Lanka and Nepal. The shares of markets in Pakistan and Nepal have been increasing since 2000.

Pakistan's reduction in the list of items in its Positive List for imports from India is likely to have contributed to an increase in India's exports to that country.

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[82] India drastically reduced its Sensitive List for LDCs to 25 *vide* Customs notification No. 99/2011 dated 9 November 2011, as presented in Table 4.

[83] The Economic Times, "India may allow Bangladesh to export more duty-free garments" (available at http://articles.economictimes.indiatimes.com/2011-09-02/news/30105953_1_million-pieces-bangladesh-export PTI 020911).

Maldives

For the Maldives, the European Union has been the largest market, its share having increased from 2000, as seen in Table A.4.4. The share of countries in NAFTA has declined perceptibly since 2000. Within the SAARC region, Sri Lanka accounted for 77 percent of market share for the Maldives in 2010. The share of India was 7 percent in 2000, but increased to 17 percent in 2010.

Nepal

It may be observed in Annex Table A.4.5 that the European Union's share of Nepal's exports declined perceptibly since 1990. In 2010 this region accounted for only 13 percent of Nepal's exports. The share of the NAFTA region also declined, from 26 percent in 2000 to 9 percent in 2010. The share of the SAARC region, however, increased from 42 percent in 2000 to 66 percent in 2010. Within the SAARC region, India's share was predominant, its share increasing from 90 percent in 1996 to 99 percent in 2000. However, this share declined to 92 percent in 2010. The relaxation in India's RoO criteria for Nepal in 1996 and its reintroduction of stricter terms in 2002 contributed to this decline. In addition, the lack of real comparative advantage for major products exported to India further contributed to this increase and subsequent declining trend.

Pakistan

Annex Table A.4.6 shows that Pakistan's market share declined both in the European Union and in NAFTA. Between 2000 and 2010 the share of the European Union in Pakistan's export market declined from 30 percent to 21 percent, whereas that of the NAFTA region declined from 27 percent to 17 percent during the same period. Within the SAARC region, Pakistan's market share increased from 30 percent in 2000 to 64 percent in 2010. Pakistan's market share in India, however, declined from 14 percent to 10 percent over the same decade. During this period, the share of Sri Lanka also declined from 20 percent to 10 percent. From 2005 onwards, however, Pakistan's market share in Sri Lanka increased modestly. The implementation of the Pakistan-Sri Lanka Free Trade Agreement beginning in 2005 could have contributed to this trend.

Sri Lanka

Sri Lanka's market share in the European Union increased from 28 percent to 35 percent between 2000 and 2010, as seen in Annex Table A.4.6. The shares of GCC and Near East countries also increased marginally during this period. However, during this period the share of NAFTA declined sharply, from 42 percent to 22 percent. Sri Lanka's share in the SAARC region increased from 3.4 percent in 2000 to 6.9 percent in 2010. Within this region, India's share increased from

31 percent in 2000 to 86 percent in 2005, declining to 73 percent in 2010. Pakistan's share increased from 6.7 percent in 2005 to 11.36 percent in 2010.

The main reason for the increased share of India in Sri Lanka's exports to the region was the offer of duty-free access to the Indian market under the Indo-Lanka Free Trade Agreement. The subsequent decline in this share was a result of a decline in the preferential margin of Sri Lanka's exports to India as well as the predominance of a few products entering the Indian market duty-free but having no real comparative advantage.

6. Trade flows in agricultural products

In this section trade flows are examined in terms of value as per the definition of agriculture under WTO classification. The trade flows are examined as per the defined level of aggregation, resulting in an analysis of trade flows for 35 products. Since the data availability is not the same for all countries, the period of coverage varies for different SAARC countries. However the period is generally a few years before the emergence of SAFTA and a few years after its operation. The trade flows for identified agricultural products cover both exports and imports.

In this section we examine by country the top five agricultural products exported to the world and their distribution in the region among other SAARC countries. Furthermore, for each of these products we examine the size of the market by examining world imports. This will give a broad indication as to whether the size of the regional market could be expanded given the supply-demand balances depending on trade measures and changes in exchange rates.

Bangladesh

In Annex Table A.5.1 we see that Bangladesh exported US$371 million worth of agricultural exports to the world in 2007, its principal markets in the region being India and Pakistan. The region constituted 47 percent of its total agricultural exports. In terms of commodities, its exports of raw cotton waste and cotton carded and combed found markets mainly in India. However, it could find new markets in this region, particularly in Pakistan. Bangladesh does not export edible vegetables/roots to the region. However, export possibilities exist, given the condition of market demand. The country exports live trees and other plants, mainly to Pakistan, and edible fruits and nuts to India.

Bhutan

Bhutan's agricultural exports to the world in 2010 were worth US$29 million, its main markets in the region being India and Bangladesh, as seen in Annex Table A.5.2. Its

exports to the region accounted for 94 percent of its total exports. Its major exports were edible fruits, vegetables, beverages, fruits and nuts.

India

India exported nearly US$15 billion of agricultural products in 2009, as seen in Annex Table A.5.3. It exported to most SAARC member states, its major markets being Bangladesh, Pakistan and Sri Lanka. Its exports to the region were 9.5 percent of its exports to the world. Its major exports in agricultural products include cereals, residues of the food industry, beverages, meat and edible oils. Its major market in the region for cereals and beverages was Sri Lanka, whereas for food residues and edible fruit, Bangladesh was India's most important market in the region.

Maldives

The major agricultural exports of the Maldives in 2009 were preparations of meat/ fish, and residues from the food industry (Annex Table A.5.4). Bhutan and Bangladesh were the main markets in the region. These two markets accounted for 8.7 percent of Bangladesh's total agricultural exports. A possible new market for these products could be Sri Lanka.

Pakistan

In 2010 Pakistan exported US$3.8 billion worth of agricultural products to the world. Its major markets in the region were Bangladesh, India, Maldives and Sri Lanka (Annex Table A.5.5). Pakistan's most important agroproduct was cereals, which it exported to Bangladesh and Sri Lanka in the region. Pakistan's only market in the region for raw cotton waste and cotton carded or combed was Bangladesh. India was the principal market for Pakistan's export of edible fruits and nuts, etc. Sri Lanka was Pakistan's principal market in the region for beverages, etc. Pakistan had no market for its meat products in the region.

Sri Lanka

Sri Lanka exported US$2.1 billion worth of agricultural products in 2009 as may be observed in Annex Table A.5.6. Its principal market in the region was India, followed by Pakistan, Maldives and Bangladesh. The SAARC region constituted 9.8 percent of its global exports. The most important market for beverages (tea) in the region was Pakistan, followed by India and Bangladesh. Maldives is the only market in the region for Sri Lanka's export of products of the milling industry. India was the principal market in the region for residues and wastes of the food industry. Bangladesh was Sri Lanka's principal market for edible fruits and nuts. Most of Sri Lanka's market for manufactured tobacco is outside the region.

7. India's role as supplier of agricultural products to the region

India is the largest milk producer in the world and the second largest producer of paddy rice, sugarcane, wheat, groundnuts and certain fresh vegetables. Although at one time India had to depend on imports to feed its people, since 1990 it has become a net exporter of agroproducts. Given its sheer size, even minor changes in its trade have significant effects on world agricultural markets.[84] In this section we examine India as a supplier of principal agroproducts to major South Asian markets. India's exports of such products are assessed in terms of its supply capability (measured in terms of its world exports), and the size of its South Asian partner countries' markets is assessed in terms of the latter countries' global imports. Since India's existing supply to its partner countries in the region is quite modest in relation to the former's global supply, and also since India's partner countries' imports are also modest in relation to the latter's global imports, there is considerable potential for India and its partner countries to expand their mutual trade given responses to trade liberalization initiatives. The concept of "potential trade"[85] is used below to examine India as a supplier to its major partner countries in the region as its market.

In Tables 6 and 7 I examine India's potential trade in agroproducts with Pakistan and Sri Lanka. In these tables I examine not only the top potential agroproducts for export to these countries, but also the customs tariffs on them. To the extent that information on non-tariff barriers (NTBs) is available, I also examine the nature of sanitary and phytosanitary (SPS) barriers\measures and technical barriers to trade (TBT) applied to these products in the importing countries. To obtain the respective countries' customs tariffs, I have accessed the World Bank's World Integrated Trade Solution (WITS) database. To obtain non-tariff barriers, I examined the Web-based TBT/SPS Notification and Market Access Database, Centre for WTO Studies, Indian Institute of Foreign Trade. This database does not have information on TBT/SPS

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[84] *India's role in world agriculture* (available at http://ec.europa.eu/agriculture/publi/map/03_07.pdf).

[85] Potential Trade is given as: [Min (SEi, MIi) – ETi] where SEi – Suppliers' Global Exports, MIi – Market's Global Imports, ETi – Existing Bilateral Exports of the supplier of product i. By matching the import demand with export supply, it gives the possibility of trade expansion of product i under most favourable competitive conditions after netting the existing trade and assuming supplies as given. This concept sets the outer limit for mutual trade expansion among partner countries offering trade preferences to the supplier country (tariff/non-tariff). The actual trade expansion will be much more modest depending on price and substitution elasticities of the liberalized products being exchanged. In this study this concept is being used to identify agroproducts having high potential trade for the supplying country (India) that could be considered for elimination from the Sensitive Lists of major importing countries in the region. It is assumed that the larger the supply capability and the wider the market of the partner countries, and the smaller the existing trade flows, the greater the possibility of trade expansion among them with the easing of trade restrictiveness among them. Thus the concept of potential trade may be perceived in terms of the additional market access frontier of the agroproduct importing country. The concept has been used by Mukherji (2002, 2005).

measures applicable to Bangladesh's imports, but information on both is available for Sri Lanka. For Pakistan only TBT measures are available.

Table 5 presents potential trade balances between India as supplier and Bangladesh as market.

TABLE 5:

India's top 20 high-potential agroproduct exports to Bangladesh and applied customs tariffs (2009: value in US$ thousands)

HS-6	Description in brief	Sensitive List	Customs tariff (*ad valorem*)	BD-M-W (Demand)	IND-X-W (Supply)	IND-X-BD (Existing exports)	Potential trade
1	2	3	4	6	7	8	9 = Min [(6, 7)] − 8
520100	Cotton, not carded or combed		0	339 822	1 007 006	114 089	225 733
071320	Chickpeas (garbanzos)	Sensitive List	0	68 444	75 100	20	68 424
230990	Animal feed prep except dog or cat		7	29 490	29 233	1 645	27 588
170111	Raw sugar not containing added flavour	Sensitive List	n/a	410 192	24 684	0	24 684
040210	Milk & cream, in powder, granules or other solid	Sensitive List	18.5	49 790	37 414	13 071	24 343
120100	Soybeans, whether or not broken		0	52 751	21 313	90	21 223
090830	Cardamom		25	12 720	24 464	0	12 720
120750	Mustard seeds		0	16 396	12 883	919	11 964
210690	Soft drink concentrate, other	Sensitive List	20.7	11 231	68 315	18	11 213
091010	Ginger	Sensitive List	9.5	30 790	11 499	1 012	10 486
100610	Rice in the husk (paddy or rough)		0	7 885	17 460	5	7 880
240120	Tobacco, partly or wholly stemmed		25	8 235	602 231	909	7 326
090930	Seeds of cumin	Sensitive List	25	11 963	93 609	5 280	6 683
080610	Grapes, fresh	Sensitive List	25	18 826	68 329	13 067	5 759
151319	Coconut (copra), other	Sensitive List	25	6 119	8 315	899	5 220

TABLE 5: *(continued)*

India's top 20 high-potential agroproduct exports to Bangladesh and applied customs tariffs (2009: value in US$ thousands)

HS-6	Description in brief	Sensitive List	Customs tariff (ad valorem)	BD-M-W (Demand)	IND-X-W (Supply)	IND-X-BD (Existing exports)	Potential trade
1	2	3	4	6	7	8	9 = Min [(6, 7)] − 8
140420	Cotton linters		12	5 202	13 504		5 202
350510	Dextrins and other modified starches		25	5 352	16 187	242	5 110
040229	Milk and cream, other	Sensitive List	25	4 841	12 286	44	4 797
170199	Cane and beet sugar, other	Sensitive List	n/a	48 989	4 494	0	4 494
170230	Glucose and glucose syrup, not containing fructose	Sensitive List	25	5 033	20 829	811	4 222

Note: n/a – not available; BD-M-W stands for Bangladesh's imports from world; IND-X-W stands for India's export to the world; IND-X-BD stands for India's existing exports to Bangladesh.

Source: Estimated from COMTRADE; customs tariff from COMTRADE

It will be observed that out of the 20 top potential agroproducts for exports to Bangladesh, 12 are on Bangladesh's Sensitive List. The two top potential products, cotton not carded or combed and chickpeas, are already duty-free. Since the latter product is duty-free, there is no point in keeping it on Bangladesh's Sensitive List. There are at least eight products having customs tariffs of 25 percent and these could also be removed from the country's Sensitive List. There is no information available for Bangladesh's NTBs on these products.

In Table 6 we present India's top 20 potential exports of agroproducts to Pakistan. It will be seen that only eight of these products are on Pakistan's Sensitive List. There is no point in keeping onions and shallots on Pakistan's Sensitive List since these products are duty-free, with no NTBs on import. Of the remaining products, only four have customs duties ranging from 20 percent to 30 percent. These products could be considered for removal from the country's Sensitive List.

India's top 20 potential exports of food products to Sri Lanka are presented in Table 7. Of these, as many as 13 are on the country's Sensitive List of SAFTA and 16 are on the Negative List of ISFTA. The customs duties on these range from 6 percent to 75 percent, the lowest being for preparations for infant use, and the highest for tobacco, not stemmed/stripped. Most of these products are subject to food safety and plant protection regulations.

TABLE 6:

India's top 20 high-potential agroproduct exports to Pakistan and applied customs tariffs/NTBs (2009: value in US$ thousands)

HS-HS-6	Description in brief	Sensitive List	Customs tariff (*ad valorem*)	NTBs: TBT/SPS	PAK-M-W (Demand)	IND-X-W (Supply)	IND-X-PAK (Existing exports)	Potential trade 9 = Min [(6, 7)] – 8
1	2	3	4	5	6	7	8	
520100	Cotton, not carded or combed		0.0		480 403	1 007 006	128 907	351 496
090240	Other black tea (fermented) and other	Sensitive List	10.0	This Pakistan standard prescribes the requirement and methods of test for tea intended for use as a drink	221 639	409 744	10 068	211 570
071320	Chickpeas (garbanzos)		0.0		106 646	75 100	16 116	58 984
070310	Onions and shallots	Sensitive List	0.0		81 369	474 862	50 474	30 894
100510	Seed		0.0		28 742	28 251	2 570	25 681
040210	Milk, in powder, granules or other solid	Sensitive List	25.0	This standard prescribes the types, the requirements and the method of sampling and test for flavoured milk	24 389	37 414	738	23 651
210690	Other		31.4		22 014	68 315	27	21 987

TABLE 6: *(continued)*

India's top 20 high-potential agroproduct exports to Pakistan and applied customs tariffs/NTBs (2009: value in US$ thousands)

HS-HS-6	Description in brief	Sensitive List	Customs tariff (*ad valorem*)	NTBs: TBT/SPS	PAK-M-W (Demand)	IND-X-W (Supply)	IND-X-PAK (Existing exports)	Potential trade
1	2	3	4	5	6	7	8	9 = Min [(6, 7)] − 8
190110	Preparations for infant use, put up for retail sale		20.0	This standard applies to food for infants and children in liquid or powdered form intended for use, where necessary, as a substitute for human milk in meeting the normal nutritional requirements of infants. It also provides a standard for formulae intended for infants with special nutritional requirements, except for certain provisions that must be modified to meet those special requirements	27 037	19 852	0	19 852
240120	Tobacco, partly or wholly stemmed		5.0		19 698	602 231	0	19 698
151620	Vegetable fats and oils and their fractions	Sensitive List	n/a		15 538	38 281	133	15 405
190590	Bread, pastry, cakes, etc. not elsewhere specified		35.0		14 990	53 149	696	14 295

TABLE 6: *(continued)*

India's top 20 high-potential agroproduct exports to Pakistan and applied customs tariffs/NTBs (2009: value in US$ thousands)

HS-HS-6	Description in brief	Sensitive List	Customs tariff (*ad valorem*)	NTBs: TBT/SPS	PAK-M-W (Demand)	IND-X-W (Supply)	IND-X-PAK (Existing exports)	Potential trade 9 = Min [(6, 7)] – 8
1	2	3	4	5	6	7	8	
230990	Other	Sensitive List	20.0	The standard prescribes general requirements, methods of sampling and test for poultry feeds	13 391	29 233	25	13 366
140490	Other	Sensitive List	19.2		14 786	20 531	1 608	13 178
110100	Wheat or meslin flour	Sensitive List	5.0		13 462	12 018	0	12 018
080610	Fresh	Sensitive List	35.0		11 671	68 329	2	11 668
091010	Ginger		15.0		32 830	11 499	68	11 431
110290	Other		10.0		11 468	11 294	0	11 294
090411	Pepper, neither crushed nor ground		3.8	This Pakistan standard specifies requirements for red chilli powder. This standard does not cover dry whole chillies	11 394	49 622	321	11 073
120999	Other		0.0		9 316	8 065	559	7 507
081340	Other fruit		31.3		6 855	7 981	33	6 822

Note: PAK-M-W stands for Pakistan's imports from world; IND-X-W stands for India's export to the world; IND-X-PAK stands for India's existing exports to Pakistan.

n/a – not available.

Source: Estimated from COMTRADE; customs tariffs from COMTRADE

For NTBs: web-based TBT/SPS Notification and Market Access Database, Centre for WTO Studies, Indian Institute of Foreign Trade accessed in http://wtocentre.iift.ac.in/

TABLE 7:

India's top 20 high-potential agroproducts exports to Sri Lanka (2009: value in US$ thousands)

HS-6	Description in brief	Sensitive List	Customs tariff (ad valorem)	Negative List* (ISFTA)	NTBs: TBT/SPS	SL-M-W (Demand)	IND-X-W (Supply)	IND-X-SL (Existing exports)	Potential trade
1	2	3	4	5	6	7	8	9	10 = Min [(7, 8)] − 9
240110	Tobacco, not stemmed/stripped	Sensitive List	75.0	Negative List	Plant protection	35 714	124 679	131	35 582
190190	Other	Sensitive List	15.0	Negative List	Food safety	27 108	38 350	5 342	21 766
100630	Semi-milled or wholly-milled rice	Sensitive List	n/a	Negative List	Food safety	22 392	2 380 349	6 213	16 179
070310	Onions and shallots	Sensitive List	n/a	Negative List	Food safety	50 264	474 862	35 276	14 988
090240	Other black tea (fermented) and other partly fermented tea	Sensitive List	28.0	Negative List	Food safety	22 038	409 744	8 454	13 584
040210	Milk and cream in powder, granules or other solid forms	Sensitive List	15.0	Negative List	Food safety	13 928	37 414	377	13 551
070190	Potatoes, except seed, fresh or chilled, not elsewhere specified	Sensitive List	n/a	Negative List	Food safety	22 973	12 810	2 567	10 243

TABLE 7: *(continued)*

India's top 20 high-potential agroproducts exports to Sri Lanka (2009: value in US$ thousands)

HS-6	Description in brief	Sensitive List	Customs tariff (ad valorem)	Negative List* (ISFTA)	NTBs: TBT/SPS	SL-M-W (Demand)	IND-X-W (Supply)	IND-X-SL (Existing exports)	Potential trade 10 = Min [(7, 8)] – 9
1	2	3	4	5	6	7	8	9	10 = Min [(7, 8)] – 9
210690	Food preparations not elsewhere specified	Sensitive List	16.1		Food safety	11 268	68 315	1 263	10 005
090920	Seeds of coriander		15.0	Negative List	Food safety	9 465	37 905	341	9 124
230400	Oil-cake and other solid residues		15.0		Food safety	48 856	1 355 488	40 175	8 681
220710	Undenatured ethyl alcohol	Sensitive List	n/a	Negative List		10 863	8 181	63	8 119
071320	Chickpeas (garbanzos)	Sensitive List	15.0	Negative List		17 705	75 100	10 720	6 985
151620	Vegetable fats and oils and their fractions	Sensitive List	15.0	Negative List	Food safety	7 027	38 281	43	6 984
070320	Garlic		15.0		Plant protection	9 946	6 965	0	6 965
230990	Preparations of a kind used in animal feeding, other		2.5	Negative List		10 872	29 233	4 120	6 752
080810	Apples		28.0	Negative List	Plant protection	7 704	6 730	0	6 730

TABLE 7: *(continued)*

India's top 20 high-potential agroproducts exports to Sri Lanka (2009: value in US$ thousands)

HS-6	Description in brief	Sensitive List	Customs tariff (*ad valorem*)	Negative List* (ISFTA)	NTBs: TBT/SPS	SL-M-W (Demand)	IND-X-W (Supply)	IND-X-SL (Existing exports)	Potential trade 10 = Min [(7, 8)] – 9
1	2	3	4	5	6	7	8	9	
190110	Preparations for infant use, put up for retail sale	Sensitive List	6.0	Negative List	Food safety	7 366	19 852	1 311	6 056
170199	Cane/beet sugar sugar, other	Sensitive List	n/a	Negative List	Food safety – prescribed requirements and methods of sampling and test for white sugar	206 528	4 494	44	4 449
120991	Other: vegetable seeds		0.0		Food safety	4 371	18 613	538	3 833
090930	Seeds of cumin		15.0	Negative List	Food safety	4 471	93 609	768	3 703

Note: SL-M-W stands for Sri Lanka's imports from world; IND-X-W stands for India's export to the world; IND-X-SL stands for India's existing exports to Sri Lanka.

* Under India-Sri Lanka Free Trade Agreement (ISFTA), the term used is Negative List which has the same meaning as Sensitive List under SAFTA.

n/a – not available.

Source: Estimated from COMTRADE; customs Tariffs from COMTRADE

For NTBs: Web-based TBT/SPS Notification and Market Access Database, Centre for WTO Studies, Indian Institute of Foreign Trade (available at http://wtocentre.iift.ac.in/)

8. Conclusions and future action

As a regional trading organization, SAFTA is still at a nascent stage of development. Its approach has been "goods only" for a long time, although recent efforts have been initiated to expand its coverage to include services. Attempts to deal with issues such as NTBs do not have any mandatory approach. Attempts to harmonize tariffs and customs matters have remained outside the framework of SAFTA. The same may be said about food security, which remains outside the SAFTA agreement. Even at the peak of the food crisis, no initiative was taken to activate the release of foodgrains from the SAARC Food Bank.

This study has highlighted the importance of agriculture in intra-SAARC trade. It is noteworthy that the share of foodgrains trade in total trade in the SAARC region had been increasing consistently until the global recession affected its growth. Unfortunately a large share of agricultural trade falls on the Sensitive Lists of SAARC member states. However, in terms of demand conditions, there is considerable opportunity to expand markets in agricultural products in the region, provided supply conditions are improved and trade-restrictive conditions in importing countries are eased. The potential role that India could play in meeting the agricultural needs for selected products for a few select South Asian countries has been discussed in this study. Since many of these identified products are on the Sensitive Lists of India's partner countries, the need for pruning from those Lists has been highlighted.

SAFTA is committed to reducing its Sensitive Lists, and a defined time table has been launched for doing so. In pruning these Lists, member states should give special consideration to eliminating primary products in their mutual trade from their Sensitive Lists, in line with the India-Nepal trade treaty.

In addition, when addressing tariff and non-tariff barriers, the major focus should be on agroproducts. Mutual recognition of food and agrobased products from SAARC member states through mutually accredited laboratories in each CS would go a long way towards promoting agricultural trade in the region. This is a process that has already been initiated between India and its neighbouring countries in the region, but the progress has been too slow. India's capacity-building initiative is crucial to its success in this regard.[86]

India maintained a general ban on shipments of non-basmati rice for more than three years, ending September 2011, and kept an elevated floor price on basmati

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[86] To illustrate, under a Protocol to India Nepal Trade Treaty, with reference to Article I, the Government of India sought to make its best endeavour to assist Nepal to increase its capacity to trade with India "through improvement in technical standards, quarantine and testing facilities and related human resource capacities". Furthermore, under Article II of the treaty, both parties "shall grant recognition to the sanitary and phytosanitary certificates (including health certificates) issued by the competent authority of the exporting country…." (see Mukherji 2011).

exports to keep domestic supplies steady after the 2008 flare-up in prices triggered protests by consumers and opposition parties. The country permitted only limited non-basmati rice sales to friendly neighbours to honour diplomatic requests.[87] It is expected that rice exports from India may more than double in 2012, given a record crop and as importers seek alternatives to expensive supplies from Thailand and Viet Nam, aided by a significant depreciation of the Indian rupee. Shipments including aromatic basmati rice may total 6 million metric tonnes in the year ending March 2012, compared with 2.2 million metric tonnes a year earlier.[88] According to another press report, India's total rice export in 2011/12 is expected to be about 6.5–7 million tonnes, of which 4.5 million tonnes would be non-basmati rice. Rice exports in 2012/13 could drop to about 4 or 5 million tonnes, 25 percent less than previous year as Indian exporters are slowly raising prices.[89] On 2 July 2012, the Indian government further approved the export of two million tonnes of wheat from its buffer stock to clear space for new crops.[90]

According to the latest official estimate (3 February 2012), India's grain production will reach an all-time high of 250.42 million tonnes in 2011/12, (of which rice constitutes 102.75 million tonnes and wheat 88.31 million tonnes).[91] India's draft food security bill, which proposes to give legal entitlement to food to 63.5 percent of the country's population through subsidized foodgrains, has been referred to the parliamentary standing committee. To implement this law the government needs to buy more than 61 million tonnes of foodgrains from farmers. Given the bumper harvests in the last two years, this should pose no problem and, in addition, should leave an adequate surplus for export. In view of its comfortable position with respect to food security, the Indian government has allowed the export of more sugar and has lowered the floor price of basmati rice exports to boost farm trade.[92]

It may be noted that even as India applied general export restrictions after 2007, given the spike in global food and commodity prices, it has made exceptions by lifting such restrictions selectively upon request from its neighbouring countries. In 2012, given the very comfortable food supply situation in India, it is expected that, notwithstanding the anticipated enhanced domestic foodgrains requirement following enactment of the food security bill, the country is very well-placed to meet such requirements in more diversified markets, thereby contributing to a decline in global food prices.

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[87] As a special gesture, India waived a ban to allow export of 0.3 million tonnes of rice and 0.2 million tonnes of wheat to Bangladesh in August 2008. (Ministry of External Affairs, Annual Report 2010-11).

[88] See article *India rice exports seen surging as ban ended* (available at http://www.bloomberg.com/news/2012-01-09/india-rice-exports-seen-surging-as-ban-ended.html).

[89] Business Standard, 5 May 2012.

[90] Moneycontrol, 3 July 2012.

[91] As reported in The Financial Express (New Delhi) 4 February 2012.

[92] As reported in The Financial Express (New Delhi) 8 February 2012.

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Annex

TABLE A.1:

COMTRADE data availability (HS 1996)

CSs	Period
Bangladesh	2002–2007
Bhutan	2005–2010
India	1996–2009
Maldives	1997–2008
Pakistan	2003–2010
Sri Lanka	2001–2010

TABLE A.2:

Coverage of agricultural products

Products	Description (in brief)
Prod. 1-Ch.01	Live animals
Prod. 2-Ch.02	Meat and edible meat offal
Prod. 3-Ch.04	Birds' eggs, natural honey, edible products of animal origin, not elsewhere specified
Prod. 4-Ch.05	Products of animal origin, not elsewhere specified
Prod. 5-Ch.06	Live tree and other plants, bulbs, roots etc., cut flowers and ornamental foliage
Prod. 6-Ch.07	Edible vegetables and certain roots and tubers
Prod. 7-Ch.08	Edible fruit and nuts, peel of citrus fruit and melons
Prod. 8-Ch.09	Coffee, tea, malt and spices
Prod. 9-Ch.10	Cereals
Prod. 10-Ch.11	Products of milling industry, malt, starches, insulin, wheat gluten
Prod. 11-Ch.12	Oilseeds and oleaginous fruits, miscellaneous grains, seeds and fruit, industrial and medicinal plants, straw and fodder
Prod. 12-Ch.13	Lac, gums, resins and other vegetable saps and extracts
Prod. 13-Ch.14	Vegetable plaiting materials, vegetable products not elsewhere specified
Prod. 14-Ch.15	Vegetable plaiting materials; vegetable products not elsewhere specified or included
Prod. 15-Ch.16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates
Prod. 16-Ch.17	Sugars and sugar confectionery
Prod. 17-Ch.18	Cocoa and cocoa preparations

TABLE A.2: *(continue)*

Coverage of agricultural products

Products	Description (in brief)
Prod. 18-Ch.19	Preparations of cereals, flour, starch or milk; bakers' wares
Prod. 19-Ch.20	Preparations of vegetables, fruit, nuts or other parts of plants
Prod. 20-Ch.21	Miscellaneous edible preparations
Prod. 21-Ch.22	Beverages, spirits and vinegar
Prod. 22-Ch.23	Residues and waste from the food industries; prepared animal feed
Prod. 23-Ch.24	Tobacco and manufactured tobacco substitutes
Prod. 24-HS.290543	(mannitol)
Prod. 25-HS.290544	(sorbitol)
Prod. 26-HS.3301	(essential oils)
Prod. 27-HS.3501-05	(albuminoidal substances, modified starches, glues)
Prod. 28-HS.380910	(finishing agents)
Prod. 29-HS.4101-03	(hides and skins)
Prod. 30-HS.4301	(raw fur skins)
Prod. 31-HS.5001-03	(raw silk and silk waste)
Prod. 32-HS.5101-03	(wool and animal hair)
Prod. 33-HS.5201-03	(raw cotton waste and cotton carded or combed)
Prod. 34-HS.5301	(raw flax)
Prod. 35-HS.5302	(raw hemp)

Note: Descriptions of products are not necessarily comprehensive.

Source: World Trade Organization n.d.

TABLE A.3.1:
SAARC exports in agricultural products (US$ thousands)

Year	World	SAARC-7	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	% Share of SAARC-7
Bangladesh exports										
2002	42 941	6 462	–	–	465	–	–	5 988	9	15.05
2003	50 549	10 634	–	1 524	559	–	–	8 483	68	21.04
2004	110 746	24 381	–	2 882	6 135	–	24	15 309	31	22.02
2005	207 343	44 576	–	1 163	24 323	–	8	18 893	189	21.50
2006	203 842	53 738	–	–	43 054	25	88	10 081	490	26.36
2007	370 757	175 276	–	–	159 378	47	20	15 831	–	47.28
Bhutan exports										
1999	15 735	15 482	4 040	–	11 439	–	–	–	3	98.39
2005	27 829	27 437	7 936	–	19 501	–	–	–	–	98.59
2006	53 896	53 281	5 793	–	47 472	–	16	–	–	98.86
2007	69 157	67 959	5 777	–	62 078	–	104	–	–	98.27
2008	251 972	248 783	7 646	–	241 137	–	–	–	–	98.73
2009	30 297	28 489	9 059	–	19 330	–	100	–	–	94.03
2010	29 733	28 237	10 719	–	17 216	–	302	–	–	94.97
India exports										
1996	6 001 177	410 226	104 757	7 668	–	3 178	21 200	125 905	147 518	6.84
1997	5 694 165	383 948	164 894	4 720	–	2 747	18 153	78 613	114 821	6.74
1998	5 238 651	710 116	579 295	3 476	–	2 366	12 213	49 238	63 528	13.56
1999	4 721 579	339 447	176 334	2 145	–	1 889	25 338	39 435	94 306	7.19
2000	4 615 535	383 403	183 399	324	–	7 001	22 433	85 172	85 074	8.31
2001	5 134 177	585 735	334 408	2 446	–	7 997	26 718	84 953	129 213	11.41
2002	5 554 280	597 426	355 243	4 131	–	9 802	25 198	22 148	180 904	10.76

TABLE A.3.1: *(continued)*
SAARC exports in agricultural products (US$ thousands)

Year	World	SAARC-7	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	% Share of SAARC-7
2003	5 876 973	1 007 046	657 768	15 510	–	8 682	91 101	48 934	185 051	17.14
2004	7 579 520	1 111 401	657 632	20 359	–	11 793	89 510	124 020	208 087	14.66
2005	8 761 667	1 130 937	652 961	15 619	–	12 675	120 318	155 038	174 326	12.91
2006	10 883 739	1 604 844	570 182	9 276	–	15 098	137 095	654 699	218 494	14.75
2007	14 752 176	2 095 522	942 132	8 376	–	17 328	182 718	613 332	331 636	14.20
2008	19 816 400	2 735 401	1 446 710	8 788	–	31 376	222 186	624 899	401 442	13.80
2009	14 760 158	1 565 830	734 076	10 744	–	26 211	164 748	407 604	222 447	10.61
Maldives exports										
1997	17 882	1 517	–	–	75	–	2	–	1 440	8.48
1998	18 065	1 335	–	–	9	–	–	–	1 326	7.39
1999	10 016	1 928	–	–	38	–	–	5	1 885	19.25
2000	11 711	863	–	–	50	–	–	–	813	7.37
2001	10 764	937	–	–	100	–	–	–	837	8.70
2002	11 272	1 123	–	–	47	–	–	–	1 076	9.96
2003	13 916	1 075	–	–	39	–	–	–	1 036	7.72
2004	17 773	1 366	–	–	32	–	–	–	1 334	7.69
2005	18 772	1 496	–	–	8	–	–	–	1 488	7.97
2006	16 805	1 438	–	–	25	–	–	–	1 413	8.56
2007	13 377	917	–	–	42	–	–	–	875	6.86
2008	10 952	912	–	–	–	–	–	–	912	8.33
Pakistan exports										
2003	1 306 036	119 536	41 761	15	62 163	1 082	299	–	14 216	9.15
2004	1 419 243	106 686	26 020	–	46 907	1 068	287	–	32 404	7.52

TABLE A.3.1: *(continued)*

SAARC exports in agricultural products (US$ thousands)

Year	World	SAARC-7	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	% Share of SAARC-7
2005	2 033 945	163 212	31 334	–	114 887	1 976	842	–	14 173	8.02
2006	2 113 621	95 425	31 637	–	45 019	1 821	319	–	16 629	4.51
2007	2 286 219	141 232	36 676	–	64 804	2 875	147	–	36 730	6.18
2008	3 888 762	193 667	92 584	–	57 907	3 996	8	–	39 172	4.98
2009	3 106 897	182 876	56 132	–	70 508	2 784	3	–	53 449	5.89
2010	3 867 523	336 392	185 111	–	62 093	2 468	2	–	86 718	8.70
Sri Lanka exports										
1999	894 557	64 045	3 214	–	29 188	7 474	224	23 945	–	7.16
2001	905 909	52 008	2 732	–	23 860	8 183	25	17 208	–	5.74
2002	919 107	79 553	2 640	–	48 164	8 406	28	20 315	–	8.66
2003	948 271	66 459	2 366	–	31 562	8 460	10	24 061	–	7.01
2004	1 057 885	97 090	1 903	–	61 702	10 573	15	22 897	–	9.18
2005	1 288 599	223 200	2 217	–	184 097	9 766	195	26 925	–	17.32
2006	1 402 213	198 945	2 614	–	153 059	11 576	146	31 550	–	14.19
2007	1 699 515	288 368	2 603	–	242 552	13 895	166	29 152	–	16.97
2008	1 944 236	206 279	3 153	–	147 692	17 445	89	37 900	–	10.61
2009	1 740 613	146 773	3 063	–	98 878	14 865	201	29 766	–	8.43
2010	2 107 326	206 105	3 433	–	158 943	18 240	173	25 316	–	9.78

Note: '–' denotes nil or negligible trade.

Source: Estimated from COMTRADE

TABLE A.3.2:
SAARC imports in agricultural products (US$ thousands)

Year	World	SAARC-7	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	Share of SAARC-7
Bangladesh imports										
2002	1 750 109	330 693	–	1 675	305 131	–	23	21 171	2 692	18.90
2003	2 497 505	583 831	–	1 094	533 391	–	1 623	45 535	2 188	23.38
2004	2 519 146	354 020	–	–	320 898	–	50	31 364	1 708	14.05
2005	2 464 974	356 544	–	–	316 773	–	31	38 057	1 683	14.46
2006	3 500 868	715 357	–	–	677 570	–	0	35 794	1 994	20.43
2007	5 039 000	1 013 326	–	–	965 976	–	0	45 374	1 975	20.11
Bhutan imports										
1999	34 233	32 901	67	–	32 640	–	195	–	–	96.11
2005	56 570	53 334	1 931	–	50 511	–	891	–	–	94.28
2006	86 433	56 181	574	–	54 548	–	1 059	–	–	65.00
2007	107 627	67 317	964	–	65 821	–	532	–	–	62.55
2008	88 164	74 002	1 216	–	72 244	–	542	–	–	83.94
2009	77 561	75 587	1 131	–	74 078	–	379	–	–	97.46
2010	99 517	96 187	2 238	–	93 544	–	405	–	–	96.65
India imports										
1996	2 106 506	68 696	282	943	–	18	24 090	31 817	11 547	3.26
1997	2 447 528	85 405	607	790	–	66	35 224	39 643	9 075	3.49
1998	3 691 685	297 540	938	131	–	17	68 801	206 613	21 040	8.06
1999	3 843 467	140 163	1 265	318	–	85	65 188	50 366	22 940	3.65
2000	2 896 702	156 083	2 249	361	–	14	93 266	42 186	18 007	5.39
2001	3 386 003	206 585	692	461	–	41	130 644	56 075	18 671	6.10
2002	3 820 767	159 695	3 131	429	–	137	87 641	23 024	45 333	4.18

TABLE A.3.2: *(continued)*

SAARC imports in agricultural products (US$ thousands)

Year	World	SAARC-7	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	Share of SAARC-7
2003	4 704 536	163 386	3 239	9 017	–	36	82 253	45 231	23 610	3.47
2004	4 996 622	196 380	4 131	6 494	–	2	75 815	60 649	49 289	3.93
2005	5 564 449	438 031	9 341	9 906	–	20	121 089	114 408	183 268	7.87
2006	5 708 955	367 300	19 315	20 558	–	45	91 159	82 666	153 557	6.43
2007	7 692 252	468 461	15 340	45 733	–	7	118 974	91 542	196 866	6.09
2008	8 399 037	375 736	20 033	15 916	–	40	140 772	57 380	141 596	4.47
2009	11 177 219	276 286	16 658	2 098	–	3	93 757	69 854	93 917	2.47
Maldives imports										
1997	78 658	21 707	–	–	11 224	–	–	517	9 966	27.60
1998	85 343	25 595	–	–	12 201	–	–	1 058	12 336	29.99
1999	92 478	26 754	–	–	13 376	–	–	1 070	12 307	28.93
2000	90 073	27 416	–	–	13 054	–	–	753	13 609	30.44
2001	87 788	29 748	–	–	14 804	–	–	874	14 070	33.89
2002	86 786	28 717	0	–	14 370	–	10	820	13 516	33.09
2003	96 539	31 297	1	–	15 475	–	–	986	14 836	32.42
2004	114 990	38 421	5	–	20 156	–	–	1 440	16 820	33.41
2005	114 481	38 499	8	–	20 922	–	–	2 062	15 506	33.63
2006	144 892	47 404	16	–	25 363	–	4	1 809	20 212	32.72
2007	176 669	59 527	46	–	31 675	–	–	2 819	24 988	33.69
2008	216 072	75 219	114	–	42 677	–	–	3 950	28 478	34.81
Pakistan imports										
2003	1 802 687	79 662	13 438	23	36 775	111	1 792	–	27 523	4.42
2004	2 516 242	132 377	13 228	–	90 575	–	3 182	–	25 393	5.26

TABLE A.3.2: *(continued)*

SAARC imports in agricultural products (US$ thousands)

Year	World	SAARC-7	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka	Share of SAARC-7
2005	3 178 148	203 204	11 388	11	155 015	14	2 808	–	33 967	6.39
2006	3 556 334	635 026	6 951	–	586 807	65	3 514	–	37 689	17.86
2007	3 905 205	504 197	11 323	–	459 815	–	1 254	–	31 806	12.91
2008	6 317 204	786 077	16 986	–	737 435	–	997	–	30 659	12.44
2009	4 170 007	450 521	8 750	–	412 559	–	461	–	28 750	10.80
2010	5 774 901	867 570	6 263	–	839 555	–	315	–	21 438	15.02
Sri Lanka imports										
1999	810 762	172 364	23	–	118 612	1 684	6	52 038	–	21.26
2001	752 474	169 897	50	–	146 401	1 052	–	22 394	–	22.58
2002	838 530	218 562	53	–	200 968	1 343	–	16 198	–	26.06
2003	859 395	226 844	9	–	211 240	1 001	–	14 594	–	26.40
2004	935 732	255 427	40	–	228 185	1 341	–	25 861	–	27.30
2005	1 017 780	193 594	45	–	178 915	1 457	–	13 177	–	19.02
2006	1 187 596	213 717	121	–	191 936	1 732	–	19 928	–	18.00
2007	1 335 267	380 698	139	–	339 071	951	–	40 536	–	28.51
2008	1 828 233	499 614	340	–	449 625	1 026	3 192	45 431	–	27.33
2009	1 402 669	282 416	447	–	222 922	796	5 538	52 713	–	20.13
2010	1 826 374	376 914	460	–	283 774	857	47	91 776	–	20.64

Note: '–' denotes nil or negligible trade.

Source: Estimated from COMTRADE

TABLE A.4.1:

Afghanistan's exports to the selected regions and SAARC countries (value in US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	BD	IND	NPL	PAK	SL
					% share of world									% share of SAARC		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1990	131.09	0.11	0.09	0.00	61.82	2.81	3.73	4.39	14.20	12.85	18.61	0.00	68.73	0.00	31.17	0.11
1991	189.03	0.01	0.17	0.00	36.48	1.85	2.33	2.32	7.90	48.94	14.93	0.00	66.24	0.00	31.28	2.48
1992	181.32	0.24	0.63	0.00	23.97	2.92	3.41	1.20	6.26	61.38	11.35	1.23	46.26	0.00	52.51	0.00
1993	688.11	0.13	0.33	91.14	5.10	0.07	0.15	0.39	1.70	1.00	11.68	1.20	20.80	0.00	77.83	0.17
1994	104.61	0.03	4.29	9.93	53.51	0.90	1.20	5.71	11.57	12.86	12.10	1.49	15.12	0.00	83.39	0.00
1995	166.00	0.04	1.63	48.99	20.69	0.40	0.93	3.36	13.05	10.91	21.67	3.41	32.16	0.00	64.42	0.00
1996	128.05	0.23	14.02	10.45	25.46	3.65	5.92	12.62	23.58	4.08	30.19	2.75	12.82	0.00	84.43	0.00
1997	144.66	0.38	6.89	8.45	32.81	3.10	6.84	7.45	24.04	10.05	34.77	2.67	9.06	0.00	85.65	2.62
1998	154.22	0.34	0.84	8.05	36.12	4.96	7.04	10.60	30.93	1.13	47.70	0.00	45.26	0.00	53.29	1.45
1999	122.75	0.41	2.00	8.08	23.19	3.54	4.78	7.03	46.59	4.37	57.19	0.45	36.32	0.00	63.02	0.21
2000	142.19	0.25	2.19	6.19	35.28	0.54	2.27	2.15	42.41	8.73	60.30	3.10	38.03	0.00	58.86	0.02
2001	90.29	2.06	3.15	4.44	25.17	0.52	3.91	1.01	54.27	5.47	49.00	0.00	51.67	0.00	48.29	0.04
2002	87.56	3.87	0.97	5.86	21.70	0.79	4.57	5.14	50.74	6.36	44.43	0.00	37.29	0.00	62.53	0.18
2003	209.36	1.86	0.78	3.97	28.29	1.64	3.18	27.53	30.63	2.12	64.12	5.80	49.63	0.00	44.18	0.39
2004	184.14	1.03	0.82	4.69	20.44	2.49	6.11	12.59	47.47	4.36	87.42	3.80	45.09	0.00	50.98	0.13
2005	238.52	0.68	1.21	3.19	12.53	2.70	7.33	25.96	42.78	3.62	102.04	2.99	49.51	0.00	47.39	0.11
2006	249.48	0.65	1.98	7.51	19.12	2.91	7.76	16.97	39.96	3.14	99.68	2.84	36.92	0.00	59.96	0.28
2007	340.41	0.31	2.04	10.35	7.17	2.74	7.09	20.72	47.18	2.40	160.60	2.56	51.26	0.00	46.18	0.00
2008	475.21	0.16	0.34	16.73	12.84	2.48	5.82	16.87	43.08	1.67	204.73	0.64	58.00	0.00	41.36	0.00
2009	448.25	0.36	0.48	12.61	4.31	2.46	5.80	25.49	48.91	0.42	219.23	0.45	50.05	0.00	49.50	0.00
2010	532.20	0.36	0.14	13.48	11.13	2.39	5.77	15.21	51.61	0.09	274.66	0.33	49.49	0.00	50.17	0.00

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.4.2:

Bangladesh's exports to the selected regions and SAARC countries (value in US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	AFG	BHU	IND	MLD	NPL	PAK	SL
					% share of world									% share of SAARC				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1990	1 670.50	3.30	3.81	2.87	35.33	0.94	4.94	32.23	3.67	12.91	61.30	1.11	0.24	35.37	0.00	11.99	37.88	13.41
1991	1 687.51	1.75	2.90	1.65	42.45	1.14	5.87	28.07	4.75	11.42	80.13	0.56	0.37	28.45	0.00	14.40	48.82	7.39
1992	2 037.47	1.63	4.32	0.73	37.45	0.77	5.33	37.53	2.27	9.97	46.24	0.67	0.45	9.13	0.00	0.48	65.96	23.31
1993	2 277.31	1.88	4.90	1.19	40.40	0.59	3.35	35.40	2.38	9.90	54.23	0.48	0.35	23.09	0.00	12.83	47.41	15.84
1994	2 649.75	1.86	3.73	0.85	41.56	0.84	3.88	35.44	2.46	9.39	65.22	6.81	0.06	37.27	0.02	22.05	28.41	5.38
1995	3 129.20	1.80	1.51	0.81	45.00	0.71	3.24	34.05	2.70	10.16	84.52	0.59	0.32	42.32	0.02	11.80	31.35	13.59
1996	3 297.16	1.94	1.53	0.33	48.55	0.69	2.78	32.95	2.00	9.22	65.93	7.64	0.42	31.87	0.14	0.71	56.58	2.64
1997	3 627.56	1.87	1.61	0.53	42.75	0.71	3.43	37.61	2.52	8.98	91.50	10.15	0.36	40.68	0.02	1.02	43.50	4.27
1998	3 821.91	1.04	1.55	0.18	46.20	0.95	2.73	38.02	2.94	6.40	112.24	8.14	0.36	49.02	0.00	15.90	25.62	0.95
1999	4 520.11	0.89	1.22	0.12	40.35	0.64	2.01	33.03	1.93	19.81	87.44	0.69	0.79	56.62	0.00	5.99	28.44	7.47
2000	5 589.58	0.58	1.44	0.24	40.26	1.44	2.44	33.71	1.67	18.21	93.60	4.56	0.96	53.56	0.00	1.41	36.87	2.64
2001	5 735.61	0.43	1.34	0.17	41.61	1.21	2.44	31.36	1.70	19.73	97.66	5.70	1.52	62.26	0.25	2.00	26.21	2.07
2002	5 443.26	0.75	1.11	0.11	43.14	0.77	2.32	29.35	1.44	21.02	78.43	5.94	1.80	50.15	0.00	4.99	34.66	2.47
2003	6 229.39	0.80	1.28	0.12	47.22	0.65	1.67	26.80	1.81	19.66	112.45	2.89	2.12	49.21	0.00	2.65	37.97	5.16
2004	7 585.60	0.66	1.11	0.14	51.25	0.62	1.40	25.85	1.67	17.29	126.50	1.57	2.88	52.29	0.00	3.63	31.98	7.65
2005	8 494.40	0.53	1.52	0.19	46.85	0.69	1.56	27.08	2.21	19.38	187.31	0.45	1.76	63.47	0.00	1.86	27.76	4.70
2006	11 622.60	0.58	1.47	0.27	46.85	0.56	1.17	28.36	2.06	18.68	239.00	0.31	1.53	70.34	0.00	0.98	23.83	3.01
2007	12 687.90	0.62	1.03	0.55	46.75	0.63	1.25	26.61	2.59	19.96	329.24	0.45	1.47	70.75	0.00	1.91	22.33	3.08
2008	13 627.60	0.64	1.14	0.55	48.18	0.77	1.44	24.39	3.08	19.81	419.86	0.55	0.75	75.93	0.00	1.43	18.70	2.63
2009	14 377.50	0.62	1.32	0.69	48.14	0.96	1.58	24.17	2.59	19.93	372.16	1.11	0.78	72.07	0.00	2.86	20.80	2.38
2010	14 666.10	0.77	1.76	0.60	51.02	1.13	2.30	26.31	2.88	13.22	422.93	1.74	0.78	76.09	0.00	2.32	16.23	2.84

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.4.3:

India's exports to the selected regions and SAARC countries (value in US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	AFG	BD	BHU	MLD	NPL	PAK	SL
					% share of world									% share of SAARC				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1990	17 813.1	1.84	4.27	16.10	28.87	4.99	6.75	16.14	3.06	17.99	545.14	10.78	54.50	0.00	0.86	7.25	7.98	18.62
1991	17 873.8	2.59	5.68	9.19	29.10	7.19	9.32	17.56	3.58	15.79	640.68	2.81	50.66	0.19	0.77	12.06	6.27	27.24
1992	19 233.0	3.20	6.36	3.82	30.51	6.18	9.88	19.68	3.91	16.45	752.83	4.47	46.91	0.28	1.02	9.68	6.90	30.73
1993	20 990.5	2.89	7.45	3.30	28.18	6.94	10.67	19.76	4.05	16.77	849.26	3.38	50.59	0.54	0.74	8.88	6.80	29.06
1994	24 196.6	3.31	7.36	3.34	28.17	8.03	9.65	20.61	4.28	15.24	1 035.40	1.40	50.32	0.66	1.51	8.16	5.73	32.22
1995	30 538.8	4.38	7.77	3.66	27.62	6.72	8.25	18.49	5.11	18.01	1 559.42	0.94	61.54	0.75	0.80	6.87	4.51	24.59
1996	32 326.2	4.46	8.53	2.70	26.86	7.38	9.44	20.33	5.17	15.13	1 670.64	1.22	49.83	0.60	3.04	9.43	8.44	27.44
1997	34 624.4	4.54	7.45	2.97	26.71	7.79	9.73	20.96	4.78	15.08	1 655.20	1.30	48.76	0.94	0.55	10.21	8.86	29.38
1998	33 667.6	5.15	5.47	2.61	27.40	8.80	10.88	22.84	4.98	11.86	1 677.05	0.89	56.25	0.63	0.51	8.01	6.88	26.84
1999	35 923.2	4.63	5.81	2.79	26.50	8.80	10.75	24.47	4.16	12.09	1 493.86	1.88	48.61	0.54	0.51	9.64	6.44	32.38
2000	42 627.3	4.50	6.45	2.50	24.38	8.75	10.99	23.25	4.28	14.90	1 822.70	1.52	47.20	0.15	1.11	7.87	8.96	33.19
2001	45 432.0	3.74	7.20	1.56	24.58	6.42	8.81	23.09	5.46	19.14	2 480.41	1.23	43.82	0.12	1.50	22.45	8.83	22.04
2002	50 522.0	5.36	8.57	1.85	22.59	9.17	12.22	22.24	5.15	12.84	2 601.26	1.99	43.54	1.20	1.17	12.16	7.33	32.62
2003	61 130.2	5.39	9.03	1.65	22.67	10.68	13.81	20.24	6.41	10.12	3 916.35	3.17	40.84	1.96	1.01	15.05	6.81	31.14
2004	75 386.7	5.88	9.88	1.38	22.00	11.70	14.96	18.53	5.86	9.79	4 416.70	3.50	36.79	1.93	0.96	16.16	10.21	30.46
2005	98 212.1	5.97	10.10	1.23	22.43	11.49	14.41	18.21	5.41	10.75	5 312.27	2.79	31.17	1.80	1.18	15.64	12.18	35.24
2006	120 550.0	7.13	10.01	1.18	21.52	12.63	15.94	16.69	5.18	9.72	6 239.02	2.76	26.24	1.09	1.10	14.61	18.99	35.23
2007	153 775.0	7.74	10.04	1.09	21.20	13.27	16.86	14.36	5.74	9.69	8 830.29	2.63	29.38	0.90	0.96	15.42	20.33	30.38
2008	177 700.0	7.19	10.28	1.05	21.35	16.32	19.85	12.84	4.91	6.20	8 733.05	4.11	29.48	1.20	1.36	17.67	17.74	28.44
2009	165 204.0	6.79	10.51	0.95	21.13	16.30	19.57	12.07	4.52	8.16	7 464.97	6.29	29.22	1.44	1.44	18.99	19.42	23.21
2010	217 341.0	6.46	9.51	1.02	17.80	15.53	18.48	13.83	4.74	12.63	10 301.14	5.46	31.40	1.37	0.94	17.75	18.23	24.85

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.4.4:

Maldives' exports to the selected regions and SAARC countries (value in US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	BD	IND	NPL	PAK	SL
		% share of world										% share of SAARC				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1990	52.1	0.0	21.6	0.0	26.2	0.0	0.0	26.3	14.0	11.9	7.29	0.00	0.69	0.00	0.00	99.31
1991	53.7	0.0	16.1	0.0	34.1	0.0	0.0	24.8	19.2	5.8	10.32	0.00	0.19	0.00	0.00	99.81
1992	39.7	0.0	12.0	0.0	43.8	0.0	0.0	13.9	25.9	4.5	10.27	0.00	0.49	0.00	0.00	99.51
1993	34.6	2.2	17.6	0.0	31.3	0.1	0.1	11.6	30.6	6.6	10.59	0.00	0.76	0.00	0.00	99.24
1994	47.9	0.0	11.3	0.0	36.3	0.0	0.0	18.4	24.9	9.0	11.92	0.00	1.17	0.00	0.00	98.83
1995	49.8	0.0	3.3	0.0	38.4	0.5	0.5	19.3	22.6	15.5	11.27	0.00	0.98	0.00	0.00	99.02
1996	59.3	0.0	18.5	0.0	33.6	0.1	0.1	10.5	18.5	18.8	10.99	0.00	1.36	0.00	0.00	98.64
1997	70.2	0.0	17.9	0.0	26.1	0.0	0.0	18.2	16.1	21.6	11.29	0.00	1.42	0.00	0.00	98.58
1998	74.6	0.0	17.3	0.0	26.4	0.1	0.1	20.7	17.4	18.2	12.95	0.00	0.77	0.00	0.00	99.23
1999	64.0	0.0	18.8	0.0	17.4	0.1	0.1	35.5	19.6	8.7	12.51	0.00	1.52	0.00	0.00	98.48
2000	76.2	0.0	10.2	0.0	18.6	0.0	0.0	44.5	18.1	8.6	13.82	0.00	1.74	0.00	0.00	98.26
2001	76.6	0.0	13.4	0.0	14.8	0.0	0.0	39.2	22.2	10.4	16.99	0.00	7.12	0.00	0.00	92.88
2002	90.7	0.0	18.6	0.0	14.0	0.1	0.1	38.1	15.5	13.5	14.06	0.00	0.85	0.00	0.00	99.15
2003	112.7	0.0	24.5	0.0	15.6	0.0	0.0	32.4	13.9	13.5	15.69	0.00	2.23	0.00	0.00	97.77
2004	122.8	0.0	28.7	0.0	19.3	0.1	0.1	26.5	12.7	12.6	15.59	0.00	2.95	0.00	0.00	97.05
2005	98.7	0.0	29.1	0.0	24.5	0.0	0.1	0.9	17.4	28.0	17.16	0.00	5.83	0.00	0.00	94.17
2006	161.8	2.9	36.5	0.0	31.2	0.5	0.6	1.6	14.8	11.9	23.97	0.00	10.55	0.00	0.00	89.45
2007	151.8	3.3	33.3	0.0	39.8	0.7	0.8	2.7	11.6	7.8	17.58	0.00	20.02	0.00	0.00	79.98
2008	187.6	2.9	37.0	0.0	42.7	0.1	0.1	2.1	10.8	4.3	20.33	0.00	21.05	0.00	0.00	78.95
2009	112.7	5.9	17.2	0.0	55.0	0.1	0.2	2.6	15.1	4.0	16.99	0.00	17.30	0.00	0.06	82.64
2010	105.6	8.0	20.7	0.1	41.1	0.1	0.3	1.6	21.7	6.5	22.89	4.85	17.21	0.00	0.04	77.89

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.4.5:

Nepal's exports to the selected regions and SAARC countries (value in US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	BD	BHU	IND	MLD	PAK	SL
		% share of world										% share of SAARC					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1990	211.3	0.02	3.01	0.00	53.28	0.00	0.09	24.06	7.66	11.9	16.18	3.83	0.00	91.41	0.00	4.08	0.68
1991	257.3	0.07	1.71	0.00	57.84	0.00	0.03	24.24	8.35	7.8	21.48	0.56	0.00	81.24	0.00	18.20	0.00
1992	352.9	0.04	0.63	0.00	54.41	0.01	0.01	24.05	13.02	7.8	45.94	0.72	0.00	45.34	0.00	6.92	47.02
1993	367.6	0.14	0.56	0.10	58.75	0.08	0.09	28.52	4.90	6.9	18.01	1.50	0.00	94.78	0.00	3.72	0.00
1994	351.4	0.13	0.58	0.00	53.74	0.05	0.06	34.38	4.06	7.0	14.27	3.50	0.00	88.51	0.00	1.61	6.38
1995	323.5	0.01	0.40	0.00	53.29	0.03	0.08	31.63	9.23	5.3	29.87	11.85	0.00	83.56	0.00	1.54	3.05
1996	360.1	0.03	0.25	0.11	42.76	0.03	0.03	29.19	20.58	7.0	74.10	9.45	0.00	90.01	0.00	0.13	0.40
1997	396.9	0.00	0.13	0.15	42.61	0.03	0.03	26.96	25.37	4.7	100.70	8.64	0.00	90.96	0.00	0.30	0.10
1998	443.6	0.02	0.14	0.09	33.21	0.00	0.00	26.26	36.25	4.0	160.80	5.97	0.00	90.49	0.00	0.50	3.05
1999	575.6	0.50	0.34	0.02	26.19	0.02	0.05	31.12	29.63	12.1	170.57	4.76	0.00	94.69	0.00	0.50	0.05
2000	720.7	0.01	0.37	0.01	23.03	0.04	0.04	28.06	42.90	5.5	309.20	0.61	0.00	99.35	0.00	0.03	0.00
2001	753.5	0.01	0.66	0.01	17.35	0.23	0.23	27.60	47.78	6.1	360.00	1.97	0.00	97.94	0.00	0.08	0.00
2002	610.3	0.02	0.44	0.02	14.50	0.28	0.28	20.68	60.22	3.6	367.50	0.84	0.00	98.94	0.00	0.22	0.00
2003	641.2	0.02	0.36	0.02	13.68	0.11	0.11	26.25	53.98	5.5	346.10	1.53	0.00	98.18	0.00	0.29	0.00
2004	729.5	0.03	0.33	0.01	14.04	0.15	0.15	19.05	58.48	7.8	426.60	1.34	0.00	97.77	0.00	0.89	0.00
2005	812.6	0.07	0.25	0.02	11.83	0.28	0.30	13.89	67.36	6.0	547.40	0.73	0.00	98.67	0.00	0.58	0.02
2006	829.6	0.16	0.68	0.10	12.11	0.32	0.32	12.77	68.57	5.0	568.83	0.57	0.00	98.97	0.00	0.45	0.01
2007	877.0	0.07	0.54	0.09	10.73	0.34	0.36	9.68	72.66	5.5	637.18	6.21	0.52	92.98	0.00	0.24	0.05
2008	893.1	0.15	0.86	0.11	10.96	0.75	0.76	8.73	71.02	6.7	634.27	10.48	0.37	88.75	0.00	0.19	0.21
2009	666.5	0.25	0.99	0.09	14.20	0.94	1.17	9.96	65.14	7.3	434.20	9.65	0.47	89.43	0.00	0.18	0.26
2010	804.9	0.26	0.89	0.09	12.69	0.89	1.13	9.33	66.43	8.3	534.67	6.11	0.49	92.94	0.00	0.18	0.27

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.4.6:

Pakistan's exports to the selected regions and SAARC countries (value in US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	AFG	BD	BHU	IND	MLD	NPL	SL
					% share of world									% share of SAARC				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1990	5 587.5	4.02	5.25	1.34	37.77	7.16	8.65	14.16	4.02	17.62	224.55	0.89	45.76	0.11	21.80	0.25	0.51	30.68
1991	6 495.2	4.25	4.97	1.08	34.06	8.51	12.16	13.20	3.48	18.29	225.86	3.29	44.55	0.36	20.85	0.75	0.21	30.00
1992	7 269.1	3.91	6.09	0.62	30.68	10.72	13.20	14.87	5.17	14.73	376.11	4.24	36.18	0.18	36.04	0.48	0.37	22.50
1993	6 702.1	3.38	4.80	0.90	32.31	11.63	12.92	17.16	3.47	13.44	232.26	6.61	45.16	0.25	22.84	0.34	0.15	24.64
1994	7 335.7	4.23	3.56	0.60	33.10	9.35	10.83	18.19	3.62	16.51	265.39	9.69	44.72	0.24	17.31	0.40	1.30	26.35
1995	7 992.4	3.71	4.60	0.92	31.10	8.56	11.62	16.90	3.41	19.18	272.58	7.27	56.28	0.38	14.23	0.51	1.09	20.23
1996	9 303.5	4.02	4.65	1.30	30.40	8.76	10.61	18.23	2.71	19.32	252.39	5.19	43.04	0.25	16.42	1.12	2.21	31.78
1997	8 647.2	5.03	3.11	1.53	31.54	8.99	10.22	20.89	2.83	15.86	244.99	7.70	37.38	0.20	13.50	0.57	1.74	38.92
1998	8 445.9	4.59	2.91	0.85	31.28	9.30	10.69	23.73	5.35	11.31	451.48	8.36	23.60	0.02	44.87	0.40	1.69	21.06
1999	8 448.8	4.37	3.43	0.39	29.78	10.39	11.46	25.23	4.54	10.42	383.17	21.31	27.77	0.09	22.72	0.34	0.49	27.29
2000	8 882.9	3.64	3.88	0.42	27.92	10.97	12.30	27.52	4.55	8.78	404.57	30.13	34.44	0.07	14.30	0.35	0.67	20.03
2001	9 217.4	4.71	3.21	0.33	27.66	12.75	14.64	26.28	4.42	5.99	407.46	35.04	29.32	0.06	16.24	0.41	0.56	18.37
2002	9 883.7	4.27	3.45	0.32	27.99	14.24	16.36	26.91	4.57	1.89	452.14	49.35	22.96	0.05	10.81	0.56	0.50	15.78
2003	11 928.3	4.28	3.42	0.38	28.84	14.95	16.95	25.20	6.28	0.29	749.64	54.50	22.19	0.04	11.14	0.34	0.64	11.14
2004	13 285.2	5.99	2.55	0.51	30.40	11.52	13.59	25.23	7.22	2.98	959.47	48.45	20.58	0.02	16.44	0.20	0.32	13.99
2005	16 052.5	5.37	2.17	0.62	26.61	11.35	13.61	26.46	11.20	2.61	1 797.32	59.26	13.04	0.01	18.77	0.16	0.20	8.55
2006	16 604.1	5.00	1.84	0.85	23.04	13.49	15.34	23.89	11.27	5.28	1 871.98	70.32	8.27	0.02	13.95	0.19	0.13	7.12
2007	18 929.9	5.46	1.79	0.79	22.76	15.67	17.52	20.18	11.89	3.93	2 251.36	72.56	7.95	0.02	11.98	0.20	0.10	7.19
2008	21 704.3	5.61	2.20	1.02	22.42	18.63	20.75	17.72	12.30	0.65	2 670.64	69.83	10.09	0.02	12.84	0.19	0.10	6.92
2009	17 522.8	6.62	3.01	0.75	24.40	13.33	16.84	19.49	12.39	3.17	2 171.92	62.50	16.81	0.00	10.68	0.16	0.03	9.81
2010	21 397.9	6.87	3.56	0.92	20.97	12.59	16.01	17.45	12.56	9.06	2 688.54	64.13	14.64	0.00	10.96	0.17	0.03	10.06

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.4.7:

Sri Lanka's exports to the selected regions and SAARC countries (US$ millions and % share)

Year	World (Value)	Africa	ASEAN	CIS	EU-27	GCC-6	N-E	NAFTA-3	SAARC	Others	SAARC (Value)	AFG	BD	IND	MLD	PAK
		% share of world										% share of SAARC				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1990	1 895.3	1.20	3.99	2.14	27.46	4.20	17.41	28.36	3.78	11.47	71.70	2.55	13.68	28.17	10.32	45.27
1991	1 987.5	0.71	5.55	0.58	28.82	5.85	15.98	30.76	3.15	8.62	62.51	3.07	7.58	20.19	18.00	51.16
1992	2 766.6	0.82	2.07	0.32	30.93	2.68	8.55	32.88	2.10	19.64	58.09	3.18	11.86	19.97	15.08	49.91
1993	2 859.5	0.62	2.67	1.77	32.45	4.49	8.70	37.12	2.53	9.65	72.46	1.48	10.09	27.27	12.23	48.94
1994	3 199.0	0.97	3.72	1.16	32.70	3.53	8.28	36.92	2.72	10.00	87.00	1.15	10.34	27.59	11.49	49.43
1995	3 801.0	0.92	3.45	2.39	32.44	2.37	6.55	37.33	2.68	11.87	102.00	0.98	11.76	31.37	13.73	42.16
1996	4 089.0	0.76	2.93	2.79	31.08	2.49	7.07	35.73	2.67	14.48	109.00	0.92	11.01	39.45	14.68	33.94
1997	4 629.0	0.93	2.68	3.35	30.50	3.02	6.93	37.78	2.59	12.21	120.00	1.67	9.17	36.67	20.83	31.67
1998	4 819.9	0.77	2.18	2.65	27.55	4.26	8.34	41.10	2.36	10.78	113.75	1.13	9.18	33.13	32.87	23.68
1999	4 621.8	0.68	2.61	1.90	29.22	3.78	7.01	40.77	3.06	10.97	141.47	0.25	8.23	34.37	35.36	21.79
2000	5 458.8	0.69	2.99	2.01	28.27	2.76	6.20	42.10	3.46	11.51	189.07	0.10	5.41	30.69	48.10	15.71
2001	4 722.4	0.72	2.42	2.45	27.08	4.08	8.01	42.88	3.33	9.03	157.45	0.04	6.40	45.72	32.04	15.80
2002	4 678.4	0.83	2.42	2.71	30.09	3.82	7.29	39.85	5.47	7.54	255.91	0.16	3.98	66.66	17.94	11.27
2003	5 133.3	0.87	2.10	2.74	28.57	4.11	7.80	36.59	6.80	10.42	348.89	0.14	3.20	70.24	15.90	10.53
2004	5 757.2	0.82	2.25	2.62	32.43	3.27	7.04	34.38	8.82	8.38	507.59	0.25	2.74	77.13	12.10	7.77
2005	6 383.7	0.72	2.48	2.47	30.96	3.69	7.32	33.10	10.26	9.00	655.05	0.31	2.41	86.47	4.16	6.65
2006	6 883.0	0.73	2.76	2.73	33.70	3.32	7.00	30.94	8.67	10.14	596.83	0.11	3.13	82.01	4.97	9.78
2007	7 740.0	0.68	2.87	2.62	37.06	3.70	7.67	27.28	8.33	9.80	644.36	0.00	3.53	79.97	7.90	8.60
2008	8 541.1	0.77	2.62	4.03	38.65	4.29	8.51	24.48	6.19	10.45	528.93	0.00	2.93	74.12	10.98	11.97
2009	7 385.0	0.76	3.11	4.11	38.77	4.63	9.12	23.03	5.67	10.81	418.58	0.00	4.50	71.23	12.14	12.13
2010	8 485.1	0.83	3.30	4.51	35.34	4.64	9.30	22.33	6.69	13.06	567.63	0.00	3.78	73.49	11.37	11.36

Note: N-E denotes Near East. Figures in columns 1 and 11 are in US$ millions and remaining figures are in percentage.

Source: Estimated from IMF 2011

TABLE A.5.1:

Bangladesh's top five exports of agricultural products (2007) (value in US$ thousands)

Product	Description	World	Bhutan	India	Maldives	Pakistan	Sri Lanka
Prod. 33-HS.5201-03	Raw cotton waste and cotton carded or combed	155 044	0 (30)	143 349 (187 139)	0 (119)	0 (763 199)	0 (4 303)
Prod. 6-Ch.07	Edible vegetables and certain roots	567 759	0 (4 700)	0 (2 066 898)	0 (23 230)	1 (507 019)	0 (314 632)
Prod. 5-Ch.06	Live trees and other plants, bulb, root	44 411	0 (587)	60 (9 563)	0 (1 514)	2 343 (1 256)	0 (295)
Prod. 23-Ch.24	Tobacco and manufactured tobacco substitutes	23 696	0 (1)	47 (31 239)	0 (8 692)	1 313 (14 584)	0 (33 309)
Prod. 7-Ch.08	Edible fruit and nuts, peel of citrus	21 670	0 (1 115)	12 735 (1 102 356)	0 (22 216)	0 (117 450)	0 (26 583)
All agricultural products		**370 757**	**0**	**159 378**	**47**	**15 831**	**0**

Note: Figures in brackets denote world imports of the designated products in the destination country.

Source: Estimated from COMTRADE

TABLE A.5.2:

Bhutan's top five exports of agricultural products (2010) (value in US$ thousands)

Product	Description	World	Bangladesh	India	Maldives	Pakistan	Sri Lanka
Prod. 7-Ch.08	Edible fruit and nuts, peel of citrus	10 336	8 323 (70 260)	2 013 (1 102 356)	0 (22 216)	0 (117 450)	0 (26 583)
Prod. 6-Ch.07	Edible vegetables and certain roots	5 775	0 (346 557)	4 650 (2 066 898)	0 (23 230)	0 (507 019)	0 (314 632)
Prod. 8-Ch.09	Coffee, tea, mate and spices	5 358	2 315	3 045	0	0	0
Prod. 19-Ch.20	Prep of vegetable, fruit, nuts	3 730	30	3 402	0	0	0
Prod. 21-Ch.22	Beverages, spirits and vinegar	3 319	1	3 318	0	0	0
All agricultural products		**29 733**	**10 719**	**17 216**	**0**	**0**	**0**

Note: Figures in brackets denote world imports of the designated products in the destination country.

Source: Estimated from COMTRADE

TABLE A.5.3:

India's top five exports of agricultural products (2009) (value in US$ thousands)

Product	Description	World	Bangladesh	Bhutan	Maldives	Pakistan	Sri Lanka
Prod. 9-Ch.10	Cereals	2 986 630	10 113 (1 015 857)	1 420 (20 898)	8 660 (15 873)	10 404 (73 211)	15 998 (302 833)
Prod. 22-Ch.23	Residues and waste from the food industry	1 707 576	155 568 (158 967)	19 (1 401)	3 (395)	82 639 (161 447)	44 601 (82 733)
Prod. 8-Ch.09	Coffee, tea, mate and spices	1 518 723	32 537 (66 955)	366 (1 429)	872 (4 469)	33 041 (403 421)	62 101 (102 301)
Prod. 2-Ch.02	Meat and edible meat offal	1 178 713	768 (631)	318 (9 631)	527 (19 051)	3 481 (4 191)	5 (2 179)
Prod. 7-Ch.08	Edible fruit and nuts, peel of citrus	1 035 359	44 415 (70 260)	82 (1 115)	1 219 (22 216)	1 148 (117 450)	1 698 (26 583)
All agricultural products		**14 760 158**	**734 076**	**10 744**	**26 211**	**407 604**	**222 447**

Note: Figures in brackets denote world imports of the designated products in the destination country.

Source: Estimated from COMTRADE

TABLE A.5.4:

Maldives' top five exports of agricultural products (2009) (value in US$ thousands)

Product	Description	World	Bangladesh	Bhutan	India	Pakistan	Sri Lanka
Prod. 15-Ch.16	Preparations of meat, fish or of crustaceans, molluscs or other aquatic invertebrates.	9 886	0 (328)	0 (142)	0 (3 944)	0 (3 482)	0 (38 894)
Prod. 22-Ch.23	Residues and waste from the food industry	1 032	0 (158 967)	912 (1 401)	0 (165 240)	0 (161 447)	0 (82 733)
All agricultural products		**10 952**	**42**	**912**		**0**	**0**

Note: Figures in brackets denote world imports of the designated products in the destination country

Source: Estimated from COMTRADE

TABLE A.5.5:

Pakistan's top five exports of agricultural products (2010) (value in US$ thousands)

Product	Description	World	Bangladesh	Bhutan	India	Maldives	Sri Lanka
Prod. 9-Ch.10	Cereals	2 279 567	97 521 (1 015 857)	0 (20 898)	(—)	1 736 (15 873)	49 832 (302 833)
Prod. 33-HS.5201-03	Raw cotton waste and cotton carded or combed	284 645	82 683 (1 055 499)	0 (30)	0 (187 139)	0 (119)	0 (26 583)
Prod. 7-Ch.08	Edible fruit and nuts, peel of citrus	254 177	1 157 (70 260)	0 (1 115)	45 253 (1 102 356)	221 (22 216)	1 624 (26 583)
Prod. 21-Ch.22	Beverages, spirits and vinegar	187 455	0 (3 487)	0 (10 810)	305 (288 578)	0 (16 877)	4 208 (30 724)
Prod. 2-Ch.02	Meat and edible meat offal	123 393	0 (631)	0 (9 631)	0 (1 064)	0 (19 051)	0 (2 179)
All agricultural products		**3 867 523**	**185 111**	**0**	**62 093**	**2 468**	**86 718**

Note: Figures in brackets denote world imports of the designated products in the destination country.

Source: Estimated from COMTRADE

TABLE A.5.6:

Sri Lanka's top five exports of agricultural products (2009) (value in US$ thousands)

Product	Description	World	Bangladesh	Bhutan	India	Maldives	Pakistan
Prod. 8-Ch.09	Coffee, tea, mate and spices	1 549 310	219 (66 955)	0 (1 429)	70 984 (276 051)	2 143 (4 469)	6 502 (403 421)
Prod. 10-Ch.11	Products of milling industry, etc.	105 333	0 (15 964)	0 (2 668)	0 (22 292)	1 991 (13 245)	0 (60 707)
Prod. 22-Ch.23	Residues and wastes from food industry	78 174	334 (158 967)	0 (1 401)	56 070 (165 240)	43 (395)	2 019 (61 447)
Prod. 7-Ch.08	Edible fruit and nuts, peel of citrus	77 745	216 (70 260)	0 (1 115)	3 945 (1 102 356)	1 431 (22 216)	6 275 (117 450)
Prod. 23-Ch.24	Tobacco and manufactured tobacco	56 545	0 (17 482)	0 (1)	0 (31 239)	395 (8 692)	0 (14 584)
All agricultural products		**2 107 326**	**3 433**	**0**	**158 943**	**18 240**	**25 316**

Note: Figures in brackets denote world imports of the designated products in the destination country.

Source: Estimated from COMTRADE

6

An analysis of Bangladesh's food security concerns: nature of the problem and potentials of SAFTA-RTA

Mustafizur Rahman and Md Ashiq Iqbal

1.   Introduction

Ensuring food security remains a critical challenge for Bangladesh, the world's seventh most-populated country. The country has a population of about 148 million[93] with about 31 percent of the population living below the national poverty line, one of the highest concentrations of poverty in the world. Compared with other countries in South Asia, the proportion of undernourished people is highest in Bangladesh. Notwithstanding the formidable difficulties facing the country, over the years Bangladesh has been able to make impressive progress in terms of economic growth and poverty alleviation. Bangladesh has also been able to attain discernible success in the area of food security[94] for her growing population. Bangladesh has been able to achieve significant growth in the production of foodgrains over the past years through adoption of better cropping practices, increases in cropping intensity and productivity gains. However, in recent times, the comfort zone created in the past with regard to food security has come under some pressure in view of rising prices both in the domestic and global markets. Population pressure, volatility in prices, the possible adverse impact of climate change, and periodic natural disasters have all undermined the cause of sustainable food security for Bangladesh. Indeed, the Global Hunger Index of 2011, although identifying Bangladesh as one of the high achievers in reducing hunger, also places the country in the *alarming zone,* ranked seventieth among 81 developing countries (IFPRI 2011).[95]

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[93] Estimates from Bangladesh Economic Review. However, the preliminary census report of 2010 came up with an estimated population of 142 million and this is now being reviewed.

[94] Definition of "food security", as suggested by the World Bank, is provided at the beginning of Section 2.

[95] According to the index, Bangladesh was in the "extremely alarming" zone prior to 2001, indicating some improvement over the past years. The Global Hunger Index, jointly prepared by the International Food Policy Research Institute (IFPRI), Welthungerhilfe and Concern Worldwide, ranks developing countries according to the extent of hunger in their respective economies. In the calculation of the index, three equally weighted indicators are combined. These indicators include the proportion of undernourished population, the proportion of underweight children and the child mortality rate. The index scores are classified into five categories: "Low" (<=4.9), "Moderate" (5.0–9.9), "Serious" (10.0–19.9), "Alarming" (20.0–29.9) and "Extremely alarming" (>=30.0). Bangladesh, with a GHI, of 24.5, remains in the "Alarming" zone in 2011. Details about the index can be found at: http://www.ifpri.org/publication/2011-global-hunger-index.

As noted, Bangladesh's food production has increased significantly in recent years. Per capita food availability has also risen. However, rising food prices have raised questions about the issue of food entitlement as low-income groups have experienced erosion of real income and purchasing power. Moreover, Bangladesh needs to import foodgrains in varying amounts on a regular basis. Volatility in global food prices has important implications for Bangladesh's domestic prices of foodgrains. Availability of foodgrains in the domestic market – for consumption and foodstocks purposes – and the price of foodgrains in the local market depend on the ease and price of imports. Accordingly, both domestic production and the import situation are important for Bangladesh. The issue of food security and the various possibilities of addressing and seeking solutions to food security concerns are of critical importance to Bangladesh.

Concerns about food security have assumed new dimensions and added urgency against the backdrop of the rising global food prices of recent times. Record prices were observed between 2007 and mid-2008 when global food prices increased by about 67 percent. Indeed, one study estimated that in Bangladesh the share of population below the poverty line increased from 40.0 percent to 48.5 percent in view of the rise in food prices in 2007 (CPD 2008). Although the global economic and financial crises of 2008 induced a sharp decline in prices of foodgrains, this has been followed by another wave of price hikes since the middle of 2010. Indeed, by early 2011 a new record in price levels was observed (Hasan, Freire and Malik 2011). The resulting high inflation, driven by high food prices, threatened economic development in many developing countries and severely undermined the efforts of these countries in attaining the Millennium Development Goals (MDGs) and reducing poverty. The capacity of many of these countries to ensure food security came under pressure as access to food by the overwhelming majority of the population was challenged by the large erosion of purchasing power. This was also the case for Bangladesh. Estimates carried out by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP 2011a) indicated that because of higher fuel and food prices in 2011 and 2012 (compared with 2010), Asia and the Pacific region would suffer a loss of 1.5 percentage points in the rate of growth of Gross Domestic Product (GDP) in 2011 and 2012. It was estimated that 19.4 million people in the region were not able to emerge from poverty because of the rising food and energy prices in 2010, and the situation worsened in some of the South Asian countries (ESCAP 2011b).

According to the latest Food Outlook report of the Food and Agriculture Organization of the United Nations (FAO), although the food production forecast for 2012 is higher, there appears to be little chance of any respite from the high food prices in the short term (FAO 2011). Despite improved supply prospects, global agricultural commodity markets – which are a key factor driving price levels – are expected to remain tight. Strong demand from some countries is predicted to be the

underlying factor driving up prices in 2012. The increase in the price of fuel also remains a major cause of volatility in the food market.[96] Increasing volatility in the financial and equity markets and exchange rate fluctuations also contribute to higher and more volatile prices in the food market. As a result, for food importing countries such as Bangladesh, it is likely that the food security situation is not liable to improve in the coming years; rather, the signs are that, at least in the short term, it could become more difficult to ensure Bangladesh's food security.

Higher food prices have forced food-deficit countries, including Bangladesh, to look for non-traditional solutions. Until the early 1990s Bangladesh followed a "self-sufficiency" policy geared towards production enhancement to meet the rising demand and with a view to narrowing the demand-supply gap. In 1993 this policy was changed to one of self-reliance, which was primarily aimed at overcoming the food shortage through imports from the world market when prices were favourable in comparison with prices in the domestic market. This policy shift was in part informed by the growing demand for land for non-farm use. As Deb, Hossain and Jones (2009) described, this strategy worked quite well, as the private sector rose to address the attendant situation and make the necessary imports, particularly of rice. Even in 1998, the year of a devastating flood, private imports played a key role in stabilizing food prices in Bangladesh. As a matter of fact, the inflation rate declined in 1998 following the fall in food prices. This happened because of the low import prices arising from a surplus in the global rice market at that time (Faridi and Wadood 2010). However, this strategy came into question when the price of global foodgrains posted a significant rise in 2008. This forced countries with a surplus to adopt various export restrictive measures, including export bans,[97] to ease the supply situation and with a view to bringing down prices in their own domestic markets. These measures, along with higher prices, particularly of rice, limited the ability of the private sector to import from the global market. Even with government initiatives, the external supply of food could not be ensured in those trying times. This was a time when Bangladesh desperately needed to have access to the global foodgrains market to mitigate the damaging impact of two consecutive floods and two cyclones that occurred in 2007 and 2008.

Although the situation eased somewhat thereafter, prices in the global market began to rise again in 2010. Prices of foodgrains were even higher than in 2008.

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[96] Beyond a certain level, it becomes profitable to divert some of the foodgrains (such as maize) for production of fuel (ethanol, etc.). This creates a shortage in the global foodgrains market.

[97] India was the first among nations to restrict private exports of rice. To discourage export of foodgrains, an unusually high minimum export price of US$1 000 per tonne was imposed. Major exporting countries such as Thailand and Viet Nam followed with similar measures. Later, Cambodia, Egypt, India and Viet Nam banned rice exports. Similar steps were taken by wheat exporting countries as well. China, India, Kazakhstan, Pakistan, the Russian Federation and Ukraine eventually banned wheat exports (Deb, Hossain and Jones 2009).

This period coincided with natural calamities in Bangladesh (such as cyclone *Sidr* in November 2007) that led to significant crop losses. Indeed, cyclone *Sidr* came on the heels of two earlier floods. As a result, there was a significant depletion of public food stocks. This led to a hike in domestic prices. The government had to buy foodgrains at high prices from the international market. Domestic price movements in Bangladesh during this period thus were similar to the international price trends, although imports to Bangladesh did not account for a high share of the country's total demand for foodgrains.[98] The fact that domestic prices in recent years have tended to become aligned with global prices has added to the challenge of attaining food security for Bangladesh. Further adding to the challenge is the issue of climate change and its possible adverse impact on Bangladesh's agriculture. Bangladesh is known to be one of the most vulnerable countries to the impact of climate change. The consequences of higher temperatures, greater variability in precipitation, extreme weather in the form of frequent flooding, cyclones and droughts, and salinity issues resulting from the rise in sea levels are becoming increasingly evident and are likely to intensify in the future. In view of this likelihood, the issue of ensuring sustainable food security has assumed critical importance for Bangladesh.

Exploring the opportunities of regional cooperation with a view to ensuring Bangladesh's food security adds an important dimension to the discourse on food security for the country. Bangladesh was a key initiator of the process that saw the creation of a regional grouping called the South Asian Association for Regional Cooperation (SAARC) in 1985. Cooperation among the SAARC members has evolved from the SAARC Preferential Trading Arrangement (SAPTA) to the establishment of the South Asian Free Trade Area, (SAFTA). Whereas SAPTA is considered to have marked the beginning of the integration initiative among the SAARC member countries (Mukharji 2011), the SAFTA-Regional Trading Arrangement (RTA) has created an opportunity for closer economic cooperation among the SAARC members in the areas of trade and investment, trade facilitation and other areas. One of the areas of cooperation is in the agricultural sectors of the member countries, where the opportunities of regional trade and cooperation in other relevant areas could potentially have a positive impact from the perspective of food security. As it stands, agriculture remains an important sector in all the SAARC member countries. Production of foodgrains constitutes a key activity in all these economies. In view of this, leveraging opportunities of SAARC and aiming that synergy towards ensuring food security, remains a distinct possibility for Bangladesh. The extent to which trade liberalization in SAARC and opportunities offered through SAFTA-RTA, as well as any additional measures, could be helpful, remain important areas to explore with regard to ensuring food security for Bangladesh. Although the literature on regional cooperation in SAARC is quite rich and diverse, the particular aspect of Bangladesh's food security issues from the perspective of potential opportunities for regional cooperation has not been examined in depth.

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[98] It is to be noted that *ad valorem* duties on imports of rice are at present zero in Bangladesh.

In view of the above, this paper seeks to investigate the current food security situation in Bangladesh, analyzing the concerns from the perspective of regional cooperation. Following this introduction (Section 1), this paper looks at the dynamics of the food production, food demand and the food security status of Bangladesh in Section 2. In Section 3 the paper goes on to assess Bangladesh's food security concerns and interests from the perspective of regional cooperation in SAARC and opportunities originating from the SAFTA-RTA. Concluding remarks are presented in Section 4.

2. Status of food security in Bangladesh

Agriculture in the Bangladesh economy

Food security for the purpose of this paper is defined as "access by all people at all times to enough food needed for an active and healthy life. Its essential elements are the availability of food and the ability to acquire it" (Reutlinger 1985). It is thus important to look at food security at both the national and the household levels, and from both the "food supply" and the "access to food" dimensions. Agriculture used to be the dominant sector in Bangladesh during the early years of post-independence in the 1970s. In the mid-1970s, agriculture contributed about 56 percent of Bangladesh's GDP. However, this share has continued to decline in recent years – agriculture's contribution to Bangladesh's GDP was 26 percent in the early 1990s and 19 percent in 1999/00. In 2010/11, agriculture contributed about 18 percent of GDP (in current prices). Measured in constant (1995/96) prices, agriculture's contribution to the GDP was about 20 percent in 2010/11 (Table 1). This declining share, however, was primarily driven by the ascendancy of various industrial and services sectors in the Bangladesh economy, although agriculture remained an important sector in terms of feeding the growing population and providing employment. The decreasing share should also not lead one to discount Bangladesh's formidable success in agriculture. It is notable that Bangladesh has achieved an impressive result in efforts to increase agricultural production and GDP. Agricultural GDP (crop, forestry and fisheries subsectors together) has increased from only about 26 billion taka (Tk.) (US$3.3 billion) in the early-1970s to about Tk. 200 billion (US$4.0 billion) in the early 1990s, and was about Tk. 750 billion (US$10.5 billion) in 2010/11. On average, during the 1990s the agricultural GDP increased annually by about 7.9 percent in nominal (taka) terms (3.4 percent in inflation – adjusted real terms) whereas the average annual growth rate stood at 11.4 percent during the 2000s (3.8 percent in real terms).

The issue of food security includes food production, actual availability and the access and entitlement situation rather than simply agricultural production and GDP. Apart from the dynamics of a growing population, the three possible sources of food

TABLE 1:

Agriculture subsector: share as percentage of GDP

(Share in constant prices)

Sectors	FY1999/2000–2004/05	FY2004/05–2008/09	FY2009/10 (prediction)
Agriculture (A+B)	**23.9**	**21.4**	**20.0**
A. Agriculture and forestry	**18.5**	**16.6**	**15.5**
i. Crops and horticulture	13.7	12.0	11.2
ii. Animal farming	3.0	2.9	2.6
iii. Forest and related services	1.9	1.8	1.7
B. Fishing	**5.4**	**4.8**	**4.4**

Source: Sixth Five-Year Plan 2011–2015

availability (production, food aid and imports), along with food prices and purchasing power, are crucial considerations to determine the state of food security in Bangladesh. As the following discussion indicates, despite the production growth, Bangladesh still has to be concerned with food security because of developments in the other elements of the food security equation.

Food production situation

Since independence in 1971, production and consumption of foodgrains has been increasing at a significant pace in Bangladesh. The pace of growth of foodgrains production has gained momentum, particularly over the last decade. Comparing the production of major food items of Bangladesh in 2009/10 with the level of production in the early 1990s, one observes a significant improvement for some commodities (Table 2). Production of rice has increased by almost 81 percent; production of potato increased by about seven times (666 percent). Wheat production, however, has increased only by 9 percent. In contrast, with growing imports of edible oil and pulses, the production of these latter items has declined over time.

Bangladesh achieved a major milestone at the end of the 1990s when the country approached the critical point of demand-supply balance with regard to foodgrains (Hossain and Deb 2009). However, this was not enough to ensure the long-term food security of the country. The surplus in food production attained at the end of the 1990s was difficult to sustain in the face of the growing population pressure. The population of Bangladesh, according to the Bangladesh Economic Review, is estimated to be over 148 million as of 2011. It has been growing by about 1.8 million each year over the past decade. Given the finite land resources, it has been a major challenge to keep food production growing to keep pace with the growth of population. It is Bangladesh's success with respect to agricultural production

TABLE 2:

Long-term food production scenario in thousand metric tonnes (MT)

Food Item	1989/90	1994/95	1999/00	2004/05	2006/07	2009/10	2010/11	Average annual growth (%)	
								(1989–1999)	(2000–2010)
Rice	17 864	16 833	23 066	25 157	27 318	32 257	33 520	2.8	4.0
Wheat	890	1 245	1 840	976	737	969	970	8.7	-4.7
Pulses	512	534	383	316	258	221	n/a	-1.6	-4.2
Oilseeds	438	480	406	304	322	377	n/a	0.3	-0.7
Potato	1 066	1 468	2 933	4 855	5 167	8 168	n/a	15.4	17.8

Note: n/a = not available.

Source: Bangladesh Bureau of Statistics (BBS) 2011a

that has allowed growth of foodgrains production to somewhat outpace population growth, leading to some rise in per capita food availability.

Notwithstanding the implications of the population growth mentioned above, there is no denying that Bangladesh has achieved impressive success in terms of the growth of food production. This is particularly true for rice, the staple food of the population. Rice comprises about 97 percent of the foodgrains that Bangladesh produces every year. Consequently, food security in Bangladesh is influenced mainly by the availability and price of rice. On average, during the last decade, the production of rice grew about 4.0 percent per annum (Figure 1). However, a negative annual growth was recorded for the production of the second major foodgrain, wheat (albeit with less than 3 percent share in total foodgrains production), over the corresponding period between 1996/97 and 2006/07.

The growth in rice production was driven by two important changes in the cultivation system. The first was related to the adoption of high-yielding modern varieties of rice. Almost three-fourths of rice cultivation consists of modern high-yield rice varieties. As Hossain and Deb (2009) observed, at present it is only in the deeply-flooded areas in the depressed basins and in the salinity-affected coastal areas that farmers grow low-yield traditional rice varieties. According to their estimates, since independence almost 90 percent of the growth in rice production has come from increases in yield thanks to technological progress in rice cultivation. The dry season irrigated *Boro*[99] rice alone accounted for over 80 percent of the increased production, which now accounts for over 55 percent of the total rice

[99] *Boro*, *Aman* and *Aus* are the three most prominent rice varieties produced in Bangladesh with their respective shares in total rice production amounting to about 57 percent, 38 percent and 5 percent in 2010.

FIGURE 1:

Growth in food grain production
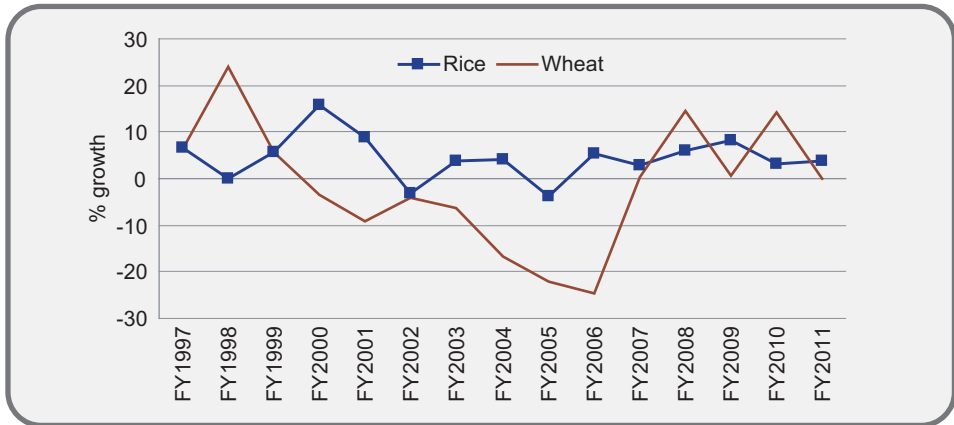
Source: BBS 2011a and Ministry of Food and Disaster Management (MOFDM) 2011

production in Bangladesh (Hossain, Naher and Shahabuddin 2005). In comparison, the share of *Boro* was only about 34 percent in the early 1990s. This change was also accompanied by an expansion of irrigation facilities. Almost two-thirds of the cultivated land is now connected to irrigation facilities that have been developed mainly as a result of private investment in deep and shallow tubewells and power pumps. The growing importance of technology-dependent *Boro* crops instead of the traditional varieties dependent on monsoon rains was a critical development from the perspective of food security in Bangladesh.

Changes in cultivation brought about by technological progress have also resulted in adjustments in the seasonal dimensions of cropping patterns, sowing and harvesting. The gap between the two rice seasons has decreased in many areas; drought and salinity resistant varieties have been introduced; resilience of the sector has grown; the agricultural sector of Bangladesh is now relatively less dependent on the vagaries of nature. In the deeply-flooded areas, farmers now keep the land fallow during the monsoon season or use it for aquaculture with raised embankments, and grow a high-yielding *Boro* rice crop (February to June) with the help of irrigation. The *Boro* rice area has expanded from 0.5 million hectares (ha) in the early 1970s to nearly 4.5 million ha in 2008. The *Boro* rice, together with wheat, now accounts for nearly 60 percent of cereal production during the March to June period, replacing cultivation of *Aus*, the traditional crop (reflected in Figure 2). In comparison, their share in total cereal harvest was less than 10 percent in the early 1970s. The farmers can now recover from their traditional loss of monsoon season *Aman* crop within four to five months (Hossain and Deb 2009).

FIGURE 2:

Area under cultivation for different rice varieties
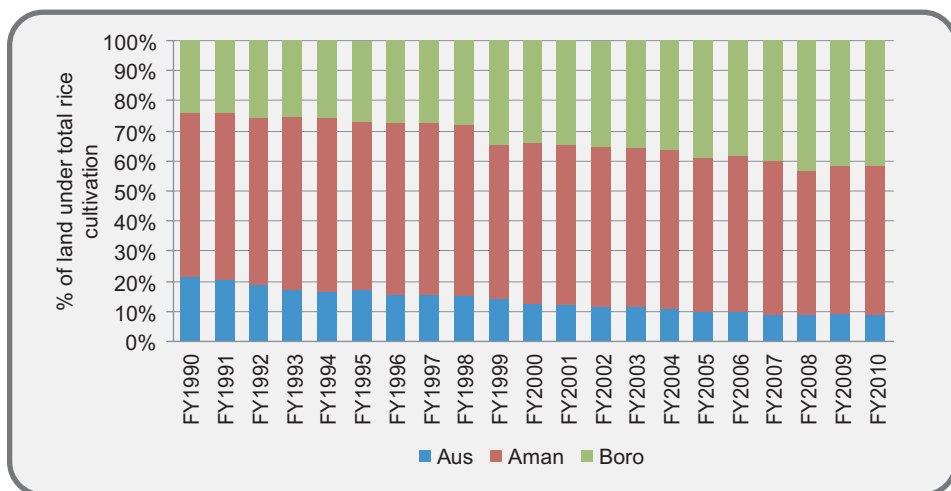
Source: BBS 2011a

With regard to wheat cultivation, Bangladesh does not have a favourable agroclimatic environment because of the relatively short winter season and the heavy soil. Until the late 1960s, wheat accounted for less than 1 percent of the cultivated area in Bangladesh. However, with the availability of high-yielding modern varieties in the late 1970s, farmers became more interested in wheat, especially for replacing low-yielding dry season crops such as pulses and oilseeds. In the late 1990s, wheat also ensured better prices (relative to rice), which further motivated farmers to cultivate this crop. However, in recent times, maize is preferred even more, given its better yield, profitability and suitability to the agro-ecological conditions in Bangladesh. As was noted above, wheat now accounts for less than 3 percent of the total cereal production.

One important aspect of the lack of food security in Bangladesh, along with growing population pressure, was the fact that domestic foodgrain production remained susceptible to floods, cyclones and droughts despite the changing pattern of cropping and the successes noted above. In 2007, for example, the cyclone *Sidr*, followed by *Aila*, led to large-scale damage to standing crops and resulted in added vulnerability with regard to food security of the country. Possible climate change impacts could make the agricultural sector even more vulnerable in the future.

As a consequence, Bangladesh's food security is threatened for various reasons. Production shortfalls because of natural calamities and growing population, as well

as the low purchasing power of certain groups of the population, which raises issues of entitlement, combine to make food security an ongoing concern.[100]

Import of foodgrains and food aid

To meet demand and replenish the foodstock, Bangladesh needs to import foodgrains, in varying amounts. On average, during the recent decade, over 8 percent of the total supply of foodgrains in the domestic market of Bangladesh has been secured from imports. In 2010/11, the share of imports in available foodgrains (rice and wheat) was as high as 12.9 percent (Table 3). It is pertinent to recall here that although food aid was an important component of food availability in Bangladesh immediately after independence,[101] it has been in gradual decline in recent years. The contribution of food aid in the total grain supply was about 4 percent in the 1990s. However, during the 2000s this share came down to only 1.1 percent. Indeed, at present food aid is almost non-existent – in 2009/10 the share of food aid in total foodgrain supply was only about 0.2 percent and 0.4 percent in 2010/11. Trade in foodgrains has assumed greater importance from the perspective of food availability and food security in Bangladesh.

TABLE 3:

Sources of foodgrain

			(in percentage)
Fiscal year	**Domestic production**	**Imports**	**Food aid**
1999/00	92.2	4.6	3.2
2000/01	94.6	3.8	1.7
2001/02	93.5	4.7	1.8
2002/03	89.3	9.9	0.8
2003/04	90.8	8.3	0.9
2004/05	88.6	10.4	1.0
2005/06	91.4	7.9	0.7
2006/07	92.1	7.6	0.3
2007/08	89.6	9.7	0.8
2008/09	91.4	8.2	0.4
2009/10	90.6	9.2	0.2
2010/11	86.7	12.9	0.4

Source: BBS 2011a

[100] It should be noted, however, that Bangladesh maintains a large safety network of programmes to cater to this group in the population, such as Food for Works and Vulnerable Group Feeding; a limited rationing scheme and an open market sales programme are also in operation.
[101] Food aid came mainly as part of the United States' Public Law 480 (PL480), Food for Peace programme.

To facilitate the import of foodgrains and other major food items, tariff rates in Bangladesh on these items have been brought down quite radically over the last two decades. As Table 4 indicates, duties on imports of rice, wheat, edible oil and pulses were reduced significantly over this period. Indeed, after 2006/07 these duties were reduced to zero. Duty-free import of these items has been maintained to the present time. Imports served two objectives: ensuring adequate supply and bringing stability to domestic prices through a supply-side response.[102]

TABLE 4:

Total operative tariff rates on major food items

Food item	1991/92	2001/02	2006/07	2010/11
Rice	31.25	13.50	5.00	0.00
Wheat	16.44	7.50	5.00	0.00
Edible oil (refined)	107.49	52.50	20.75	18.00
Edible oil (crude)	67.82	36.43	0.00	0.00
Pulses	21.44	15.00	5.00	0.00

Source: Deb 2011 and National Board of Revenue for 2010/11

With the reduction in tariff rates, Bangladesh has experienced a rapid growth in food imports, particularly of rice and wheat. As Table 5 indicates, significant growth in the import of food items has taken place particularly since 2006/07, at a time when tariffs on food grains were being removed.

TABLE 5:

Import of major food items

(in US$ millions)

Major food items	2000/01	2006/07	2010/11
Rice	172	180	829.7
Wheat	177	401	1 081.4
Oilseeds	64	106	103.1
Edible oil	218	583	1 066.8
Pulses, all sorts	86	195	292.2

Source: Bangladesh Bank (2001, 2006, 2011)

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[102] Even though international prices tended to be higher than domestic prices in Bangladesh, the government imports foodgrains (on its own and through the private sector) for replenishing foodstocks, distribution through public food distribution systems and for allocation for open market sales.

At the aggregate level, foodgrain availability has improved in Bangladesh over the years. As Begum and D'Haese (2010) showed, the growth rate of overall foodgrain production has been generally higher than the population growth rate of Bangladesh since independence in 1971. At the same time, although food aid has declined, imports of foodgrains have increased. The combined impact has been an improvement in food availability. However, the fact of rapid growth in imports has cast doubt on the reliability of production figures, as well as the estimates of population figures in Bangladesh. Based on the traditional supply-oriented approach, food availability on a per capita basis has increased from 453 grams per day (g/day) in 1991/92 to 666 g/day in 2010/11, an increase of 47 percent (Table 6). This was, by any measure, a significant achievement. In view of the population size, production and per capita consumption of foodgrains, the picture that emerges is one of surplus (overestimated demand), for the period since 1999/00. Indeed, in 1999/00 the food situation had improved dramatically by over 15 percent compared with the previous year. However, this high growth was not sustained over subsequent years. In spite of this, even in the years of major disasters (i.e. 2004 and 2007), estimates of the key variables mentioned above would indicate a food surplus. This has led some experts to question the production estimates carried out by government sources. Reliability of the latest population estimate, of 140 million, has also been questioned.[103] The existence of significant imports, even at times of high global foodgrains prices, has added to this debate.

Indeed, imports of foodgrains have gained momentum since the mid-2000s, particularly since 2007, when the price of rice in the international market has been higher than the local price (Figure 3). Consequently, the imported rice was used to replenish the public stock of foodgrains. These are then distributed through Public Food Distribution System (PFDS), and sold through open market sales (OMS) at subsidized prices (which are even lower than the domestic market price).

Estimates carried out at the household level indicate a different picture, however. The overall aggregate surplus figures are not substantiated at the household level. Hossain and Bayes (2009) found that only about 4 percent of rural households had a net surplus of foodgrains. This also reinforces doubts about the credibility of the production and population data. There is thus an urgent need to have a fresh look at all the relevant variables and their measurement. The fact remains, however, that maintaining food security continues to be an ongoing concern and challenge for Bangladesh.

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[103] The latest census was carried out in January 2011. In the face of criticism, the government has conducted a limited survey to establish its reliability and arrive at a more objective figure.

TABLE 6:

Production gap/surplus and per capita availability of foodgrain

(in thousand MT)

Year	Total food grain production	Net production	Population (millions)	Consumption requirement	Gap/ (surplus)	Private imports	Public distribution	Domestic procurement	Net domestic availability	Per capita availability (g/day)
1991/92	19 317	17 385	113	18 709	1 323	0	2 345	1 035	18 695	453
1992/93	19 517	17 565	115	19 023	1 458	355	1 074	227	18 767	447
1993/94	19 172	17 255	117	19 354	2 100	312	1 376	166	18 777	440
1994/95	18 078	16 270	119	19 669	3 399	1 014	1 573	278	18 579	428
1995/96	19 056	17 150	121	20 000	2 850	850	1 794	400	19 394	440
1996/97	20 337	18 303	123	20 298	1 995	237	1 392	615	19 317	432
1997/98	20 665	18 599	125	20 613	2 014	1 135	1 621	617	20 738	456
1998/99	21 813	19 632	126	20 911	1 279	3 480	2 134	753	24 493	531
1999/00	24 906	22 415	128	21 209	(1 207)	1 234	1 900	967	24 582	526
2000/01	26 758	24 082	130	21 507	(2 575)	1 063	1 774	1 088	25 831	545
2001/02	25 906	23 315	132	21 788	(1 527)	1 289	1 464	1 053	25 015	521
2002/03	26 694	24 025	133	22 086	(1 938)	2 966	1 435	952	27 474	564
2003/04	27 443	24 699	135	22 384	(2 314)	2 480	987	843	27 323	554
2004/05	26 133	23 520	137	22 682	(837)	2 982	1 367	899	26 970	539
2005/06	27 265	24 539	139	22 980	(1 558)	2 265	1 245	945	27 104	535
2006/07	28 055	25 250	141	23 278	(1 971)	2 209	1 463	1 144	27 778	541
2007/08	29 775	26 798	142	23 576	(3 221)	2 916	1 329	1 300	29 743	572
2008/09	32 166	28 949	144	23 874	(5 075)	2 217	2 160	1 483	31 843	605
2009/10	33 226	29 903	146	24 189	(5 714)	2 899	1 961	805	33 958	637
2010/11	34 490	31 041	148	24 487	(6 554)	3 109	2 290	464	35 976	666

Source: Authors estimate based on data from FAO, BBS, Department of Agricultural Marketing (DAM), Department of Agriculture Extension (DAE) and Food Planning and Monitoring Unit (FPMU)

FIGURE 3:

Rice price in the domestic and international markets
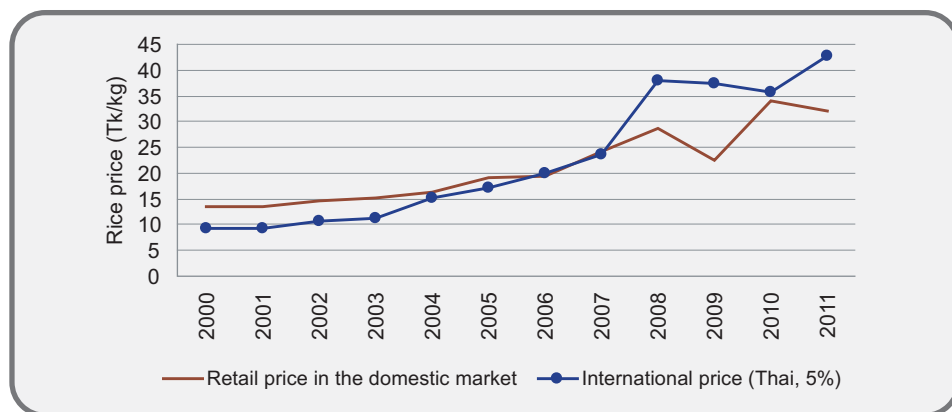
Source: Trading Corporation of Bangladesh (TCB) 2011 and FAO 2011

Access to food

Essential elements in the definition of food security relate to the availability of food and the ability of citizens to access the food through appropriate entitlement. Thus the mere description of availability, as discussed in the above section, does not necessarily reflect the status of food security in Bangladesh. According to Nobel Laureate Amartya Sen (Sen 1982), "food entitlement" is the key to food security, which depends on four elements: a) production-based elements; b) trade-based elements; c) productivity and the opportunity cost of the labour power of an individual; and d) inheritance and transfer (including a government's transfer) of entitlements. An individual's access to food is defined by the operation and interaction of all those elements manifested mainly through poverty and income circumstances and further affected by the price of food. As can be seen in Sen's model, access through trade is an important element of food security.

Poverty and income

Owing to slow growth in Gross National Product (GNP) and high population growth, Bangladesh experienced slow growth in per capita income until the end of the 1980s. However, this situation changed in the 1990s as the country achieved significant progress in terms of both of these indicators. Population growth slowed during the 1990s. Nominal per capita Gross National Income (GNI) was US$463 in 2004/05 and US$818 in 2010/11, indicating an annual growth rate of over 12 percent between those periods. However, according to the Household Income and Expenditure Survey conducted in 2010 by the Bangladesh Bureau of Statistics (BBS),

a significant proportion of the population (31.5 percent) still lives below the poverty line. In fact, as Figure 4 depicts, Bangladesh has the highest incidence of poverty within the South Asian region. This poverty rate is computed using the cost of basic needs (CBN) method. More importantly from the food security perspective, poverty measured on the basis of the daily calorie intake (DCI) method also shows a high incidence of food poverty of 40.4 percent in 2005. Notwithstanding the high level of poverty, it is undeniable that Bangladesh has achieved significant progress in terms of poverty reduction. Indeed, within the region Bangladesh was able to record the largest reduction in the poverty headcount ratio (percentage of people living below the poverty line) during the last two decades (Figure 4). Whereas the poverty rate declined by an average of 1 percent per annum during the 1990s (using the CBN measure), in the last decade a faster decline – over 1.8 percent per annum – was observed in poverty rates. Although the DCI rate is yet to be available for 2010, one can assume a similar trend given that food poverty is highly correlated with income poverty.

FIGURE 4:

Incidence of poverty in South Asian countries
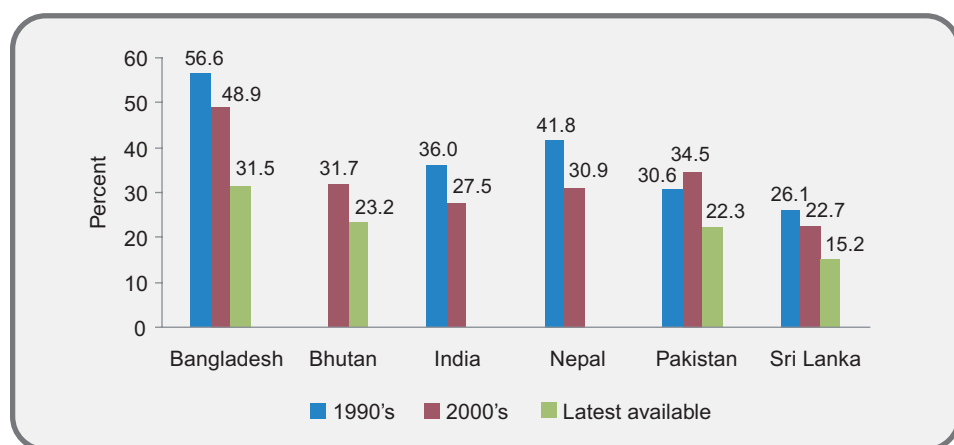
Source: World Bank 2011b

As a separate measure, the agricultural wage can be used to indicate progress in terms of the living conditions of the poor. The nominal wage rate index computed by the BBS showed an increase of over 100 percent in agricultural wages during 1999/00 and 2008/09. This increase, however, did not reflect the real wage situation because a significant rise in inflation was experienced during this time and this has led to the erosion of real income by a significant margin. According to the consumer price index, between 1999/00 and 2008/09 the price levels in the rural areas

increased by over 70 percent. As for food items, the price increases in the rural areas were over 73 percent. At the same time, in all likelihood, the average wage growth mentioned for agricultural workers was experienced differently by various income groups in the rural areas. The lower-income category may not have reaped the full benefit of the rising real wage, as indicated by the persistently high income inequality in rural areas of Bangladesh. At the national level, a significant level of inequality is evident, with the Gini coefficient being 0.46 in 2010 (this was 0.45 in 2000); for rural areas the Gini coefficient was 0.43 in 2010 and 0.39 in 2000 (BBS 2011a, BBS 2003).

This inequality is reflected in the household-level analysis of access to food carried out by Hossain and Bayes (2009). As noted earlier, the authors have found an overall surplus in the marketable rice. However, when rural households in 2004 were considered as a whole, the level of actual availability varied by household types. They found that 14 percent of households with relatively large landholdings accounted for about half of the total paddy produced. On the other hand, over 50 percent of households with little or no land accounted for only one-fifth of the produce. They also found that, whereas all rural households as a group had a 4 percent marketable surplus, only one-third of the rural households in Bangladesh were net sellers of rice and the remaining households were net buyers. One can easily correlate these figures and conclude that these net buyers are the marginal farmers – in other words, the poor.

Trends in inflation and food prices

For the past several years, Bangladesh has been experiencing an era of high inflation. The general month-on-month inflation rate (inflation rate for a particular month compared with that month of the previous fiscal year) at the national level in October 2011 was 11.4 percent. In recent months Bangladesh has witnessed inflation rates similar to 2008, when commodity prices around the globe – food items included – were rising at an alarming pace. Many have argued that this high trend in food price inflation has pushed millions below the poverty line. As would be expected, the current high level of inflation in Bangladesh is affecting the poor relatively more adversely, because food inflation has been significantly higher than non-food inflation (Figure 5), and because the poor spend most of their income on food items. At the same time, the inflation rate has been in general higher in the rural areas than the urban areas (Figure 6).

Such high inflationary trends have undermined the cause of food security in Bangladesh despite the significant gains in terms of income and production growth. However, this aggregate inflation situation alone does not reflect the real picture. As mentioned earlier, rice comprises about 97 percent of total production of foodgrains in Bangladesh. Rice also accounts for about 50 percent of total expenditures of the poor. Deb (2011) showed that a daily wage that could buy only 3.5 kg of rice in

FIGURE 5:

Inflation trend: food vs non-food
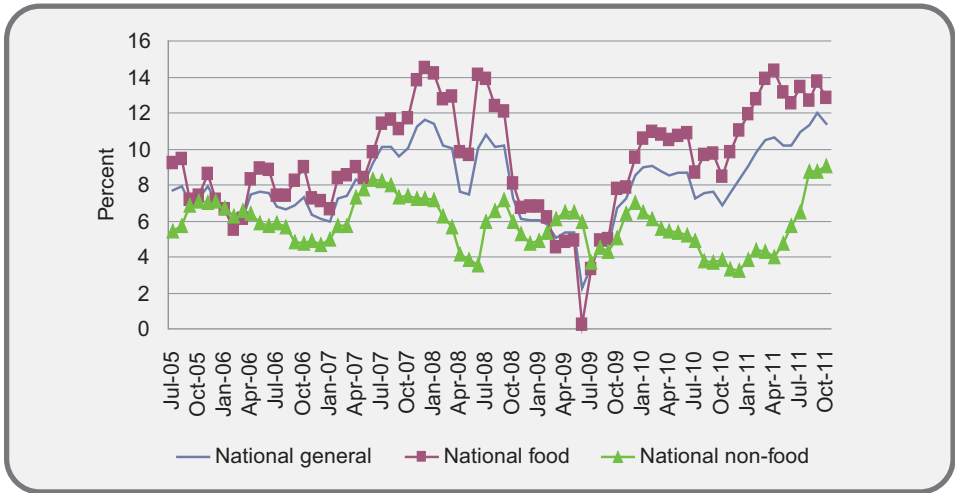
Source: BBS 2011a

FIGURE 6:

Inflation trend: urban vs rural
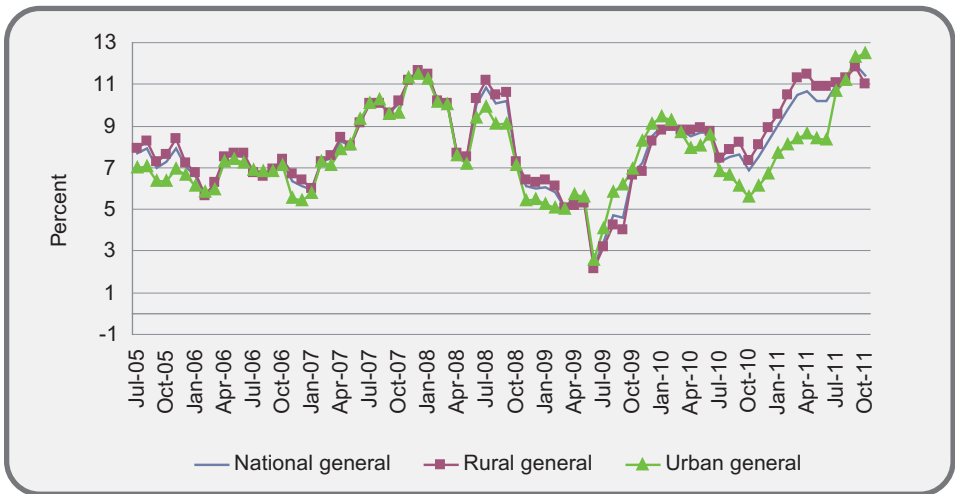
Source: BBS 2011a

1990/91 gradually increased to being able to buy 5.9 kg rice in 2006/07. However, the rice-equivalent wage in 2007/08 declined to 4.6 kg/day owing to a significant increase in the price of rice during this period. Given that high inflation affects the poor's access to food, an important element of food security, it is important that the government has reliable access to food outside of the country so that the food supply, and consequently food prices, remain stable and less volatile at times of rising prices. As noted previously, in recent years international prices have been higher than domestic prices in Bangladesh. Under these circumstances, private imports of food from the international market for domestic sales were not profitable. In view of this, it was the government that had to import rice for foodstocks and to sell in the domestic market at subsidized prices. The general practice in Bangladesh is for the government to import through the private sector and then buy the foodgrains at a negotiated price.[104] Catering to demand through subsidized distribution and sales mechanisms such as PFDS and OMS does put downward pressure on the prices, although the extent of this is not known. An important trend in this regard relates to the fact that domestic prices in Bangladesh tend to be influenced significantly by international prices. For example, although food production, import and distribution through public channels were better in 2010/11, relative to the recent past, prices have continued to rise in line with world prices. The World Bank estimates show a high correlation between monthly rice prices for Kolkata-Dhaka and Thailand-Dhaka – these were found to be 0.9 and 0.8, which implied that these prices tend to move closely together (World Bank 2011a). The lack of connection between food prices and food availability will add to the difficulty of controlling food price inflation in Bangladesh. In the international market, food prices, particularly of cereals, have been experiencing a substantial rise since the middle of 2010 and they have continued to remain high in recent months. According to FAO statistics, food prices in general increased by about 29 percent between July 2010 and October 2011, whereas cereal prices increased by over 46 percent during this period (Figure 7).

The other difficulty in recent times, from the perspective of Bangladesh's food security, arises from the fact that the major sources of food imports for Bangladesh, particularly of rice (India, Thailand and Viet Nam), have experienced the growing pressure of their own domestic demand for food, a situation sometimes exacerbated by production shocks. Rising food prices have sometimes forced these countries to adopt export-restrictive measures, most notably in 2008. All these factors have made it more important for Bangladesh to look for additional opportunities to help solve the country's longer-term food security challenges. The following section explores whether regional cooperation in SAARC within the scope of SAFTA could be used to address and mitigate the attendant concerns. This section discusses the potential of the regional market, as well as regional initiatives for improving food security in Bangladesh.

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[104] From time to time, the public sector Trading Corporation of Bangladesh (TCB) has also imported foodgrains, and the government has imported directly through government-to-government negotiations.

FIGURE 7:

Movement of food and cereal prices in the international market
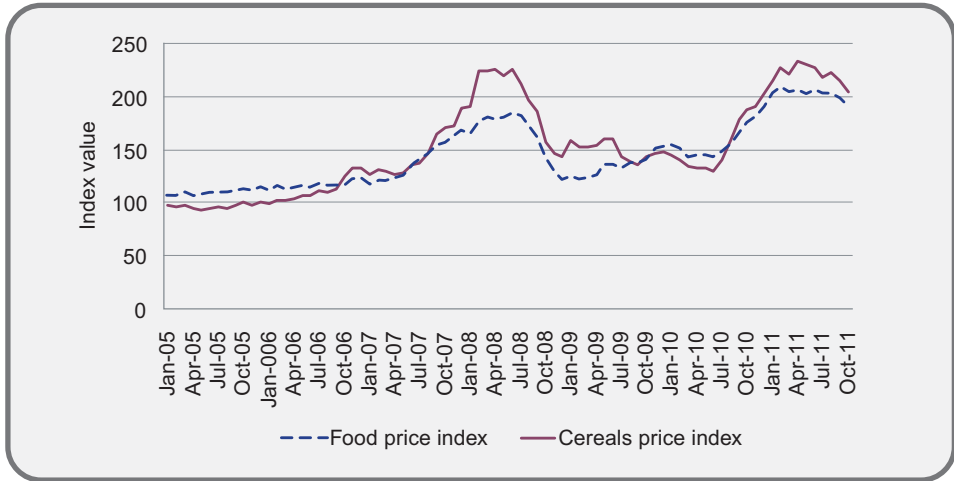
Source: FAO 2011

3. Bangladesh in SAFTA and the issue of food security

Importance of agriculture for Bangladesh and in the SAARC region

The agricultural sector continues to remain important for all the SAARC member countries, despite its declining share in their respective GDPs (Table 7). Agriculture is still the single largest employer in South Asia and, despite the green revolution with its attendant yield gains, increased crop diversity and rise in food production, food security remains a nagging concern. Most South Asian countries are subject to the vagaries of nature – both flood and drought. A complex set of policies, including input and output subsidies, marketing of outputs and fiscal-monetary policies, and the state of infrastructure all have important implications in the form of incentives and disincentives for foodgrains producers. Policy choices are thus of key importance in terms of ensuring higher foodgrains production in the region. In addition, issues of food production and food security will attain enhanced importance in the future given the adverse impact of climate change which is likely to afflict many regions and countries in South Asia. The urgency of food security has also been heightened because of the volatility in global food prices in recent times. Trade in agriculture under SAFTA must be examined from the perspective of food security and regional cooperation in South Asia in general. Cooperation among South Asian countries could alleviate food security concerns of individual countries and also provide regional members with policy flexibility as they would not necessarily need to make difficult policy choices to ensure food self-sufficiency for their own countries.

TABLE 7:

Share of agricultural value added in GDP in South Asian countries

Country name	2000	2005	2010
Bangladesh	25.5	20.1	18.8
Bhutan	28.4	24.5	17.6*
India	23.4	18.8	16.2
Maldives	8.8	10.1	5.2
Nepal	40.8	36.3	32.8*
Pakistan	25.9	21.5	21.8
Sri Lanka	19.9	11.8	13.6
South Asia	23.9	19.3	17.0

Note: * 2009.

Source: World Bank 2011b

The agricultural sector is important for almost all South Asian countries. Bangladesh, India and Pakistan have the major share of arable land in South Asia, with India producing the lion's share of the total South Asian food production. In 2009, India produced 748.84 million tonnes of food, three times higher than the total combined production of other South Asian countries.[105] It must be noted that, on average, South Asian people spend over half of their income on food consumption (Sapkota 2011). According to Asian Development Bank (ADB) estimates, a food price increase of 10 percent will significantly increase the number of poor people living below the poverty line in South Asia – by a number as high as 3.8 million for Bangladesh and 3.5 million for Pakistan (ADB 2011).

Trade in agri-items in the region and under the SAFTA-RTA regime

However, trade in agricultural products among South Asian members remains low. In 2009 intraregional agricultural exports constituted only 12.8 percent of the total exports of the region. On the other hand, intraregional imports of agricultural products accounted for only 8.5 percent of the global import of these items (Sapkota 2011). Although this share was higher than the aggregate intraregional trade in South Asia (which was below 5 percent), the fact remains that relative to extra-regional trade in agricultural goods it was significantly lower. It is also important to note that between the pre-SAFTA (2005) and the post-SAFTA period (2009) this intraregional import

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[105] It would perhaps have been clearer if per capita food production were compared by country and its dynamics studied over time. However, this could give a wrong understanding since food intake habits tend to change significantly over time. As countries develop, people tend to take more calories from non-foodgrain items (fish, meat, potato etc.) and hence average requirements for foodgrains for direct human consumption tend to come down.

TABLE 8:

Intraregional export and import of agricultural products

Commodity group	2005	2006	2007	2008	2009
Intraregional exports (% share of region's exports to the world)					
Animal and animal products	3. 8	4.2	3.9	4.3	4.7
Vegetable products	17.5	14.9	16.0	15.9	13.9
Foodstuff	14.9	26.4	17.3	16.5	17.2
Intraregional imports (% share of region's imports from the world)					
Animal and animal products	20.8	19.7	16.8	21.2	22.2
Vegetable products	11. 7	10.9	10.8	7.9	6.7
Foodstuff	11.3	33.6	35.7	37.3	15.6

Source: Sapkota 2011

share did not see any significant increase. In the case of foodstuff (mostly foodgrains) imports, however, there was some rise during this period, although one finds a large degree of variation in this from year to year (Table 8).

As Table 8 indicates, intraregional trade in agricultural products as a share of total trade of SAARC countries in agricultural products has risen slightly between 2005 and 2009. Data from the UN commodity trade statistics database (COMTRADE) also indicate that between 2005 and 2010, intraregional trade of the region as a share of global trade increased from 10.9 percent to 20.8 percent (Table 13); however, there is wide variation across countries. Among SAFTA members, India and Sri Lanka showed consistent trade surpluses, whereas the others have been net food importers (Table 9). In fact, for Afghanistan, Bangladesh, Maldives and Nepal, the agricultural trade deficit has been on the rise. Indeed, Bangladesh has the largest deficit in trade in agri-items in the SAFTA-RTA region.

TABLE 9:

Balance in total agricultural trade (US$ millions)

Country	2008	2009
Afghanistan	-18	-31
Bangladesh	-190	-306
Bhutan	16	-5
India	1 087	340
Maldives	-7	-9
Nepal	-16	-27
Pakistan	-114	-55
Sri Lanka	19	41

Source: Sapkota 2011

Bangladesh's intraregional trade in agri-items

As seen in Table 10, Bangladesh is a member of several RTAs. Of these, SAFTA remains the most important RTA because trade liberalization under the SAFTA, including liberalization of trade in agri-items, has been more significant compared to other RTAs.

TABLE 10:

RTAs where Bangladesh is a member

South Asian countries	Bilateral FTAs	RTAs								
		SAPTA (est. 1993)	SAFTA (op. 2006)	BIMSTEC (est. 1997)	D-8 (est. 1997)	IOR-ARC (est. 1997)	Bangkok Agreement (est. 1975)	SAGQ (est. 1997)	ASEAN	EU
Bangladesh	India* Pakistan* Sri Lanka*	✓	✓	✓	✓	✓	✓	✓		
Bhutan	India	✓	✓	✓				✓		
India	Bangladesh* Bhutan Nepal Sri Lanka	✓	✓	✓		✓	✓	✓	✓	✓
Maldives		✓	✓							
Nepal	India	✓	✓	✓				✓		
Pakistan	Bangladesh* Sri Lanka*	✓	✓		✓					
Sri Lanka	Bangladesh* India* Pakistan*	✓	✓	✓		✓	✓			

Note: * These are under negotiation or proposals for negotiations have been put on the table.

SAPTA (SAARC Preferential Trading Arrangement); SAFTA (South Asian Free Trade Area); BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation); D-8 (Developing Eight); IOR-ARC (Indian Ocean Rim Association for Regional Cooperation); SAGQ (South Asian Growth Quadrangle); ASEAN (Association of Southeast Asian Nations); EU (European Union).

Source: WTO 2011

Bangladesh's intraregional trade in agricultural products is noteworthy: 18.3 percent of the country's total exports go to the region; 20.5 percent of the global imports of agricultural products relate to intraregional import in SAARC. India remains the dominant regional trading partner of Bangladesh both in terms of exports (Table 11) and imports (Table 12) of agricultural items.

TABLE 11:

Bangladesh's export of agricultural products to SAARC countries in FY2010/11

SAFTA members	Export (US$ millions)	Share in Bangladesh's total export of agri. products
Bangladesh's total export of agri. products	1 867.18	100.00
Afghanistan	0.14	0.01
Bhutan	2.28	0.12
India	255.81	13.70
Maldives	0.21	0.01
Nepal	2.07	0.11
Pakistan	77.81	4.17
Sri Lanka	4.05	0.22
Total SAARC	*342.36*	*18.34*

Source: Export Promotion Bureau (EPB)

For a significant share (about one-fifth) of Bangladesh's import of foodgrains and other agricultural items, Bangladesh depends on SAFTA partners, primarily India (Table 12). Of the total imports of agricultural products by Bangladesh, 18.2 percent comes from India and 1.15 percent from Pakistan. Therefore, although the region has been a major source of agricultural products, it is mainly India, and to some extent Pakistan, with whom Bangladesh has developed trading partnerships in agricultural items.

TABLE 12:

Bangladesh's import of agricultural products from SAFTA member countries in FY2009/10

SAFTA members	Import value (US$ millions)	Share in Bangladesh's total import of agri. products
Bangladesh's total import of agri. products	4 250.36	100.00
Afghanistan	0.14	0.00
Bhutan	5.95	0.14
India	773.41	18.20
Maldives	0.00	0.00
Nepal	41.93	0.99
Pakistan	49.01	1.15
Sri Lanka	1.20	0.03
Total SAARC	*871.64*	*20.51*

Source: Estimated from Bangladesh Bank 2011

Apart from Afghanistan, Bhutan and Nepal, intraregional trade in agricultural products is low for the remainder of the region, including Bangladesh (Table 13). According to Sapkota (2011), this indicates either low complementarity in agricultural trade within the region or an unattractive regional market structure with regard to price, quality and volume. However, one could also argue that this reflects the impact of trade restrictions imposed by the member states with regard to trade in agricultural commodities under the SAFTA (and also previously under SAPTA). Various trade-restrictive practices also hinder the flow of agricultural trade within the region, including the banning of exports during times of food shortages and Non-Tariff Barriers (NTBs) of various kinds. For example, in 2008 when prices of foodgrains were high, India imposed a ban on rice exports that had significant implications for the regional food situation. The export ban had an adverse impact on Bangladesh's food situation in particular, at a time when prices were already rising.

TABLE 13:

Intraregional agriculture trade as percent of total trade

Country	2005*	2010**
Afghanistan	n/a	20.3
Bangladesh	14.7	20.3
Bhutan	95.1	96.6
India	8.7	3.5
Maldives	33.7	34.9
Nepal	34.5	46.2
Pakistan	7.0	16.5
Sri Lanka	19.4	21.3
SAARC	10.9	20.8

Note: * 2003 for Nepal.
** 2007 for Bangladesh, 2008 for India and Maldives.
COMTRADE follows WTO definition of Agriculture (HS 01 – 24 and HS 53).
n/a – not available.
Source: Author's estimates based on COMTRADE

Barriers to regional trade in agriculture and the issue of food security

Though intraregional trade in agricultural goods (as a share of the region's total agricultural trade) was higher compared with intraregional merchandise trade (as a share of the region's total trade), a host of barriers exist that constrain trade in agricultural items in South Asia. All SAARC countries have tended to protect agricultural goods under the SAFTA agreement by putting them on their respective Sensitive Lists (Table 14). This means that tariffs on these items would not be reduced under the Tariff Liberalization Programme. The Most Favoured Nation (MFN)

tariff applied to agricultural goods in South Asia has also tended to be higher when compared with manufactured goods. The average tariff for agricultural goods was about 29.0 percent during 2006–2009; the corresponding statistic in the Association of Southeast Asian Nations (ASEAN) countries was 9.9 percent (Sapkota 2011). The average import-weighted tariff for all commodities in South Asia was significantly lower than for agricultural items.

TABLE 14:

Agricultural products in SAFTA Sensitive Lists

Country	Total number of products in the Sensitive List (LDC and Non-LDC)	Number of agriproducts in the Sensitive List
Bangladesh	1 241	149
India	868	247
Maldives	681	181
Nepal	1 295	359
Pakistan	1 169	146
Sri Lanka	1 042	38

Source: SAARC Secretariat Web site; Islam *et al.* 2011

If agricultural trade between Bangladesh and India is taken as a case study, one finds that the presence of various types of NTBs tends to hinder bilateral trade. Most of the NTBs are related to sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT). There is a debate, however, as to whether these are NTBs. Although many of these measures do tend to restrict trade and to be deployed as tools of protectionism, others are indeed related to health-hygiene concerns and may lead to enhanced social welfare in the domestic economy. The task appears to be to build up national capacities to deal with the compliance requirements in this respect. Standardization, certification and laboratory testing related requirements will need to be met through appropriate initiatives at a national level if these NTBs are to be removed or to become less of an impediment. Lack of appropriate facilities at border customs points to verify SPS-TBT requirements has posed problems in the past and discourages trade in agri-items. Other than these, such measures as license requirements, state monopolies, tariff rate quotas, canalization, reactivation of quarantine regimes, anti-dumping and countervailing measures have also tended to undermine the flow of agricultural commodities in the region (Islam *et al.* 2011).

Quantitative restrictions and NTBs were significantly reduced by Bangladesh between the 1980s and the 2000s. During the 1980s, almost 56 percent of tariff lines in Bangladesh were subject to quantitative restrictions; this fell to 5.1 percent in the

2000s. In the 1990s, Bangladesh maintained import bans or restrictions that affected nearly 11.7 percent of tariff lines. This is no longer the situation, as also is the case for most of the SAFTA members. However, as noted earlier, Sensitive Lists maintained by member countries that include many agricultural items continue to create barriers to the larger flow of trade in agri-items. In the Sensitive List of 1 241 products that Bangladesh maintains under SAFTA, 149 products belong to the group of agricultural commodities (HS 01 to HS 24 plus HS 53). In contrast, of the 868 items on the Sensitive List of India, of which 480 are applicable to Least Developed Countries (LDCs), 247 items belong to the category of agricultural commodities (Islam *et al.* 2011). However, MFN tariff rates for such products have been on the decline.

It has been the experience in recent times that during times of high price volatility countries that traditionally have been surplus agricultural producers and exporters resort to export bans or to minimum export prices. India is a case in point. On the other hand, deficit and importing countries have tended to reduce import tariffs to increase imports. Bangladesh is a case in point: import duties have been reduced to zero to encourage imports and reduce the price of imported foodgrains during times of food shortages experienced in the recent past.[106]

Cooperation towards agricultural development in SAARC – going beyond trade and SAFTA

As noted earlier, notwithstanding the fact that the contribution of agriculture to GDP of all the South Asian countries has been on a continuing decline over the years, agriculture still plays a vital role in almost all these economies. It is likely that the agricultural sector will continue to play this key role for some time to come and the growth dynamics of the region will, to a significant extent, depend on the performance of the respective agricultural sectors of countries in the region. Consequently, both from the perspectives of food security and inclusive growth, cooperation in agricultural trade and the agricultural sector in general is important for SAARC countries. Indeed, as an organization, SAARC has maintained a focus on the issue of collaboration in agriculture among member countries from its very beginning. The SAFTA accord itself speaks of sectoral cooperation.

Even before SAARC took its formal shape, a meeting of the Study Group for Agriculture took place in Dhaka in 1981. Within the structure of SAARC, regional cooperation in agriculture was initiated with the formation of two Technical Committees on Agriculture and Rural Development in 1990. Through these committees, a number of specialized programmes and projects were approved under the SAARC Integrated Programme of Action (SIPA). Later, these two committees were merged into one, the Technical Committee on Agriculture and Rural Development (TC-ARD). The

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[106] For example, the import duty on foodgrains, including rice, was reduced to zero a few years ago, where it has remained.

reconstituted Committee started work in July 2000 and was mandated to encompass the livestock and the fisheries subsectors as well (SAARC Secretariat 2011).

By focusing on research collaboration among SAARC member countries, TC-ARD has contributed to identifying critical knowledge gaps and areas that could be addressed through targeted regional actions, as well as projects that could be undertaken. The SAARC Agriculture Centre (SAC) was established in Bangladesh in 1985 and formally initiated its activities in 1989 as the SAARC Agricultural Information Centre (SAIC). It was the first Regional Centre established under the auspices of SAARC. It has served as a network for agricultural research and information in SAARC member states, and worked to promote exchange of regionally generated technical information to strengthen agricultural research, development and innovation. In 2006, in view of nearly two decades of commendable work by SAIC, member states decided to expand its mandate to encompass all subsectors and allied disciplines of agriculture, e.g. crops, fisheries, livestock and horticulture. Another important initiative under the TC-ARD was the establishment of a regional seed bank to mitigate the adverse impact of natural disasters on food production. An agreement on the seed bank was finally signed in the recently concluded Seventeenth SAARC Summit held in the Maldives in November 2011.

During 2006–2008, with input from the member states, the SAARC Agricultural Perspective/Vision 2020 was finalized. The decision to establish a regional food bank is considered another important milestone under TC-ARD. However, many questions remain as to how to make this food bank operational.

The SAARC food bank and attendant challenges of making it operational

As mentioned earlier, with the goal of dealing with food security on a regional basis, one of the earliest collective efforts of SAARC concerned the food reserve issue. The SAARC Food Security Reserve established in 1988 was replaced with a regional food bank in 2007.[107]

As part of this initiative, a grain bank with a total amount of 241 580 metric tonnes of foodgrains was to be set up from contributions from the original signatory member states. Afghanistan also agreed to contribute through an allocation of 1 420 tonnes (of wheat) bringing the total agreed amount to 243 000 tonnes.[108] The bank began operation in 2008. The food bank is provisioned to support the

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[107] ASEAN+3 is also planning a similar food reserve called ASEAN+3 Emergency Rice Reserve, with an initial reserve amount of 720 000 tonnes of rice. This reserve will constitute reserves at the country level from which member countries will be able to draw, through bilateral discussion, in times of food shortage and needs.

[108] This amount is broken down as follows: India (153 000 tonnes), Bangladesh (40 000 tonnes), Nepal (40 000 tonnes), Pakistan (4 000 tonnes), Sri Lanka (4 000 tonnes), Afghanistan (1 420 tonnes), Bhutan (200 tonnes) and Maldives (180 tonnes).

member states during emergencies, as well as in normal times if any of the member states is in need of such support, subject to a negotiated price between the concerned members. However, Bangladesh's first attempt to use the facility, in 2009, did not succeed. This was because no concrete modalities (triggering factors, repayments) had been put in place to make the food bank operational, and there was no institutional mechanism to oversee its functioning. At present, a proposal has been floated to double the earlier agreed amount to 486 000 tonnes with the following contributions: India (306 400 tonnes), Bangladesh (80 000 tonnes), Nepal (80 000 tonnes), Pakistan (8 000 tonnes), Sri Lanka (8 000 tonnes), Afghanistan (2 840 tonnes), Bhutan (360 tonnes) and Maldives (400 tonnes). Members are at present exploring the possibility of increasing the reserve to 1.0 million tonnes in the near future. However, making the food bank functional has proven to be a difficult issue and is yet to be fully solved.

The need to make the SAARC food bank operational was underscored by the recent crisis in food prices during 2008, when food prices rose to record levels. High prices of food items prompted different countries (inside and outside of South Asia) to adopt various defensive measures, including export restrictions in the form of bans, the setting of minimum export prices, the strengthening of safety net programmes and other initiatives (Table 15). As a matter of fact, foodgrain prices have tended to remain high and are unlikely to return to the 2007 level in the near future, according to most projections. For example, according to the latest available information, Bangladesh was experiencing a year-to-year food price inflation of 12.8 percent in October 2011; if 12 months moving average inflation (average inflation rate for twelve months compared with the average inflation rate for the previous twelve months) is considered, this was equivalent to 12.7 percent (BBS 2011a).

TABLE 15:

Measures adopted by SAARC countries to tackle recent hike in food prices

Policy instruments	Bangladesh	India	Nepal	Pakistan	Sri Lanka
Economic policies					
Reduce taxes on foodgrains	✓	✓			✓
Stock management	✓	✓		✓	
Export restrictions	✓	✓	✓	✓	
Pricing policies	✓	✓		✓	✓
Social protection programmes					
Cash transfer	✓		✓	✓	✓
Food for work	✓	✓			
Food ration/stamps	✓	✓			✓
School feeding	✓	✓	✓	✓	
Rural employment schemes	✓	✓	✓		

Source: Kattumuri 2009; Mittal and Sethi 2009

The food bank holds much potential for the region from the perspective of tackling food security; the bank is particularly important for net food-importing SAARC members such as Bangladesh, a country with frequent natural calamities that lead to volatility in food availability and food prices. However, from Bangladesh's perspective, some critical issues regarding the food bank continue to undermine SAARC's efforts in this area. Raihan (2011) articulated three such issues. The first issue relates to the contribution that individual countries are expected to make. Contributory reserves that members are to offer are not expected to be proportional to their share in agricultural production in the region. For example, although India's contribution to the Food Bank is the highest among the member states, it is lower than its relative share in regional agriculture production. Table 16 reflects this concern. The second concern relates to the fact that the contribution set for the food bank does not take into account the volatility in food production experienced by members. Bangladesh, for example, tends to experience higher fluctuations in agricultural production compared with India and Pakistan. Third, despite higher volatility and average lower production in Bangladesh compared with Pakistan, equal contributions have been set for both countries. For these reasons, Raihan has argued that Bangladesh should request higher contributions from India and Pakistan. Notwithstanding these concerns, net food-importing SAARC countries could potentially benefit greatly if the SAARC Food Bank was made effectively operational.

TABLE 16:

Share in production and contribution to the food bank (%)

Country	Share in regional production of wheat (average between 1999 and 2008)	Contribution to be made to the food bank
Bangladesh	20	16.5
India	76	63.0
Pakistan	21	16.5

Source: Raihan 2011

SAARC cooperation in view of climate change

The inevitable and adverse consequences of global climate change are no longer a threat of tomorrow – the impacts are already becoming visible across the world. Because of its unique geographic characteristics, high density of poor people, lack of resources and technological limitations, South Asia is considered to be the most vulnerable region facing potential climate disasters. The Intergovernmental Panel on Climate Change (IPCC 2007) has reported that the South Asia region is already experiencing an increasing trend in mean temperature, a declining trend in annual

rainfall and a significant rise in sea level, with increasing frequency and intensity of extreme weather events such as heat waves and droughts, heavy precipitation, floods and tropical cyclones. Secondary effects such as landslides, water shortage, forest degradation, damage to coastal and marine resources, and outbreaks of infectious diseases have also been aggravated in recent decades (ADB 2009). The aftermath of these devastating events are threatening millions of lives and properties worth billions of dollars. Food security and livelihood are also under threat – there is strong scientific evidence to suggest that in the near future agricultural production will be reduced significantly because of climate change. Himalayan glaciers, feeders of seven of Asia's greatest rivers[109] that ensure year-round water supply and livelihood to hundreds of millions of people on the Indian subcontinent and China, are retreating at a fast pace as a result of global warming, adding vulnerability to irrigation and agricultural production as well as economic and environmental loss (Vokes and Jayakody 2010; WWF 2005). According to a recent ActionAid research report Bangladesh was ranked fifth according to climate-change vulnerability and hunger among 28 developing countries. India, Pakistan and Nepal were ranked seventh, fourteenth and sixteenth, respectively. The report cautioned that the era of cheap food was over as a result of the triple crises of climate change, depletion of natural resources and "sky-rocketing food prices" (ActionAid 2011).

Within the South Asian region, Bangladesh is considered to be a frontline victim of climate change.[110] The country has a history of extreme climatic events claiming millions of lives and destroying past development gains. Evidence of climate change such as hotter summers, irregular monsoons, untimely heavy rainfall over short periods, less rainfall than usual in the dry season, increased frequency, intensity and recurrence of floods and droughts are already visible in the country and have resulted in crop damage. Low flow in the rivers in dry seasons has triggered salinity intrusion leading to scarcity of potable water and has resulted in prevailing crop practices being continued. Deaths as a result of extreme heat and cold, increasing mortality and morbidity as a result of the prevalence and outbreak of diseases such as dengue, malaria, cholera and diarrhoea are also becoming prominent (DoE 2007).

The origins of these crises are intertwined and they call for a regional response rather than individual efforts. This intertwining is especially important given the fact that the Himalayan ecology has a singular influence over the environmental and hydro-geological systems of the deltaic floodplains of Bangladesh and other South Asian countries. A sustainable solution for the management of flood control, irrigation, river transport and overall water and the environment will require long-term

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[109] The Ganges, Indus, Brahmaputra, Salween, Mekong, Yangtze, and Huange He.

[110] The higher vulnerability of Bangladesh is because of its unique geographic location dominated by low floodplains, high density of poor population, and overwhelming dependence on nature for agriculture and livelihood.

crossborder cooperation between Bangladesh, India and Nepal as well as other countries inside and outside the region (i.e. China, where many of the major South Asian rivers originate). In view of the need to ensure food security and livelihood, climate change adaptation and mitigation strategies need to be put into a regional framework that can serve as an instrument to facilitate the formulation and implementation of individual country strategies. Additionally, because of common borders and geographic proximity, common actions by the South Asian countries may eliminate negative externalities, reduce transaction costs of monitoring and implementation, and allow learning from shared best practices (Ahmed and Ghani 2010).

Recognizing climate change as a potentially fatal threat to the region and its food security, the SAARC forum discussed the issue in its Third Summit held in 1987 (Sharma 2011) and a project titled Protection and Preservation of the Environment and the Causes and Consequences of Natural Disasters[111] was commissioned. The report recommended collective measures to protect and manage the environment and to strengthen disaster management capabilities. In connection with the Public Scientific Conference held in Toronto, the Fourth SAARC Summit (December 1988) decided to undertake a study on the greenhouse effect and its impact on the region. It also recommended regional measures to share indigenous experiences, to build scientific and technological capabilities and to exchange information on climate change. At the time of the Fourth Session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP 4),[112] SAARC countries agreed to project a common position urging the Annex-1 countries to accelerate signing of the Kyoto protocol for its earliest ratification. SAARC also declared the year 2007 to be the Year of Green South Asia, calling for collaboration to address the problems of arsenic contamination of groundwater, desertification and melting of glaciers, sea level rise and assistance to affected peoples. SAARC members agreed to commission a team of regional experts to identify collective actions to address such issues.[113]

In 2008, the SAARC Environment Ministers meeting held in Dhaka adopted the SAARC Action Plan on Climate Change with a view to identifying areas of regional cooperation and south-south support of technology and knowledge transfer, to promoting a regional action plan on climate change through activities at the national level, and to supporting the global negotiation process of the United Nations Framework Convention on Climate Change (UNFCCC).[114] The Sixteenth SAARC Summit held at Thimphu, Bhutan in April 2010 was dedicated to the theme of

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[111] The study report, a collection of individual country papers, was published in 1991.

[112] Held in Buenos Aires on 2–13 November 1998.

[113] Declaration of Fourteenth SAARC Summit, New Delhi, April 2007 (available at http://www.saarc-sec.org).

[114] SAARC Workshop: Climate Change and Disasters – Emerging Trends and Future Strategies, 21 and 22 August 2008, Kathmandu, Nepal, SAARC Disaster Management Centre, New Delhi.

Climate Change and the Summit declaration bore the title Towards a Green and Happy South Asia. There was an agreement to establish an Intergovernmental Expert Group on Climate Change to develop a clear policy direction and guidance for regional cooperation as envisaged in the SAARC Plan of Action on Climate Change. An intergovernmental meeting on the draft SAARC Agreement on Rapid Response to Natural Disasters held in Colombo, Sri Lanka in May 2011 achieved a broad consensus on the Agreement. Subsequently, this Agreement was signed in the Seventeenth SAARC Summit held in Maldives in November 2011. However, despite all such efforts, tangible progress has been lacking in terms of effective cooperation on the ground in the areas of climate change, water management, disaster management and human health, which have a strong bearing on medium- to long-term food security in the region (Ahmed, Kalegama and Ghani 2010).

As shown in the above analyses, through the various modalities and opportunities provided under the auspices of SAARC, South Asian countries have sought to address the regional food insecurity issue from the perspectives of production, of trade and of a safety net (through buffer stocks). The effectiveness of these measures of cooperation are still to be assessed as the initiatives constitute a work in progress and, in many instances, are still going through a period of implementation.

In the recently concluded Fourth South Asia Economic Summit (SAES IV),[115] a number of recommendations were offered from civil society that merit consideration for strengthening regional efforts in South Asia to address food insecurity. These included: a) establishing Regional Adaptation Trials and Variety/Breed Release Systems in South Asia under the ambit of SAARC; b) establishing a SAARC Gene Bank to preserve valuable germplasm resources with a view to fostering agricultural technology development in the region; c) establishing a common vaccination system against livestock diseases; d) setting common standards for sanitary and phytosanitary (SPS) measures and facilitating quarantine procedures to ensure food safety and biosafety; and e) developing joint projects for technology exchange with specific targets for the exchange of germplasm, varieties and breeds, crop husbandry practices, animal husbandry practices, fisheries management techniques, water and natural resource management techniques, and post-harvest and processing technologies.

Another recommendation of SAES IV related to facilitating movement of agricultural scientists in South Asia towards stronger cooperation in the fields of research and knowledge transfer. A more flexible visa and work permit regime was suggested to encourage this.

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[115] The Fourth South Asia Economic Summit (SAES IV) was a conclave of researchers and academics, policy-makers, development partners and other stakeholders held in Dhaka on 22 and 23 October 2011. Summaries of recommendations of SAES IV are available at www.cpd.org.bd.

The SAARC countries should also take a common stance in the World Trade Organization (WTO) where, as part of the negotiations on the Doha Round agenda, discussion is taking place with respect to ensuring food security for net food-importing developing countries (NFIDC). It is known that 42 of the 48 LDCs belong to the NFIDC group. LDCs are asking for the commitment on the part of non-LDC members not to impose any restrictions on the export of food items to LDCs during times of high prices and global food supply shortages. LDCs also have concerns with regard to the monetization of food aid,[116] market access and aid for trade. SAFTA members should strive to forge a common stand with regard to these issues, particularly in view of the ongoing negotiations on the Agreement on Agriculture (AoA) as well as trade-related aspects of intellectual property rights (TRIPS).[117] Such a strategy will help to ensure a global trading regime that will benefit the food security interests of SAFTA members such as Bangladesh.

5. Conclusion

Bangladesh's achievement over the past years in terms of ensuring food security for the growing population has been remarkable. Productivity growth, efficiency enhancement, higher cropping intensity and adoption of high-yielding technologies have enabled Bangladesh to move towards food self-sufficiency in recent years. However, uncertainties remain in the face of natural disasters, high and volatile prices, growing domestic demand and the likely adverse impact of climate change on production. The challenge of ensuring food security was severely tested during the price hikes of the recent past, as well as in the present, when prices of major foodgrains such as rice and wheat remain high.

This paper has made an attempt to investigate how the SAFTA-RTA could be made to play a proactive role in terms of ensuring food security of Bangladesh in a sustainable manner. The study concludes that Bangladesh stands to gain from the perspective of ensuring food security if the opportunities available under the SAFTA-RTA and also other avenues of cooperation under SAFTA could be fully exploited. Further liberalization of the existing tariff regime concerning agri-products through pruning the Sensitive List, which still includes a large number of agri-items, was suggested as a step towards this outcome. A decision not to ban exports of foodgrains by SAARC members during times of crisis could help lessen the volatility in regional

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[116] This term means the ability of LDCs to sell a part of the food aid in the domestic open market in order to service the costs of managing the distribution of the food aid received from outside.

[117] Concerns of LDCs relate to constraints on using agricultural-related technologies because of licensing, copyrights, and patent requirements, which are often very costly. The current waiver for LDCs from TRIPS obligation will end in 2013. In the recently concluded MC-8 (WTO Eighth Ministerial Conference), a consensus was reached to the effect that the TRIPS Council will consider the possibility of an extension of the waiver of LDCs from TRIPS obligation beyond 2013.

foodgrains markets. The study pointed out that a number of initiatives and institutions have been envisaged under the ambit of SAARC, including establishment of the SAARC food bank, the SAARC seed bank and SAARC's initiatives on climate change. However, not much progress has been achieved in terms of making these initiatives operational. The recently concluded Seventeenth SAARC Summit has decided to resolve the operational issues related to the SAARC food bank by the next Session of the Council of Ministers so that it can start to function effectively. The Seed Bank agreement could also play an important role in ensuring higher productivity of foodgrains and higher food production. It is important for the region as a whole and for Bangladesh in particular that these decisions are carried out according to the plan that has been outlined. The study also recommends closer cooperation among the experts and scientific communities of the region so that sustainable and highly productive agricultural practices can be promoted in the region. Low-income countries of SAARC such as Bangladesh stand to gain the most from such cooperation. The study has argued that SAARC members will benefit if they are able to articulate a common stance in view of the ongoing negotiations in the WTO, as part of the Doha Development Round, particularly in the context of the AoA and TRIPS.

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Nepal-India bilateral trade agreement: implications for agriculture and food security

Posh Raj Pandey

1. Introduction

The agricultural sector in Nepal represents about 35 percent of Gross Domestic Product (GDP) (MoF 2011) and employs nearly 74 percent of the active labour force (CBS 2009). Therefore, it is a central focus for poverty reduction, rural development and overall economic growth, as well as for ensuring food security. Nepal's agricultural sector is dominated by the production of cereal crops, although this predominance has waned in recent years. The key cereal products are paddy rice, maize and wheat, which occupy the major share of cropped area, as well as the largest share in the value of output from agriculture. Given that one-fourth of the population is living below the poverty line, the production of cereals is crucial from the perspective of food security. Cereals, especially rice, form the staple diet of the Nepalese population, providing nearly 69 percent of the total dietary energy supply and 63 percent of the total dietary protein supply in the period 2005–2007 (FAO 2010). Because of low productivity and sluggish growth in cereal production, in recent years Nepal has had to rely increasingly on cereal imports to meet domestic demand. The cereal import dependency ratio[118] reached 3.5 percent in 2007 (IFPRI 2010). Government policies focus on domestic measures that improve self-reliance in food production, access to subsidized food products and food distribution, but they neglect the role of international trade and the dynamism it brings to the national economy in ensuring food security. Conversely, the government's trade policy, including that related to bilateral trade agreements, does not recognize food security as one of its goals. Against this background, this paper aims to assess the implications of the Nepal-India Bilateral Trade Agreement for ensuring food security in Nepal.

The paper is organized as follows: Section 2 provides an overview of the Nepalese agricultural sector. It discusses the role of agriculture in national output, the composition of agricultural output, and the growth performance of the main agricultural products, as well as land distribution, structure and ownership. Section 3 deals with food production and food self-sufficiency at the national level. It also deals

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[118]   The import dependency ratio is defined as: Imports/(Production + Imports – Exports)*100.

with food aid and trade in food products, the issue of household food security and the status of nutrition. Section 4 analyses the trade flows of agricultural products and food items, as well as price levels. Section 5 reports the policy environment for agricultural development. Section 6 discusses Nepal's bilateral trade agreements, in particular the Nepal-India Trade Agreement and its salient features, agricultural trade flows between Nepal and India, and the implications of trade agreements for food security. Section 7 concludes the paper.

2.   Salient features of Nepalese agriculture

Agricultural output and its growth

The agricultural sector, including forestry and fisheries, constituted more than one-third of GDP in 2010/11. However, its share has been declining over time. The share of agriculture in GDP was 38.95 percent during the period from 2001/02 to 2005/06 and it fell to 36.94 percent from 2006/07 to 2010/11. This decline suggests that the agricultural sector lagged behind non-agricultural sectors and could not keep up with the overall growth rate of the economy. Agricultural growth is also highly erratic, because agricultural performance is very vulnerable to weather conditions and to the incidence of pests and diseases. The average annual growth rate of the agricultural sector, including forestry and fisheries, was 3.17 percent during the last decade. During the period from 2006/07 to 2010/11, the average growth rate of this sector increased to 3.04 percent, up from 2.68 percent during the period from 2001/02 to 2005/06 (Figures 1 and 2).

FIGURE 1:

Share of agriculture in GDP
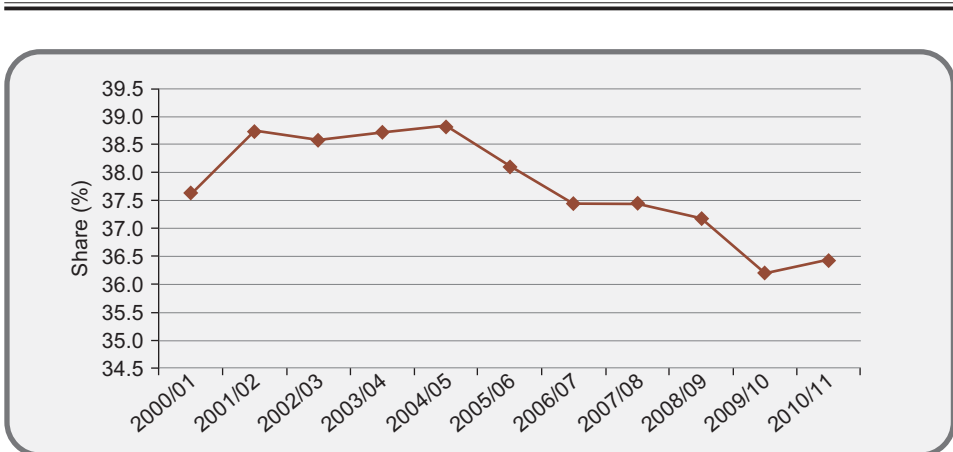
Source: Ministry of Finance (MoF) 2011

FIGURE 2:

Sectoral growth rates
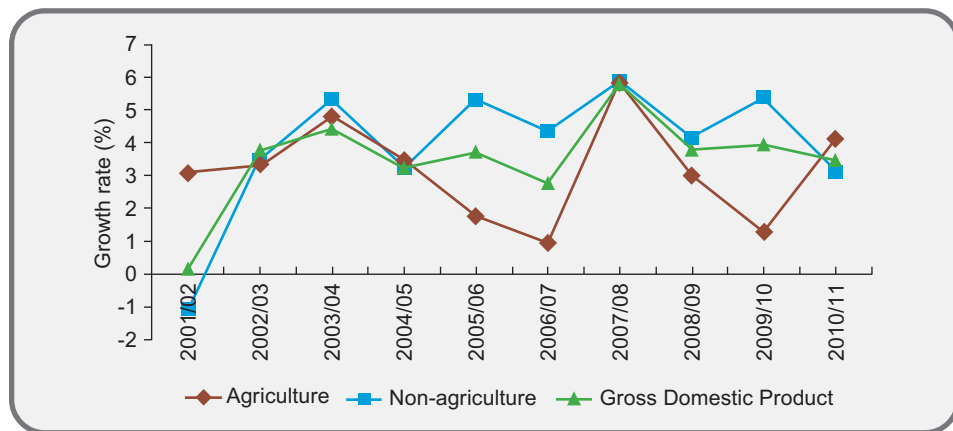
Source: MoF 2011

Subsectoral composition of agricultural output

Cereal production contributes almost half of agricultural GDP although its share is declining (Figures 3a and 3b). It is followed by vegetables, forestry, fruits and spices and poultry. Between 2001/02 and 2010/11, the shares of cereals, forestry and poultry declined, whereas the contribution of vegetables (including floriculture and nurseries), dairy, fruits and spices (including tea and coffee) increased.

FIGURE 3A:

Composition of agricultural products 2001/02
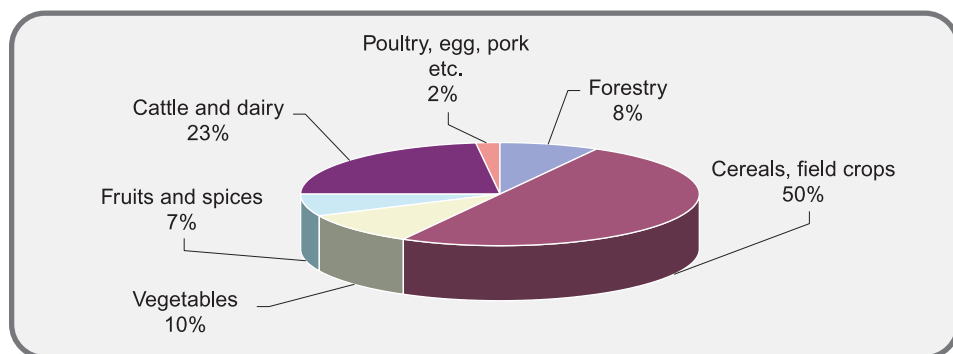
Source: Ministry of Agriculture and Cooperatives (MoAC) 2011

FIGURE 3B:

Composition of agricultural products 2010/11
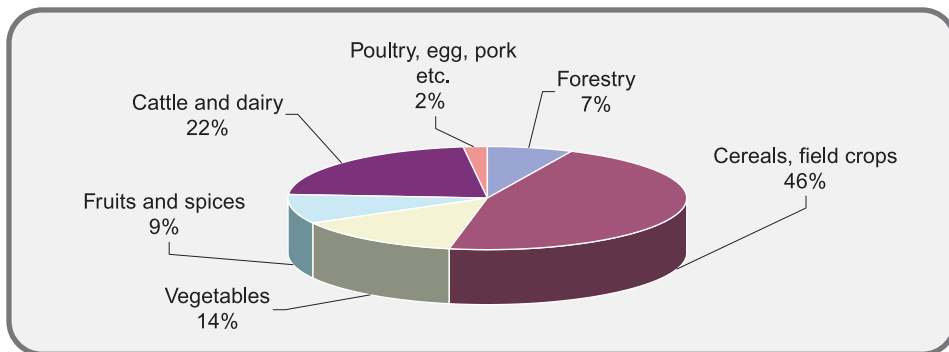
Source: MoAC 2011

Major agricultural products

Cereal cultivation is the mainstay of Nepalese agriculture. The major cereal crops of Nepal are paddy rice, maize, millet, wheat and barley. They cover about 80 percent of the total agricultural land and the coverage is rising. This indicates that agricultural diversification away from cereals has not occurred over the past decade in Nepal (CBS 2006, ANZDEC 2002). The total basic cereal crop production in the country was 4 967 thousand metric tonnes (MT) in 2010/11. Paddy rice is the most important food crop, in terms of area and production, and it also forms a major component of the Nepalese diet. However, its share in total farm area has declined significantly during the period from 2001/02 to 2010/11 and stands at 43 percent, whereas for other cereal products the ratios have remained generally stable. The other key cereals in terms of share in production area are maize (26.28 percent), wheat (21.35 percent), millet (7.83 percent) and barley (0.85 percent). All these crops except paddy rice and millet are grown in all districts (MoAC 2010).

The production of food crops has grown at a rate of 2.31 percent per annum during the period from 2001/02 to 2010/11, indicating a marginal growth in per capita terms. Production growth has been higher than area growth, implying that yield growth is a contributing factor in the growth of food production. The growth in the production of wheat (4.21 percent) and maize (3.44 percent) is significantly higher than population growth (2.1 percent). The production of paddy rice grew at less than 1 percent and the level of production varied across the years, indicating high dependence on weather and monsoon conditions (Table 1). The growth in wheat and maize is driven by yield enhancements, which grew at an average annual rate of 2.55 percent and 2.77 percent respectively, rather than solely by area expansion (average annual growth of 0.95 percent for maize and 1.42 percent for wheat)

TABLE 1:

Growth rates in the production of agricultural products (average annual %)

Description	2001/02–2010/11	2001/02–2005/06	2006/07–2010/11
Food crops			
Paddy rice	0.95	0.05	1.85
Maize	3.44	3.19	3.69
Wheat	4.21	3.86	4.57
Barley	-0.24	-1.96	1.49
Millet	0.69	0.56	0.82
Cash crops			
Sugarcane	3.01	2.19	3.82
Oilseeds	3.08	1.18	4.98
Potato	7.19	8.55	5.83
Jute	-0.85	0.88	-2.59
Other crops			
Pulses	0.92	1.93	-0.09
Fruits	4.16	2.03	6.29
Vegetables	6.86	5.81	7.90
Meat	3.63	2.45	4.81
Milk and milk products	3.31	3.14	3.48
Eggs	3.36	3.45	3.24
Fish	4.56	6.44	2.68

Source: MoF 2011

(Table 2). These increases in yield are attributed largely to the use of hybrid seeds. A comparison with the growth in the yields of rice and wheat in the neighbouring Indian states shows that, in the case of rice, Nepal is doing better whereas wheat yield has shown a higher rate of growth in the Indian states (IFPRI 2010).

The contributions of cash crops and other high-value crops to the overall value of agricultural output have been increasing. Among cash crops, potato has the highest rate of growth, followed by sugarcane and oilseeds during the period from 2001/02 to 2010/11. The output growth of sugarcane and of oilseeds was higher during the period from 2006/07 to 2010/11 compared with 2001/02 to 2005/06. Growth in the production of cash crops is also driven by growth in yields. Jute registered a marginal decline in production, attributable to a decline in yield. Vegetable production has grown at an impressive rate of 6.86 percent per annum during the period from 2001/02 to 2010/11. Although not as high as the growth rate of the vegetable sector, the growth rates of meat, milk, eggs and fish are substantial, at 3.63 percent, 3.31 percent, 3.36 percent and 4.56 percent per annum, respectively (Table 1).

TABLE 2:

Growth rates in the area and yield of food and cash crops (average annual %)

Description	2001/02–2010/11		2001/02–2005/06		2006/07–2010/11	
	Area	Yield	Area	Yield	Area	Yield
Food crops						
Paddy rice	-0.35	1.14	-0.13	0.21	-0.56	2.07
Maize	0.95	2.43	0.63	2.55	1.27	2.31
Wheat	1.42	2.67	0.96	2.77	1.87	4.58
Barley	-0.04	0.13	-1.46	-0.31	1.54	0.57
Millet	0.38	0.29	0.16	0.37	0.60	0.20
Cash crops						
Sugarcane	1.06	1.97	1.02	1.30	1.09	2.64
Oilseeds	0.87	2.06	-0.11	1.18	1.84	2.94
Potato	3.81	3.27	3.20	5.21	4.41	3.27
Jute	0.38	-1.19	1.18	-0.27	-1.94	-2.11

Source: MoF 2011

A few observations emerge from the above analysis. First, the area devoted to cereal production has increased, except for paddy rice production. However, the growth in cereal production exceeds the area growth, implying that yield growth is a major contributing factor in cereal production growth. Second, the growth in cereal production is higher than the population growth rate, indicating positive growth in cereal production in per capita terms. Third, although the observed trend in land use is away from paddy rice, there is no significant diversification in the cereal production and paddy rice constituted more than 40 percent of total cereal production in 2010/11. Fourth, there is high variation in production across the year, implying that weather – in particular the monsoon – determines the level of production of foodgrains.

Agricultural employment

Nepal's economy has experienced structural transformation, with agriculture having a declining share in total GDP and services overtaking agriculture to account for the largest share of GDP. Such a structural change in output, however, has not translated into the employment structure. Agriculture is the largest sector of employment, providing employment to 8.7 million people. An intertemporal comparison between 1998 and 2008 shows that the share of agriculture in total employment declined from 76 percent in 1998 to 73.9 percent in 2008, indicating only a marginal shift in employment from agriculture to non-agriculture. This shift in the employment structure has occurred only in urban areas and there is only marginal change in the employment structure in rural areas (Table 3). Nepal Living Standard Survey (NLSS)

for 2010/11 also corroborated declining employment in agriculture. The share of population engaged in agriculture has declined from 71.3 percent in 2003/04 to 64.1 percent in 2010/11. Moreover, wage employment in agriculture has declined significantly over this period (CBS 2011).

TABLE 3:

Employment status in agriculture (employment in thousands and share in %)

Industry group	1998			2008		
	All Nepal	**Urban**	**Rural**	**All Nepal**	**Urban**	**Rural**
Total	9 463	971	8 492	11 779	1 535	10 244
Agriculture	7 203 (76.1)	393 (40.5)	6 810 (80.2)	8 704 (73.9)	494 (32.2)	8 210 (80.1)
Non-agriculture	2 260 (23.9)	578 (59.5)	1 682 (19.8)	3 075 (26.1)	1 041 (67.8)	2 034 (19.9)

Source: CBS 2009a

Land and its uses

Nepal lies in the Hindu Kush region of Asia. It is a landlocked country, bounded on the north by China and on the south, east and west by India. Ecologically, the country is divided into three zones or belts: Mountains, Hills and Terai, running east to west with non-uniform widths from north to south. The total area of the country is 147 181 square kilometres. The Hills is the largest ecological belt and comprises 61 345 square kilometres, followed by the Mountains (52 817 square kilometres) and the Terai (34 019 square kilometres) (CBS 2006). Most of the northern part of the Mountains is covered with snow, whereas the southern part has extensive alpine meadows used for grazing and the collection of high-value medicinal and aromatic plants. The Terai is an extension of the Indo-Gangetic plain and is composed of fertile land. Administratively, Nepal has 75 districts, with 3 915 village development committees (VDCs) and 58 municipalities. The 75 districts are spread over five development regions: Far-Western, Mid-Western, Western, Central and Eastern regions, although these regions are not functional administrative units.

Table 4 shows that the cultivated area accounts for about 21 percent of the total area and it has increased by 4.1 percent between 1999 and 2001. The remainder is non-cultivated land: patches of land intermixed with cultivated areas (7 percent); forest (29 percent); shrub (11 percent); grassland (12 percent) and other (20 percent). The cultivated land accounts for more than 44 percent of the Terai, 10 percent of the Mountains and 16 percent of the Hills (CBS 2006).

TABLE 4:

Land use (thousand ha)

Land use	1991/92	2001/02
Total farming area	2 597.4	2 653.9
Agricultural land	2 392.9	2 497.7
Arable land	2 323.4	2 357.0
Land under permanent crops	29.4	117.5
Land under permanent pasture	36.9	19.7
Ponds	3.3	3.5
Non-agricultural land	204.5	156.3
Woodland and forest	108.8	37.2
Other land	95.7	119.8
Total land area of Nepal	14 718.1	14 718.1

Note: Total farming area includes agricultural land and other lands that are part of the holdings, which may comprise woodland and forest and the home lot of the holder.
Source: CBS 2006

Land ownership and distribution

In Nepal, most of the agricultural lands are operated by the owners themselves. The National Sample Census of Agriculture in 2001/02 shows that 86.7 percent of the total of 3 337 million landholdings are fully occupied by either owner or tenant, that is, there is only one form of tenure. The remaining 13.3 percent have more than one form of tenure, i.e. one parcel may be owned and some parcels may be rented. Under a single form of tenure, 98.5 percent of the holdings are operated by the owners with an average size of 0.76 hectare (ha). Only 1.21 percent of the holdings consist of purely rented land and the remaining 0.26 percent is tribal or squatter land. With regard to area, 91.5 percent of 3.6 million ha is under only one form of tenure whereas 8.5 percent is part of the area under more than one form of tenure. The rented land covers about 230.5 thousand ha, representing about 8.6 percent of the total area of land holdings in Nepal.[119]

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[119] Land tenure is a highly controversial and political issue in Nepal. Some of the microlevel studies show a higher percentage of land rented out. For example, ILO 2003, using the sample of VDCs in 20 districts, showed that 25.3 percent of households rented land. Similarly, Sugden (2009), using a case study of the eastern Terai, showed that 47 percent of households are strictly tenants.

TABLE 5:

Number and area of holdings by type of tenure 2001/02

Type of Tenure	Number of holdings (thousand)	Area in hectares (thousands)			
		Owned	Rented	Other	Total
One tenure form	2 939.5	2 212.8	26.3	2.0	2 241.1
Owned	2 896.2	2 212.8	…	…	2 212.8
Rented	35.5	…	26.3	…	26.3
Other	7.9	…	…	2.0	2.0
More than one tenure form	397.9	204.5	204.2	4.2	412.8
Total land holdings	3 337.4	2 417.2	230.5	6.2	2 653.9

Note: Tenure refers to arrangements or rights under which the holder holds or uses the land.

Source: CBS 2006

Farm size and ownership

In an agrarian economy, land ownership is the most important source of food security. Large land holdings also provide greater marketable surplus. Land ownership in Nepal is highly skewed. However, the land concentration index[120] declined from 0.52 in 1991 to 0.49 in 2001. According to the National Sample Census of Agriculture 2002, the average farm size also declined from 0.96 ha in 1991 to 0.80 ha per holding in 2001.[121] Almost three-fourths (74.7 percent) of the holdings were less than one ha in area in 2001 compared with 69.5 percent in 1991 (Table 6). Marginal farmers made up 47.7 percent of households but operated only 14.7 percent of the farmed area in 2001 whereas large farmers (greater than 5 ha) accounted for less than 1 percent of the farm households but operated 7.7 percent of the land (Table 7).

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[120] The concentration index is the area between the Lorenz curve and the diagonal as a proportion of the total area under the diagonal.

[121] NLSS 2010/11 shows that average farm size has further decreased to 0.7 ha (CBS 2011).

TABLE 6:

Distribution of holdings and area (ha) between 1991/92 and 2001/02 (in %)

Size in hectare	1991/92		2001/02	
	Holding	Area	Holding	Area
< 0.1	6.4	0.4	7.8	0.5
0.1 < 0.2	9.8	1.5	10.4	1.9
0.2 < 0.5	27.0	9.4	29.1	12.3
0.5 < 1.0	26.3	19.2	27.4	24.2
1.0 < 2.0	19.6	27.6	17.6	29.8
2.0 < 3.0	6.2	15.4	4.7	14.0
3.0 < 4.0	2.2	7.8	1.5	6.6
4.0 < 5.0	1.1	4.8	0.6	3.4
5.0 +	1.5	13.9	0.7	7.3
Concentration index		0.52		0.49
Average landholding size (ha)		0.96		0.80

Source: CBS 2006

TABLE 7:

Structure of farm size 2001/02

Description	Marginal	Small	Medium	Large	All
Range (ha)	*0.1 < 0.5*	*0.5 < 3.0*	*3.0 < 5.0*	*5.0 +*	*0.1 +*
Number of holdings	1 605 619.0	1 661 349.0	71 814.0	25 358.0	3 364 139.0
Percent	47.7	49.4	2.1	0.8	100.0
Hectares	390 248.8	1 804 847.0	264 948.0	197 956.0	26 540 371.0
Percent	14.7	68.0	10.0	7.3	100.0
Average holding size (ha)	0.24	1.1	3.7	7.7	0.8

Source: CBS 2006

3. Agricultural production and self-sufficiency

Agricultural production

Nepal was a food[122] self-sufficient country at the national level and even exported large portions of its food production until the mid-1980s. A food balance estimate for 1970/71 showed that the country had 294 051 MT surplus foodgrains. Although 34 districts were food-deficit – 6 in the Mountains, 26 in the Hills and 2 in the inner Terai in 1970/71 – Nepal had a food surplus at the national level. Food export was possible because of food surpluses in 18 Terai districts, where population density was low and there were no road linkages to transport food surpluses to food-deficit districts. Similar estimates made in 1974/75 revealed an even greater food surplus in Nepal. This study showed that Nepal had an overall food surplus of 539 160 MT. However, 29 districts (11 Mountains, 16 Hills including Kathmandu, 1 inner Terai and 1 Terai) were food-deficit in that year (Gurung 1989). Food insecurity was a serious problem when there were unfavourable climatic conditions in 1972 and again during the drought of 1980.

In the 1990s, Nepal recorded a food deficit in all years except in 1990/91. Food had to be imported on a large scale to meet the deficit. Nepal also received food as gifts from various friendly countries to meet the shortages. Even though no deaths from hunger were reported at that time, there could have been some problems in the Hills and Mountains districts that were not covered by the media because of inaccessibility (Adhikari 2009). Data compiled by the Ministry of Agriculture for the period 2001/02 to 2009/10, presented in Table 8, indicate a positive food balance in the early 2000s.[123] However, the food balance situation deteriorated in the later part of the decade. Out of the last nine years presented in the table, four years recorded a food deficit. These food shortages (from 0.43 to 6.22 percent of the total requirement) were mainly attributed to the vagaries of weather conditions, as year-by-year climatic variability is one of the major causes of the non-stability of crop yields and food production in the country (Dahal and Khanal 2010).

For the year 2010/11, the preliminary estimates of Ministry of Agriculture and Cooperatives show the growth of food crops (paddy rice, wheat, maize, barley and millet) by 10.36 percent (MoF 2011) compared with the previous year and there are indications of improvements in the food supply situation and a decline in the

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[122] Food has been narrowly defined as staple cereals comprising rice, maize, wheat, millet and barley.
[123] It is difficult to explain the improved food supply situation during these years since government spending on agriculture was declining and the Maoist insurgency was at its peak.

TABLE 8:

Edible food production and balance 2001/02–2009/10 (thousand MT)

Year	Production						Total require-ment	Total balance	Balance as % of require-ments
	Rice	Maize	Wheat	Millet	Barley	Total			
2001/02	2 294.2	999.8	1 008.8	231.7	8.4	4 543.0	4 463.0	80.0	1.79
2002/03	2 271.9	1 059.7	1 069.2	231.9	8.6	4 641.4	4 565.8	75.6	1.65
2003/04	2 455.9	1 082.4	1 105.0	232.3	8.4	4 884.3	4 671.3	213.0	4.55
2004/05	2 358.5	1 186.8	1 151.2	237.7	8.1	4 942.5	4 779.7	162.8	3.40
2005/06	2 314.0	1 097.6	1 211.4	238.6	7.6	4 869.4	4 890.9	-21.5	-0.43
2006/07	2 060.2	1 292.2	1 211.8	242.3	8.5	4 815.2	4 995.1	-179.9	-3.60
2007/08	2 336.6	1 348.1	1 263.9	238.7	7.7	5 195.2	5 172.8	22.3	0.43
2008/09	2 461.2	1 383.6	1 069.1	240.0	6.3	5 160.4	5 293.3	-132.9	-2.51
2009/10	2 185.9	1 282.4	1 248.3	243.2	7.5	4 967.4	5 297.4	-329.9	-6.22

Note: Food requirement is calculated based on the historical per capita calorie intakes of the total population.

Source: MoAC 2010

population suffering from acute food insecurity.[124] Nonetheless, the World Food Programme (WFP) estimates that 3.4 million people are still suffering from acute food insecurity (Nepal Food Security Monitoring System 2011).

The food availability situation varies across regions and districts. Among the ecological regions, the Mountains and Hills regions suffered deficits of 25.7 percent and 16.7 percent of food requirements respectively, whereas the Terai recorded a surplus of 7.21 percent of the requirements in 2009/10 (MoAC 2010). Within the Terai region, 9 out of 20 districts were food-deficit despite an overall surplus at the regional level. The district-level situation of food production and requirement shows that 57 percent of the districts did not produce sufficient food in 2009/10. Among the ecological regions, 81 percent of the districts in the Mountains, 53 percent of the districts in the Hills and 45 percent of the districts in the Terai were food-deficit. The Far-Western region had the highest number of food-deficit districts (77.7 percent) followed by the Central region (73.6 percent), the Mid-Western region (66.6 percent), the Eastern region (43.7 percent) and the Western region (31.2 percent) (Table 9).

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[124] GoN/WFP/FAO (2010) defines acute or severe food insecurity as a situation of severe/critical lack of food access/availability, usually because of prolonged stress or shocks, which may result in very high levels of malnutrition. Humanitarian or emergency food insecurity is defined as a situation of extreme lack of food access/availability caused by devastating natural disasters.

TABLE 9:

Numbers of food-deficit districts in 2009/10 by ecological zone and region

Ecological zone	Eastern region	Central region	Western region	Mid-Western region	Far-Western region	Total
Mountains	1 (3)	2 (3)	2 (2)	5 (5)	3 (3)	13 (16)
Hills	3 (8)	7 (9)	3 (11)	4 (7)	4 (4)	21 (39)
Terai	3 (5)	5 (7)	0 (3)	1 (3)	0 (2)	9 (20)
Total	7 (16)	14 (19)	5 (16)	10 (15)	7 (9)	43 (75)

Note: Numbers in parentheses indicate total number of districts in particular ecodevelopment, ecological and development regions.

Source: Calculations based on MoAC 2010

Per capita cereal production

Nepal's cereal production growth, as mentioned above, has been outpaced by population growth in most of the recent years. As a result, total per capita cereal availability has shown a declining trend and reached the lowest level of 177 kilograms (kg) per year in 2009/10. During the period from 2000/01 to 2009/10, per capita cereal availability increased only in 2003/04, 2007/08 and 2009/10; this growth was recorded for all the cereals. The general decline in per capita availability is the highest for rice, followed by barley and millet. However, wheat and maize recorded

TABLE 10:

Domestic production of cereals (kg/person)

Year	Rice	Maize	Wheat	Millet	Barley	Total cereals	Equivalent calories
2000/01	101.8	43.3	39.5	10.0	0.4	194.9	1 493.0
2001/02	96.8	42.2	42.6	9.8	0.4	191.7	1 436.6
2002/03	93.7	43.7	44.1	9.6	0.4	191.4	1 421.0
2003/04	99.0	43.7	44.6	9.4	0.3	197.0	1 469.9
2004/05	93.1	46.8	45.4	9.4	0.3	195.0	1 443.9
2005/06	89.4	42.4	46.8	9.2	0.3	188.1	1 367.4
2006/07	78.0	48.9	45.9	9.2	0.3	182.2	1 319.1
2007/08	86.7	50.0	46.9	8.9	0.3	192.7	1 409.5
2008/09	89.5	50.3	38.9	8.7	0.2	187.6	1 430.0
2009/10	77.9	45.7	44.5	8.7	0.3	177.1	1 283.3
Average annual growth rates	-2.62	0.87	1.66	-1.58	-2.60	-1.00	-1.55

Sources: Calculation based on MoAC 2010 and CBS 2009b

positive growth in per capita availability. The performance of rice, which is the major staple food, has been reflected in calorie availability, which has also shown a declining trend and was 1 283 kilocalories in 2009/10.

Food imports

Despite declining per capita domestic production of cereals, the Food and Agriculture Organization of the United Nations (FAO) reports that per capita cereal availability does not show any decline (FAO 2011). Cereal imports are the reason for the high cereal availability. Per capita imports of major cereal products are presented in Table 11, which shows that the decline in the per capita production of cereals has been made up by imports – for example, the highest decline in per capita rice production was offset by increased imports. With regard to commodity groups, per capita imports of oil and oilseeds were the highest, followed by those of rice and fruits during 2005–2007.

TABLE 11:

Imports of major food items (kg/person/year)

Food items	1990–1992	1995–1997	2000–2002	2005–2007
Rice	0.7	2.1	3.5	5.6
Vegetables	0.1	0.4	1.1	1.7
Oil and oilseeds	1.8	2.8	7.2	9.0
Pulses	0.9	0.3	0.8	0.8
Fruits	0.2	0.2	0.5	2.7
Milk	0.7	0.0	0.1	0.7

Source: FAO 2011

Though cereal imports have certainly risen, Nepal's import dependency ratio has not been alarming, reaching only 3.5 percent of total domestic availability in 2007. In terms of value, fruits and vegetables form a larger share of Nepal's imports than cereals, comprising 22.8 percent of total agri-imports in 2007. Nepal's agri-exports, on the other hand, were dominated by processed oils (33.8 percent) and beverages and tobacco (15.6 percent) in 2007 (IFPRI 2010).

Food aid

In Nepal, food aid has become a key source of food in many food-deficit areas, particularly in Mid- and Far-Western Hills and Mountains districts. Initially, food aid was considered a temporary measure, but with continued shortages in some areas it has become a permanent feature of the food supply and, as such, dependence upon it is increasing. Although the share of food aid in total consumption is low

(0.2 percent during 2004–2006) (FAO 2011), the growing food deficit has made food aid imperative. Most of the food aid is in the form of rice, which accounted for 88 percent of the food aid in 2006 (Table 12). Some food aid programmes target malnourished women and children and are linked to conditions such as school attendance, and some are linked to labour-intensive food/cash for assets schemes that generate social capital for the communities. Although food aid is required when people face chronic or emergency food deficits, it has been argued that it may develop a sense of psychological dependence on food aid, and a tendency towards reduced local production (Adhikari 2009).

TABLE 12:

Quantity of food aid (kg/person)

Year	2000	2001	2002	2003	2004	2005	2006
Total cereals	0.41	0.29	0	0.39	0.44	0.40	0.28
Rice	0.41	0.29	0	0	0.44	0.32	0.24
Wheat	0	0	0	0.34	0	0	0

Source: FAO 2011

Nutrition status

Various nutritional surveys[125] conducted in Nepal reveal that the nutritional status of its people, especially of children, has been deteriorating. Two surveys, the Nepal Living Standard Survey (NLSS) (2003/04) and the Demographic and Health Survey (2006), also confirm the deteriorating nutrition status in the country. Table 13 presents the incidence of poverty and food (nutritional) insecurity according to ecological and development regions. It shows that about 31 percent of the population lives below the poverty line and about 40 percent of the people consumes less than the required daily energy intake (2 240 calories) in 2003/04. The incidence of poverty and the status of calorie intake vary across the ecological zones and development regions. The incidence of poverty is the highest in the Hills among the ecological regions, and the Mid-Western region among the development regions. With regard to the status of calorie intake, the Mountains ranks the worst among the ecological zones and the Far-Western region among the development regions.

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[125] National Nutrition Survey 1975, Nepal Family Health Survey 1997, Nepal Multiple Indicator Surveillance 1997, Nutritional Survey 2001 and 2006.

TABLE 13:

Poverty and food (nutritional) insecurity 2001 and 2006

Region	Poverty rate (%)	Population not con- suming minimum calories (%)	Stunting among children under 5 years (low height for age) (%)		Underweight among children under 5 years (low weight for age) (%)		Wasting among children under 5 years (low weight for height) (%)	
			2001	2006	2001	2006	2001	2006
Nepal	30.8	39.9	50.4	49.3	45.2	38.6	9.6	12.6
Ecological zone								
Mountains	32.6	45.2	61.4	62.3	45.1	42.4	5.3	9.4
Hills	34.5	41.8	52.4	50.3	41.4	33.2	5.9	8.4
Terai	27.6	37.4	47.3	46.3	48.4	42.3	13.3	16.6
Development region								
Eastern	29.3	37.6	47.6	40.3	43.4	32.9	9.1	10.1
Central	27.1	39.9	50.0	50.0	44.7	38.2	10.8	13.8
Western	27.1	37.2	50.1	50.4	43.4	38.5	8.9	10.9
Mid-Western	44.8	44.3	53.9	57.9	49.0	43.4	8.8	11.6
Far-Western	41.0	44.9	54.0	52.5	48.9	43.7	8.8	16.7

Note: Children whose height-for-age z-score is below minus two standard deviations (-2 SD) from the median of the reference population are considered short for their age (stunted) and chronically malnourished. Children whose weight-for-age z-score is below -2 SD from the median of the reference population are considered to be underweight. Children whose weight-for-height z-score is below -2 SD from the median reference population are considered to be thin for their height (wasted) and acutely malnourished.

Sources: WB 2006; Ministry of Health and Population (MoHP), New Era and Macro International Inc. 2007

Stunting among children under five years of age has remained more or less the same in the period from 2001 to 2006. But during this period, the incidence of underweight children has declined significantly, from 45 percent to about 39 percent. On the other hand, the incidence of wasting has grown significantly in this period. There is also variation in the type of malnutrition according to ecological regions and development regions. In terms of calorie intake and stunting, the Mountains (Himal) and Hills regions suffer more. But in terms of wasting, the Terai seems to have the most severe problem. Similarly, the problem in the Mid-Western and Far-Western regions is far more serious than in other regions.

4. Trends in agricultural trade, prices and wage rates

Trends in agricultural trade

Nepal experienced a change in its export and import structures between the mid-1990s and the current decade. The share of agriculture and food items increased, whereas the share of manufacturing goods declined. The structural change has been more pronounced in exports than in imports (Table 14). As a result, the share of agricultural exports in agricultural GDP reached 4.45 percent in 2009/10 and the share of agricultural imports in gross domestic consumption was 4.18 percent.[126]

TABLE 14:

Export and import structures (share %)

Description	Exports			Imports		
	1995	2000	2009	1995	2000	2009
Food items	7.8	23.5	25.1	9.8	15.2	14.7
Agricultural raw materials	1.1	1.1	2.9	2.4	1.5	1.7
Fuels	0.0	0.0	0.0	9.5	24.7	16.7
Ores and metals and precious stones	0.1	7.4	5.5	22.3	4.5	7.7
Manufactured goods	83.7	68.0	66.5	37.1	51.9	59.3

Source: UNCTAD 2010

Export performance in agriculture is marginally better than overall export performance. The growth rate of agricultural exports remained at a double-digit level and surpassed overall export growth rates as well as import growth rates of agricultural products (Table 15). However, the trade deficit in agricultural products widened over the period because of the low base of the agricultural exports (Figure 4). The share of agricultural exports in total exports increased marginally, from 18.27 percent during 2000–2004 to 19.10 percent during 2005–2008, but the share in imports hovered at about 16 percent during the observation period (Table 16).

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[126] Author's calculation based on Trade and Export Promotion Centre, Nepal Foreign Trade Statistics 2009/10 and Ministry of Finance, Economic Survey 2010/11, Kathmandu, 2011. The definition of agricultural goods has been adopted from Article 2 of the WTO Agreement on Agriculture.

FIGURE 4:

Nepal's agricultural trade

Source: FAO 2011

TABLE 15:

Growth rates of agricultural trade (average annual %)

Descriptions	2000–2004	2005–2008
Exports	29.26	18.57
Imports	12.98	11.10

Source: FAO 2011

TABLE 16:

Share of agricultural trade in total trade (%)

Descriptions	2000–2004	2005–2009
Exports	18.27	19.10
Imports	16.31	15.71

Source: FAO 2011

Nepal exports agricultural goods mostly in primary forms and without any substantial value addition. Table 17 presents major exportable agricultural products and their destinations. The top ten agricultural export products are: lentils, vegetables, cardamom, tea, non-alcoholic beverages, betel nuts, ginger, plant roots, juice and pasta. The major destinations are: Bangladesh, China, India, the European Union (EU), the United Arab Emirates (UAE) and the United States of America (USA). The export structure of agricultural products indicates that there is limited industrial forward and backward linkage with export sectors, including low utilization of local materials and inputs (TEPC 2011).

TABLE 17:

Major exportable agricultural products 2009/10

HS Code	Product description	Value (Rs million)	Major destination countries (top three)	Value (Rs million)
07134000	Lentils	3 744.9	Bangladesh, USA, Malaysia	3 110.1
14049000	Vegetable products	1 351.9	India	1 351.9
09083010	Cardamom	1 171.5	India, UAE, Pakistan	1 155.9
09024000	Black tea fermented	1 160.8	India, Germany, Czech Republic	1 098.5
22029000	Water, non-alcoholic beverages	848.2	India, China	845.3
08029000	Betel nuts	479.1	India	479.1
09101000	Ginger	456.0	India, Bangladesh, Japan	450.4
12119000	Plants and parts of plants	440.4	India, Hong Kong SAR, Singapore	232.8
20019000	Mixture of juice	410.2	India, China	394.1
19021900	Uncooked pasta	337.0	India, China, Bhutan	289.8

Source: Trade and Export Promotion Centre (TEPC) 2011

The import structure of agricultural products shows that Nepal imports primary and industrial raw materials and processed agricultural products (TEPC 2011). The top ten agricultural products at the HS-6 digit level are presented in Table 18, including food items as well as industrial raw materials. The reason for increased imports of agricultural products for industrial purposes is that domestic sourcing of raw materials by agro-industries is declining (Upadhyaya 2004). Such a trend has a significant bearing on the livelihood of small farmers.

TABLE 18:

Major importable agricultural products 2009/10

HS Code	Description	Value (Rs million)	Major Source Countries
15071000	Crude soybean oil	5 963.42	Argentina, Brazil, Netherlands
15111000	Crude palm oil	3 756.03	Indonesia, Singapore, India
08029000	Betel nuts	3 352.62	Indonesia, Thailand, Malaysia
23040000	Oil cakes	2 232.18	India
10063000	Milled rice	2 279.76	India, USA, Singapore
24012000	Tobacco steamed/stripped	1 982.64	India, China
12051000	Rape of colza seeds	1 537.39	Ukraine, India, Australia
15121000	Crude sunflower oil	1 472.74	Indonesia, Singapore, India
10059000	Maize corn	1 309.99	India, Argentina
07019000	Potatoes	874.66	India, China

Source: TEPC 2011

Price trends

The inflation statistics for the period from 2001/02 to 2010/11 are presented in Table 19. The table shows that the average annual rate of inflation during the period was 6.84 percent and the overall price level showed an increasing trend. Separating the overall inflation level into food and non-food, the average inflation rate for food and beverage was lower compared with overall inflation during the period from 2001/02 to 2005/06. This lower level of inflation is attributed to tight monetary policy, better food harvests in Nepal and price control measures in India (NRB 2007). However, the average rate of inflation for food and beverage overtook the overall inflation rate during the period from 2005/06 to 2010/11 and the average inflation rate of food and beverage is more than double that of non-food and services. This trend continued in 2010/11 as well: prices of food and beverage rose by 14.7 percent whereas prices of non-food and services increased by 5.4 percent. Within the food and beverage group, the price index of vegetables increased sharply by 35.0 percent. The annual average price indices of spices, sugar and sweets and fruits went up by 23.2 percent, 19.5 percent and 19.4 percent, respectively (NRB 2011b).

Another feature of the price situation in Nepal is regional variation. In 2010/11, the overall price indices of the Kathmandu Valley, the Hills and the Terai increased by 9.2 percent, 10.3 percent and 9.5 percent respectively. The prices of individual commodities showed substantial price differentials across different parts of the country because of the problem of physical connectivity and infrastructural constraints on the flow of goods. (IFPRI 2010).

TABLE 19:

Average annual change in National Consumer Price Index

Year	Overall Index	Food and Beverage	Non-Food and Services
2001/02–2010/11	6.84	8.67	5.32
2001/02–2005/06	4.81	4.63	5.00
2005/06–2010/11	8.86	12.71	5.64

Sources: Calculation based on MoF 2011, Nepal Rastra Bank (NRB) 2011b

Trends in the agricultural wage rate

The annual wage rate indices for agricultural labour and unskilled industrial workers during the period from 2004/05 to 2010/11 are presented in Figure 5. The average agricultural wage increased by 280 percent, whereas for industrial workers the increase was 195 percent. The agricultural wage increased sharply in the last two years and overtook the growth in the non-agricultural wage. The NLSS in 2010/11 corroborates this trend and indicates that the mean daily wage in agriculture increased by a multiple of 2.26 between 2003/04 and 2010/11 compared with 1.97 for the non-agricultural wage. However, the mean wage in agriculture remained less than two-thirds that of the non-agricultural daily wage in 2010/11 (CBS 2011). Despite stagnant labour productivity in agriculture and an increasing labour force participation

FIGURE 5:

Wage index for agricultural labour
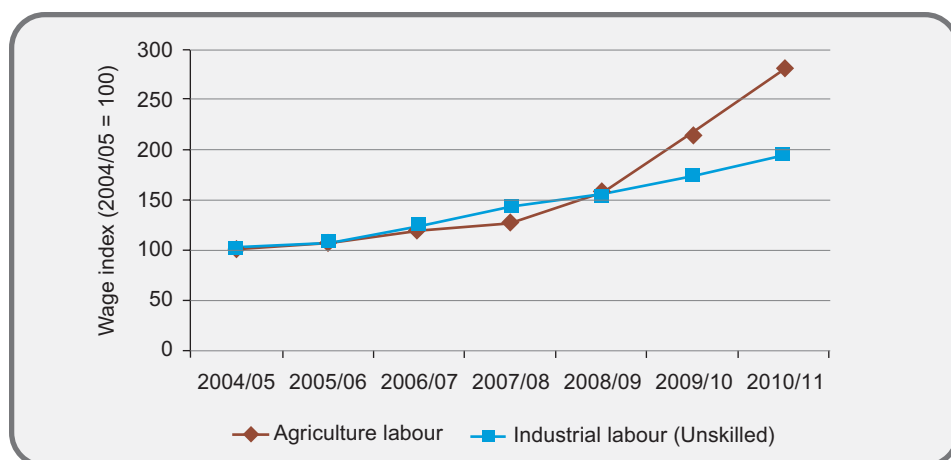
Sources: NRB 2011a, 2011b

rate, the rise in agricultural wage between 2003/04 and 2010/11 could be explained by the diminished supply of agricultural labour in local labour markets as a result of temporary migration and the ease of commuting to urban centres.

5.   Agricultural development policy environment

Despite the government's declared priority of agricultural development at the beginning of the planned development exercise of the mid-1950s, a consolidated policy document for agricultural production was not announced until 1995, followed by implementation of the Agricultural Perspective Plan (APP) in 1996 (APROSC and JMA 1995). This was a 20-year strategy to increase agricultural production whereby per capita agricultural GDP would grow from its 1995 level of 0.5 percent to 4 percent per year through massive investment in irrigation, research and input supply. APP emphasizes few priority inputs, outputs and outcomes. The green revolution package for the Terai and production of high-value commodities such as vegetable and fruits for the Hills are the strategies intended to achieve catch-up growth, promote agribusiness, reduce poverty and achieve positive environmental outcomes. Regional interaction between the Hills and the Terai based on their respective specific comparative advantages was central to the APP's intention and premised on the proposition of rural growth linkages (Karkee 2008). The overall objectives of the APP are as follows: (a) accelerate the growth rate in agriculture through increased factor productivity; (b) alleviate poverty and achieve significant improvement in the standard of living through accelerated growth and expanded employment opportunities; (c) transform agriculture from subsistence to commercial orientation through diversification and realization of comparative advantage; (d) expand opportunities for overall economic transformation by fulfilling the preconditions of agricultural development; and (e) identify immediate, short- and long-term strategies for implementation and provide clear guidelines for preparing future periodic plans and programmes.

However, the APP was not effectively implemented because of inadequate investment, a design problem, lack of coordination between ministries and organizational weakness, as well as other factors. In addition, APP could not meet its targets for the following reasons: (a) inadequate growth in the irrigated area and use of fertilizers; (b) less development expenditure than targeted; (c) unfavourable weather conditions and decline in the value of agricultural harvests; and (d) Maoist insurgency and political instability that obstructed implementation of programmes and projects (ANZDEC 2002, IDL group Ltd. 2007).

Because the APP was not being implemented effectively, the government developed another policy called the National Agricultural Policy (NAP) 2004. The NAP 2004 upholds the long-term vision and strategy of APP 1995 but recognizes the

need for reformulation of the policy and strategies in view of recent developments, such as the liberalized economic environment, the increased role for the private sector, the Millennium Development Goals (MDGs) commitments, and Nepal's commitments in the World Trade Organization (WTO) and regional trading arrangements. The main objective of NAP is to contribute to food security and poverty alleviation through higher economic growth realized through a commercial and competitive agricultural system. Various policy measures are enumerated under three categories: (a) raising productivity and production; (b) developing a commercial and competitive agricultural system; and (c) conserving and utilizing natural resources and the environment. Most of the policy measures are generic in nature. NAP provides continuity for "pocket programmes" – programmes designed and implemented for specific geographical areas – and envisages development of large production "pockets" in which infrastructure such as roads, electricity, markets etc. will be made available in an integrated manner. It also gives priority to the programme for high-value products along north-south and feeder roads. It also provides some incentives to private sector investment in commercial farming, processing and trade (MoAC 2004).

The Agribusiness Promotion Policy 2006, which was promulgated to provide momentum to agribusiness promotion activities emphasized by NAP 2004, further elaborates on some of the policies identified in the NAP. The main objectives of the Agribusiness Promotion Policy 2006 are to: (a) assist market-oriented and competitive agricultural production; (b) contribute to capturing domestic markets and export promotion through developing agro-industry; and (c) assist poverty alleviation through agribusiness. The policy measures identified by the Agribusiness Promotion Policy elaborate on the features of the production areas, the infrastructure to be developed, and the support and incentive measures to be provided. These measures include the establishment of business service centres, markets and collection points, as well as provision of physical facilities, such as rural roads, loans based on group collateral and insurance schemes. The Agribusiness Promotion Policy also offers innovative ideas for developing growth centres and special production areas. Additional elements include commercial crop/commodity production areas, organic/pest-free production areas and agricultural products export areas to be developed in coordination with Special Economic Zones (MoAC 2006).

Another significant policy document is the medium-term periodic plan prepared by the National Planning Commission (NPC). The current Three-Year Plan (TYP 2010/11–2012/13) aims for a rise in agricultural sector growth from 3.3 percent to 3.9 percent during the period, against a rise in overall economic growth from 4.4 percent to 5.5 percent. The TYP objectives and policies follow APP and NAP 2004 in terms of the principal sectoral policies. The TYP's strategy objectives for the agricultural sector are to: (a) enhance the contribution of the agricultural sector to food and nutritional security, employment generation and poverty reduction;

(b) enhance the balance of trade by means of modernization and commercialization, considering the agricultural sector to be the backbone of the national economy; and (c) improve the economic status of rural people by increasing the production and productivity of agricultural and livestock commodities in line with the requirements of farmers and other stakeholders. The TYP describes, among other measures, strategic actions focused on ensuring food and nutritional requirements. These include: enhancing agricultural productivity through the commercialization of agriculture; enhancing competitive capacity through improved breeds; and encouraging investment in contract farming and commercial cooperative farming (NPC 2011).

6. Nepal's trade agreements

Overview of trade agreements

In an attempt to broaden and diversify its economic and trading relationships, Nepal signed bilateral trade agreements with the following countries: Bangladesh (1976); Bulgaria (1980); China (1981); Czechoslovakia (1992); Democratic People's Republic of Korea (1970); Egypt (1975; India (1991); Mongolia (1972); Pakistan (1982); Poland (1992); Republic of Korea (1971); Romania (1984); Sri Lanka (1979); Union of Soviet Socialist Republics (1970); United Kingdom (1965); United States of America (1947); and Yugoslavia (1995). With the exception of the agreement with India, all the bilateral trade agreements were limited to the provision of most favoured nation (MFN) treatment. Since Nepal became a member of the WTO in 2004, most of these bilateral trade agreements no longer apply, some have been terminated[127] and the provision of MFN treatment has become redundant. The bilateral agreement between India and Nepal has a significant bearing for Nepal – a landlocked country with an open border with India. The agreement incorporates the Transit Treaty and the Agreement on Cooperation to Control Unauthorized Trade in addition to the Treaty of Trade that provides duty-free market access to all products except alcoholic beverages, perfume and cosmetics of non-Nepalese or non-Indian brand and cigarettes and tobacco. Nepal has also joined regional trading arrangements such as the Agreement on South Asian Free Trade Area (SAFTA) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC).

Salient features of Nepal-India trade agreement

Historical records show the existence of intensive trade relations between Nepal and Northern India during the golden age of Guptas (beginning in 320 AD). But Nepal's economic relationship with India was formalized only in 1816 through the signing of the Peace Treaty of Sugauli with the East India Company. This granted the right for

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[127] For example, the agreements with Bulgaria, Poland and Romania ceased to exist when these countries joined the European Union.

British products to enter the Nepalese market. During the nineteenth century, Nepal imported scrap metal, precious stones, spices, tobacco, etc. from India, whereas exports from Nepal included agricultural, mineral and forest products such as timber, rice, ghee, etc. In 1923 Nepal signed the first trade treaty with British India, which provided for Nepal to import goods from Britain freely through ports in British India without paying any customs duties (Shrestha 2003).

In modern times, Nepal and India signed the Treaty of Peace and Friendship, and the Treaty of Trade and Commerce on 30 July 1950. These two treaties can be seen as landmarks towards strengthening economic, social and cultural relations between Nepal and India. The Treaty of Trade was modified and renewed in 1961 and 1971 and incorporated provisions regarding transit facilities extended by India to enable Nepal's trade with a third country, as well as provisions on cooperation to control unauthorized trade. Duty-free access to Nepalese imports on a non-reciprocal basis was first given in 1971 but with a content requirement of 90 percent of Nepalese/Indian material. This value-added requirement was gradually reduced, eliminated and then reintroduced when the Treaty of Trade was renewed. New Treaties of Trade were signed in 1978, 1991, 1996, 2002 and 2009.

A separate Treaty of Transit was also signed in 1978 and this provides national treatment with regard to vessels, places of origin, departure, entry, exit, destination and ownership of goods or vessels (Article I) and provides storage facilities for traffic in transit awaiting customs clearance before transmission onward. It also states that traffic in transit shall be exempt from customs duties and from all transit duties or other charges, except for reasonable fees or charges for any services provided.

In order to minimize the adverse effect of illegal trade resulting from the long and open border between the two countries and the free movement of persons and goods across the border, an Agreement of Cooperation between Nepal and India to Control Unauthorized Trade was signed on 5 December 1991. The Agreement calls upon both countries for cooperation "to prevent infringement and circumvention of the laws, rules and regulations of either country in regard to matters relating to customs, narcotics and psychotropic substances". It also prohibits re-export of goods without manufacturing activity to a third country.

The provisions of the 1991 Treaty of Trade were further modified and replaced on 3 December 1996. (The 1996 treaty was replaced by the treaty signed on 2 March 2002 and this treaty was again replaced by the treaty signed on 27 November 2009, effective for a period of seven years with the provision of automatic renewal.) The 1996 modification was a landmark in defining Nepal-India trade relations. It allowed access, free of customs duties and quantitative restrictions, to the Indian market for Nepalese manufactured articles. Only three categories were included in the negative list: alcoholic beverages, perfume and cosmetics, and

cigarettes and tobacco. It also simplified the export procedure, in particular with regard to Certificate of Origin (CoO), which reduced bureaucratic delays. In addition, a special provision was made for rebate of additional duty on products manufactured by small and cottage industries. However, the 2002 amendment was more restrictive and regressive from the Nepalese perspective as it introduced conditions for rules of origin, quantitative restrictions through quotas on some products and provisions for safeguard measures. The current treaty was signed in 2009. The main provisions of the Treaty of Trade between Nepal and India, as amended, are highlighted below:

- Extension of MFN treatment with respect to: (a) customs duties and charges of any kind imposed on or in connection with importation and exportation; and (b) import regulations, including quantitative restrictions. It also provides the Government of Nepal with the right to collect the excise and other domestic taxes collected by the Government of India on products imported by Nepal, provided that: (a) such payment shall not exceed the import duties and like charges levied by Nepal on similar goods imported from any other country; and (b) the Government of Nepal shall not collect from the importer of the said Indian goods so much of the import duty and like charges as is equal to the payment allowed by the Government of India.

- Reciprocal market access for primary products, duty-free and without any quantitative restrictions. The agreement has identified 16 primary products eligible for preferential market access. These include: (1) agriculture, horticulture and forest products; (2) minerals which have not undergone any processing; (3) rice, pulses and flour; (4) timber; (5) *jaggery* (raw sugar) (6) livestock, poultry and fish; (7) bees, beeswax and honey; (8) raw wool, goat hair and bones used in the manufacture of bonemeal; (9) milk and home-made products of milk and eggs; (10) traditionally-produced oil and oilcakes; (11) herbs and ayurvedic and herbal medicines, including essential oils and extracts; (12) articles produced by village artisans that are used mainly in villages, (13) *akara* (14) yak tail (15) stone aggregate, boulders, sand and gravel. For these primary products, national treatment shall be accorded in the matter of internal taxes or charges as well as on internal movements (Article IV).

- Duty-free and without any quantitative restrictions, for all articles manufactured in Nepal that satisfy the rules of origin criteria. An article is considered a product of Nepal under the following conditions: (a) it is manufactured in Nepal entirely from Nepalese or Indian materials or a combination of Nepalese and Indian materials, or the total value addition in Nepal is not less than 30 percent of the ex-factory price of the article; (b) the final process of manufacturing is performed within the territory of Nepal; and (c) the article involves a manufacturing process in Nepal that brings about a change in tariff classification at the four-digit level of the Harmonized Commodities Description and Coding System that is different

from the classifications of all the third-country origin materials used in its manufacture (Article V). The Government of Nepal can designate any agency to issue the CoO for each of the consignments. Currently this task is carried out by trade and industry associations.

● Exemption by Nepal, wholly or partially, from customs duties and quantitative restrictions on imports from India in a manner compatible with the development needs and protection of industries. In addition, Nepal will waive additional customs duty on all Indian exports.

● Provision for invocation of safeguard measures if the imports cause or threaten to cause injury to the domestic industry. The definitions of the terms "serious injury" and "domestic industry" are linked to the WTO Safeguards Agreement. A number of conditions and limitations are to be used to investigate the application of safeguard measures; these include "making a finding of serious injury or threat thereof caused by increased imports". The provisions regarding measures in the case of serious injury to the domestic industry have been streamlined (Mukherji 2010).

● Quota restrictions for preferential access in Indian markets of 100 000 MT per year for vegetable fats (*vanaspati* vegetable ghee), 10 000 MT per year for acrylic yarn, 10 000 MT per year for copper products and 2 500 MT per year for zinc oxides produced in Nepal.

Institutions

The agreement establishes procedures for consultation in matters relating to trade between the two countries. Issues on bilateral trade are to be referred to an Inter-Governmental Committee (IGC) led by the Secretaries in each government's Ministry of Commerce. The IGC will meet at least once every six months, alternating between the countries' respective capitals. In addition, an Inter-Governmental Sub-Committee (IGSC), constituted of Joint Secretaries of the Commerce Ministries of the two countries, will meet during intervals between the meetings of the IGC. The IGSC will deal extensively with trade matters and present any recommendations to the IGC, to facilitate bilateral trade between the two countries.

Trade facilitation

In order to facilitate cross-border movement of goods between Nepal and India, 27 Land Customs Stations have been mutually agreed on. In addition, bilateral trade is allowed by air through international airports connected by direct flights between Nepal and India (between Kathmandu and Delhi, Mumbai, Kolkata or Chennai).

In addition, the Indian government will make its best efforts to assist Nepal "to increase its capacity to trade through improvement in technical standards, quarantine and testing facilities and related human resource capacity". Provision is also made for facilitating "crossborder flow of trade through simplification, standardization and harmonization of customs, transport and other trade-related procedures and development of border infrastructure."

The Agreement also provides mutual recognition of the sanitary and phytosanitary certificates (including health certificates) issued by the competent authority of each country in the area of food and agricultural products (including primary, semi-processed and processed) and allowance of entry of those products into markets, provided that the certificate meets mandatory requirements of the importing country.

Trade flows between Nepal and India

Historically, India has been a major export destination and import source for Nepal, and India's current share in Nepal's trade is significant. India's share in total exports increased to 67 percent in 2010/11 from 47 percent in 2000/01. Similarly, India's share in total imports increased from 38 percent to 66 percent during the same period (Figure 6). This could be attributed to geographical contiguity, cultural ties, relative size of the economy and the bilateral trade treaties. Both exports and imports of Nepal have grown consistently but the growth in imports is higher than the growth in exports and this has caused the trade relationship between Nepal and India to become increasingly unbalanced (Figure 7). Export growth in recent years has declined whereas import growth has increased (Table 20). The export-import ratio for Nepal stood at 17 percent in 2010/11, down from 58 percent in 2000/01 (MoF 2011). One reason the trade balance is heavily in favour of India is the asymmetry of the economies between the two countries in terms of export base, excess capacity, raw material supply base, degree of industrialization, freight charges and availability of skilled technical labour.

TABLE 20:

Nepal's trade with India (average annual growth %)

	2001/02–2005/06	2006/07–2010/11
Exports to India	9.89	1.62
Imports from India	18.99	19.77

Source: MoF 2011

FIGURE 6:

India's share in Nepal's trade
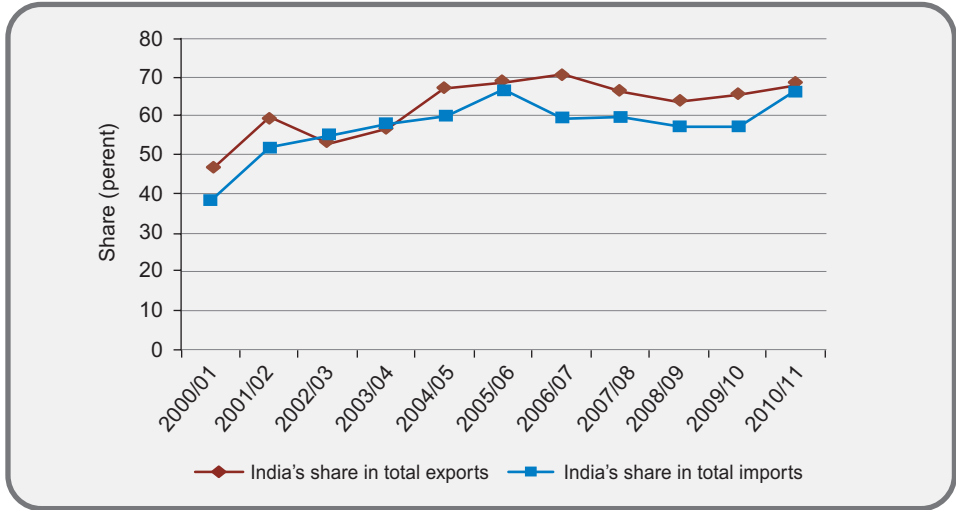
Source: MoF 2011

FIGURE 7:

Nepal's trade with India
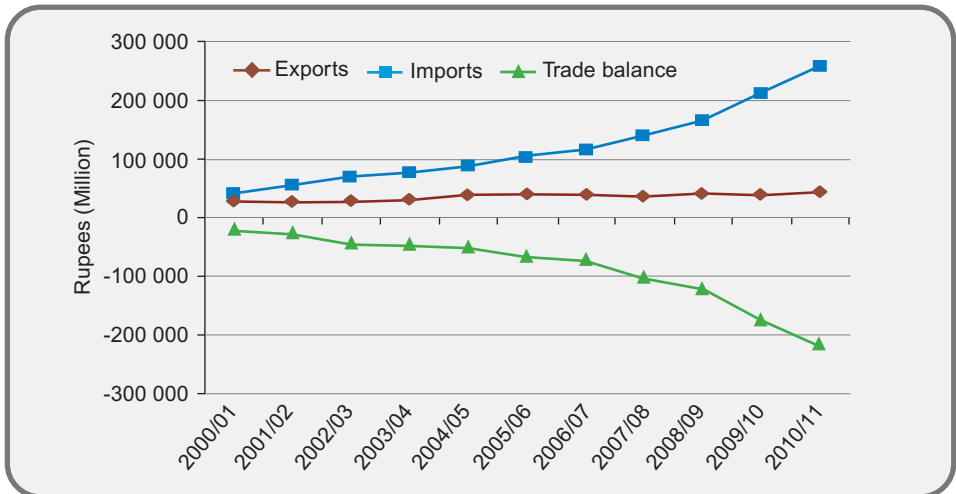
Source: MoF 2011

Unlike India's significant role for both the export and import trade of Nepal, Nepal's shares in India's total exports and imports are minuscule and declining. Nepal's share in India's total exports declined from 1.68 percent in 2001/02 to 0.88 percent in 2010/11. Similarly, Nepal's share in India's imports stood at 0.44 percent in 2010/11 (Table 21). The trade relationship between Nepal and India is thus unbalanced not only in absolute transactions but also in terms of importance in total trade. It reflects the asymmetric strength in bilateral trade negotiations.

TABLE 21:

Relative importance of bilateral trade

Year	India's share in Nepal's		Nepal's share in India's	
	Exports (%)	Imports (%)	Exports (%)	Imports (%)
2001/02	59.55	52.72	1.68	0.71
2002/03	52.93	57.03	1.72	0.55
2003/04	57.09	57.77	1.67	0.53
2004/05	66.29	59.32	1.47	0.48
2005/06	67.59	61.65	1.43	0.37
2006/07	70.81	59.18	0.73	0.40
2007/08	69.94	60.07	0.92	0.51
2008/09	63.57	56.74	0.85	0.42
2009/10	65.47	57.04	0.86	0.43
2010/11	67.14	66.24	0.88	0.44

Sources: Government of Nepal 2011; Government of India 2011

There has been no significant change in the import and export structure of Nepal's trade with India. The share of agricultural products in total exports has declined, whereas the import share has shown a horizontal trend (Figure 8). Major agricultural exports are pulses, live animals, ginger, oil cakes, animal feed, vegetables and jute; these account for about 60 percent of the exports of agricultural products. The exports of pulses and *vanaspati* vegetable ghee have declined sharply, whereas exports of other products have shown an increasing trend (Figure 9). The import composition of agricultural products from India is highly diversified and comprises almost all products, though some of them in very small quantities. The trends in imports of rice, fruits, vegetables and live animals are presented in Figure 10, which shows an increasing trend of imports of these products, except for live animals. The import of rice has fluctuated depending on the supply situation of cereals in Nepal. Nepal imported 96 115 MT of rice from India in 2009/10 (TEPC 2011).

FIGURE 8:

Share of agriculture in exports and imports
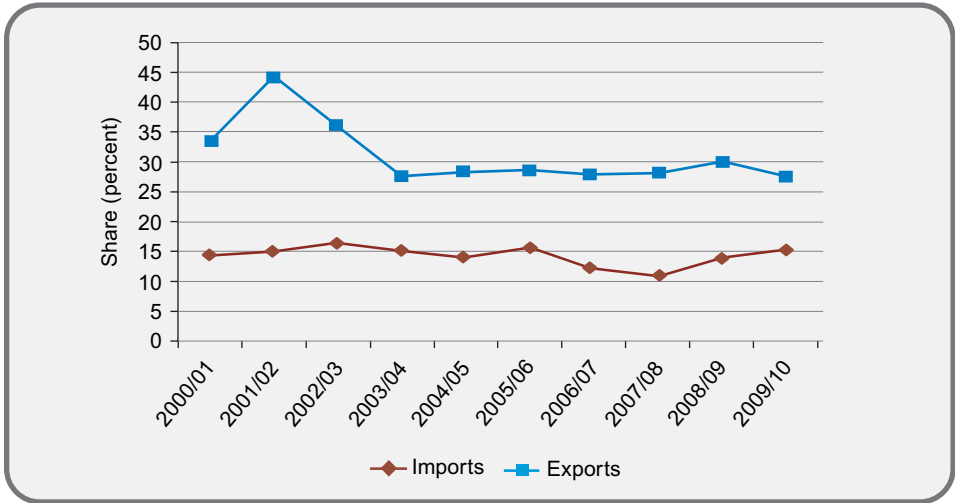
Source: NRB 2011a

FIGURE 9:

Exports of selected agricultural products
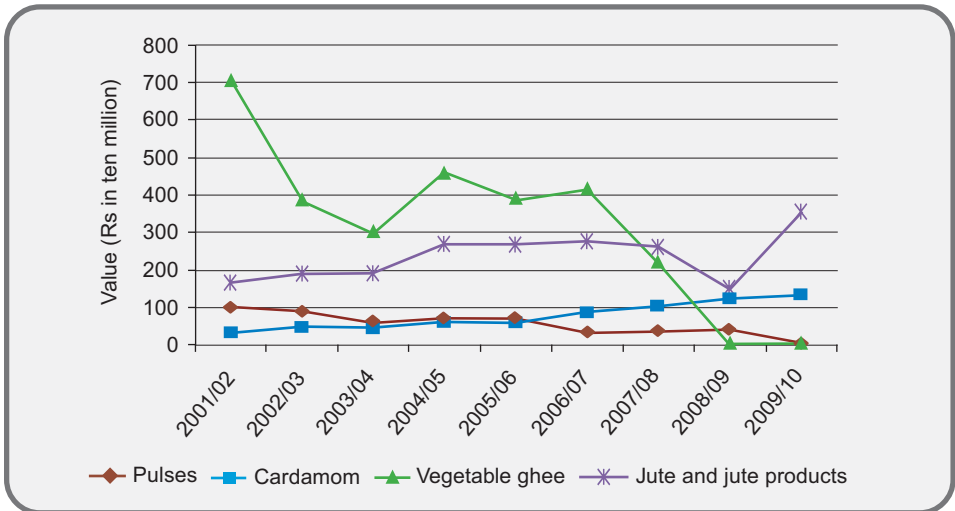
Source: NRB 2011a

FIGURE 10:

Imports of major edibles
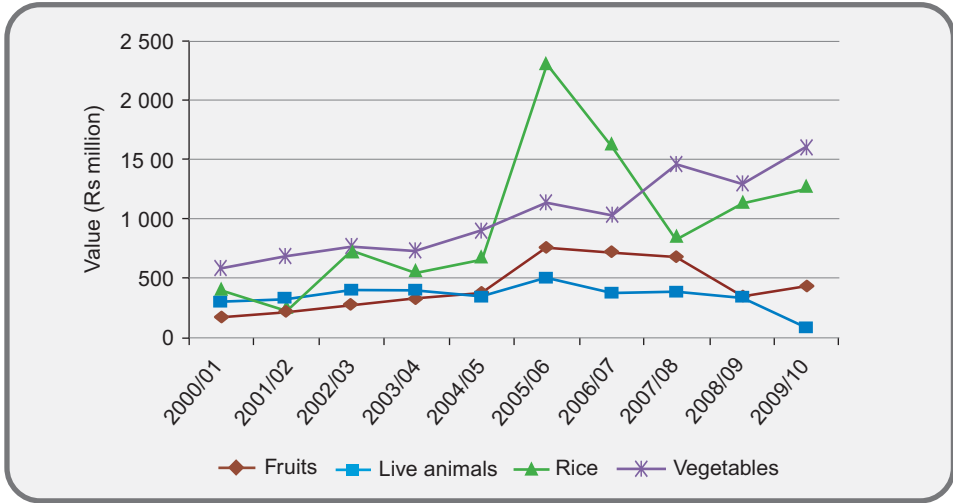
Source: NRB 2011a

Informal trade between Nepal and India

Given the long and porous border and freedom of currency exchange, informal trade (broadly defined as all trade activities between any two countries that should be included in the national income according to national income conventions but are presently not captured by official trade statistics) has been taking place between the two countries. Reasons for the informal trade include quick realization of payments, absence of paperwork, absence of procedural delays and lower transportation costs, as well as the ability to circumvent the requirements of rules of origin and evade duties and charges (Karmacharya 2010). Traditionally, it was believed – particularly in India – that informal trade between these countries occurred primarily in one direction, from Nepal to India (Muni 1992). However, survey studies (Karmacharya 2002, Taneja *et al.* 2002) carried out in the Indian states and in Nepal show that informal trade between Nepal and India is a two-way phenomenon and that informal trade comprises both manufactured and agricultural products.

Based on surveys, Karmacharya (2010) has estimated crossborder informal trade between Nepal and India in agricultural products. He found that paddy rice is the major agricultural item informally imported from India, accounting for 25 to 27 percent of Nepal's total informal agricultural imports from India. This is followed by rice (about 21 to 22 percent), sugar (about 12 percent) and edible oils (about 8 to 9 percent). Other agricultural products imported informally from India are pulses,

fish, poultry, milk powder and oilseeds, maize, bananas, chili, potatoes, tea, onions, and live animals such as buffalo and goat. On the export side, betel nuts top the list, accounting for 47–52 percent of Nepal's total informal agricultural exports to India, followed by hides and skins/leather (18–21 percent), apples and garlic (each accounting for 11 to 12 percent), and ginger (about 6 percent). Other minor agricultural items exported informally from Nepal to India are oranges, large cardamom, onions, turmeric, pigs, poultry, powder milk and jute/jute products.

Implications of India-Nepal trade agreement for food security

The issue of food security vis-à-vis international trade boils down to the question of maximizing domestic production regardless of cost or maximizing domestic production at a competitive cost. The former denotes food self-sufficiency or food sovereignty and the latter denotes food self-reliance. In addition to high cost, food self-sufficiency is impractical for most developing and least-developed countries, including Nepal, as they do not enjoy favourable climatic conditions for producing all the staple food they need. Moreover, the excess worldwide capacity to produce food, coupled with the availability of transportation, implies that the strategy of food self-sufficiency makes little economic sense (Panagariya 2002). If self-reliance is accepted as a means to achieve food security, international trade can ease the impact of instability in domestic agricultural production. The impact of the bilateral trade agreement between Nepal and India on food security is assessed in terms of its impact on food self-reliance.

Capacity to finance food imports

The role of imports is to fill the shortfall between production and consumption. In order to measure the effectiveness of imports for ensuring food security, the FAO reviewed potential indicators and concluded that gaining the ability to finance import requirements (for example, export earnings) is likely to be a more robust indicator of food security than the primary indicators of price levels/price instability or trends in stocks and flows in global cereal markets (FAO 2003). To assess the role of trade with India in ensuring food security in Nepal, the capacity to finance food imports has been assessed using the ratio of the value of net food imports to non-food exports at the bilateral level. This ratio indicates that the capacity to finance the import of food products from India through the export of non-food items has declined (Figure 11). The ratio has increased from about 2 percent in 2000/01 to about 25 percent in 2009/10. Such an increased ratio is a result not only of the increased volume of food imports but also of the decline in non-food exports resulting from, among other factors, challenges in domestic security and law and order that have adversely affected industrial production.

FIGURE 11:

Ratio of net food imports from India to non-food exports to India
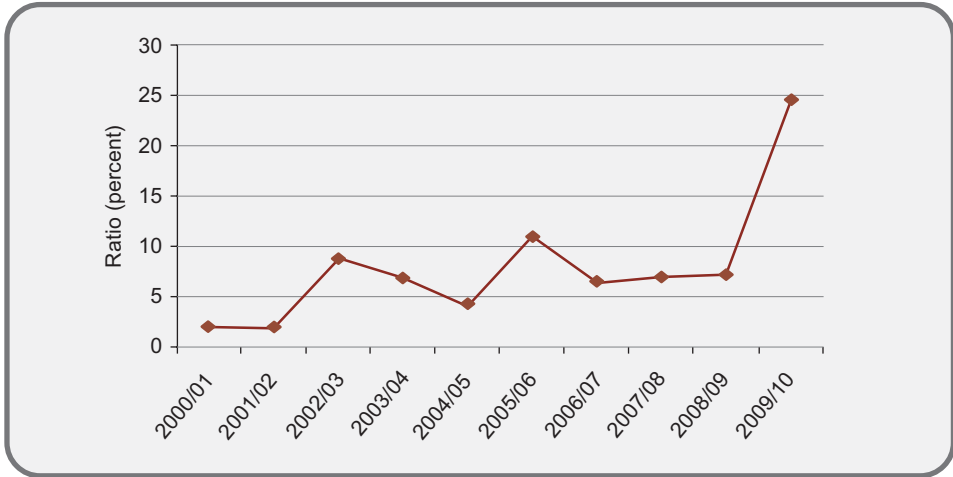
Source: NRB 2011

Price stability

On the one hand, expenditure on staple food constitutes a major share in household expenditure and on the other, farmgate prices of food staples are a major determinant of incomes and production incentives for small and large farmers. Thus government policy-makers are faced with a food policy dilemma: whether to promote high prices for producers or low prices for consumers (Dorosh 2009). In Nepal, where agriculture remains at the subsistence level, it has been reported that own production can meet household food requirements for six to eight months (NPC 2005) and for the rest of the year households have to rely on the market. Food expenditure accounts for 38.9 percent of household expenditure (NRB 2008). Therefore, the prices of major food staples are major determinants of food consumption and welfare, and the stabilization of the prices of food items would contribute positively to the status of food security.

An empirical study by Nepal's Central Bank (NRB 2007) shows that short-term inflation in Nepal is mainly determined by inflation in India and the narrow money supply. In the short run, a 1 percent increase in narrow money supply leads to a 0.18 percent increase in inflation in the same year, whereas a 1 percent increase in Indian inflation leads to a 1.13 percent increase in Nepalese inflation. In the long-term, however, the price level in Nepal is determined mainly by the Indian price level. The co-movement of Nepalese consumer prices and Indian consumer prices is shown in Figure 12. This co-movement of prices, particularly of food products, implies

that the bilateral trade agreement that allows the free movement of goods across borders has contributed to price stability in Nepal by dampening the price effect in a time of low production and supply in Nepal.[128] In recent years, it has been argued that the price rise in Nepal would have been higher as a result of world food and fuel price rises if India had not allowed exports of food to Nepal (Pandey 2009).

FIGURE 12:

Price movements in Nepal and India
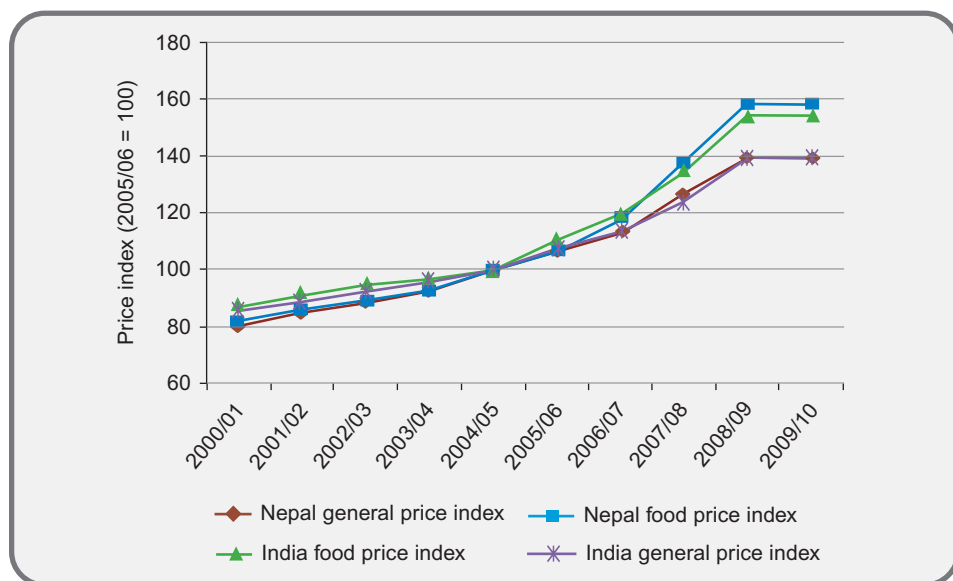
Sources: MoF 2011; Government of India 2011

Change in cropping pattern

A farmer's choice of crops is generally determined by the rate of return generated and this depends on a host of factors: the quality of the soil, climatic conditions, costs of production and inputs, infrastructure facilities including marketing, level of technological adaptation and sale proceeds of the crop. The combination of the Nepal-India trade agreement – providing duty-free market access for agricultural and primary products on a reciprocal basis – and a porous border has created de facto free trade, which also affects the choice of crops through its effects on prices and sale proceeds. Indian farmers of cereal products, especially rice, enjoy better

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[128] The agreement also provides for exemption of export restrictions by India upon the request of the Government of Nepal on a case-by-case basis.

technology, economies of scale and provisioning of government supports and subsidies than Nepalese farmers. Unable to compete, Nepalese farmers have moved away from the production of rice to cash crops such as potatoes, oilseeds and sugarcane (Table 21 and Table 2). The area allocated for rice production has declined, whereas for potatoes and vegetables it has increased significantly. The Nepal-India Trade Treaty could have contributed to the changing cropping pattern, but the factor of domestic demand is also responsible. The breakdown of contributing factors needs further study.

TABLE 21:

Share of individual food crops in area cultivated and production

Description	2001/02–2010/11		2001/02–2005/06		2006/07–2010/11	
Food crops	Area	Production	Area	Production	Area	Production
Paddy rice	48.36	56.17	50.10	58.48	46.61	53.85
Maize	27.25	23.44	27.27	22.33	27.23	24.54
Wheat	21.93	19.26	21.75	18.77	22.11	19.75
Barley	0.85	0.38	0.88	0.41	0.83	0.35
Millet	8.35	3.86	8.43	3.94	8.26	3.78

Source: MoF 2011

7. Summary and conclusions

The agricultural sector, including forestry and fisheries, has shown highly erratic growth and a declining share in income from 2000 to 2011. However, this sector constitutes more than one-third of GDP, and provides employment to about three-fourths of the active labour force in Nepal. Thus, agricultural development is the key determinant in ensuring food security, poverty reduction, rural development and overall economic growth. Its role in food security is more pronounced as cereal production – mainly paddy rice, maize, millet, wheat and barley – adds up to almost half of agricultural GDP.

Nepal's per capita food production has declined and the country has experienced food deficits in most years in the recent past. The deficits have been made up largely by increasing cereal imports, although food aid has also played a crucial role in many food-deficit areas. In terms of imports per capita, oil and oilseeds top the list, followed by rice and fruits. Cereal imports have risen but the import dependency ratio is not very alarming. Overall price levels have tended to increase but the average rate of inflation for food and beverages is more than that of non-food and services. Various surveys of nutrition reveal that the nutritional status of people, especially of children, has been deteriorating.

Nepal trades predominantly with India for both agricultural and manufacturing products because of its geographical proximity and the existence of the preferential trade agreement. The Nepal-India Trade Treaty, which provides reciprocal market access for primary products, duty-free and without any quantitative restrictions, has a significant bearing not only on trade performance, composition and direction but also on the state of food security in Nepal. Nepal's imports of rice, fruits and vegetables have increased, contributing positively to the state of food supply but also increasing trade deficits.

The impact of the bilateral trade agreement between Nepal and India on food security is assessed in terms of its impact on food self-reliance rather than on food self-sufficiency. The Nepal-India Trade Treaty has both positive and negative implications for food security. It has contributed to maintaining the price stability of food products; however, this price stability has discouraged domestic production of cereals, especially of rice. The reduction in food production has resulted in increased food imports but the capacity to finance food imports through the exports of non-food items at the bilateral level has deteriorated. In order to reduce the negative impact of the Nepal-India Trade Treaty, the government has adopted a policy of imposing an agricultural reform fee (currently 5 percent) on all agricultural products imported from India. However, such policy space will not be available after 2012 once Nepal fully implements its commitment in the WTO to abolish other duties and charges (WTO 2003). In addition, the government has recently introduced the policy of subsidizing chemical fertilizers. However, such subsidies, at about 0.05 percent of agricultural GDP, are far from able to provide a level playing field for Nepalese farmers.

Given the existing and future policy flexibilities and the widening gaps between the productivity of the Nepalese agricultural sector and that of Indian farms because of differences in technology, scales of operation and magnitude of government supports, we argue that the Nepalese government has three options to promote agricultural production in the context of trade with India: 1) harmonize fiscal policy with India in terms of support measures; 2) introduce para- or non-tariff measures to a level that effectively protects the domestic farm sector; or 3) renegotiate with India on coverage of reciprocal duty-free market access and rules of origin for improved market access.

As far as the first option is concerned, given the resource constraints and administrative difficulties in the management of subsidies, Nepal may not be able to afford on its own to harmonize agricultural-related fiscal policies with India. India needs to provide financial and technical supports so that Nepalese farmers can have a level playing field in markets.

Regarding the second option, one provision of the Nepal-India Trade Treaty allows both parties to resort to para-tariff measures. Under this provision, Nepal is

imposing agricultural reform fees on the imports of agricultural products from India, but Nepal's commitments to WTO prohibit the use of such measures after 2012. This means there will be virtually free trade between Nepal and India after 2012 and so this option would be valid for one year only.

The third option would mean renegotiation of the trade treaty with India to exclude at least major agricultural products, such as paddy rice, rice, wheat, maize, millet, oilseeds and their products, from reciprocal duty-free market lists. In addition, renegotiation on the rules of origin for manufactured products to allow meaningful market access would go a long way towards improving food import capacity.

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Part IV

Experience from outside the region and commodity-specific perspectives on regional trade agreements

The effects of agricultural domestic reforms and trade liberalization on food security: lessons from Mexico

Antonio Yunez-Naude

1. Introduction

Mexico is a notable laboratory in which to study agricultural development policies and outcomes under trade and domestic liberalization. In the 1980s, the Mexican government began to apply market-oriented policies. In agriculture and the rural sector, reforms ranged from constitutional changes to enhanced private property rights in rural communal lands to the elimination of price supports granted to farmers producing staple crops. Policy changes included agricultural trade liberalization: in 1985 Mexico joined the General Agreement on Tariffs and Trade (GATT, now the World Trade Organization or WTO), and in January 1994 the North American Free Trade Agreement (NAFTA) was implemented. NAFTA included the liberalization of agriculture and, in conjunction with its implementation, the Mexican state applied a series of transitional policies intended to prepare farmers for the new economic conditions.

As in other developing and emerging countries, a feature of the Mexican agricultural sector that must be considered in any effort to study agricultural transformation in a globalized economy is its heterogeneity. Mexico's farm sector contains a juxtaposition of entrepreneurial farmers and rural households producing food in small plots for both self-consumption and the market and who are also involved in other economic activities. Rural households make production and consumption decisions jointly for staples, with agriculture being only a part of their income-earning activities. In general, family producers have limited land, they do not have access to formal credit, and – because of poor communications and transport limitations – they face high transaction costs in some markets. In contrast, entrepreneurial or commercial farmers live outside the rural sector and operate in a context that enables them to make decisions in the same way as farmers in the developed world. Their production is specialized and for profit and is oriented towards the market in a context of low transaction costs. Among other factors, these differences imply that, whereas commercial farmers respond directly to agricultural price changes, family farmers may not, in other words subsistence agricultural producers are price-inelastic because of the presence of high transaction costs

(de Janvry, Fafchamps and Sadoulet 1991) and/or because they react in apparently unexpected ways to changes in output market prices of the staples they produce. For example, using a microeconomic computable general equilibrium model applied to rural households in Mexico, Dyer, Boucher and Taylor (2006) found that a drop in the market price of maize (the major staple produced by these households) reduces local wages and land rents, while stimulating maize production by subsistence households. Hence, the heterogeneity of farm production suggests that the effects of external shocks, such as agricultural free trade agreements, will depend on the conditions of production, market linkages and access to markets by farmers (see Section 5 below).

In addition to production heterogeneity, Mexico is characterized by sharp regional agro-ecological and welfare differences: the arid North requires irrigation for agricultural production and has the lowest food poverty index; the Southeast is humid and has the poorest population; and Central Mexico lies between the North and Southeast in terms of agro-ecological and welfare conditions.

Taking into consideration agricultural heterogeneity, the main objective of this paper is to evaluate the effects of NAFTA and domestic reforms on Mexico's agricultural prices, production, trade and food security, with special attention to grains, oilseeds and maize. Maize warrants particular attention, as it is the major staple for Mexicans, produced by both commercial farmers and small-subsistence farmers or rural households, and is considered to be non-competitive under NAFTA negotiations. Trends in major components of the agricultural and rural sectors of Mexico over the last 20 to 30 years are described, and empirical evidence presented to explore whether official expectations about the effects of NAFTA have been realized. In order to draw lessons from this experience, hypotheses are proposed here to explain the dynamics of the agricultural and rural sector of Mexico, and its implications for food security.

This paper is divided into six sections, including this introduction. The next section presents a summary of the domestic agricultural reforms and characteristics of NAFTA, together with a description of government policies intended to prepare agricultural producers to face trade liberalization, and a discussion of the main governmental expectations about the effects of these policy changes. In Section 3 the salient features of the agriculture and rural sectors of Mexico during the last 30 years are documented, including the evolution of food import dependency, self-sufficiency and security, the changes in farm size and property rights on farmlands, and trends in rural out-migration. In Section 4 the results of existing empirical research on the effects of NAFTA are synthesized. This synthesis includes tests to inquire whether domestic prices have converged with international/United States prices of major imported agricultural crops. Results of econometric studies on structural change in Mexico's agricultural production, trade and rural out-migration and changes in welfare of the population of Mexico are examined. In Section 5 the

contemporary policy environment is discussed and hypotheses are proposed to explain the changes in agricultural production, as well as recent programmes in light of the evolution of food security. Section 6 concludes with a reflection on the lessons the Mexican experience can bring to other countries.

2. Reforms and expected effects

As in other Latin American countries, market-oriented policy reforms with respect to the Mexican economy began in the 1980s as a form of structural adjustment to solve the country's debt crisis. The liberalization of the agricultural sector began in the late 1980s and intensified during the first half of the 1990s. In the mid-1980s, government subsidies based on support prices to farmers producing basic crops (grains, beans and oilseeds) began to be abolished, as well as most subsidies for agricultural inputs and for credit. In addition the banking system was re-privatized, public infrastructure to support the marketing of basic crops began to be sold or abolished, and in 1992 the Constitutional Article regarding land property rights was reformed (Table 1, details in Yunez-Naude 2003).

The land or *ejidal* reform granted individual property rights to *ejidatarios*, those peasants who benefited from the process of rural land distribution and re-distribution implemented after the Mexican Revolution of 1910 and during the application of Agrarian Reform from the 1930s to 1991. Before the 1992 reform, *ejidatarios* had to use *ejidal* land for production purposes, but were not allowed to sell or rent it, or to conduct business in association with the private sector. The individual beneficiaries of land distribution could and did pass on their land to their children, who became *ejidatarios* themselves.[129] Since the land reform of 1992, privatization of land property rights is possible if the *Ejido* Assembly – formed by all the *ejidatarios* of the *Ejido* (farmers' cooperative) – approves it. Expected consequences of the *ejidal* reform were to promote rural land markets, to increase farm size and to promote access to credit via the possibility of using former *ejidal* land as collateral. In addition to hoping to deepen the rural land rental market, the federal government has created policies to promote the use of agricultural lands more efficiently and in association with other economic actors to facilitate subcontracting and the enhancement of value-added chains.

Agricultural credit was another target of policy reforms. In the early 1990s the government decided to reduce official credit subsidization sharply, with the expectation that private banks would fill the credit requirements of Mexican farmers. In spite of

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[129] In addition to land distribution to *ejidatarios*, the application of the Agrarian Reform that emanated from the Revolution of 1910 included the distribution of land to rural communities. In some cases, the *Ejidal* Reform of 1992 allows community land exploited collectively to be distributed to individual owners.

this, the two main official rural credit institutions – BANRURAL (Rural Bank) and FIRA (*Fideicomiso Institudos en Relación con la Agricultura,* Trust Funds for Rural Development) – were not abolished, and in 2003 the government replaced BANRURAL with *Financiera Rural* (Rural Financing, a government bank) in an effort to increase rural credit and avoid persistent high rates of default on loans by BANRURAL, whose assets and liabilities were taken over by *Financiera Rural.*

TABLE 1:

Liberalization process of Mexico's agriculture

Policy	Main policy changes	Years
Mexico joins GATT and food imports restrictions began to be reduced	Substitution of import licensing for imposition of tariffs to agricultural goods (tariffs ranging from 0% to 20%)	1986–1994
Sale of Food State Enterprises	Privatization of state food storage facilities and state and state enterprises selling seeds and fertilizers at subsidized prices	1988/89
	Abolition of state enterprises selling coffee, sugar and tobacco	
"Ejidal" Reform (land property rights reform)	Ending of agricultural land distribution to peasants	1992
	Liberalization of agricultural land property rights	
Elimination of price supports to farmers producing food staples (in 1999 the State Trading Enterprise providing this subsidy was abolished)	Domestic prices of staples determined taking into account international prices	1989 to date
	Creation of ASERCA in 1991, a marketing support agency granting subsidies to commercial staple crops' producers and buyers	
	Creation of PROCAMPO in 1994, a direct income transfers programme to all producers of staples	
North American Free Trade Agreement (NAFTA)	Prohibits the use of import licenses and applies tariffication principles	Jan. 1994– Jan. 2008
	Free trade in 15 years. Sensitive agricultural products were subject to tariff rate quotas for a transitional period of up to 15 years	
	Interventions are allowed in the 3 countries for agricultural subsidies, import restrictions on phytosanitary grounds and rules of origin and for packing.	
Alliance for the Countryside	Group of programmes to promote agricultural and rural productivity, including small farmers	1995–2007

Note: ASERCA (*Apoyos y Servicios a la Comercialización Agropecuaria* or Support Services for Agricultural Marketing); PROCAMPO (*Programa de Apoyos Directos al Campo* or Programme for Direct Supports to the Countryside). More information on ASERCA and PROCAMPO is presented on pages 285-286.

Source: Compiled by the author

A third major agricultural reform of the past 20 years was the abolition of producer price supports granted by the state-owned National Company of Popular Subsistence (*Compañía Nacional de Susbsistencias Populares* or CONASUPO). Since its creation in the mid-1960s, CONASUPO had been fundamental in Mexican agricultural policies, shaping food production, storage, consumption and rural incomes. Before the reforms, the Company's programmes involved 11 agricultural field crops (termed basic crops): barley, beans, copra, cotton, maize, rice, sesame, sorghum, soybeans, sunflower seeds and wheat. By supporting prices for the commercial producers of these crops, by processing, storing, and distributing them, and by regulating their trade through direct imports and import permits, CONASUPO exerted control over an important component of Mexico's food chain.

CONASUPO began to be eliminated in the mid-1980s. By 1996, most of CONASUPO's subsidiaries and financial activities had been dismantled, privatized or transferred to farmers. By 1999, the liquidation of CONASUPO was practically complete (Yunez-Naude 2003). A major reform of Mexican state intervention in staple production consisted of the elimination of guaranteed prices that CONASUPO had traditionally awarded to the producers of basic crops, so that by 1999 price interventions were limited to beans and maize, and in 2001 consumption subsidies for *tortillas* (flat maize bread) were eliminated.

A fourth group of policy changes in Mexico is related to trade. The first step the Mexican government took towards trade liberalization was to join GATT in 1986. By 1991, most licenses to import agricultural products had been abolished, and between 1991 and 1994 most agricultural commodities were under a tariff regime.

After Mexico joined GATT, the governments of Mexico and the United States initiated bilateral trade liberalization negotiations. An accord was reached, and NAFTA began to be implemented in January 1994. In the agricultural sector, two separate agreements were negotiated: one between Mexico and Canada; and the other between Mexico and the United States.

The level of concessions Mexico has given to the United States and Canada vis-à-vis the rest of the world is shown in Table 2. Mexico has also signed trade agreements with several Latin American countries, Israel, the European Union and other European countries.[130] The only Asia-Pacific country included in Mexico's trade

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[130] Mexico signed a Partial Scope Agreement (PSA) with Chile in 1992 and a Free Trade Agreement (FTA) in 1999, an FTA with Colombia and Venezuela in 1995 (Venezuela dropped out in 2006), an FTA with Costa Rica in 1995 and with Bolivia in the same year. Mexico has participated in FTAs with Nicaragua since 1998, with Israel since 2000 and in a Regional FTA with the European Union since 2000. In 2001 Mexico signed FTAs with the Central American North Triangle countries (Guatemala, El Salvador and Honduras), and with Iceland, Liechtenstein, Norway and Switzerland, and one with Uruguay in 2004. Mexico has had a PSA with Argentina since 1987, which was extended to an FTA in 2006, a PSA with Brazil beginning in 2003, and a PSA with Peru since 1987, with current negotiations to extend it as an FTA. These agreements include different degrees of liberalization in agricultural and food products, as well as limitations on domestic supports to exported goods (source: Mexico Ministry for the Economy: www.economia.gob.mx).

TABLE 2:

Structure of protection: major crops 1985–1995

Tariff fraction No.*	Description	Status between 1985 and 1989/90		Status: NAFTA and Uruguay Round				
				NAFTA (January, 1994)**			MFN (January, 1995)***	
		Tariff (%)	Import Licence	Tariff (%)	Quota (US)	Quota (Canada)	Tariff (%)	Quota
10051001	Corn for cropping	0	X	Nil			Nil	
10059001	Corn for popcorn	20	X	10.0			20	
10059002	Corn kernels	0	X	5.0			10	
10059099	Corn, other	0	X	215.0	2 500	1.0	198	10.0
07133301	Beans for cropping (Phaseolus vulgaris)	0	X	Nil			Nil	
07133399	Beans, other	0	X	139.0	50	1.5	128	5.0
10030001	Barley for cropping	0	X	Nil			10	
10030002	Barley	5	X	128.0			118	
11071001	Malt	10	X	175.0	120	30.0	161	1.2
10011001	Hard Wheat	10		7.5			67	98.0
10019099	Wheat (other)	0	X	7.5			67	
10061001	Rice (paddy with husk)	10		5.0			10	
10062001	Rice peeled	20		10.0			20	
1063001	Rice, whole	20		10.0			20	
10064001	Rice, broken	10		5.0			10	
10070001	Sorghum (Dec. 16th to May 15th)	0	X	Nil			Nil	
10070002	Sorghum (May 16th to Dec. 15th)	15	X	Nil			15	
12010001	Soybean for cropping	0	X	Nil			Nil	
12010002	Soybean (Feb. 1st to July 31st)	0	X	Nil			Nil	
12010003	Soybean (Aug. 1st to Jan. 31st)	15		5.0			15	
12030001	Copra	10	X	10.0			45	
12060001	Sunflower seed (for cropping)	0	X	Nil			Nil	
12060099	Sunflower other	0	X	Nil			Nil	
12072001	Cotton seed for cropping	0	X	Nil			Nil	
12074001	Sesame seed	0	X	Nil			Nil	
12076001	Suflower seed for cropping	0	X	Nil			Nil	
12076002	Suflower seed (Jan. 1st to Sept. 30th)	0	X	Nil			Nil	
12076003	Suflower seed (Oct. 1st to Dec. 31th)	10	X	5.0			10	
4041090	Milk powder		X	139.0	40		128	80.0

Notes: * Corresponds to the first six digits of the WTO harmonized tariff codes system.
** When Tariff-Rate Quotas (TRQs) apply, the figures are for above-quota tariffs (in-quota tariffs are nil). Quotas are in thousands of metric tonnes.
*** When TRQs apply, the figures are for above-quota tariffs (consolidated in-quota tariffs are 50 percent).

Source: SECOFI 1994

agreements is Japan, added in 2005. However, the United States, both before and after NAFTA, has been overwhelmingly the main agricultural trade partner of Mexico (see below), and so this paper focuses on agricultural trade between these two countries.

Under NAFTA, trade in some agricultural commodities was liberalized in January 1994. Other commodities – considered sensitive by the signing governments – were subject to a process of year-to-year liberalization, so that full free trade was reached in January 2003 for barley and in January 2008 for beans, maize and powdered milk. Mexico imposed tariff rate quotas for the imports of barley, dry edible beans, maize and powdered milk, whereas the United States included seasonal tariffs as well as tariff rate quotas for several fresh vegetables and fruits imported from Mexico (Table 3). Beginning in 1995, quota levels grew and above-quota tariffs were reduced until free trade was reached in January 2003 for barley, and in January 2008 for the other sensitive commodities (Table 4).[131]

NAFTA does not imply specific commitments with regard to domestic marketing support reductions or export subsidies, and it includes mechanisms for dispute settlement. NAFTA was signed with the following official expectations: based on the facts that the United States is a major player in setting world prices of the most important crops in which Mexico is non-competitive (basic crops) and that the United States is the most important agricultural trade partner of Mexico, NAFTA, coupled with domestic reforms, was expected to lead to price convergence in agricultural products. Under NAFTA, Mexican prices were expected to follow United States prices closely. Because United States prices were lower, Mexico's imports of basic crops from its northern partner would rise. With respect to agricultural products in which Mexico is competitive (fruits and vegetables), United States liberalization of imports restrictions under NAFTA would increase Mexico's exports of these goods.

An additional expectation was that the elimination of industrial protection in Mexico would lead to a reduction of agricultural physical capital and lower input prices of tractors, irrigation equipment, fertilizers, improved seeds, etc. Trade liberalization would thus improve resource allocation, efficiency and agricultural productivity in Mexico. Non-competitive farmers producing basic crops would have to be more efficient, sell or lease out their lands or use them differently, e.g. to produce competitive foodstuffs such as fruits and vegetables. Thus, during the 1990s, the Mexican government was not concerned about the implications for Mexico's self-sufficiency of freer agricultural trade in North America. Food security was implicitly taken for granted according to the above-mentioned expectations, together with the expected increase in income and poverty reduction in Mexico.

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[131] Yunez-Naude and Barceinas 2002. Notwithstanding the above, the Mexican government never charged tariffs for maize imports when imports were over the NAFTA quotas (Yunez, Orrantia and Guzman 2010). Thus, in what follows, Mexico's maize imports from the United States are considered to have been practically free of tariffs.

TABLE 3:

Liberalization by the United States of Mexico's major exported agricultural commodities

Fraction	Commodity	Tariff reductions	Tariff rate quotas
Vegetables			
0709.20.10	**Asparagus**	Some seasonal tariffs eliminated in Jan. 1994, others in 1998 and the 25% tariff from Feb. 1 to Apr. 30 reduced gradually until its elimination in Dec. 2008	
0706.10.05	**Carrots and turnips**	A seasonal tariff eliminated in Dec. 1998 and from Oct. to April tariff eliminated in Dec. 2003	120 800 mt. from Oct. to April
0704.10	**Cauliflower and broccoli**	Tariff reduced to 15% in 1994 and eliminated in Dec. 2003	
0707.00.50	**Cucumbers**	Seasonal tariffs eliminated in Dec. 2008	
0703.20.00	**Garlic**	Tariffs eliminated in 1994	
0703.10	**Onions**	Seasonal tariffs eliminated in Dec. 2003	130 700 mt from I-1 to VI-30
0709.60.00	**Peppers**	A seasonal tariff eliminated at the end of 2003 and other seasonal tariff in Dec. 2008	
0702.00.60	**Tomatoes (fresh and frozen)**	A seasonal tariff eliminated in Dec. 1998 and other seasonal tariff in Dec. 2003	165 000 mt from III-1 to VII-14 and 172 300 from XI-15 to II-28(9)
Fruits			
0804.40	**Avocadoes**	Annual tariff reductions until eliminated in XII-30-2003. Phytosanitary restrictions	
0806	**Grapes**	Free beginning in Jan. 1994	
0805.30	**Limes and lemons**	Annual tariff reductions until eliminated in XII-30-2003	
0804.50	**Mangoes**	Tariffs eliminated in 1994	
0807.10	**Cantaloupe**	The tariff for XII-1 to V-15 eliminated in 1994; the tariff for VIII-1 to IX-15 eliminated in 2003, and free trade until Dec. 2008 for the rest of year	
0805.10.00	**Oranges**	Trade resttictions gradually reduced until eliminated in XII-30-2008	40 million SSE gallons of FCOJ and 4 million SSE, plus a snapback provision
0807.20.00	**Papaws**	Tariff gradually eliminated until Dec. 2003	
0804.30	**Pineapples**	Tariffs eliminated in 1994	
0810.10	**Strawberries**	Tariffs eliminated in 1994	
0807.10	**Watermelon**	Tariff from V-1 to IX-30 eliminated in Dec. 2003	54 400 mt, increasing 3% per year until 2008

Sources: SECOFI 1994 Economic Research Service (ERS), United States Department of Agriculture Web site (http://search.ers.usda.gov/search?affiliate=ers&query=NAFTA)

TABLE 4:

Process of liberalization of agricultural products subject to TRQs under NAFTA (thousands of metric tonnes and percentages)

Product	1998		2000		2003		2008	
	Quota	Over quota tariff (%)	Quota	Over quota tariff (%)	Quota	Over quota tariff (%)	Quota	Over Quota tariff (%)
Maize	2 814.90	172.00	2 986.32	145.20	3 263.24	98.80	0.00	0.00
Beans	57.96	111.20	61.49	93.90	67.20	58.70	0.00	0.00
Barley (grain and malt)	182.33	102.40	201.01	72.90	0.00	0.00	0.00	0.00
Powdered milk*	45.02	111.20	47.76	93.90	52.19	58.70	0.00	0.00

Note: * Excluded from negotiations with Canada, but with a quota of 80 000 MTs for the rest of the world.

Source: SECOFI 1994

Specific public policies and institutions designed to reduce rural poverty were created in parallel with the above reforms. The first of these was the National Solidarity Programme *(Programa de Solidaridad Nacional* or PRONASOL) founded in 1988, followed by the creation of the Ministry of Social Development (*Secretaría de Desarrollo Social* or SEDESOL) in the early 1990s. These programmes were followed in 1997 by *Progresa* (later called *Oportunidades*, Programme for (rural) Education, Health and Nutrition), a conditional cash-transfer programme aimed at reducing poverty in the short term and promoting human capital formation in the medium to long term. *Progresa/Oportunidades* has become a model for similar cash transfer programmes in Latin America and elsewhere.

Domestic policy reforms and NAFTA would imply the transformation of Mexican agriculture, leading in the short to medium term to increasing rural migration to Mexico's cities or to the United States. However, in the longer term international rural out-migration would tend to disappear with the expected rapid growth of the Mexican economy (in the early 1990s these expectations were validated by results of general equilibrium models applied to the agriculture and rural sector of Mexico (see for example Robinson *et al.* 1993 and Levy and van Wijnbergen 1994).

Economic liberalization was accompanied by transitional measures implemented by the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (*Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* or SAGARPA). As well as the period of transition under NAFTA discussed above, domestic measures were implemented in 1991 with the creation of Support Services for Agricultural Marketing (*Apoyos y Servicios a la Commercialización Agropecuaria* or ASERCA), a SAGARPA institution that has provided subsidies to commercial

producers and buyers of basic crops, and direct income transfers to all farmers producing these crops, through PROCAMPO just before NAFTA began to be implemented. "Alliance for the Countryside" was the third major programme of SAGARPA implemented by the Mexican government from 1995 to 2007. It consisted of government supports to enhance rural productivity.

ASERCA was created to substitute for the traditional direct price interventions in major grains and oilseeds produced in Mexico that the government had undertaken through CONASUPO. Since its creation, ASERCA has followed a scheme of "indifference prices" for these crops, with the intention of making buyers indifferent when it comes to choosing between domestically produced or imported basic crops. The scheme is similar to the United States' "deficiency payments". It consists of fixing a "concentrated price" for the crop in question before the cropping season, taking as a reference the international price, together with transport costs. In a region-specific scheme, the government subsidizes surplus commercial producers that sell their crop to big intermediaries and/or processors. The government transferred the difference between the international and the concentrated price to the buyers until 2001 and thereafter to the farmers.[132] The scheme is basically a governmental income transfer. ASERCA is also in charge of PROCAMPO. In contrast with PROCAMPO, ASERCA marketing supports are not decoupled from production.[133]

Alliance for the Countryside, which includes agriculture and other rural activities, was restructured beginning in 2008, but its main objective is still to increase agricultural productivity and capitalize farmers by providing funds for investment projects in order to integrate farmers into commercial food markets. A goal of Alliance has been to promote farming efficiency by facilitating a switch from basic crops to fruits and vegetables, where farmers are deemed to have a potential competitive advantage in the context of an open economy. Alliance has a decentralized character, with state-level control of projects, evaluation and implementation, and it is funded by contributions from participating farmers. One Alliance component (*Desarrollo Rural*, or Rural Development) focuses on agricultural and non-agricultural production in marginal rural regions with high poverty rates. Amongst the three major programmes, Rural Development is the only intervention of SAGARPA that specifically has a focus on small farmers (see www.sagarpa.gob.mx).

Politically, the process of agricultural reform and liberalization went smoothly until the beginning of the present century when the political party that had ruled Mexico for 70 years lost power and massive protests against the agricultural

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[132] To the scheme of indifference prices, a programme of price coverage has been added and increased in 2007, when international staple prices increased.

[133] PROCAMPO is basically a non-conditioned income transfer programme. The only requirement for a farmer to benefit from PROCAMPO income transfer was to have produced a basic crop during the three years before 1994, as well as to use her/his land for any legal purpose.

components of NAFTA emerged. The basic concern of these protests was the increasing import of maize from the United States; as a result, it was argued that Mexico was losing food security and sovereignty. The resolution of the conflict was the signing of an agreement between the federal government and the political forces involved, and later the approval by Congress of the Law for Sustainable Rural Development (*Ley de Desarrollo Rural Sustentable)*. Among other purposes, this Law includes the promotion of food security in Mexico and is enacted in practice by increasing public expenditure in the rural sector and stopping, until 2008, imports of white maize (white maize is the maize produced in Mexico and used for human consumption; most yellow maize is imported from the United States and used for animal feed). In 2007 the food security purpose began to be supported in a more concrete manner by the strategy called Special Programme for Food Security or PESA (*Programa Especial para la Seguridad Alimentaria*), inspired and backed by the United Nations Food and Agriculture Organization (FAO) office in Mexico.

3. Salient features of the agriculture and rural sector of Mexico and changes during the last 30 years

Since the 1980s the performance of agriculture production has been poor, especially up to 2004. Processed food and beverage production has performed better, mainly because of the rise of beer production during this period (Table 5). The low growth of agriculture has meant a continuous decrease in the share of this sector in Gross Domestic Product (GDP) (Table 6).

TABLE 5:

GDP average rates of growth 1980–2008 (2002 pesos)* (%)

	GDP	Agriculture, fisheries and hunting	Field crops and pastures	Livestock	Processed foods and beverages
1980–1988	-0.41	-0.10	0.92	-2.77	1.97
1989–1993	4.06	1.27	2.28	-1.40	5.41
1994–1998	1.60	-1.67	-2.48	0.53	1.59
1999–2004	4.60	0.39	-0.66	2.86	4.02
2005–2008	4.38	5.08	8.11	0.78	3.21

Note: * "Field crops and pastures" and "Livestock" are part of "Agriculture, fisheries and hunting".

Source: Instituto Nacional de Estadística, Geografía e Informática (INEGI) (http://www.inegi.org.mx/sistemas/bie/)

TABLE 6:

Agriculture and processed foods' participation in GDP 1980–2008 (%)

	Agriculture, fisheries and hunting	Field crops and pastures	Livestock	Processed foods and beverages
1980–1988	6.28	3.70	2.10	4.35
1989–1993	6.27	n/a	n/a	4.66
1994–1998	5.26	3.46	1.43	4.80
1999–2004	3.74	2.42	1.02	4.85
2005–2008	3.59	2.23	1.08	4.66

Note: n/a – not available.

Source: INEGI (http://www.inegi.org.mx/sistemas/bie/)

In absolute terms, rural population and employment have remained practically the same. According to FAO data, the rural population increased from 23 million to 24.9 million from 1985 to 2001, and rural employment increased from 8.4 to 8.7 million during the same years (see http://www.rlc.fao.org/prior/desrural/gasto). Data from official Mexican sources show a larger rural population: 29.3 million in 1980 and about 29.8 million in 2006, 2007, 2008 and 2009.[134] According to Mexico's National Institute of Statistics, Geography and Informatics (*Estadística, Geografía e Informática* or INEGI), rural employment decreased from 6.7 million in 2000 to 5.8 million in 2010.[135] Notwithstanding these differences, both FAO and official Mexican figures indicate that rural population and employment have not changed significantly during the past 30 years. Together with the growth in urban population and employment, this has meant a decline in the relative share of rural population and employment in the total figures: rural population declined from 43.5 percent in 1980 to 27.7 percent in 2009, and rural employment from 17.7 percent in 2000 to 13.3 percent in 2009, according to INEGI's data (30.2 percent in 1988 and 21.6 percent in 2001, according to FAO's figures).

Compared with industrial wages, agricultural wages have decreased continuously since the beginning of NAFTA (Table 7), and rural out-migration to urban Mexico and to the United States has increased (Taylor and Dyer 2003).

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[134] The dissimilarities may be because of differences in the definitions of rural localities. Whereas Mexico's official rural population data are for localities with up to 15 000 inhabitants, FAO may be using data of localities with smaller populations, e.g. 10 000 inhabitants.

[135] INEGI does not provide data for previous years. INEGI's rural employment figures may be restricted to agricultural and fisheries employment.

TABLE 7:

Differences between agricultural wages with respect to total and industrial wages* (%)

	With total	With construction	With industry
1994–1998	-41.20	-18.07	-34.71
1999–2004	-40.77	-20.52	-36.87
2005–2008	-43.85	-29.34	-45.26
2009–2010	-44.83	-27.96	-50.27

Note: * Based on average daily wages in pesos of workers with social security (Mexican Institute of Social Security).

Source: Puyana and Romero 2004

Main agricultural products

Field crop production has remained the major component of agricultural GDP since the 1980s, followed by livestock and fisheries and forestry (Figure 1).

FIGURE 1:

Participation of components of primary sector GDP: 1980–2008 (constant 2002 pesos)
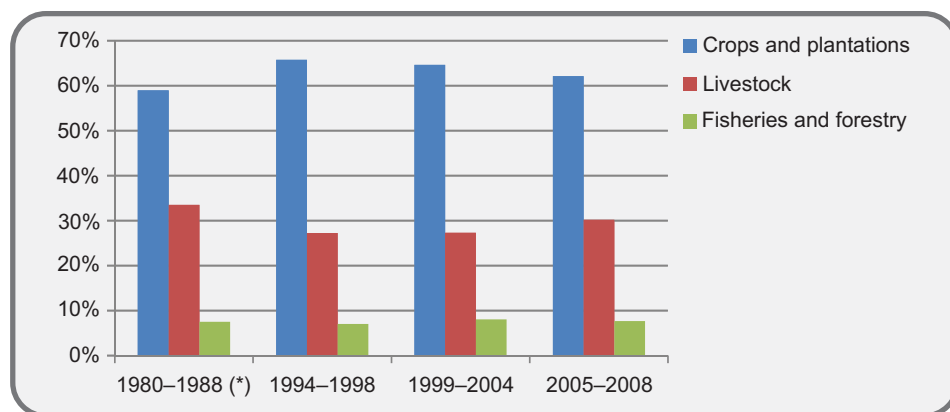
Note: (*) Data for agriculture GDP are not available for 1989, 1991, 1992 and 1993.
Sources: Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA) (www.sagarpa.gob.mx) and Agrifood and Fishery Information Service (SIAP) (www.siap.gob.mx)

Maize has continued to be the only major crop produced in Mexico, despite the fact that its share of total crop production declined during the first ten years of NAFTA implementation: from 35 percent during the 1980s to 20 percent during 1994–2004. A similar trend has been demonstrated by other major grains, whereas the oilseed share of field-crop value of production has decreased sharply (Figure 2). Fresh fruits and vegetables have experienced ups and downs during the studied periods; however their share of field-crop production has remained between 20 percent and 17 percent for fruits and between 12 percent and 14 percent for vegetables. The share of sugarcane has not changed to any apparent extent: its share of total production has remained about 8 percent and 9 percent.

FIGURE 2:

Participation of main crops and plantations in field-crop production GDP (constant 2002 pesos)*
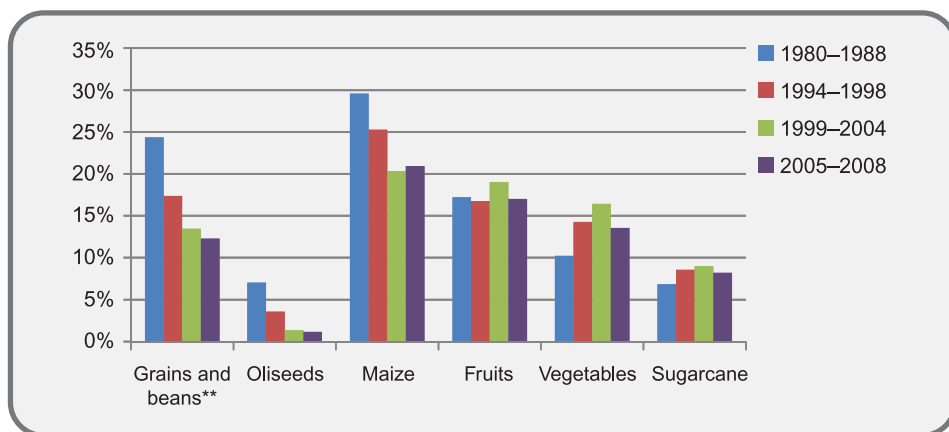
Notes: * Data for agriculture GDP are not available for 1989, 1991, 1992 and 1993.
        ** Grains include barley, sorghum and wheat, oilseeds are composed of safflower and soybean; fruits include avocado, peach, strawberry, guava, citrus, mango, apples, melon, papaya, pineapple, banana, watermelon; vegetables include tomatoes, carrots, garlic, broccoli, pumpkin, onion, chayote, peas, chili, coriander, sprouts, cauliflower, asparagus, cucumber and peppers.
Sources: SAGARPA (www.sagarpa.gob.mx) and SIAP (www.siap.gob.mx)

With respect to livestock, the share of major live animals in livestock GDP varies according to the type of animals. The share of chickens has increased continuously since the beginning of NAFTA (from 17 percent during 1980–1988 to 36 percent during 2005–2009), whereas that of cattle increased slightly during 1999–2004 (from 47 percent in the previous period to 48 percent) and declined to 42 percent and 41 percent during the last two periods under study (Figure 3). Finally, the share of pork has declined since the beginning of NAFTA (from 33 percent to 19 percent) and the share of other live animals (sheep and goats) has decreased and remains negligible.

FIGURE 3:

Participation of major live animals in livestock GDP (constant 2002 pesos)
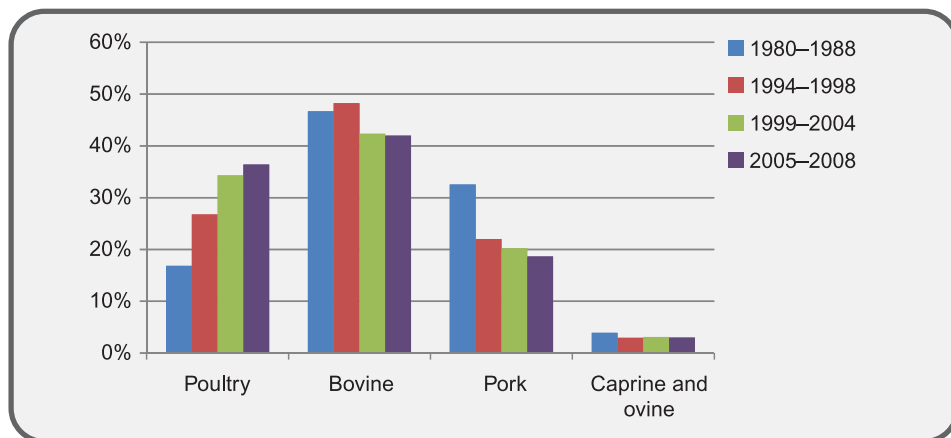
Sources: SAGARPA (www.sagarpa.gob.mx) and SIAP (www.siap.gob.mx)

Table 8 shows that volumes of domestic production of rice, wheat and major oilseeds have had a tendency to decline, and the volume of sugarcane has remained practically unchanged. Taking into account the expected impacts of reforms and NAFTA, it is surprising that the production of maize has continuously increased.[136]

Table 9 shows that the rate of change in the value of production of major basic crops (in constant 2002 pesos) has experienced a similar trend with respect to the volume of production; it also indicates that the value of production of these crops declined until the end of the 1990s, but at much lower rates than before NAFTA implementation: down by 3.9 percent during 1980–1988, by 0.5 percent during 1989–1993 and by 0.2 percent during 1994–1998 (this trend is mainly explained by the evolution of maize production). As expected, the value of production of vegetables has increased during NAFTA, although the average rates of growth declined during the period 1999–2004 and the growth rate was slightly negative during 2005–2009. However, production of fruits declined from 1994 to 2004. Some of these trends may be explained by the rise in exports of fruits and vegetables to the United States by the members of the Dominican Republic-Central America-United States Free Trade Agreement or CAFTA-DR (see for example Taylor, Yunez-Naude and Jesurun-Clements 2010).

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[136] Barley production has been sustained by the boom of beer production in Mexico.

TABLE 8:

Volume of production of basic crops: Annual average rates of growth 1980–2009 (metric tonnes) (%)

	Rice	Beans	Barley	Maize	Sorghum	Grain wheat
1980–1988	0.31	-1.01	-4.37	-1.93	2.90	3.49
1989–1993	-14.09	21.37	5.58	13.42	-15.25	-4.87
1994–1998	5.23	-1.95	7.53	0.30	15.01	-6.04
1999–2004	-3.13	1.90	15.45	4.14	4.13	-5.13
2005–2009	-2.51	5.93	-9.12	1.02	2.54	8.09
	Soy	**Safflower**	**Sesame seed**	**Cottonseed**	**Sugarcane**	
1980–1988	-4.32	-7.93	-15.66	-10.89	2.48	
1989–1993	-15.85	-18.12	-16.24	-36.48	-0.58	
1994–1998	-26.77	27.93	37.47	20.01	3.84	
1999–2004	0.08	-2.55	1.01	-2.20	1.53	
2005–2009	-10.32	-5.05	9.22	-8.71	-1.42	

Sources: SAGARPA (www.sagarpa.gob.mx) and SIAP (www.siap.gob.mx)

TABLE 9:

Value of production of major field crops: Annual average rates of growth 1980–2009 (constant 2002 pesos) (%)

	Rice	Beans	Barley	Maize	Sorghum	Grain wheat
1980–1988	-3.31	-7.77	-4.48	-4.30	0.47	2.66
1989–1993	-25.95	24.94	-0.19	8.39	-21.51	-9.91
1994–1998	3.62	3.73	2.88	-3.17	14.62	-8.81
1999–2004	-8.20	-2.21	13.76	1.09	4.42	-7.00
2005–2009	8.18	16.50	0.63	11.59	13.74	19.50
	Soy	**Safflower**	**Sesame seed**	**Cottonseed**	**Subtotal**	
1980–1988	-2.47	-10.59	-15.89	-8.86	-3.91	
1989–1993	-28.30	-26.80	-21.77	-41.34	-0.51	
1994–1998	-25.85	30.71	34.07	19.87	-0.19	
1999–2004	-3.72	-4.58	1.04	-5.93	0.31	
2005–2009	3.87	6.12	15.96	-1.02	12.58	
	Fruits*	**Vegetables***	**Sugarcane**	**Coffee**		
1980–1988	0.07	6.50	1.49	-0.33		
1989–1993	0.93	8.51	-3.07	-21.16		
1994–1998	-1.71	10.51	-1.28	15.69		
1999–2004	-4.62	2.93	1.45	-20.83		
2005–2009	5.88	-0.41	-4.12	5.53		

Note: * List of included fruits and vegetables in Figure 2.
Sources: SAGARPA (www.sagarpa.gob.mx) and SIAP (www.siap.gob.mx)

The figures in Table 9 show that the value of sugarcane production (largely for export) has not changed significantly during the period studied, whereas the value of coffee production (also for export) has experienced huge variation, leading to a sharp decline in the twenty-first century compared with the 1980s: from 10.6 billion in 1980–1989 to 3.6 billion during 2000–2009. The trend is explained by the impact of the reduction of international coffee prices.

Figures in Table 9 for 2005–2009 indicate that the value of production of basic crops increased during the period, because of the increase in their international prices (see discussion below) coupled with the rise in the volume of production of beans, maize, sorghum and wheat (Table 8).

Despite the fact that, in general, the volumes of production of major meats and live animals have had positive rates of growth during NAFTA, poultry is the only component that has had noticeably high rates of growth during the period (Table 10). The value of egg production (in constant pesos) has also increased continuously during the last 30 years (from 14 billion pesos in 1980 to 23 billion pesos in 2009), whereas cow milk production has declined (from 51 000 million pesos in 1980 to 37 000 million pesos in 2009, see http://www.siap.gob.mx).

TABLE 10:

Livestock value of production: annual average rates of growth 1980–2009 (constant 2002 pesos) (%)

	Poultry	**Beef**	**Pork**	**Caprine**	**Ovine**
Live animals					
1980–1988	2.50	-0.14	0.78	-2.08	0.72
1989–1993	-1.82	-8.68	-11.38	-8.63	-8.12
1994–1998	11.29	-0.12	0.33	-4.76	-1.59
1999–2004	5.57	-0.78	1.05	0.71	5.27
2005–2009	2.61	-0.48	-0.72	-1.19	1.39
Meats					
1980–1988	5.40	2.30	-0.94	2.02	2.59
1989–1993	-1.16	-10.59	-9.07	-7.91	-8.29
1994–1998	5.35	-1.79	0.71	-1.53	-0.72
1999–2004	6.61	0.65	2.58	0.29	7.75
2005–2009	3.71	-0.45	-1.11	-1.41	1.80

Sources: SAGARPA (www.sagarpa.gob.mx) and SIAP (www.siap.gob.mx)

Trade

Agricultural and food trade in Mexico have doubled since the signing of NAFTA (Figure 4) but the value of imports has increased much more than exports, resulting in increasing agricultural and food trade deficits (Figure 5). Despite these trends, the share in constant United States dollars of basic crops in total agricultural imports has decreased from 30 percent during 1980–1993 to 20 percent during 2005–2008, whereas that of livestock has increased from 6 percent to 12 percent during the same period (see COMTRADE). With the exception of sorghum, imports of major basic crops have increased (Table 11).

FIGURE 4:

Agricultural and food trade: 1980–2009
(thousands of US$ at constant 2005 prices)
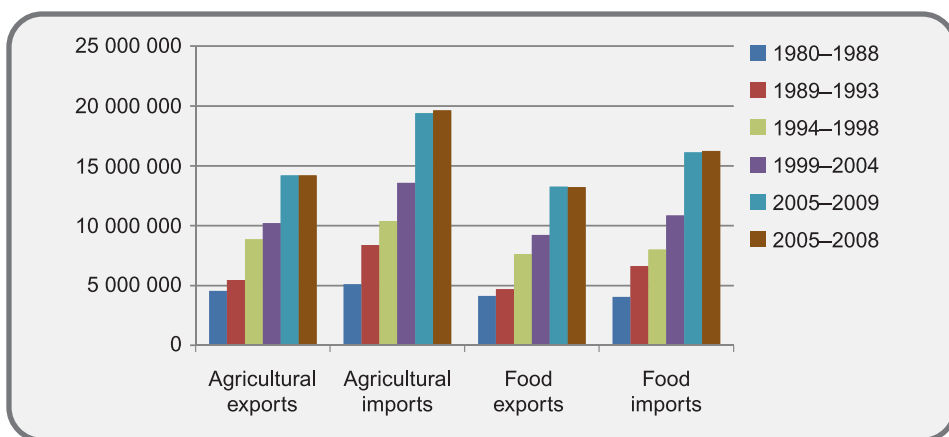
Sources: World Trade Organization Web site (www.wto.org); conversion to constant 2005 United States prices using the International Monetary Fund (IMF) Web site data on United States consumer prices (www.imf.org)

Since the late 1980s and up to the present (i.e. before and after the implementation of NAFTA) the United States share in Mexico's total and agricultural trade has been greater than 80 percent. With the implementation of NAFTA in 1994, both food exports to and imports from the United States increased.[137] Of particular interest for this paper are imports of field crops, and of maize in particular, because maize has been the major crop and food staple of Mexico produced by commercial and family farmers (Figure 6).

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[137] For example, in 1990 Mexico was the sixth highest importer of United States agricultural products, but in 2008 Mexico was the second highest, just behind but very close to Canada.

FIGURE 5:

Agricultural and total food trade balances of Mexico: 1980–2009
(thousands of US$ at constant 2005 prices)
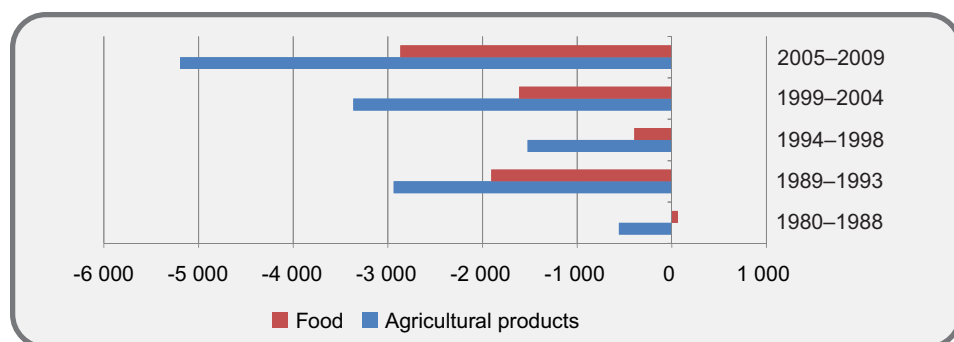
Source: World Trade Organization Web site (www.wto.org); conversion to constant 2005 United States prices using the IMF Web site data on US consumer prices (www.imf.org)

TABLE 11:

Imports of major basic crops: average simple rates of growth in constant 2005 US$ (%)*

	Maize	Wheat	Sorghum	Dry beans	Soybeans	Cotton seed
1980–1988	-8.22	-5.21	-12.87	-31.36	7.03	-14.60
1989–1993	-40.54	27.36	-1.37	-51.75	6.45	27.16
1994–1998	11.32	13.01	-5.32	32.40	5.16	-3.85
1999–2004	0.27	8.64	-3.93	-12.67	3.35	12.37
2005–2008	44.83	22.67	-0.98	14.48	19.81	5.73
2005–2010	14.71	4.37	2.40	12.25	8.45	-2.36

Note: * Estimated using United States Consumer Price Index data from IMF Web site (www.imf.org).
Sources: 1980–2008, FAO Web site (www.fao.org); 2009–2010, COMTRADE

Most of Mexico's exports of major competitive fresh fruits and vegetables had high average rates of growth before NAFTA, and continued to grow during the first years of the trade accord (Tables 12 and 13). However, export trends show a tendency toward diminishing rates of growth, especially during the last five years of the 2000s. These trends suggest that after greater market access to the United States was reached, and because of competing exports from other countries such as Central America, Mexico's competitive edge in fruits and vegetables has been eroded. Refined sugar exports have increased during NAFTA, as have exports of coffee, although the value of exports decreased sharply during 1999–2004 (Table 14). Mexican beef and pork exports have increased considerably during NAFTA. However, Mexico's trade balance deficit has increased sharply (Figure 7).

FIGURE 6:

Weight of the US in Mexico's value of imports (constant US$)
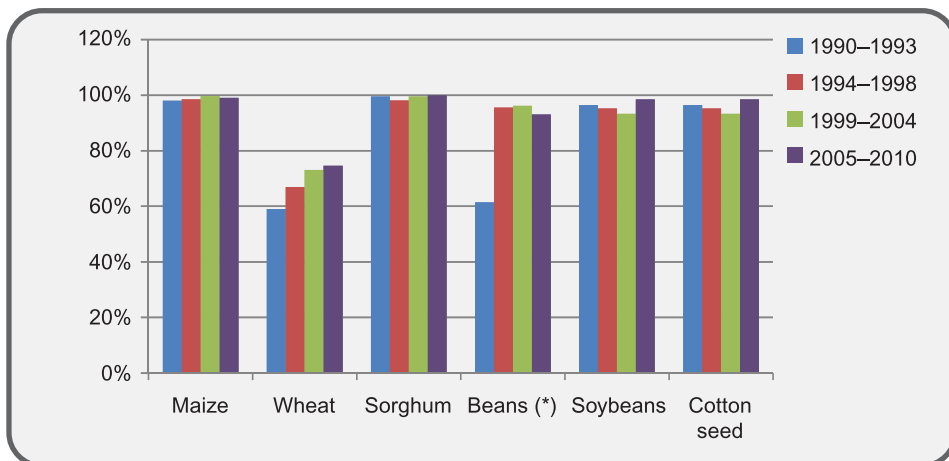
Note: (*) Includes kidney beans and white pea beans.
Source: COMTRADE, using United States Consumer Price Index data from IMF Web site (www.imf.org)

TABLE 12:

Exports of competitive vegetables: average simple rates of growth in constant 2005 US$ (%)

	Avocado	Straw-berry	Lemon and lime	Mangoes and guaba	Orange	Papaya	Water-melon
1980–1988	25.89	18.60	18.12	3.28	-6.43	57.38	2.49
1989–1993	9.66	6.67	47.19	65.44	28.98	69.02	-9.40
1994–1998	13.52	17.78	6.18	5.83	28.27	62.10	4.55
1999–2004	26.02	-3.70	15.92	-4.89	-31.17	25.22	14.92
2005–2010	6.58	7.91	4.43	11.08	13.87	-0.58	10.02

Sources: 1980–2008, FAO Web site; 2009–2010, United Nations Web site on trade, using United States Consumer Price Index data from the IMF Web site (www.imf.org)

TABLE 13:

Exports of competitive fruits: Average simple rates of growth in constant 2005 US$ (%)

	Garlic	Hot pepper*	Cauli-flower and broccoli*	Aspara-gus	Cucum-ber	Pepper*	Tomatoes (peeled)	Tomatoes
1980–1988	-1.07	30.99	30.67	20.39	-6.87	1.42	0.00	-1.13
1989–1993	11.63	73.61	12.94	43.52	9.81	0.38	-0.91	14.26
1994–1998	40.51	14.03	22.16	35.02	-0.64	6.95	23.01	10.12
1999–2004	-25.57	13.28	-2.61	-22.52	16.74	5.42	20.29	8.44
2005–2010	-4.57	-0.72	8.72	11.84	-3.47	1.66	-7.19	7.77

Note: * Covers 2005 to 2008.

Sources: 1980–2008, FAO Web site (www.fao.org); 2009-2010, COMTRADE, using United States Consumer Price Index data from the IMF Web site (www.imf.org)

TABLE 14:

Refined sugar and coffee trade (thousands of constant 2005 US$)*

	Sugar		Coffee	
	Exports	**Imports**	**Exports**	**Imports**
1990–1993	176	254 554	470 408	2 461
1994–1998	70 771	13 963	809 799	19 167
1999–2004	41 038	34 748	362 349	14 206
2005–2009	95 885	13 102	808 323	17 059

Note: * Coffee includes raw and roasted coffee.

Sources: 1980–2008, FAO Web site (www.fao.org); 2009–2010, COMTRADE, using United States Consumer Price Index data from the IMF Web site (www.imf.org)

FIGURE 7:

Meats trade balances (millions of constant 2005 US$)
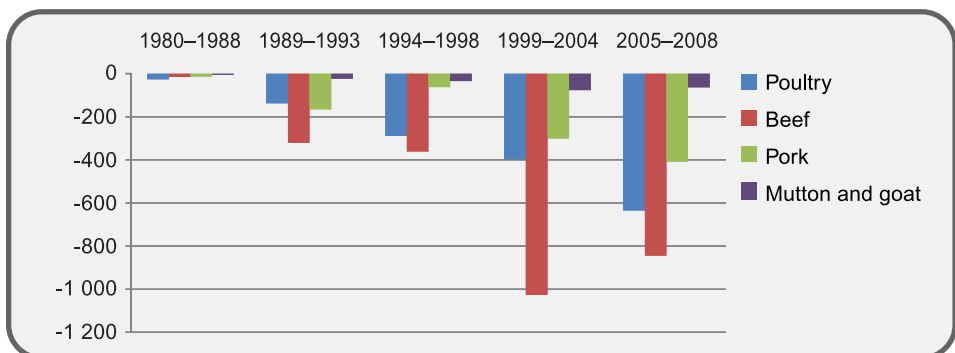
Source: FAO Web site (www.fao.org), constant 2005 US$, calculated using United States Consumer Price Index data from the IMF Web site (www.imf.org)

Food import dependency and self-sufficiency

The evolution of import dependency and self-sufficiency ratios (IDR and SSR, respectively) serves to synthesize the agricultural changes in Mexico during agricultural trade liberalization. Overall, in terms of volume, import dependency for major basic crops and for meats has increased since the beginning of NAFTA, and self-sufficiency in these crops and animal meats has decreased (Figures 8 to 11, respectively).

However, import dependency for maize has remained relatively low with NAFTA (e.g. from 18 percent during 1980–1988 to 26 percent during 2005–2009). Import dependency in sorghum and in beans has also remained low (less than 10 percent since 1989–1993). In contrast import dependency in the major oilseeds has sharply increased during NAFTA (Figure 8).

Mexico has experienced similar tendencies in food self-sufficiency ratio (SSR) in most major crops; for example, the SSR in maize has slightly decreased, and in beans and sorghum has remained unchanged during the period under study, whereas it has sharply decreased in soybean (Figure 9).

Since 1989, import dependency in major meats has increased and self-sufficiency in these goods has decreased (Figures 10 and 11).

FIGURE 8:

Evolution of import dependency in major basic crops 1980–2009 (%)*
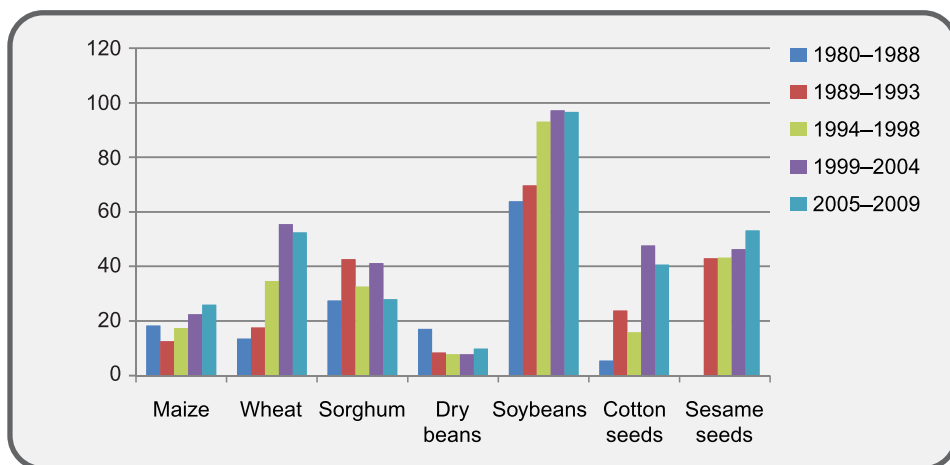
Note: * Import dependency ratio (IDR) in volume = ((Imports)/(Production + Imports – Exports))*100.
Sources: Production – SAGARPA Web site (www.sagarpa.gob.mx); imports and exports for 1980–2008 – FAO Web site (www.fao.org) and for 2009 – (Calderon 2010)

FIGURE 9:

Evolution of food self-sufficiency in major basic crops 1980–2009 (%)*
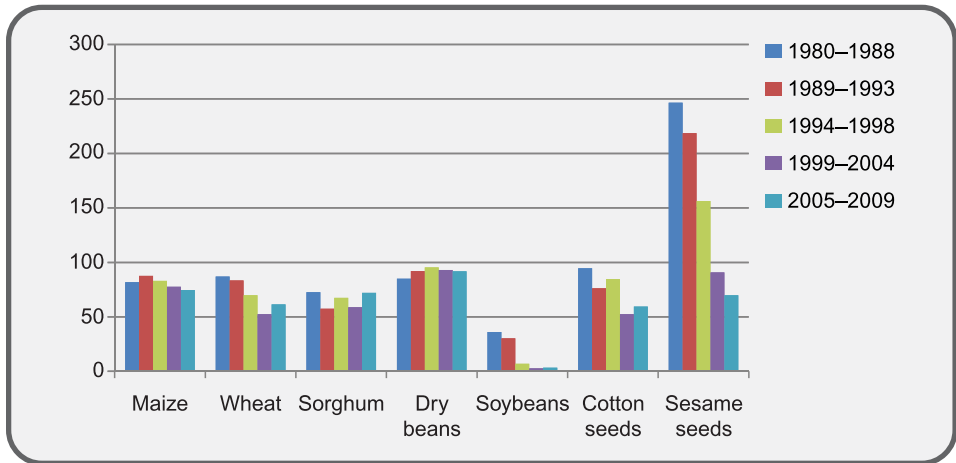
Note: * Self-sufficiency ratio (SSR) in volume = ((Production)/(Production + Imports – Exports))*100.
Sources: Production – SAGARPA Web site (www.sagarpa.gob.mx); imports and exports for
1980–2008 – FAO Web site (www.fao.org) and for 2009 – (Calderon 2010)

FIGURE 10:

Evolution of import dependency in major meats 1980–2008 (%)
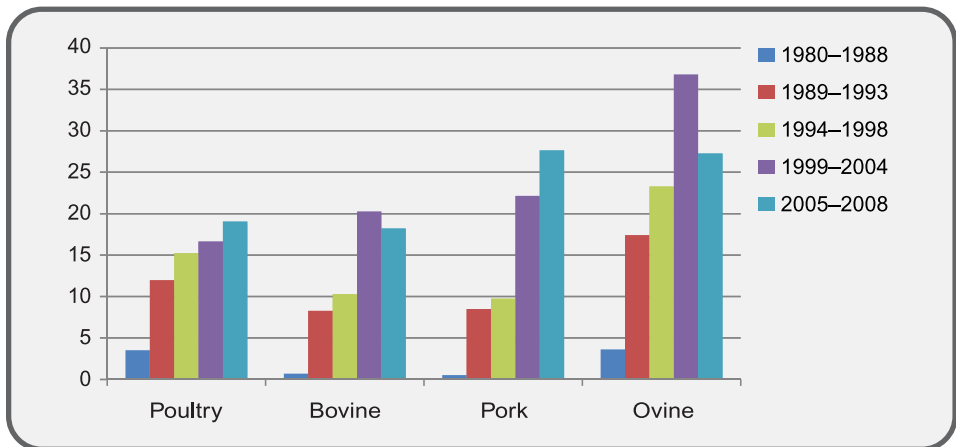
Sources: Production – SAGARPA Web site (www.sagarpa.gob.mx); imports and exports for
1980–2008 – FAO Web site (www.fao.org) and for 2009 – (Calderon 2010)

FIGURE 11:

Evolution of food self-sufficiency in major meats 1980–2008 (%)
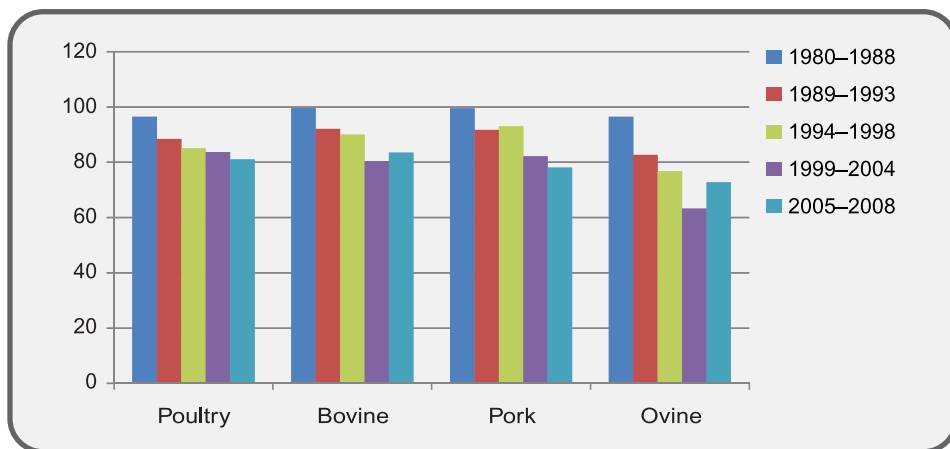
Sources: Production – SAGARPA Web site (www.sagarpa.gob.mx); imports and exports for 1980–2008 – FAO Web site (www.fao.org) and for 2009 – President Calderon's annual address in 2010 (Calderon 2010)

Food security, poverty and inequality

According to FAO, food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life. Food security has four dimensions: availability, access, utilization and stability. No data exist to evaluate the trends of these four dimensions in Mexico. However, the trends in per capita consumption of food in Mexico indicate that food security has not worsened during NAFTA. In particular, available official data indicate that per capita consumption of maize and soybean and of all major meats has increased during NAFTA, whereas per capita consumption of the remaining major basic crops has decreased (Table 15 and Figure 12, respectively). These figures suggest that, despite increasing imports of wheat, per capita consumption has not increased, although the reverse is true in the case of soybean.

It is worth noting that per capita consumption of maize dropped slightly during 2008/09 compared with 2006/07. The same was true for wheat, beans, soybean and cotton seed; per capita consumption of sorghum remained practically the same. Per capita consumption of poultry and beef did not change much in 2008 compared with the previous two years, whereas per capita consumption of pork increased slightly.

TABLE 15:

Per capita consumption of selected basic crops 1980–2009 (kg)

	Maize	**Wheat**	**Sorghum**	**Beans**	**Soybeans**	**Cotton seeds**
1980–1985	224.2	64.7	109.9	17.4	22.2	24.1
1990–1995	225.8	48.6	86.7	16.3	22.0	7.3
2000–2005	236.7	59.6	96.9	9.2	39.5	5.9
2006/07	287.3	59.3	77.0	12.2	35.8	7.1
2008/09	283.7	50.7	78.3	11.1	33.6	4.4

Sources: Population, 1985–2009 – Banco de Mexico (www.banxico.org.mx) and 2010 – INEGI
2010 Population Census (www.inegi.org.mx); production – SAGARPA Web site (www.sagarpa.
gob.mx); imports and exports – faostat.fao.org

FIGURE 12:

Per capita consumption of selected meats 1980–2008 (kg)
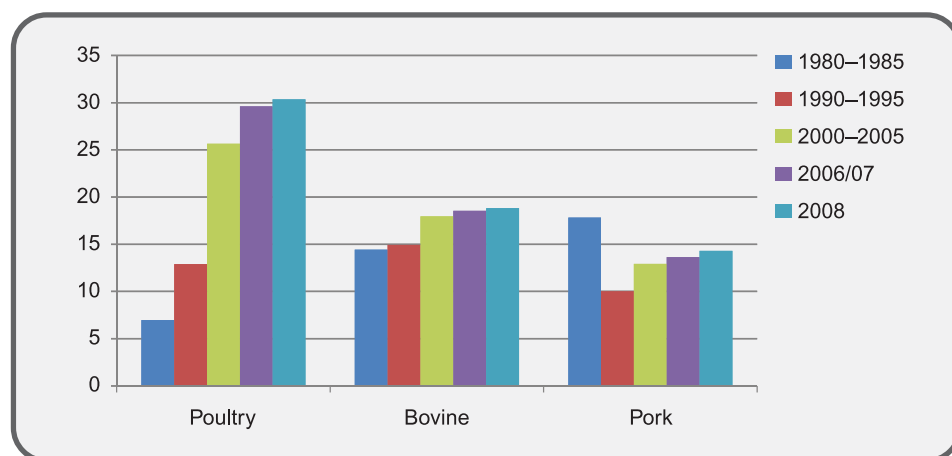
Sources: Population, 1985–2009 – Banco de Mexico (www.banxico.org.mx) and 2010 – INEGI 2010
Population Census (www.inegi.org.mx); production – SAGARPA Web site (www.sagarpa.gob.mx);
imports and exports – faostat.fao.org

These figures suggest that the increase in food prices that began in 2006/07
has negatively affected food consumption and thus food security in Mexico. This
coincides with official figures showing a rise in food poverty in 2008 compared
with 2006 (in Figure 13, note that poverty also increased sharply during the
macroeconomic crisis that Mexico experienced in the mid-1990s).

FIGURE 13:

Evolution of food poverty in Mexico 1992–2008 (%)
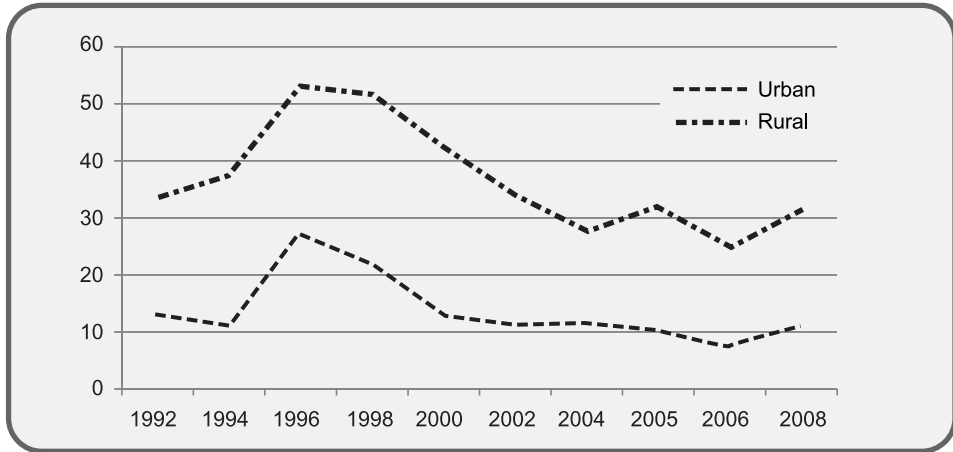
Source: National Council for the Evaluation of Social Development Policies (CONEVAL) Web site (www.coneval.gob.mx)

The tendency of households to reduce the proportion of expenditure on food as a proportion of total expenditure began in 1998 (i.e. after the mid-1990s macroeconomic crisis) but reverted to an increase in 2008 and 2010. The increase in per capita expenditure on foods during 2008 and 2010 compared with the previous ten years is explained in part by a rise in expenditure on grains and beans (Table 16). However, in absolute and constant 2002 peso terms, food expenditures of the poorest three income deciles of Mexican households decreased in 2010 compared with 2008, and expenditure on maize by the poorest households (lowest income decile) decreased in 2008 compared with 2006 and in 2010 compared with 2008 (see Annex). Given that maize and maize products are the most important food items consumed by the poor, this tendency may help to explain the increase in food poverty during 2008 and 2010 according to the estimations of the National Council for the Evaluation of Social Development Policies (*Consejo Nacional de Evaluación de la Política de Desarrollo Social* or CONEVAL, see http://www.coneval.gob.mx/).

As shown in Figure 13, rural poverty has been and remains much higher than urban poverty. In addition, rural poverty varies considerably between Mexico's rural regions (Table 17).

Finally, income inequality prevails and remains high in Mexico; the Gini coefficient was 0.53 in 1992 and 0.51 in 2005 (CONEVAL, see http://www.coneval.gob.mx/). Inequality in Mexico's rural households is even higher (0.57 in

TABLE 16:

Per capita expenditure on foods (%)

Year	Participation of food in total expediture	Participation in total food expenditure*					
		Maize	Wheat	Other grains	Beans	Fruits and vegetables	Meats
1992	25.14	7.20	5.70	0.93	2.94	12.00	19.22
1994	23.98	6.35	5.44	1.06	2.53	11.05	17.65
1996	25.73	7.69	7.01	1.25	3.92	10.35	16.76
1998	24.80	7.38	6.01	1.23	3.14	10.88	16.60
2000	24.38	7.23	5.41	1.05	1.95	10.54	14.90
2002	23.75	7.61	5.49	1.24	2.10	11.67	14.61
2004	21.67	6.13	5.26	1.38	1.40	9.45	12.90
2006	21.66	6.08	5.15	1.41	1.34	9.66	12.20
2008	24.54	6.65	5.84	1.56	1.52	9.50	12.24
2010	25.29	6.69	5.49	1.50	1.49	9.82	12.35

Note: * Includes processed foods.

Sources: INEGI, National Income and Expenditure Household Surveys (ENHIG) for the reported years (www.inegi.gob.mx)

TABLE 17:

Households in poverty by rural region (proportions in total)

Region	Food poverty	Poverty in capacities	Poverty in assets
South-Southeast	0.62	0.69	0.81
Center	0.36	0.45	0.63
Center-West	0.30	0.36	0.52
Northwest	0.20	0.25	0.35
Northeast	0.38	0.43	0.58
All rural regions	0.38	0.44	0.58

Source: Author's estimations based on Nation Survey of Rural Households of Mexico (ENHRUM) 2002 (http://precesam.colmex.mx)

2002). Inequality in the distribution of assets between rural households is higher still, and this also applies to income sources for some of these households (Table 18). In contrast, measured in years of schooling, inequality in human capital is quite low (0.25). Considering that the Gini coefficient for waged income and government transfers is lower than the Gini coefficient for the full net income of rural households,

TABLE 18:

Gini coefficients of rural households net incomes and assets 2002

Income sources	Gini	Assets	Gini
Basic crops	0.77	Schooling of househhold members	0.25
Commercial crops	0.83	Migrants to the United States	0.90
Livestock	0.77	Migratlon to rest of Mexico	0.84
Non-agricultural production	0.68	Land property (ha)	0.85
Domestic remittances	0.64	Tractors	0.95
United States remittances	0.65	Other agricultural machinery	0.89
Forestry	0.55		
Agricultural waged labour	0.51		
Non-agricultural waged labour	0.56		
Government transfers	0.53		
Total net income	0.57		

Source: Ceron (2011) based on ENHRUM data

it can be argued that education, government transfers and participation in labour markets of household members contribute to reducing income inequality in rural Mexico. Ceron (2011) evaluates this hypothesis empirically using data from a representative rural household survey, ENHRUM).

Farm size and property rights

Data from the Agricultural Censuses of 1991 and 2007 (AGC) provide information to describe the structure and evolution of agriculture by the sizes of "farms" ("agricultural production units" in INEGI's terms).[138]

From 1991 to 2007 the number of agricultural units of production (AUP) decreased by 1.2 percent. Given that the area covered by these AUP reduced greatly (-3.9 percent), the average size of Mexico's AUP declined from 8.18 to 7.96 hectares during the period. According to the AGC analysis of AUP, from 1991 to 2007 the average farm size decreased slightly for plots of less than 2 hectares, remained practically unchanged for plots between 2 and 5 hectares, and increased for the remaining plots (first two columns of Table 19).

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[138] Agricultural units of production are the set of landholdings with or without agricultural or forestry production in rural areas or with agricultural and forestry production in urban areas that are located in the same county or municipality and under the same administration.

TABLE 19:

Quantity, area and size of agricultural units of production (AUP) 1990 and 2007

Census strata	Average size of AUP (ha)		Distribution of total number of AUP (%)		Distribution of total area of AUP (%)	
	1991	2007	1991	2007	1991	2007
<2	1.12	1.09	34.56	44.47	4.71	6.10
2 <5	3.41	3.46	25.35	24.21	10.55	10.51
5 <20	8.78	9.23	31.25	23.16	33.52	26.84
20 <50	20.51	25.26	5.27	5.10	13.22	16.16
50 <100	42.64	51.68	1.77	1.74	9.24	11.32
100 <1 000	104.11	130.58	1.67	1.25	21.22	20.45
1 000 <2 500	351.45	517.82	0.09	0.05	3.70	3.06
2 500+	710.86	1 724.79	0.04	0.03	3.84	5.55
Total or average	8.18	7.96	100.00	100.00	100.00	100.00

Sources: Agricultural Censuses, 1990 and 2007 (http://www.inegi.org.mx/est/contenidos/proyectos/agro)

Table 19 also indicates the level of heterogeneity in Mexico's agrarian structure. For example, the number of small AUP (up to 5 hectares of land) accounted for almost 60 percent of total AUP in 1991 and for 68 percent of total AUP in 2007, but represent less than 16 percent of total area in both years. By contrast, large AUP (more than 50 hectares) constitute just over 3 percent of total AUP, but cover about 40 percent of total hectares.

Despite the fact that the total area of individual *ejidal* lands increased by 23.2 percent from 1991 to 2007 (Table 20), the average size of *ejidal* plots decreased by 1 hectare, from 8.5 to 7.5 (Robles 2010). The rise in total hectares of individual *ejidal* land may be explained partly by two phenomena suggested by the data in Table 20: after the Land Reform of 1992, public and "other" lands were distributed to *ejidos* whose land distribution was pending (see also Garfias 2010); and the division of common lands for individual exploitation increased.

Thus, contrary to expectations about the effects of economic liberalization and the Land/Ejidal Reform, fragmentation has increased: the number of *minifundia* (small landholdings) has not decreased and private property rights of former *ejidal* lands for agricultural production have not increased. The latter is partly because most of the 20 percent of land that has been privatized has been located in urban areas or in coastal resorts. In short, there are no signs of significant rural land market development (Garfias 2010).

TABLE 20:

Land property rights (ha) 1991 and 2007

	Type of property rights				Total*
	Ejidal	**Communal**	**Private**	**Public**	
1991	30 032 644	4 338 099	70 493 493	1 315 198	106 179 434
2007	37 009 820	3 783 889	69 672 269	492 580	110 958 557
Change (%)	23.2	-12.8	-1.2	-62.5	4.5
Weights (%)					
1991	28.3	4.1	66.4	1.2	100.0
2007	33.4	3.4	62.8	0.4	100.0

Note: * Excludes land for housing and public services.

Sources: Agricultural Censuses, 1990 and 2007 (http://www.inegi.org.mx/est/contenidos/proyectos/agro)

In addition to the prevalence of *minifundia*, formal access to credit sharply declined from 1991 to 2007 and the use of family labour and animal traction as well as production for subsistence still prevail in small farms. Notwithstanding, AGC data on the evolution of crop production and yields by farm size (measured by AUP size) indicate that production of maize by small farmers has prevailed in Mexico. The data also indicate that production of competitive agricultural goods – such as sugarcane and oranges – by small farms has been a viable option for them. Furthermore, tendencies show that medium-sized farmers producing these crops as well as other basic crops have been able to confront the challenges of reforms and trade liberalization (details in Taylor *et al.* 2011). As discussed below, this has occurred despite the dismissal of this type of producer as a target of transitional and agricultural policies during the last two decades.

Rural migration and income sources for rural households

Labour migration from Mexico's rural sector increased during NAFTA. The destinations of rural migrants are to urban Mexico and to the United States, and during NAFTA the rate of international migration has been higher compared with domestic migration. ENHRUM data show that the number of domestic rural migrants was 183 percent higher in 1994 and 342 percent higher in 2002 compared with 1980. Migration to the United States increased 92 percent by 1994 and 452 percent by 2002 (Taylor and Dyer 2003).

In addition to the increase in rural migration, the source of income for rural households has changed radically during NAFTA. Figure 14 shows the increasing importance of non-agricultural waged labour in the income structure of Mexican rural households, as well as the increasing importance of public and private (mainly

FIGURE 14:

Changes in the composition of income sources of rural households 1992–2004
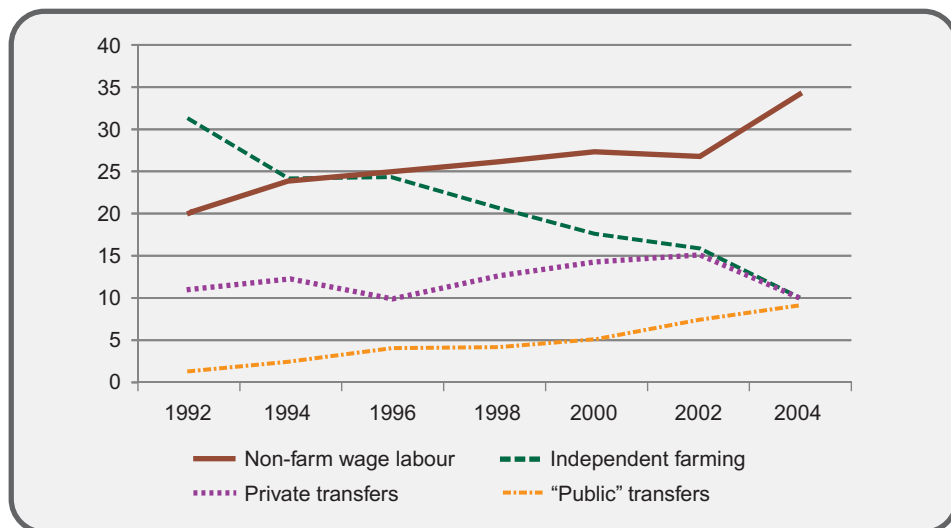
Source: CONEVAL Web site (www.coneval.gob.mx)

remittance) transfers. These figures are consistent with the ENHRUM results for 2002 and 2007 since the data of these surveys indicate that in 2002 and 2007 the share of remittances from rural migrants to the United States in the net income of rural households was similar to the net income produced by their field crop activities (see http://precesam.colmex.mx).

4. Effects of NAFTA on agricultural prices, trade, production, rural migration and welfare: empirical results

This section summarizes the main findings from a series of econometric tests done using time series data to analyse the effects of NAFTA and domestic reforms on Mexico's agriculture and rural out-migration (Yunez-Naude and Barceinas 2003). Results of an econometric analysis of changes in welfare before and after NAFTA are also summarized.

The "law of one price" and structural changes in agricultural trade, production and rural out-migration

One of the most fundamental expected impacts of NAFTA relates to price changes of non-competitive crops, previously protected by Mexico, since this could imply changes

in the structure of Mexico's agricultural production and trade. Based on the theory of Purchasing Power Parity, we applied the Error Correction Model (ECM) to evaluate whether price convergence between Mexican farmgate prices and United States prices of major basic crops has occurred during domestic reforms and NAFTA. By applying co-integration models we have also studied empirically whether structural change in Mexico's agricultural trade and in its crop imports and exports, as well as in production and yields of non-competitive crops, has occurred during NAFTA. The main results of these studies are summarized below.

Price convergence in major non-competitive grains[139]

As expected, commercial producer prices of basic crops in Mexico declined after the late 1980s; the exceptions were during the macroeconomic crisis of 1995/96 and the price surge during 2006–2008 (Figure 15). Since the price trends are similar to those in the United States, we formally tested the price-convergence hypothesis for maize, sorghum and wheat. The econometric findings suggest that price convergence between Mexico and the United States occurred for these crops during and after the reforms, i.e. from January 1981 to December 2009. For maize, we found evidence of a long-run convergence between Mexican and the United States maize prices and an increase in price convergence from January 1996 to December 2008.[140] We obtained similar results for wheat and sorghum: for both crops the long-run price convergence began in January 1995.[141]

Since Mexico's macroeconomic crisis of early 1995–1996 coincides with the second and third year of the beginning of NAFTA implementation, it is not possible to conclude which of the two phenomena explain the increasing price convergence. However, based on the analysis of long-term tendencies, it can be argued that after the macroeconomic crisis agricultural trade liberalization between Mexico and the United States led to price convergence in basic crops.

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[139] In our estimations on price convergence we used United States prices, not only because the United States is an important player in setting international prices of crops imported by Mexico, but also because before and after NAFTA, its share in Mexico's total and agricultural trade has been overwhelming (see for example, Figure 6).

[140] Details in Jaramillo, *et al*. 2011. Similar results are obtained by Prakash 2011. His and our results suggest that yellow maize (imported by Mexico from the United States) and white maize (produced in Mexico) are substitutes, which has been demonstrated by Yunez-Naude, Orrantia and Guzman (2010).

[141] Similar price tendencies and price convergence results were obtained for barley, rice and major oilseeds for the period covering 1980 to 2003 (See Yunez-Naude and Barceinas 2003, and World Bank 2005). Because of their heterogeneity in quality, price, etc. beans were not included.

FIGURE 15:

Mexico producers' prices of selected grains (base 2002 = 100)
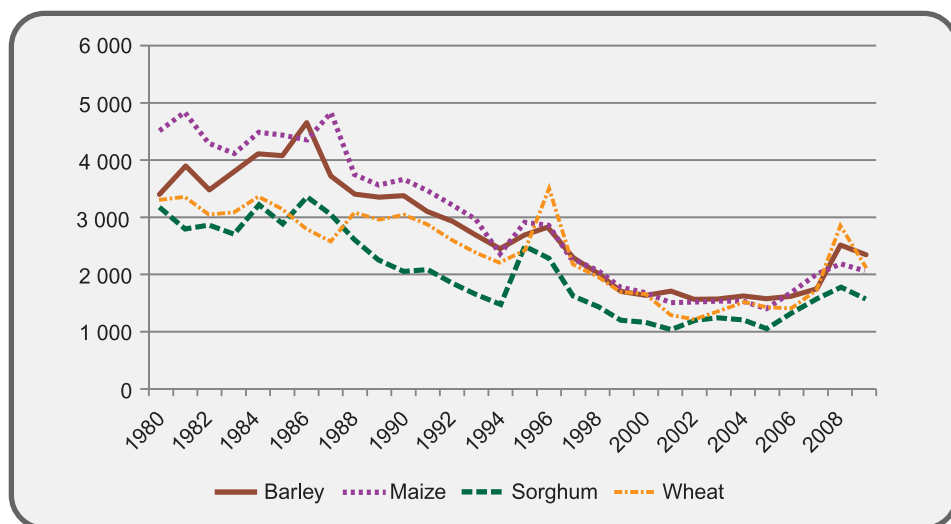
Source: SAGARPA-SIACON Web site (www.sagarpa.gob.mx), deflated using Bank of Mexico consumer price index

Agricultural trade

Econometric research has been conducted in the past to test the presence of unit root and temporary and structural changes using time series from 1960 to 2007 on major crops imported by Mexico. The results of this research indicate the following: for cotton seed, rice, soy, and wheat there is evidence of structural change, i.e. the volume of time series on imports is stationary and shows a "permanent" increase beginning in 2000, 1992, 1989 and 1996, respectively. For beans, barley, maize and sorghum there is no strong evidence of structural change, as the time series on imports of these crops are not stationary. However, the results show temporary shocks for maize in 1993 and beans in 1981, 1982 and 1990 (Yunez-Naude 2010).

Mexico's total agricultural exports and exports of some of the major fresh fruits and vegetables have undergone structural change beginning with NAFTA. The months when structural change appears were at the end of 1994 and the beginning of 1995, that is during the macroeconomic crisis in Mexico. This result suggests that in addition to NAFTA, structural change is explained by the deep devaluation against the United States dollar experienced by the Mexican peso in December 1994 and during the first months of 1995.[142]

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[142] Yunez-Naude and Barceinas 2003. Our findings are similar to those from the United States Department of Agriculture's Economic Research Service (ERS) 1999.

Domestic production of basic crops

A study by Yunez-Naude and Barceinas (2003) of structural change in production used time series on the volume of domestic production of major non-competitive crops from 1970 to 2007. For oleaginous crops, the results indicate structural change in domestic production of these goods during the reforms and NAFTA. There is strong evidence of structural change for soy and sesame (1979 and 1981), and some evidence for cotton seed in 1982. The authors argue that domestic production of these crops underwent a "permanent" reduction shock before NAFTA. With respect to major grains, econometric tests show evidence that domestic production of barley and maize underwent "permanent positive" shocks in 2000 and 1992 respectively (the authors did not find evidence of structural change in the domestic supply of beans, sorghum and wheat, although time series show that the production of wheat has been declining since 1995.

Rural out-migration

Based on ENHRUM retrospective data from 1980 to 2002, Taylor and Dyer (2003) presented econometric evidence that migration from rural to urban sectors of Mexico has increased in a statistically significant manner since 1980. This also applies to rural migration to the United States during the second half of the 1990s. However, this latter change cannot be directly linked to NAFTA. The authors proposed other phenomena that may explain the observed increase in migration of rural Mexicans to the United States. One is the devaluation of the Mexican peso against the United States dollar during the 1995/96 macroeconomic crisis. Devaluation meant an increase in pesos of the value of remittances migrants sent or could send to their families in Mexico and thus promoted more emigration. The effects of the reforms in agriculture and the lack of high growth rates in the Mexican urban economy – thus lack of growth in urban labour demand – could have had an additional effect on rural migration to the United States. Migrant reform in 1986 and increased border controls since 1995 in the United States may have also had an effect. Migrant reform amplified migrant networks in the United States by legalizing foreign-born labourers, and stricter border enforcement may have provoked undocumented migrants to stay longer in the country. In addition, the *ejidal* reform of 1992 could have reduced expectations of land ownership for children of *ejidatarios*. These factors, in combination with limited employment opportunities in Mexico, could have stimulated rural out-migration to the United States. Finally, one must consider the cumulative effect of migration, i.e. rural migration to the United States during the first half of the 1990s could have provoked more migration afterwards.

Changes in welfare

Econometric analysis of changes in household welfare at the county level (the smallest political unit in Mexico), using the "Small Area Estimates" methodology and Poverty Map or PovMap software, (Elbers, Lanjouw, and Lanjouw 2003), shows the

poor performance of Mexico with respect to poverty reduction, decrease in inequality and increase in consumption from 1992 to 2005. Only 89 of the 2 403 counties of Mexico experienced significant inequality and poverty reduction, as well as increased household consumption (this welfare improvement covered just 2.6 percent of the population of Mexico, Table 21). By contrast, in 911 municipalities (containing 45.7 percent of the population) there was no significant improvement in any of the three welfare indicators. Overall, 53.1 percent of Mexico's population is found in counties that achieved improvement in at least one of the three welfare indicators (details in Yunez-Naude, Méndez-Navarro and Arellano-González 2010).

TABLE 21:

Typology of municipalities according to changes in welfare 1992 and 2005

Changes in welfare*	Number of municipalities	Total population, 2005	Covered population (%)
Significant improvement in the 3 welfare indicators*	89	2 601 059	2.6
Significant improvement in consumption and poverty	751	14 821 530	14.9
Significant improvement in consumption and equality	2	337 995	0.3
Significant improvement in consumption	122	3 877 783	3.9
Significant improvement in poverty and equality	122	5 526 366	5.5
Significant improvement in poverty	147	4 379 188	4.4
Significant improvement in equality	259	21 412 247	21.5
No significant change in any of the 3 welfare indicators	911	45 561 331	45.7
Non available estimations/new municipalities after 1990	51	1 142 003	1.1
Total	2 454	99 659 502	100.0

Note: * Food poverty reduction, inequality reduction and increase in consumption.

Source: Yunez-Naude, Méndez-Navarro and Arellano-González 2010

These results reflect an uneven and fairly sluggish period of the Mexican economy. Given the macroeconomic crisis that severely affected Mexico's per capita income in the second half of the 1990s and the low economic growth of the country during the reporting period, it is easy to understand how roughly half of the population was left at the margins of progress.

5. The policy environment: from economic reforms to current food security programmes

This section discusses agricultural and rural policy changes during the twenty-first century, when several agricultural policy modifications began to be adopted. These changes followed massive protests in Mexico City against maize imports under NAFTA and were made in a political context of enhanced democracy. Considering these policy changes and reforms and the tendencies discussed in previous sections of the paper, a series of hypotheses are proposed to explain why some of the expected effects of NAFTA on this sector have not been realized after more than 25 years of reforms. The section concludes with a discussion of issues related to food security in contemporary Mexico.

Recent policy changes and the policy environment

The year 2000 marked the end of the reign of the political party that had governed Mexico for more than 70 years. Nevertheless, market-oriented public interventions in the economy of Mexico have prevailed, but the change in political power has led to some modifications in agricultural policies by the new governments.

In 2001 the Law for Sustainable Rural Development (*Ley de Desarrollo Rural Sustentable* or LDRS) was approved. The law provided for extension of the coverage of agricultural policies to other components of the rural sector, as well as explicitly considering the attainment of food "sovereignty" and food "security" in Mexico as policy objectives. This change was especially apparent in 2003 when the President signed an agreement with organizations from the agricultural sector that had protested maize liberalization under NAFTA (the agreement was called *Acuerdo Nacional para el Campo* or National Agreement for the Countryside). The LDRS also included provisions for decentralizing rural policies and requested participation by all ministries whose programmes related to the rural sector, in an effort to coordinate their policies.

However, in practice, the Ministry of Agriculture continues to be the major provider of public funding to the rural sector, significant decentralization has not occurred, coordination among ministries is still lacking, and agricultural policies have undergone no profound changes (see Caballero 2006, Yunez-Naude and Dyer 2006, Scott 2010 and Yunez-Naude 2010).[143] Public funds channeled to agriculture have increased during the present century, a tendency shown in the official figures on total and agricultural public expenditure presented in Soloaga and Lara's report to the World Bank (2007), as well as in the estimates on agricultural subsidies from 1979 to

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[143] A relevant example is that the current President of Mexico, in office until 2012, decided to continue PROCAMPO income transfers, despite the original intention that this be a temporary programme, to end when the NAFTA period of transition was completed in January 2008.

2004 produced by the Organisation for Economic Co-operation and Development (OECD). According to the OECD (2006) estimates, producer support estimate (PSE) of major agricultural goods increased considerably during 2000–2004 compared with 1995–1999 (from 7.2 to 21.4). The estimates made by Soloaga and Lara (2007) are lower, ranging from 0.1 to 9.2 for the same period, because, among other differences, they excluded PROCAMPO transfers by considering them non-product-specific payments. In any case, both estimates show a considerable increase of support to Mexican farmers beginning in 2000 compared with 1995–1999. The same holds for all major imported basic crops and animal products according to OECD figures (Ibid., Table 5).[144]

Despite the increase in agricultural subsidies since 2000, the composition of the agricultural budget and basic objectives of the Ministry of Agriculture have not changed during this time and so the regressive character of public spending in agriculture and the rural sector has continued. In fact, according to recent estimates, support to Mexican farmers remains extremely regressive. In 2005 the richest 10 percent of producers (in terms of farm size) received the following shares of the main Ministry of Agricultural transfers programmes: 45 percent of PROCAMPO; 80 percent of *Ingreso Objetivo* (deficiency payments); and 55 percent of the Programme for Rural Development (PDR, Spanish acronym) of Alliance for the Countryside (which was supposedly intended to support rural producers in poor regions). In addition, the richest 10 percent of landowners received 60 percent of the energy and hydrological subsidies (OECD 2006 and Scott 2009). Scott also points out that a large part of the rural population (at least the poorest 50 percent) is excluded from non-targeted, input- or output-linked support programmes, simply because they are landless or have plots which are too small to be reached by such programmes (the exception is PROCAMPO). A more recent study conducted by Scott reveals an extreme concentration of benefits for all programmes in 2009, when the poorest producer decile received only 2 to 3 percent of PROCAMPO, 10 percent of deficiency payments, and similarly insignificant fractions of energy/irrigation subsidies. In contrast, producers in the top decile received transfer shares amounting to 42 percent of PROCAMPO, 85 percent of deficit payments, 55 percent of the PDR and 60 percent of energy and hydrological subsidies (Scott 2010).

The regressive character of government agricultural supports to Mexican farmers is explained not only by the political power of big commercial farmers, but also because these programmes are designed for farmers with high productivity capacity

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[144] As Soloaga and Lara and OECD point out, total and agricultural-specific commodity PSEs decreased during 1995–1999 compared with the previous five-year period, partly because of the macroeconomic crisis and peso devaluation of 1995/96. However, the fact remains that public expenditure in agriculture increased since 2000 (see Soloaga and Lara 2007 and also CEDRSSA, http://www.cedrssa.gob.mx).

and wealth. Support from the PDR to finance productive projects also depends on the presentation by potential beneficiaries of a viable productive project and requires them to provide funds to partially finance the subsidized project. Consequently, the very low participation of poor farmers and poor rural producers, who are the intended beneficiaries of this programme, is no surprise.

The regressive nature of public subsidies to agriculture through deficiency payments applies also at the regional level, since most of the Ministry of Agriculture's budget for deficiency payments has been used to support big commercial farmers located in the north of Mexico. For instance, in 2005, almost 50 percent of the budget for this programme was used to support commercial maize producers located mainly in the northwest state of Sinaloa; the remainder was used to support big commercial producers of wheat in Sonora (also in the northwest), of cotton in Chihuahua (north) and of sorghum in Tamaulipas (northeast). The supports directed to maize producers stand out in particular, because of the relevance of maize to food security in Mexico. Excluding PROCAMPO, about 70 percent of ASERCA's budget has been used to support the income of surplus farmers of basic crops (between US$ 430 million and 600 million per year during 2000–2005). Fifty percent of this subsidy goes to this type of maize producer and 70 percent of that amount is for farmers in the northwestern state of Sinaloa (Yunez-Naude 2010).

Towards an interpretation of the evolution of the agriculture of Mexico during reforms and under NAFTA

To understand the evolution of agricultural production in Mexico during the last 30 years (and before) one must consider the heterogeneity of agricultural production in combination with the structure of markets and policy interventions.

Based on this framework and on the character of agricultural policies and the evolution of the agriculture of Mexico, the following two general hypotheses are proposed: 1) domestic reforms and NAFTA directly affected commercial farmers producing non-competitive crops, but some of them were protected from United States competition by governmental supports; and 2) rural subsistence producers have maintained or even increased their production of food staples (maize in particular) because of the nature of their decision-making, which is explained by the transaction costs they face.

Commercial farmers producing non-competitive crops have been directly affected by price reductions in basic crops during NAFTA, and have reacted by increasing productivity or by switching land use. Others have been protected from foreign competition through government supports (Sumner and Balagtas (2007) provide evidence for this).

The responses of rural households to external shocks, such as the reduction of maize prices, are complex, because they are both units of production and units of consumption facing transaction costs in several markets and having a diversity of income sources. (Singh, Squire and Strauss (1986) offer the foundations of these proposals, based on agricultural household models).

I have extended the household model to a microeconomic general equilibrium model applied to rural Mexico, with transaction costs in product and labour markets for subsistence maize farmers. In this way I have shown that a reduction in the market price of maize is indirectly transmitted to these producers through interactions in factor markets. The market price shock directly affects commercial rural households that produce maize, reducing local wages and land rents, and stimulating maize production by subsistence households. I propose that this reaction by subsistence farmers to the observed reduction of maize market prices explains why small-scale maize production in Mexico has not declined (see for example Dyer, Taylor and Yunez-Naude 2005, Dyer, Taylor and Boucher 2006, and below).

Food security: recent trends and policies

During the present century, public policies in Mexico have included the explicit objective of attaining food security, first by the promulgation of the LDRS and the signing of the National Agreement for the Countryside and afterwards through PESA, following FAO's experience in other countries. Until 2007 PESA was included in the Alliance for the Countryside and from 2008 to 2010 Alliance was part of the Ministry of Agriculture's Programme to Acquire Productive Assets (called the Programme to Support Investments in Machinery and Infrastructure since 2011, see http://www.sagarpa.gob.mx/sdr/pesa/). In addition, in January 2007 the Government of Mexico responded to the international surge in food prices that had begun in 2006 with measures to protect the purchasing power of the population in poverty and to boost domestic production of foods.

According to Soloaga (2011) it is difficult to complete an overall assessment of policies applied in Mexico to address the food price crisis. It is difficult to assess effects of the measures taken by the government to protect Mexicans from the international food-price surge because by September of 2008 new measures had been established to try to offset the effect of the international financial crisis. Poverty levels increased markedly in Mexico, to 18.3 percent in 2008 (and per capita consumption of basic staples declined during 2008/09, Figure 13 and Table 15 above), but it is not clear how much of this was caused by the rise in international food prices. Mexico's GDP dropped by almost 7 percent in 2009; real wages also decreased and unemployment increased, adding difficulties for the whole population, but in particular for the poor.

It seems clear that without policy interventions during the food-price surge, poor Mexicans would have been much more badly affected. Based on a disaggregated general equilibrium model for the rural south and southeast of Mexico (the poorest region), we have shown that a major component of the public interventions to protect the purchasing power of the poor did have positive effects on rural households receiving them (referring to the monthly cash transfer of 120 Mexican pesos delivered to beneficiaries of *Oportunidades*, beginning in 2008, see Mendoza, Yunez-Naude and Jaramillo 2011).

Overall, because of the unchanged structure and regressive nature of agricultural policies, the effects of PESA on small farmers and rural households have been inadequate. However, careful application of a version of PESA to one of the poorest rural regions of Mexico in the southern state of Guerrero does offer a success story. The programme began in 2006 and added supports for productive and land conservation purposes to the beneficiaries of *Oportunidades*, as well as access to financial services. After three years of implementation, an evaluation of the effects of the programme, based on the methodology known as propensity score matching, showed that the programme did reduce poverty, and increased nutrition levels and food production of its beneficiaries from 2007 to 2008, i.e. during the food-price surge (see http://precesam.colmex.mx).

This section concludes by summarizing the results obtained by Dyer and Taylor (2011) using a disaggregated general equilibrium model applied to Mexico to study the effects on production and welfare of Mexican households arising from the 2006 and 2007 surges in world maize prices. This study is relevant because it takes into consideration the double character – as producers and consumers – of rural households, transaction costs in some markets and for some households (e.g. maize for subsistence producers), absentee landholders, rural regional differences, as well as the linkages between macroeconomic shocks and microeconomic outcomes. The study uses a new, agent-based, general-equilibrium model to explore the impacts of world maize-price increases on land use, agricultural production, activities and income of rural households, and income of non-rural farmers in Mexico. In this model, interactions among heterogeneous agents within a local context shape both macroeconomic and microeconomic outcomes. Among other conclusions, the findings suggest that subsistence activities of small rural farmers allowed agriculture to absorb the price shock, limiting the benefits of higher prices for commercial maize producers and maize supply responses across Mexico. Based on their results, Dyer and Taylor argue that the impact of the price surge on both rural incomes and land-use change might have been overestimated. Subsistence farmers might have had few reasons to expand into marginal lands in response to international commodity price increases. Imperfect price transmission, subsistence demands and increased labour costs could limit the effects of the surge on land rents, keeping land-use changes in check. In sum, the changes in world maize prices observed in 2007 could have had widely

varied effects across rural Mexico, but it seems unlikely that they had a significant impact on rural incomes or the forest margin. In fact, Dyer and Taylor's estimated 5.7 percent maize-area expansion by 2008 and the wide variation across the five rural regions of Mexico corresponds with other reports. Agricultural growth led to 0.02 percent and 3.9 percent increases in real income for rural households and absentee landholders, respectively.

6. Lessons from Mexico

Several lessons based on the Mexican experience in food production and security under NAFTA and domestic reforms can be proposed.

It could be said that, in a way, the agricultural sector of Mexico was abandoned during NAFTA, because it was known that, compared with United States farmers, Mexican farmers had no competitive edge in the production of major food crops (grains and oilseeds). The official expectation was that NAFTA, by promoting the growth of other sectors of the Mexican economy, would reduce its negative impacts on agriculture. No official concerns were expressed about Mexico's food dependency under NAFTA, and radical changes towards market-oriented policies may have been a result of power exerted by the political party that ruled Mexico until the end of the past century.

There is movement towards a more democratic political regime in Mexico, but what has happened during the period of NAFTA is that agricultural transitional policies begun in the first half of the 1990s that were intended to help farmers make the transition to an open economy have become permanent, at least up to now. In addition, the Ministry of Agriculture's share of the budget has increased continuously during the recent past (this rise has been possible in part by taxing the oil rents from PEMEX, the state-owned oil company of Mexico).

Agricultural supports for non-competitive crops have been directed to some commercial farmers, especially those located in the north of Mexico. However, non-benefited commercial producers of major grains have increased productivity, maintaining production of some of these crops, and small farmers and subsistence households have continued to cultivate maize.

As well as raising questions of equity, the support to some big producers of basic crops suggests that disagreement with the principles of agricultural trade liberalization still exists in public policies in Mexico. In addition to being regressive, these supports are costly in both budgetary and efficiency terms. For example, according to FAO's office for Latin America, Mexico has the highest "agricultural bias" in its public expenditure among Latin American countries whose agricultural

GDP has grown much more than that of Mexico.[145] In addition, subsidies to some farmers producing non-competitive crops promote inefficiencies in production (Sumner and Balagtas 2007).

During the reforms and NAFTA, most government supports to agriculture and the rural sector have provided private goods, not public goods. Food production in Mexico could be enhanced by modifying this structure: investing in infrastructure and in research, development and application of technologies in accordance with the heterogeneous agro-ecological conditions of Mexico, taking into consideration the increasing volatility of climate conditions. These are the most fundamental challenges faced by less-developed economies, as well as by the Mexican state (a diagnosis and a proposal for the required agricultural policy changes appear in Taylor, Yunez-Naude and González 2007).

The goal of attaining food security is complex. Following FAO's definition, it involves both domestic production of food and imports as sources of food supply, as well as stability of supply and access to food by the population. In addition, food security requires healthy foods for the population and is often politically linked to food self-sufficiency, i.e. to domestically produced food availability at the national level.

Per capita food consumption in Mexico has increased during NAFTA, and it has been accompanied by an increased dependency on imports of food and therefore a decrease in self-sufficiency. This latter outcome would not be a cause of concern in a context of improved income distribution and poverty reduction. However, since income inequality and poverty prevail, food security has not been granted for all Mexicans. In addition, food security has decreased during the macroeconomic crisis of the mid-1990s and more recently during the international price surge and financial crisis, implying that social safety nets during critical periods are still absent in Mexico.

Mexico's experience with NAFTA shows Asia-Pacific countries that trade liberalization is not sufficient to attain high rates of agricultural growth and food security: domestic policies also matter. In addition, design of rural and agricultural policies must take into consideration the regional and productive heterogeneity that characterize countries like Mexico. Food production and security can increase in Mexico by "reforming the reforms" in a market-oriented and globalized context through an effective policy design for the long term that favours the provision of public goods according to rural regional differences (including investments in research and the application of new appropriate technologies, investments in infrastructure and communications, access to financial markets). Effective policy design also integrates

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[145] FAO calls this measure "agricultural orientation", and estimates it as ratio between agricultural subsidies to total public expenditure with respect to agricultural GDP to total GDP (Scott 2010).

social policies with productive policies for rural households that have a competitive potential. The political will of powerful actors in Mexico is an initial fundamental condition to make this type of reform viable, a condition that has been lacking in the current stage of a more democratic country.

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menu_infsector.html
www.wto.org

Annex

Per capita expenditure in food by first three poorest income groups (constant 2002 pesos)*

	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010
Total expenditure in food										
Decil I	177 564	177 122	162 831	166 598	167 684	177 609	208 571	215 340	240 426	236 539
Decil II	268 985	240 042	219 320	222 374	243 545	231 402	284 390	298 199	321 578	302 118
Decil III	311 301	294 771	276 848	281 697	295 981	297 351	338 373	349 708	372 632	353 891
Expenditure in maize										
Decil I	38 881	33 918	37 382	32 623	30 585	34 295	31 289	33 357	31 120	30 168
Decil II	44 401	38 109	40 162	35 486	36 693	36 815	36 651	37 757	41 122	39 051
Decil III	40 235	38 430	38 876	36 571	38 075	38 511	40 426	39 464	42 972	41 170
Expenditure in wheat										
Decil I	9 166	11 124	11 492	9 641	11 245	10 717	14 741	14 091	18 941	17 214
Decil II	19 827	15 061	16 055	14 821	14 992	15 648	19 893	19 635	23 982	20 462
Decil III	20 974	17 647	23 314	18 712	18 864	19 090	21 772	23 353	27 507	24 199
Expenditure in other cereals**										
Decil I	3 502	4 120	3 873	4 300	4 002	3 307	4 484	4 148	5 559	5 315
Decil II	4 051	4 457	4 475	4 299	3 896	3 998	4 697	4 866	6 423	5 824
Decil III	4 081	4 733	4 657	5 022	4 297	4 393	5 073	5 202	6 276	6 468

	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010
Expenditure in beans										
Decil I	18 196	16 148	18 218	18 853	13 555	15 755	10 492	12 494	11 923	11 969
Decil II	20 513	16 714	19 628	19 252	12 780	13 735	9 199	9 430	11 395	11 755
Decil III	18 864	18 432	21 918	16 804	11 429	12 431	9 874	8 446	9 824	10 240
Expenditure in fruits and vegetables										
Decil I	23 703	20 473	15 002	17 999	20 708	24 929	23 889	27 315	28 925	29 373
Decil II	33 811	31 737	21 247	26 640	30 830	31 666	32 244	33 532	36 576	36 574
Decil III	37 444	37 090	28 319	32 850	37 311	39 862	40 585	40 299	41 326	41 795
Expenditure in meats***										
Decil I	20 768	22 278	17 469	18 424	19 448	24 205	26 234	27 172	30 167	28 650
Decil II	42 335	36 439	26 986	32 654	39 398	35 614	41 972	42 996	45 151	45 072
Decil III	55 270	52 238	40 382	46 808	51 989	50 042	53 189	52 899	53 126	53 137

Notes: * Includes processed foods.

    ** Oats, rye, barley frituras and fried maize and wheat.

    *** Pork, bovine and poultry.

Sources: Own estimations based on INEGI National Survey of Households Income and Expenditure: 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010

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Trade and food security: a case study of edible oils in India

Ashok Gulati and Ashok Vishandass

1. Introduction: context and background

Ensuring food security for more than 1.2 billion people is an important element of India's food policy. To achieve this goal the government is focusing on: (1) increasing the availability of food, either through domestic production or through imports; (2) increasing economic access to food by subsidizing basic food items (primarily staples) for the vulnerable sections of society; and (3) stocking buffer quantities of key essential food products (rice and wheat) to ensure relative stability in the food system. These three pillars of food security are basically covered by the Ministries of Agriculture and Cooperation, Consumer Affairs, and Food and Public Distribution. In the case of imports, the Ministry of Commerce and Industry is also involved. A fourth pillar of food security, absorption for better nutritional outcome, is handled by the Ministry of Women and Child Development, as well as the Ministry of Health and Family Welfare.

In this paper, we examine primarily the first pillar of food security, namely increasing supplies of food through domestic production and/or trade (imports). Since the mid-1950s, the focus of increasing food availability has been the foodgrain sector. First, foodgrains were made available through imports of wheat under the United States' Public Law 480 (PL480), also known in the United States of America as the Food for Peace Programme. These imports reached their peak in the mid-1960s. Subsequently, the green revolution freed India from its high dependence on food aid imports and the concomitant political strings attached to those imports. The green revolution strategy was based primarily on two principles: (1) bringing in better seeds (technology) and making sure they were delivered to farmers who had reasonable irrigation facilities; and (2) ensuring that farmers were appropriately remunerated for their products when output increased as a result of introducing new technology. The strategy was successful and farmers' profits increased, leading to a very fast spread of new technology in the best-irrigated areas of Northwest India. Eventually, irrigated crops also used more fertilizers, water and power, and therefore cornered most of the subsidies on these inputs. As a result, coarse cereals, oilseeds and pulses remained somewhat neglected. Although wheat and rice easily substituted for coarse cereals in consumers' diets, the focus on these two crops drove India towards larger imports of edible oils and pulses to meet the rising demand.

In what follows, we examine the trade policies and trade flows of edible oils into India since the mid-1970s, and discuss how this helped achieve food security with respect to the edible oil requirements of the country (Section 2). We then look at the future demand and supply scenario for edible oils, and consider whether India will keep relying on large imports of edible oils or move towards some greater degree of self-sufficiency in edible oils, keeping in mind issues of efficiency and global competitiveness (Section 3). In Section 4 we present some concluding remarks based on policy discussions and debates in the country, and try to envision how India might dovetail trade policy with domestic production policy in order to achieve food security in edible oils.

2. Trade (imports) and food security in edible oils

Imports of edible oils provided much-needed food oil security to India when the country was trying to achieve self-sufficiency in basic staples such as wheat and rice. From the mid-1970s to 1987/88, India's imports of edible oils covered roughly one-fourth to one-third of the country's requirement. In 1983/84, for instance, India imported 1.6 million metric tonnes (MT) of edible oils, costing US$1.3 billion (covering one-third of the country's requirement and equivalent to almost half of the domestic production) (Figure 1 and Annex 1). This was the second biggest import item after

FIGURE 1:

Import of edible oils *vis-à-vis* India's domestic production
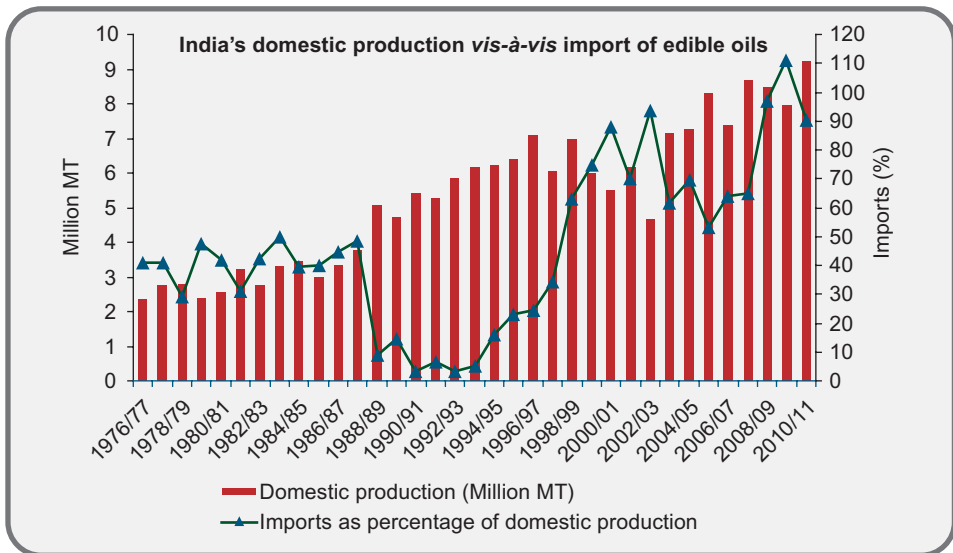
Source: Collated from data supplied by the Government of India, Ministry of Commerce and Industry, Director General of Commercial Intelligence and Statistics, Kolkata

crude oil. Given the chronic shortage of foreign exchange reserves faced by India since Independence, this high level of imports of edible oils became a matter of concern in the mid-1980s. But the mid-1980s also saw the highest accumulation of grain reserves by public agencies (exceeding 30 million MT in 1986, for the first time in the history of India). Both these factors – the severe shortage of foreign exchange and the large stocks of grains – prompted Indian policy-makers to shift the focus of food policy towards oilseeds.

Genesis of the yellow revolution (1986–1993): towards self-sufficiency in edible oils

Two policy instruments were used to revitalize the oilseeds sector in the second half of the 1980s. The first focused on production programmes pertaining to oilseeds and the second focused on price and trade policies to regulate imports of edible oils. With regard to the production programmes, a Technology Mission on Oilseeds was launched by the Government of India in May 1986, with a view to increasing the productivity of oilseeds, and to improving their marketing and processing, so that the country could have more oil to meet its growing requirements.[146] Since much of the area under oilseeds (82 percent) was rainfed, increasing yields on a sustainable basis was a major challenge, and it required time. Given the pressures from the limited foreign exchange for imports, efforts to achieve higher levels of self-sufficiency in edible oils were stepped up in the late 1980s.

On 5 January 1989, the government announced its Integrated Policy for Oilseeds, fixing the wholesale price range for oil between Rs. 20 and Rs. 25 per kilogram (kg). The National Dairy Development Board (NDDB) was entrusted with the task of maintaining this price band by means of buffer-stocking operations. The price band policy sought to fix the procurement prices of groundnut and rapeseed mustard "at least 40 percent above the present levels recommended by the Prices Commission" (Shenoy 1989). To ensure this, NDDB insisted that the imports of edible oils be stopped, or at least tightly controlled. As a result, in early 1989, a second important policy decision was taken to channel imports of edible oils through state trading enterprises such as the State Trading Corporation. This made imports dependent on administrative decisions rather than the economics of price differentials. In practice, this reduced the edible oil imports from 1.8 million MT (almost 30 percent of the domestic requirement) in 1987/88 to less than 200 000 MT in 1990/91 (less than 5 percent of the domestic requirement). As a consequence of this sharp decline in imports, the market prices of oilseeds increased significantly relative to the prices of cereals. According to the wholesale price index, prices of

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[146] In 1987/88, a scheme called the Oilseeds Production Thrust Project was also initiated for three years to accelerate production of four major oilseeds, namely groundnuts, rapeseed mustard, soybean, and sunflower. The scheme covered 246 districts in 17 states, including 151 National Oilseed Development Project districts.

groundnut seeds increased by 55 percent, rapeseed mustard seeds by 63 percent, and cotton seeds by 53 percent, from 1993 to 1989. This was in contrast to increases of 23 percent in *jowar* (sorghum), 22 percent in maize and 38 percent in barley during the corresponding period; therefore, the area under these coarse cereals shifted towards oilseeds. This switch in the relative price (incentive) structure in favour of oilseeds resulted in a shift of 8.3 million hectares of land towards oilseeds (from 18.6 million hectares in 1986/87 to 26.9 million hectares in 1993/94). The shift was primarily from coarse cereals but also from wheat in some places. Oilseeds production increased from 11.3 million MT in 1986/87 to 21.5 million MT in 1993/94, and production of edible oils increased from 3.3 million MT to 6.2 million MT over the same period (Figure 1 and Annex 1). Many in the agri-community claimed that a "yellow revolution" had occurred.

The problem with this so-called "yellow revolution" and its concomitant self-sufficiency was that it was achieved at a very high price level. Indian prices of edible oils were 60 to 70 percent higher than prevailing prices in international markets. What this meant was that although the "yellow revolution" was helping to achieve high levels of production and self-sufficiency in edible oils, consumers were being implicitly taxed through much higher domestic prices of edible oils than would have existed had India followed liberal import policies for edible oils. Interestingly, in 1992/93, India fell short of cereal stocks, and had to import about 3 million MT of wheat at a price that was almost double what it was paying to its own farmers through the Minimum Support Price policy. This led to the realization that in economic terms there was a huge allocative inefficiency in the deployment of scarce land resources. This fact, along with the overall liberal policies established since the foreign exchange crisis of 1991, prompted Indian policy-makers to gradually open up the edible oil sector to import competition.

Liberalization and the departure from self-sufficiency in edible oils (1994–1998)

In 1994, quantitative restrictions on edible oil imports (through canalization)[147] were lifted for palm oil by bringing it under the Open General Licence (OGL) whereby any private entity could import palm oil, subject to an import duty of 65 percent. Gradually this duty was reduced to 15 percent by July 1998, and other edible oils were also allowed to be imported under the OGL. This led to a massive influx of edible oil imports, from 200 000 MT in 1992/93 to 4.4 million MT by 1998/99. This was an increase in value from about US$55 million to US$1.8 billion over the same period. As a percentage of total availability, imports reached 39 percent by 1998/99, up from 3.3 percent in 1992/93. The introduction of the OGL ended the policy of self-sufficiency in edible oils, but whether it also heralded the demise of the "yellow revolution" as an import substitution strategy is not very clear because the production of oilseeds kept growing, though at a slower pace than the demand for edible oils.

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[147] Only public agencies.

**Roller coaster ride in tariffs: backsliding to protection (1999–2005) and
downswing during 2006–2011**

The East Asian crisis in 1997 led to a significant fall in commodity prices in world
markets, especially for palm oil from Indonesia and Malaysia in the ensuing years.
This necessitated raising tariffs on palm oil imports from a low of 15 percent in 1998
to a high of 80 percent by 2005. The objective was to insulate domestic oilseed
producers from the abrupt, sharp fall in prices of edible oils. But as the situation
improved and commodity prices started rising after 2006, the import duty on palm oil
was reduced from 80 percent in 2005 to zero percent by 2009 and this continued
until March 2012. The tariff policy adopted is basically counter-cyclical to the global
prices: tariffs are raised when prices are down and lowered when prices rise to
provide some stability to producers of oilseeds and edible oils in the country
(Figures 2 and 3).

FIGURE 2:

Import duties on crude and refined palm oils
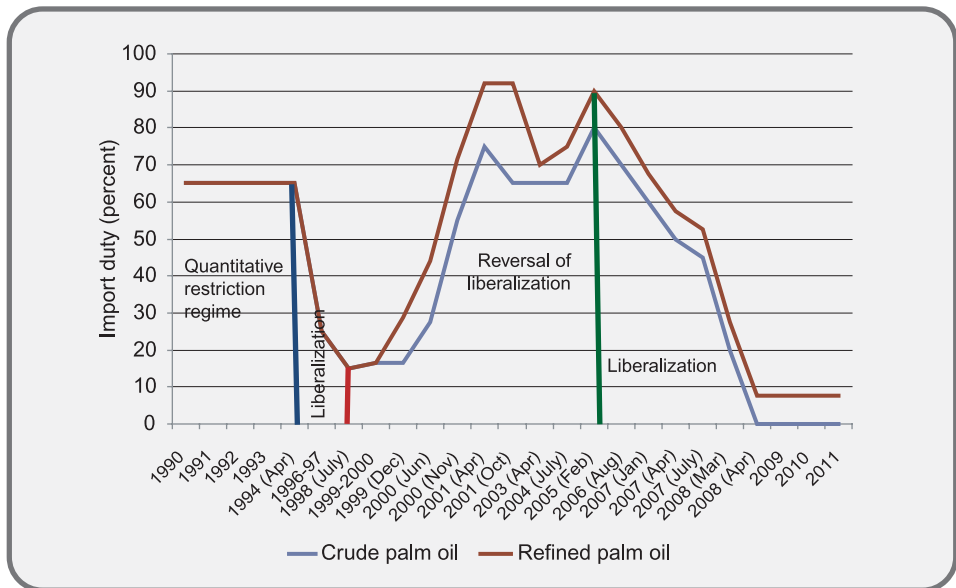
Source: Created by the authors on the basis of data from the Government of India, Ministry of
Commerce and Industry, New Delhi

FIGURE 3:

Import duties on palm oil compared to global prices

The see-saw in trade policy for edible oils and grains (2006–2011) and its implications

During the post-2006 period, when world commodity prices started to increase, Indian agri-trade policy moved to reduce tariffs on imports of edible oils from 80 percent to zero, and at the same time banning the exports of wheat and rice in late 2007. The net result of these trade policies was that, although imports of edible oils reached record levels by 2011/12 – nearly equivalent to domestic production and in some years (2009/10) even surpassing domestic production (Figure 1) – grain stocks of wheat and rice in the country also accumulated to record levels (64 million MT in July 2011, and likely to reach 72 million MT by July 2012) (Figure 4). Given that the total capacity of covered sheds to store foodgrains with the Food Corporation of India (FCI) is only 45 million MT, this level of stocks is creating a problem of plenty.

This indicates that Indian trade policy-makers have not been able to calibrate the right balance between oilseeds/oils and grains. They seem to be slowing down exports of grains and accelerating imports of edible oil, drastically and almost simultaneously, leading to excesses on both sides. One significant distinction is that imports of oils are largely through the private sector, whereas the bulging grain stocks are with public agencies. If the exports of grains had been open, as were the

FIGURE 4:

Bulging stocks of foodgrains (wheat and rice) 2006–2011
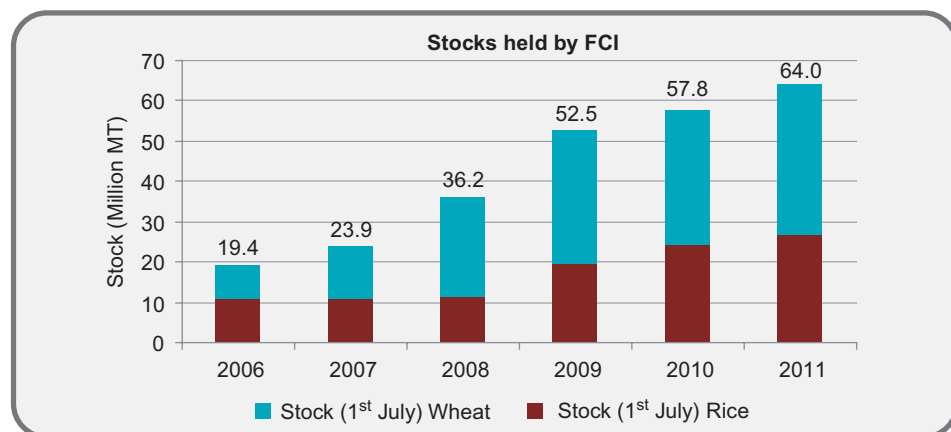
Source: Government of India, Ministry of Consumer Affairs, Food and Public Distribution, Food Corporation of India, New Delhi

imports of edible oils, there would have been automatic market-led movement towards equilibrium, probably in line with the principle of comparative advantage. But in an attempt to achieve short-term stability, policy-makers sometimes take policy decisions that are against the natural working of markets. As a result, they find themselves in situations of medium- to long-term disequilibrium leading to large economic efficiency losses, which may be hard to avoid. This is what seems to have happened in India during the last five years (2006–2011). It was only in September 2011 that a policy decision to re-open exports of wheat and rice was taken. Although wheat remains somewhat less export-competitive, exports of rice are expected to be between 6.5 and 7 million MT during 2011/12.

3. Future demand and supply projections for edible oils and India's probable strategy

There are no credible official estimates or long-term projections of the likely demand and supply of edible oils twenty years from now. What is known is that the expenditure elasticity for edible oils is very high, generally three to five times higher than the expenditure elasticity for grains. The Planning Commission has made estimates of the likely demand and supply of edible oils by 2016/17, which is the end of the Twelfth Five-Year Plan (2012–2017). The Planning Commission adopts various approaches to forecast demand and supply of agri-commodities for each five-year plan period. Demand and supply projections for edible oils from 2012/13 to 2016/17 are given in Tables 1 and 2, respectively.

TABLE 1:

Projected demand for edible oils in India using various approaches (million MT)

Year	Household consumption[148]	Normative (sedentary lifestyle)[149]	Normative (moderately active lifestyle)	Behaviourist (9% GDP growth)[150]	Absorption approach[151]
2012/13	7.97	11.12	12.75	14.12	18.73
2013/14	8.07	11.26	12.92	14.63	19.54
2014/15	8.17	11.40	13.08	15.15	20.35
2015/16	8.27	11.54	13.23	15.68	21.16
2016/17	8.37	11.67	13.39	16.23	21.97

Source: Authors' calculations

As can be seen from Table 1, the demand projections offered by various methodological approaches differ significantly from each other, providing a wide range of projected consumption levels (from 8 to 22 million MT) of edible oils by 2016/17. We feel that the reality may be closer to the absorption approach figure of 22 million MT, given that in 2010/11 absorption has already been about 17.5 million MT of edible oils (9.2 MT from domestic production and 8.3 MT from imports). None of the other methods of estimation project this level of demand even for the year 2016/17.

[148] Using Household Consumption method: total domestic demand = (annual per capita consumption * mid-year population).

[149] The normative approach is based on the requirements of food and nutrient content of a balanced diet for a moderately active person or for a sedentary lifestyle. The National Institute of Nutrition (NIN), Hyderabad, has prescribed the normative requirements per capita per day for different lifestyles. As per NIN, the recommended dietary allowances for edible oils for Indians with moderately active and sedentary lifestyles are 10.95 kg and 9 kg per capita per annum, respectively. Multiplying these norms by the mid-year projected population, total domestic demand of edible oils for each of the five years of Twelfth Five-Year Plan was projected for a sedentary lifestyle using the normative approach. The projected demand increases if a moderately active lifestyle is assumed.

[150] This approach is based on the growth of population and behaviour of consumption as a result of changing per capita income in a growing economy and the elasticity of consumption/expenditure of various items. The consumption for the base year has been assessed on the basis of average actual consumption during the triennium ending 2009/10 after adjusting for change in stocks, exports and imports and consumption based on the National Sample Survey (NSS) Sixty-sixth Round (2009/10) Survey. Furthermore, the rate of growth in Gross Domestic Product (GDP) is taken as 9 percent, which has been adjusted for the growth in population to arrive at growth in per capita income. As regards the demand for exports, an average of the last five years has been taken in order to smooth annual fluctuations.

[151] According to the absorption approach, we first examine the total absorption of edible oils in the economy over the last ten years, e.g. from 2000/01 to 2010/11. This number is derived from domestic production plus net imports. A linear trend is fitted to this and based on this trend the absorption of edible oils is projected for the five years of the Twelfth Five-Year Plan.

On the other hand, supply projections using different statistical and econometric methods turn out to be within a range of 8.4 million MT to 11.4 million MT (Table 2). If this is true, then given business as usual it appears that India will keep importing almost the same quantity (equal to its domestic production and almost half of its requirement) from abroad to meet its growing requirements even in 2016/17. This is considered by many to be heavy dependence on imports and therefore they stress that policy-makers need to look for alternatives to reduce the degree of dependence. There is also a feeling that, because India is a large country, its growing imports of edible oils may put upward pressure on prices in global oil markets, forcing India to pay increasingly higher prices for edible oil imports. This perception is encouraging policy-makers to look for alternatives whereby they can reduce the degree of dependence on edible oil imports.

TABLE 2:

Projected supply of edible oils from domestic sources in India using various approaches (million MT)

Year	Simple regression	Exponential	Multiple regression	Simple average growth	Compound growth
2012/13	9.20	9.41	8.88	8.17	7.95
2013/14	9.51	9.88	9.17	8.39	8.06
2014-15	9.82	10.37	9.46	8.62	8.17
2015/16	10.13	10.89	9.74	8.86	8.28
2016/17	10.44	11.43	10.03	9.11	8.40

Source: Authors' calculations

The key issue is not just the high degree of dependence on imports for edible oils, but whether India can develop a strategy to increase its edible oil production in an economically efficient manner, keeping global prices in mind. In this context, it may be noted that palm oil constitutes almost 70 percent of all edible oils imported by India. So the real issue is determining whether India can produce palm oil in an economically efficient manner, i.e. at a cost lower than its likely global prices. A recent report on oil palm (Vishandass and Gulati 2012), indicates that this is indeed possible. India has a potential to grow oil palm on roughly 1 million hectares, but so far only 0.2 million hectares have been used. If India develops the remaining 80 percent of the potential, it can obtain a total of about 4 million MT of palm oil at a price that would be less than the likely price of palm oil in global markets. The price forecasts by the World Bank (http://econ.WorldBank.org) suggest that palm oil prices are likely to remain above US$800/tonne until 2015. The current price level of oil palm is above US$1 100/tonne. It is interesting to note that adding 4 million MT of

palm oil out of 1 million hectares of oil palm area is comparable to adding 15 million hectares to the existing oilseed complex to get that much edible oil. Given the land scarcity in India, and the high pressure of demand on edible oils, this strategy to promote oil palm may look attractive and one may ask why it has not taken off on its own, dictated by market dynamics. The answer lies in the fact that oil palm cultivation in India is reserved for individual cultivators and companies cannot buy land and cultivate oil palm as corporate farming, unless it is declared a plantation crop. But more than 80 percent of farmers in India are marginal and small (with less than 2 hectares of land holdings). They don't have the capacity to wait for five to six years before this plant can start giving full fruit. For oil palm to succeed in Indian conditions would require either government support to farmers, to survive during the gestation period, or a change in policy, allowing companies to buy or lease land for growing oil palm. Perhaps both approaches are needed for oil palm production to take off in India.

4. Concluding remarks

Since the late 1960s and early 1970s, as India marched towards the green revolution and self-sufficiency in cereals (wheat and rice), domestic production of oilseeds was somewhat neglected. As a result, from the mid-1970s to almost 1988, India imported edible oils to provide one-fourth to one-third of its requirement. The pressures of foreign exchange and the comfortable supplies of cereals in the mid-1980s prompted India to seek a solution to its high edible oil imports. The Technology Mission on Oilseeds and other associated programmes provided temporary relief (between 1989 and 1993) – which some called a "yellow revolution" – by keeping edible oil prices abnormally high compared to global prices and causing a shift in cultivation area in favour of oilseeds. But that "yellow revolution" was short-lived because India liberalized imports in 1994. India's tariff policy for edible oils ran counter-cyclically to global prices, in an attempt to give some stability to domestic producers. But so far, there has not been any great success in the import substitution strategy. India continues to import roughly half of the country's requirement of edible oils and if business continues as usual, this degree of dependence may continue until 2016/17. This is considered a high degree of dependence by many in policy circles, especially given India's large size. Therefore, a search is underway for an import substitution strategy that is globally competitive without giving undue protection to the domestic edible oil industry. The development of oil palm cultivation in India appears promising, but it has the potential to take off only if the government either supports the smallholders or changes the law to let corporations engage in the cultivation of oil palm as a plantation crop.

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Annex 1

Imports *vis-à-vis* total availability of edible oils in India from 1976/77 to 2010/11

Year	Domestic production (000 MT)	Imports (000 MT)	Total availability (000 MT)	Imports as percentage of total availability	Imports as percentage of domestic production	Value of imported oils (Million US$)
(1)	(2)	(3)	(4) = (2) + (3)	(5) = (3)/(4)*100	(6) = (3)/(2)*100	(7)
1976/77	2 340	959	3 299	29.07	40.98	112
1977/78	2 732	1 123	3 855	29.13	41.11	829
1978/79	2 799	821	3 620	22.68	29.33	653
1979/80	2 411	1 149	3 560	32.28	47.66	551
1980/81	2 560	1 074	3 634	29.55	41.95	652
1981/82	3 219	998	4 217	23.67	31.00	501
1982/83	2 728	1 150	3 878	29.65	42.16	525
1983/84	3 282	1 634	4 916	33.24	49.79	1 276
1984/85	3 446	1 368	4 814	28.42	39.70	775
1985/86	2 964	1 179	4 143	28.46	39.78	601
1986/87	3 319	1 480	4 799	30.84	44.59	490
1987/88	3 765	1 820	5 585	32.59	48.34	747
1988/89	5 071	450	5 521	8.15	8.87	504
1989/90	4 721	690	5 411	12.75	14.62	126
1990/91	5 400	190	5 590	3.40	3.52	182
1991/92	5 240	340	5 580	6.09	6.49	101
1992/93	5 862	200	6 062	3.30	3.41	54
1993/94	6 170	330	6 500	5.08	5.35	53
1994/95	6 250	1 000	7 250	13.79	16.00	199
1995/96	6 410	1 480	7 890	18.76	23.09	676
1996/97	7 090	1 750	8 840	19.80	24.68	825
1997/98	6 032	2 083	8 115	25.67	34.53	744
1998/99	6 961	4 393	11 354	38.69	63.11	1 804
1999/00	6 015	4 494	10 509	42.76	74.71	1 857
2000/01	5 499	4 833	10 332	46.78	87.89	1 308
2001/02	6 146	4 322	10 468	41.29	70.32	1 356
2002/03	4 664	4 365	9 029	48.34	93.59	1 814
2003/04	7 140	4 397	11 537	38.11	61.58	2 543
2004/05	7 247	5 042	12 289	41.03	69.57	2 465
2005/06	8 316	4 417	12 733	34.69	53.11	2 024
2006/07	7 370	4 715	12 085	39.02	63.98	2 107
2007/08	8 654	5 608	14 262	39.32	64.80	2 560
2008/09	8 456	8 183	16 639	49.18	96.77	3 449
2009/10	7 946	8 823	16 769	52.61	111.04	5 585
2010/11	9 200	8 296	17 496	47.42	90.17	6 562

Sources: Government of India, Ministry of Consumer Affairs, Food and Public Distribution, New Delhi Directorate of Vanaspati, Vegetables and Fats, and Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce and Industry, Kolkata

Annex 2

Import duty on crude and refined palm oils

(percent)

Period	Crude palm oil	Refined palm oil
1990	65.0	65.0
1991	65.0	65.0
1992	65.0	65.0
1993	65.0	65.0
1994 (Apr)	65.0	65.0
1996-97	25.0	25.0
1998 (July)	15.0	15.0
1999/00	16.5	16.5
1999 (Dec)	16.5	28.6
2000 (Jun)	27.5	44.1
2000 (Nov)	55.0	71.6
2001 (Apr)	75.0	92.2
2001 (Oct)	65.0	92.2
2003 (Apr)	65.0	70.0
2004 (July)	65.0	75.0
2005 (Feb)	80.0	90.0
2006 (Aug)	70.0	80.0
2007 (Jan)	60.0	67.5
2007 (Apr)	50.0	57.5
2007 (July)	45.0	52.5
2008 (Mar)	20.0	27.5
2008 (Apr)	0.0	7.5
2009	0.0	7.5
2010	0.0	7.5
2011	0.0	7.5

Source: Government of India, Ministry of Commerce and Industry, New Delhi

The effects of trade liberalization on the development of China's soybean sector

Tian Weiming and Gao Ying

1. Introduction

Traditionally, China has been one of the world's major soybean producers. In 1990, China produced 11 million tonnes of soybeans, making it the third largest producer after the United States of America and Brazil (FAO 2011). China continued to be a net exporter until 1995. Since then, the volume of soybean imports has grown at an amazing pace. China became the largest importer by the end of the 1990s and the market share rose continuously in subsequent years. China now imports over half of the soybean traded in the world market. In 2010, China had a deficit of US$25 billion in soybean trade alone, approximately the same amount as China's total agricultural trade deficit (Ministry of Agriculture 2011b).

The extraordinary evolution of the soybean sector is related to China's reforms of domestic policies as well as to changes in the world trade environment.[152] Internally, the Chinese government gave the farmers increased autonomy in making micro-level decisions and established modern enterprise systems through a series of policy reforms that liberalized the sector. Externally, China reduced trade barriers gradually in the following ways: unilateral tariff cuts to assist negotiations for the World Trade Organization (WTO) accession in the 1990s; comprehensive reforms of trade regimes in line with the WTO multilateral system in the early 2000s; and bilateral liberalization under the recently concluded free trade agreements. With all of these measures, China substantially reduced trade protection on agricultural products.

The development of China's soybean sector during the past two decades has become a focus of academic research. Earlier studies focused mainly on the potential impacts of trade liberalization. It was thought by many Chinese scholars that China had no comparative advantage in soybean production and thus might increase imports after opening the market for competition (e.g. Li 1999; Cheng and Peng 1999; Huang and Ma 2000; Aubert and Zhu 2002). This perception was supported

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[152] Information on major policy changes with respect to the soybean sector over the past two decades can be found in the Annex.

by many studies using various quantitative models (e.g. College of Economics and Management 1999; Sun 2001; Chen 2004). Such a situation would inevitably make it difficult for China to raise the incomes of soybean producers (Aubert and Zhu 2002). This seemed to give rise to a need for government support to the soybean sector (e.g. Aubert and Zhu 2002; Wan 2007).

Whether China's soybean sector has been affected negatively by the WTO accession is questioned by some scholars. Ke (2005) concluded that China followed essentially the same arrangement for soybean trade after the WTO accession as before, and therefore any impact, if it existed, would not be the consequence of fulfilling the WTO commitments, but the follow-up effect of previous trade liberalization. He pointed out that neither the soybean area nor prices declined after the WTO accession, indicating that the negative effect was unrelated (Ke 2005). Gale (2007) found that although China's soybean market became closely integrated with international markets after the WTO accession, the profitability and acreage seemed to be stable, meaning that the boom in soybean imports was caused mainly by the rapid growth of domestic demand. Chen and Cheng (2003) thought that, given the growing domestic demand for soybean oil and meal, restricting soybean imports might make China's soybean sector worse off because in such a case although China would forgo the earnings from processing soybean domestically imports of soybean oil and meal would still grow inexorably. They even proposed that China should turn itself into the world soybean processing center with a trade pattern of importing soybean and exporting soybean derived products.[153]

The likely trend of market development under a freer trade regime was also the focus of many studies, both before China's WTO accession and thereafter. Whereas Aubert and Zhu (2002) correctly predicted a strong growth of soybean imports in the 2000s, on the basis of analogies between mainland China and several East Asian economies and simulations with a partial equilibrium (PE) model, their predictions of net imports in 2010 (9.27 to 14.0 million tonnes) were significantly underestimated. Sun (2001) used a PE model to assess impacts of WTO accession on a wide range of agricultural products and predicted soybean imports in 2010 at 12.3 million tonnes. In general, models based on the earlier time series data all failed to predict the surge in soybean imports after the WTO accession. The later studies (e.g. FAPRI 2011; OECD-FAO 2011; USDA 2011b) were able to take China's post-WTO experiences into consideration and refine predictions accordingly. For example, China's import of soybean in 2010/11 was forecast as 23.2, 43.8 and 57.0 million tonnes in the United States Department of Agriculture (USDA) baseline projections released in 2003, 2007 and 2011, respectively. These experiences suggest that the evolution of China's soybean market cannot be predicted by the known trends with reasonable accuracy.

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[153] In this paper, the term derived soybean products refers to soybean oil and meal.

So far, China remains a producer of non-genetically modified organism (non-GMO) varieties of soybean. In contrast, the major soybean exporters commonly use GMO varieties. This difference was regarded as a disadvantage for China in terms of yield or cost competitiveness, but an advantage in terms of quality. Whether China should adopt GMO varieties is hotly debated. Although some thought that China's adoption of GMO soybean varieties would be an unavoidable outcome given competition pressure, others warned that this might impose a serious threat to China's agricultural production and ecological systems, or lead to a complete loss of the niche market in East Asia (Wan 2007). Hansen *et al*. (2007) conducted a simulation analysis on commercializing GMO soybean in China. They concluded that China's adoption of GMO varieties was unlikely to affect significantly either the world market or the size of China's import demand.

The structural characteristics of the soybean market are also of great importance. It has become a major policy concern that a few transnational companies (TNCs) have seized control of the soybean supply chain in the Chinese market. This situation is thought to be a real challenge, if not a threat, to national food security and social stability (e.g. Wan 2007; Yin 2009). Yin (2009) even warned that the United States of America, given its position as the largest grain exporter in the world, might use grain as a strategic weapon to pursue its national interests. In contrast, Song *et al*. (2007), on the basis of the results from an estimated United States of America and China two-country PE trade model, concluded that Chinese soybean importers had greater market power relative to US soybean exporters. Nevertheless, this finding is contradictory to the prevailing perception held by many Chinese scholars and officials.

China's growing demand for soybean may have impacts on other countries as well. Willenbockel (2007) conducted a study on whether intensifying bilateral trade links with China would affect adversely the sectoral production and employment structure of Brazil. The results of computable general equilibrium (CGE) model simulations suggest that China's import demand growth has non-negligible effects on the Brazilian economy because of the noticeable effect of "Dutch disease".[154]

In brief, the evolution of China's soybean sector has become a topic attracting worldwide attention. This paper intends to describe the evolution of China's soybean sector during the past two decades and to examine the domestic and trade policies affecting its development. The paper will also explore the implications of China's experience for other countries.

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[154] The expression "Dutch disease" here refers to a situation in which the boom in agricultural productivity crowds out the manufacturing sector.

2. Soybean production and consumption

Geographical distribution of producing areas

Soybean is produced all over China, except in Qinghai Province. In the early 1990s, the geographical distribution of production was still relatively dispersed. In 1991–1993, there were seven provinces (Heilongjiang, Henan, Hebei, Shandong, Jilin, Anhui and Inner Mongolia, in descending order) that had a share above 5 percent of the national total sown area. However, the number declined to five (Heilongjiang, Inner Mongolia, Anhui, Henan and Shandong) in 1999–2001, and four (Heilongjiang, Anhui, Inner Mongolia and Henan) in 2008–2010. The data suggest that regional concentration of production has been taking place during the past decade.

Figure 1 shows changes in soybean-sown areas in the Northeast region, Central region and remaining provinces.[155] It can be observed that the total sown area for China as a whole rose slightly with noticeable fluctuations. However, if the low-level data from the first three years is excluded, the upward trend virtually disappears. The situation differs at regional levels. The sown areas rose in the Northeast region, maintained relative stability in the Central region and declined in the other provinces.

FIGURE 1:

Soybean-sown areas by major producing regions
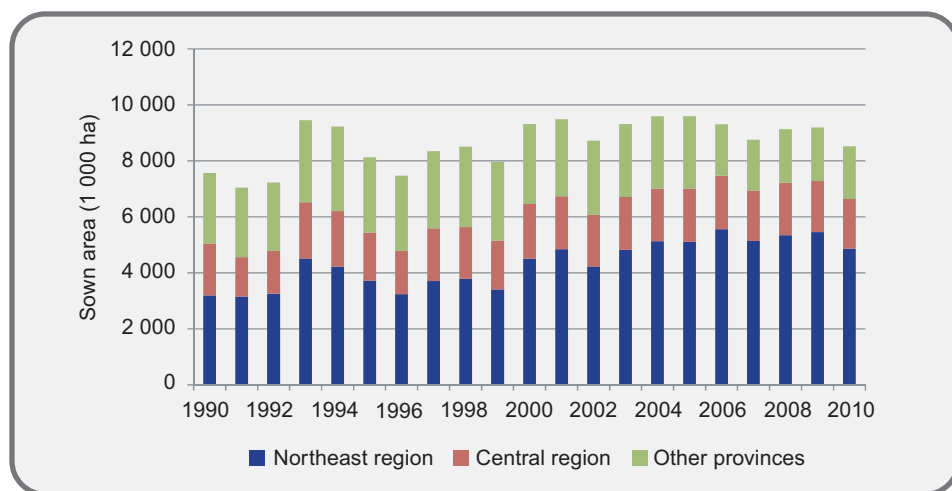
Source: Created by the authors using data from the Ministry of Agriculture 2011a

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[155] The Northeast region includes Inner Mongolia, Liaoning, Jilin and Heilongjiang; and the Central region includes Jiangsu, Anhui, Shandong and Henan. Inner Mongolia is included in the Northeast region because soybean production is highly concentrated in its eastern part.

At present, soybean production is highly concentrated in the Northeast region and the Central region (see Map 1). The Northeast region is of predominant importance, accounting for 56 percent of the total output in 2010. In the Central region, Anhui is the largest producer, followed by Henan, Jiangsu and Shandong, which in aggregate produced 20 percent of the total output.

MAP 1:

Concentration of soybean production in China in 2010
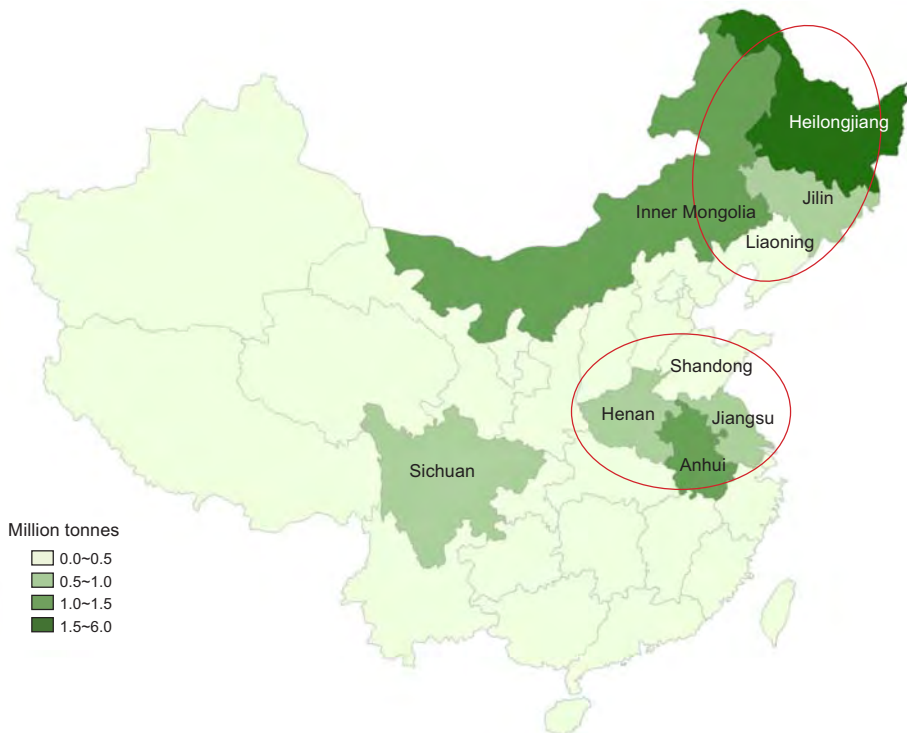
Source: Created by the authors using data from Ministry of Agriculture 2011a

Soybean production in the Northeast region differs from production in the Central region in two main aspects. First, the Northeast region is dominated by a cool climate, which allows farmers to plant only a few optional crops apart from soybean (mainly spring wheat and corn). As a result, soybean production is a major household undertaking for earning income, particularly in Heilongjiang and eastern Inner Mongolia. For instance, soybean-planting areas usually account for over half of the total planting areas in several prefectures in northern Heilongjiang (NBS 2010).[156] In

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[156] It should be noted that inconsistencies exist between national and provincial soybean production statistics.

those northernmost prefectures, this share is as high as 80 percent. The dependence of farm household income on soybean production is even higher if assessed with more disaggregated data. Such high shares suggest that farmers in these areas are, to a large extent, locked into soybean production. Second, the state farms in Heilongjiang play an important role in soybean production, accounting for about 20 percent of Heilongjiang's soybean output in 2009. With large scales of operation and advanced technology, the state farms are able to achieve much higher productivity than the household farms. For instance, it was reported that the average yield of Heilongjiang's state farms was 2 588 kg per hectare in 2009, about 75 percent higher than the corresponding provincial average (NBS 2010).

The official statistics reveal that the shares of cultivated areas planted in soybean have tended to decline over time in the coastal provinces as the precious land resources are increasingly used to produce high-value crops such as vegetables and fruits. In contrast, the shares rose in inland provinces where accessibility to the premium domestic and overseas markets is weak. Figure 2 compares the adjustments of soybean production in four major production regions at present and in the past (Heilongjiang and Anhui as inland provinces and Liaoning and Shandong as coastal provinces). Such a pattern of change can be regarded as an indication that the regional adjustments of crop structures were made based on their specific comparative advantages.

FIGURE 2:
Changes in the share of soybean area in the total planting area in selected provinces
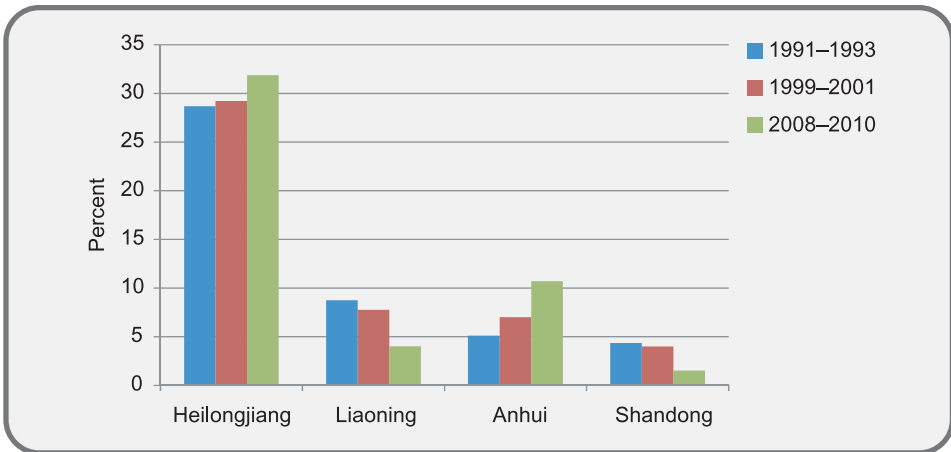
Source: Ministry of Agriculture 2011a

In the past two decades, soybean production has tended to be concentrated increasingly in less-developed regions and to be carried out by households in landlocked regions. Such a situation imposes a potential challenge to policy-makers regarding how to deal with regional problems through appropriate measures. Trade protection is certainly ineffective to solve the problem, because this may cause huge welfare losses in other economic sectors and regions, with only limited benefits to soybean growers.

Trends in yield and output

Similar to the sown areas, both yields and outputs in the first three years were significantly lower than those in the later years, as shown in Figure 3. If the data in these three years are excluded, yields seem to be fluctuating without a clear trend. Severe natural disasters in major production regions were the primary factor leading to the sharp declines in yields in 2003 and 2007. The outputs change roughly in parallel with the yield. During the period 1993–2010, soybean outputs varied notably with the average yield being 15 million tonnes.

FIGURE 3:

Soybean yield and output
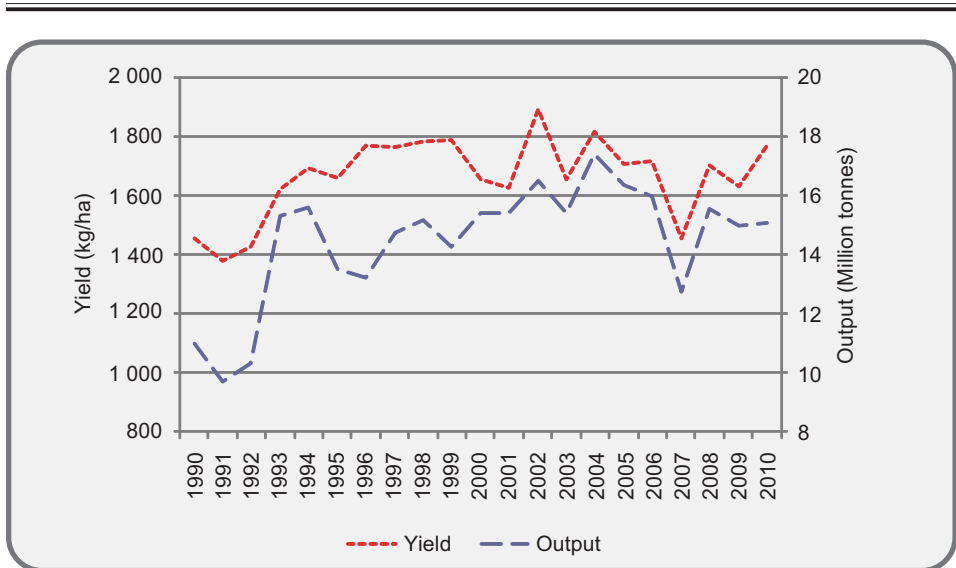
Source: Ministry of Agriculture 2011a

The official statistics reveal that large yield variations exist among different provinces. The Ministry of Agriculture (2011a) reported that the yield per hectare in 2010 was only 586 kg in Ningxia, whereas it was 2 763 kg in Liaoning.[157] The yield gaps at disaggregated levels are also very large. Taking Heilongjiang as an example, the average yields at prefecture level ranged from the lowest of 1 155 kg to the highest of 2 294 kg in 2009. As mentioned above, the state farms in Heilongjiang had a much higher average yield than the household farms in the same areas. These facts suggest that notable potential may exist for China to raise soybean production if the yield gaps can be narrowed with appropriate technical and economic measures.

Trends in labour productivity

To increase production, the return to producers becomes a crucial incentive, which is in turn related to prices and labour productivity. According to the sample survey by the National Development and Reform Commission (NDRC), the average yield, the real farmgate price of soybean, and the real material costs all trended upwards (see Figure 4). The corresponding net return per hectare of sown area varied notably

FIGURE 4:

Soybean yield, price, production costs and earnings
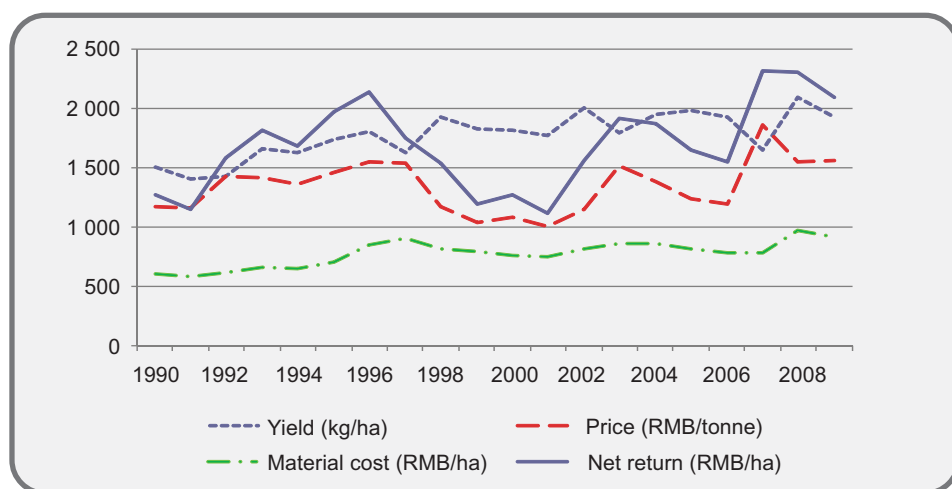
Note: The price, material cost and net return are expressed in 1990 constant price by deflating the nominal value indicators with the rural consumer price index.
Source: NDRC 2010

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[157] The reported yield was the highest in Tibet (3 571 kg). However, this number is not reasonably representative because of the small production scale there.

without an apparent upward trend. On the other hand, labour inputs declined sharply from about 170 labour-days in the early 1990s to about 60 labour-days in recent years, leading to a significant rise in earning per labour-day from less than 10 Renminbi (RMB) to more than 30 RMB. It seems that the labour productivity in soybean production tends to improve over time. In general, this can be regarded as an indicator of better incomes for the Chinese soybean producers.

Trends in utilization of soybean and soybean products

So far the Chinese government has not released statistics on utilization of soybean and soybean products in a systematic way. The urban and rural household surveys provide limited information on per capita consumption of soybeans, bean curd and soybean oil (NBS 2011). Piecemeal information about crushing and feeding use of cake can be found from various informal sources, such as the local media or speeches by people in the industry. In contrast, China's balance sheets of major agricultural products are routinely compiled and released by institutions like the Food and Agriculture Organization of the United Nations (FAO), Food and Agriculture Policy Research Institute (FAPRI), Organisation for Economic Co-operation and Development (OECD) and United States Department of Agriculture (USDA).

The historical data of China's supply and utilization of soybean and soybean products from the USDA's Production, Supply and Distribution dataset and from FAPRI are virtually the same. However, the FAO and USDA data differ to varying degrees for different indicators, although the trends are somewhat similar. For instance, the amount of soybean crushed rose from 5.7 million tonnes in 1990 to 36.5 million tonnes in 2007 according to FAO data, whereas the corresponding data from the USDA were 3.9 million tonnes and 39.5 million tonnes, respectively (FAO 2011; USDA 2011c). In general, the USDA data show stronger trends of growth for most indicators of China's utilization of soybean and soybean products. Since the USDA data are more similar to the available Chinese data, the descriptions below use the USDA data.

As shown in Figure 5, the uses of soybean for food and feed have risen notably throughout the period. However, the growth of soybean for crushing is more remarkable, especially after the mid-1990s. According to the USDA data, in 2009/10 China surpassed the United States of America as the largest soybean processor in the world. By 2011/12, China was expected to crush 61.5 million tonnes of soybean, accounting for more than one-fourth of the world total (USDA 2011a, Table 7).

The strong growth of soybean crushing is driven primarily by the growing domestic demands for vegetable oils and for protein feedstuffs. The State Grain Administration estimates that China's total demand for vegetable oils rose from 10.5 million tonnes in 1995/96 to 24.6 million tonnes in 2009/10, growing by about

6 percent annually[158] (personal communication with Wang X.H. in 2011). Given the limited capacity to increase supply of oilseeds, China increased imports of oilseeds for domestic processing as well as oils for direct use. Apart from this favourable market environment, the development of the soybean-crushing industry has also benefited from trade policy reforms that will be discussed later.

FIGURE 5:

Utilization of soybean
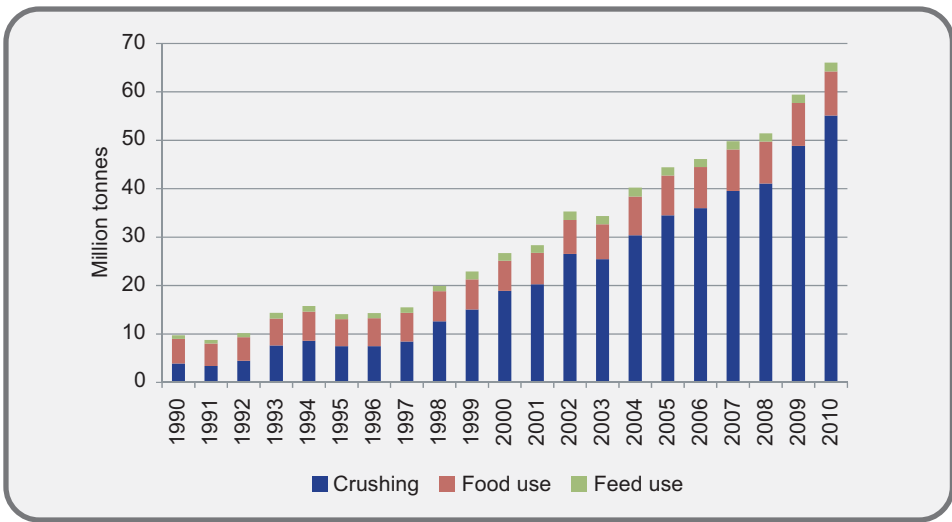
Source: USDA 2011c

Map 2 shows the regional distribution of soybean-crushing capacity. The most apparent feature is that the coastal provinces, which have easy access to overseas supply, play a dominant role in soybean crushing. Shandong has the largest capacity, followed by Jiangsu and Guangdong. The capacities in all of the inland provinces are small except for Heilongjiang, where the crushing plants use mainly locally produced soybeans. By 2010, the 12 coastal provinces in aggregate accounted for about 80 percent of China's total soybean crushing capacity.

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[158] It should be noted that the reported in-home per capita consumption of vegetable oils grew only by 28 percent for rural households and 36 percent for urban households between 1995 and 2009. This fact suggests that consumption outside the home and industrial uses chiefly account for the growth of total demand.

MAP 2:

Regional distribution of soybean-crushing capacity
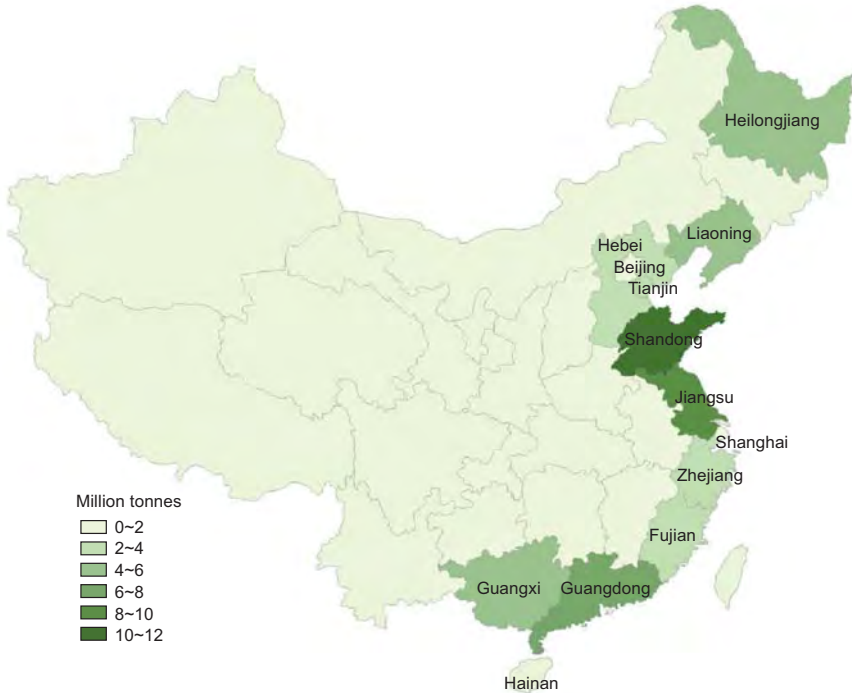
Source: Drawn by the authors using information from State Grain Administration (personal communication with Wang X.H. in 2011)

The rapid expansion of soybean crushing has enabled China to increase the soybean oil supply to the domestic market. However, as shown in Figure 6, the domestic consumption of soybean oil has risen even faster. During the whole period, China still needed to import soybean oil in large volumes for supplying the domestic market, albeit with a declining share. The exports of soybean oil were essentially negligible (2 percent or less) after 1995.

Domestic feed consumption of soybean meal has also risen continuously, along with rapid expansion of livestock production (see Figure 7). From 1990 to 2010, feed consumption of soybean meal rose from 1.0 million tonnes to 42.2 million tonnes.[8] In contrast to the situation for oil, the increments of meal supply are larger than those of domestic demand, leading to a reversion of the trade position from net-importing in the late 1990s to net-exporting in recent years.

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[159] In the FAO data, China's soybean meal consumption in 1990 was 2.7 million tonnes. The numbers for 2007 were 29.2 million tonnes from FAO and 30.1 million tonnes from the USDA.

FIGURE 6:

Composition of soybean oil consumption by sources
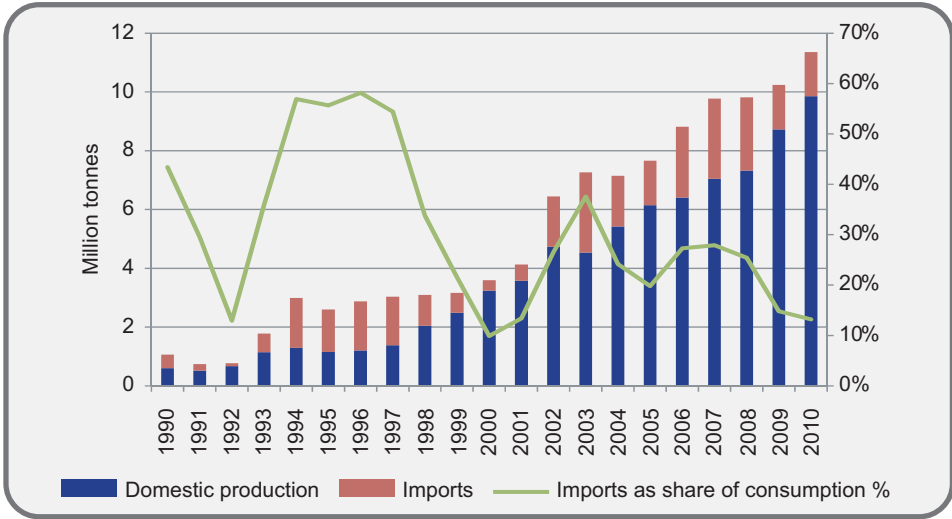
Source: USDA 2011c

FIGURE 7:

Changes in composition of soybean meal utilization
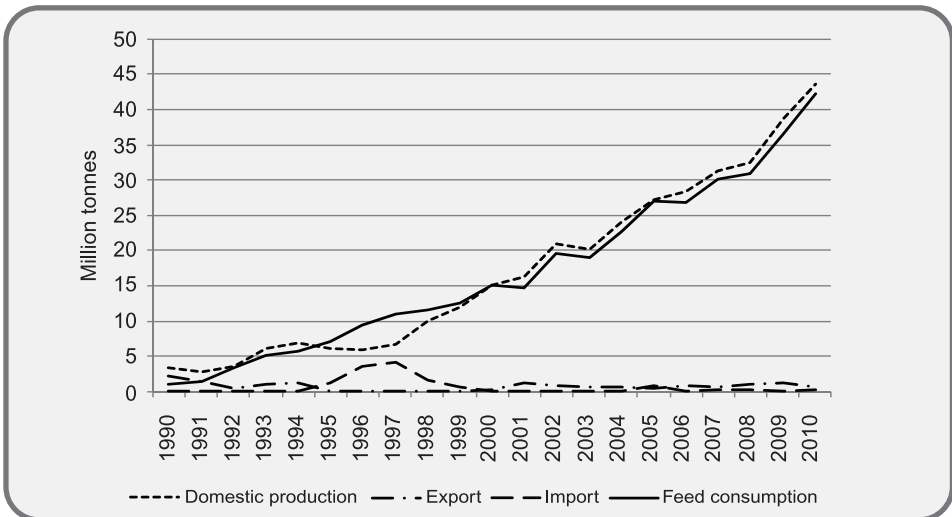
Source: USDA 2011c

3. Trade in soybeans and soybean products

Salient characteristics of the world soybean market

At present, the world soybean market has a few dominant players on both the supply and demand sides, as shown by FAO data (FAO 2011). Argentina, Brazil and the United States of America are the top three exporters, accounting jointly for about 90 percent of the world exports. These three countries are also the top producers, accounting for about 80 percent of the world production. Other important producers include China and India. China, the European Union, and Japan are the top three importers, accounting jointly for about 75 percent of the world imports. In terms of domestic consumption, Argentina, Brazil, China and the United States of America rank at the top.

Figure 8 shows changes in soybean imports by China and exports by Argentina, Brazil and the United States of America from 1992 to 2010. It can be observed that the dramatic increase of China's imports is in parallel with the strong growth of exports from the three largest exporters. Between 1995 and 2010, the volumes of exports from Argentina and the United States of America doubled, whereas export

FIGURE 8:

Imports by China and exports of the major players in the world soybean market
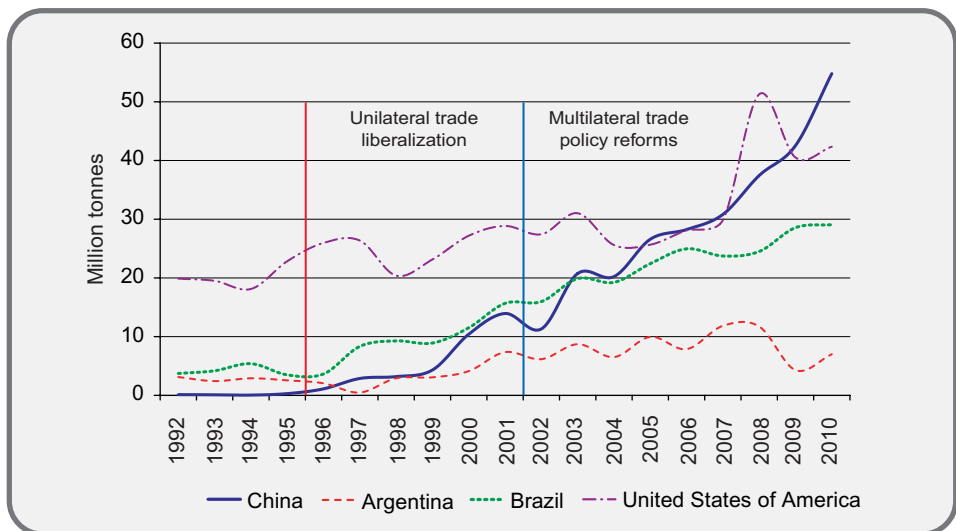
Source: COMTRADE

volume from Brazil rose by about eight times.[160] However, the most dramatic change was in China's imports. China surpassed the European Union in 2003 as the number one importer and the volume of imports has risen continuously in the subsequent years. By 2010, China's imports jumped to 54.8 million tonnes, accounting for about 60 percent of the world trade. In comparison, the volumes of imports by other leading importers (European Union, Japan, and Mexico) remained relatively stable during the same period.

It is speculated, based on the above characteristics, that the world soybean market is not perfectly competitive (Song *et al.* 2007). China could act as a monopsonistic buyer, whereas Argentina, Brazil and the United States of America are oligopolistic suppliers. Within such a framework, world prices could be affected by individual actions of any of these major players, leading to great uncertainty as to the outcome. Whether this picture is accurate or not, such an image is deeply rooted in the minds of many policy-makers in both importing and exporting countries and has an impact on the determination of both domestic policies and trade policies.

Although some empirical research provides evidence for the market power possessed by these large traders (Song *et al.* 2007), the conclusions are likely to be too superficial to reflect the reality. A major problem of this study is that it fails to take into account the behaviour of enterprises in the soybean trade, particularly TNCs. Trade flows occur between importing and exporting countries but actions are taken by trading firms. At present, several TNCs, such as ADM Co. (United States of America), Bunge Ltd. (United States of America), Cargill Inc. (United States of America), Louis Dreyfus Group (France), and Wilmar (Singapore), play dominant roles in global soybean value chains (UNCTAD 2009). These TNCs are involved directly or indirectly at each stage of the soybean value chain through financing, partnerships and/or ownerships. They purchase soybeans from exporting countries and sell them to users in importing countries. They also make large investments in crushing capacity in major soybean-importing countries, including China. It is not unusual to find that the trade in soybean and soybean-derived products between two countries is in fact trade within the same TNC. Therefore, market power is more likely possessed by these large TNCs than by an importing or exporting country. In pursuing maximum profits, these TNCs may compete for market shares or collude on setting prices, depending on the business environment of a specific country. Therefore, the mere presence of large trading countries may not be the primal factor for imperfect competition.

Another important aspect of the market for soybean is trade of soybean futures. The futures market is thought to play a role in discovering prices and managing risks. However, during the past decade, these functions have been affected by the

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[160] The sharp rise of exports from the United States of America in 2008 was mainly induced by the strong growth of imports by China and declining domestic use (USDA 2009).

increased participation of non-traditional traders in the trading of futures.[161] Unfortunately, the increased participation of non-commercial traders coincides with the extraordinary fluctuations of the world prices of soybean and soybean-derived products. In such a context, whether the functions of futures markets are distorted by the enhanced speculative activity becomes a debatable issue. Varying evidence has been found in empirical studies (Aulerich, Hoffman and Plato 2009; FAO 2010; FAO *et al.* 2011; Heady and Fan 2008; HLPE 2011; Irwin and Sanders 2010; Sanders, Irwin and Merrin 2008). An influential opinion is that trading in futures markets may have amplified price volatility only in the short term, whereas longer-term equilibrium prices are ultimately determined in cash markets where the buying and selling of physical commodities reflects the fundamental supply and demand forces (FAO 2010).

Distortions of spot-price signals by trading of futures, even if only in the short term, are harmful to developing countries because of several factors: 1) world prices are determined primarily by trading activities in those major futures markets located in the United States of America; 2) non-traditional traders (e.g. commodity index funds and swap funds) have deep involvement in such markets; 3) these speculative money pools are run by financial institutions of developed countries for the interest of investors; 4) trading of futures generally uses electronic trading techniques inaccessible or unfamiliar to potential traders in developing countries; 5) speculative activities are easily influenced by the macroeconomic conditions and policies of developed countries; 6) the likely impacts on producers and consumers in developing countries are largely externalities to speculators; and 7) developing countries commonly have limited ability to collect and analyse market information and limited instruments to manage risks of price shocks. Therefore, developing countries face a real challenge to adapt to such a market structure and to design their trade schemes, policies and institutions accordingly.

**China's trade flows for soybean and soybean products**

As shown in Figure 9, China remained a net exporter until 1995. The volumes of imports began to surge thereafter, especially after the WTO accession, except for the short-term disturbance in 2002 because of delayed approval of GMO soybeans into the Chinese market.[162]

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[161] Irwin and Sanders (2010) reported that, on average, non-commercial traders and index traders held 40 percent and 14 percent of the long position in Chicago Board of Trade soybean futures June 2006–December 2009. In contrast, commercial traders held only 33 percent of the long position during the same period.

[162] At present, China allows the import of GMO soybean, but prohibits growth of such varieties.
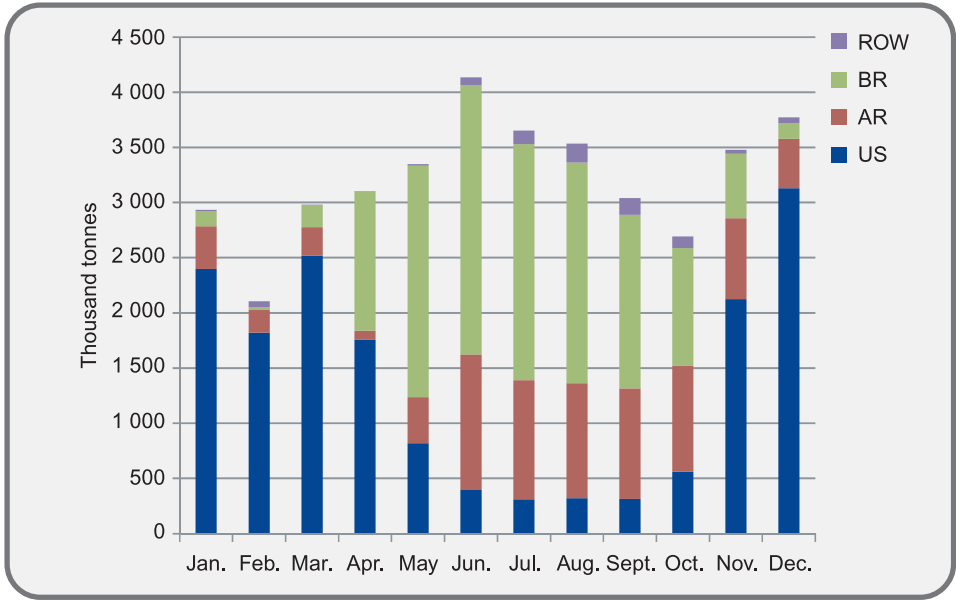
FIGURE 9:

China's soybean import and export
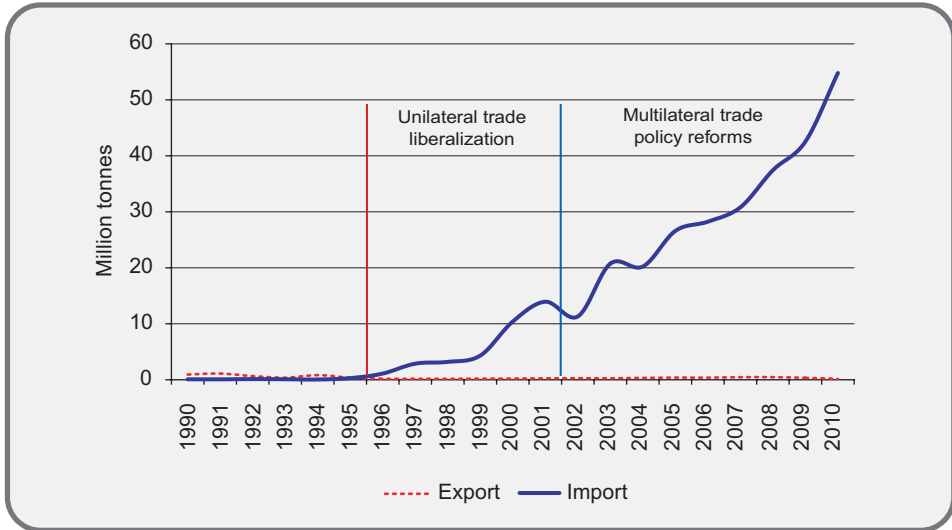
Source: Ministry of Agriculture 2011b

China's soybean imports come primarily from Argentina, Brazil and the United States of America, accounting jointly for 98 percent of total imports through most of the 2000s. However, the shares of individual countries had some fluctuations. The United States of America was the largest supplier in all years of the 2000s except for 2006, when Brazil became the leading supplier. Argentina was the second largest supplier in 2000/01, but was surpassed by Brazil in all of the later years. Because of factors of geography, the United States of America and South America complement each other seasonally in soybean supply. This fact allows China to smooth out seasonal fluctuations in foreign supply and price of soybean (see Figure 10).

During the 1992–2009 period, China remained a net importer of soybean oil, but the trade position of soybean meal alternated several times (see Figure 11). China's export of soybean oil was quite small. The volume of soybean oil imports fluctuated noticeably but with an overall upward trend. To some extent, volumes of soybean oil imports were related not only to domestic production, but also to imports of other vegetable oils. The volumes of soybean meal imports and exports also fluctuated and were negatively correlated. It seems that imports of soybean meal may have passed their peak permanently, as a result of growing domestic supply. The data suggest that China's import pattern of soybean and soybean derived products is characterized by a gradual replacement of the soybeans with soybean oil and meal.

FIGURE 10:

Seasonal composition of China's soybean imports during 2006–2010

Note: Five-year monthly average of imports by sources.
Source: Ministry of Agriculture

FIGURE 11:

China's trade of soybean oil and meal
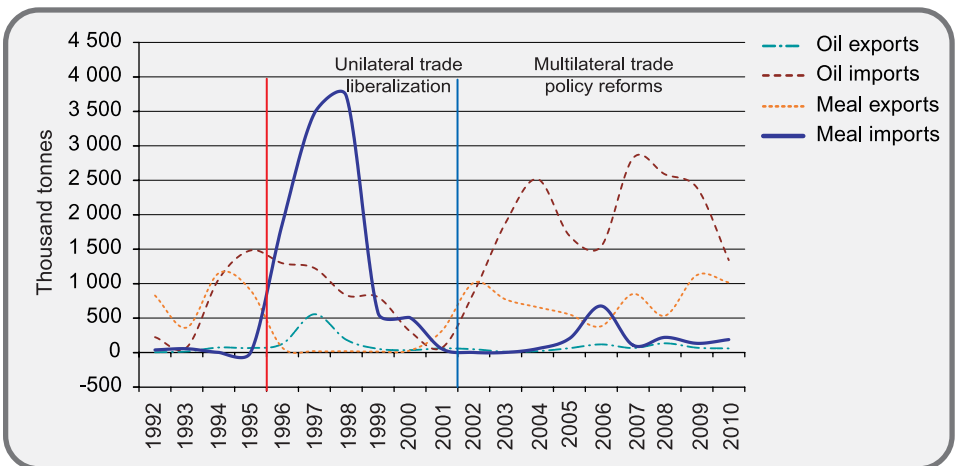
Source: Ministry of Agriculture 2011a

4.   Impacts of policy changes on domestic market and trade

Changes in trade and domestic policies

China's economic reforms since the late 1970s have profoundly altered the policies and institutions related to the soybean market. In the early 1990s, soybean production, marketing and trade were still subject to central planning and management, although state controls were not as stringent as those applied to major cereal products. The government used a wide range of instruments, such as state procurement, state pricing and state trading, to achieve prioritized policy objectives.

Fundamental reforms of the agricultural marketing system began in 1992, when the Chinese leadership accepted the model of a "socialist market economy". In subsequent years, the government took a series of pragmatic steps to liberalize agricultural marketing and trade gradually. The major changes in policies related to the soybean sector are summarized in Annex Table A1.

With the market-oriented reforms, oilseeds and vegetable oils were largely removed from state procurement and pricing at the national level by the mid-1990s. However, the old regime was retained partially for a longer period of time in major soybean-production areas (including the three northeastern provinces and the eastern part of Inner Mongolia). Although the government occasionally used measures such as special reserves or guaranteed purchase prices to protect soybean growers, for most of the period preceding 1997, the state-set prices of soybean were significantly lower than free market prices and world prices, indicating that soybean producers were being taxed.

Starting from the mid-1990s, the import trade of soybeans and derived products was under a very loose regulatory framework. The government formally installed a tariff-rate quota (TRQ) system for soybean imports in 1996, along with TRQs for the major cereals, but it never invoked the quantitative restriction. The TRQ for importing soybean oil did not work well at that time because of smuggling activities in some coastal provinces. Importation of soybean meal was even encouraged by the low tariff (5 percent) and exemption of value-added tax (VAT) at the importing stage in order to support domestic livestock production. These factors were largely responsible for the surging imports in the late 1990s.

During the 1990s, the government implemented a series of incentive measures to attract foreign direct investment (FDI), such as granting FDI firms direct trading rights outside of the state planning restrictions, concessional taxation arrangements. The soybean sector benefited greatly from these policies. The preferential policies, combined with growing demand for both vegetable oils and protein feedstuff in China's domestic markets, attracted TNCs to invest heavily in soybean-crushing

facilities. Many modern soybean-crushing factories were established after the mid-1990s, and these became effective competitors with the traditional small crushing factories that had prevailed in China.

The WTO accession resulted in fundamental reforms of the policies and institutional arrangements related to agricultural trade. In the negotiations, the Chinese negotiators faced both internal and external pressures for liberalizing trade of soybean and soybean derived products. Although opening the Chinese soybean market was a natural target for the major exporting countries, domestic interest groups, such as crushing firms and feed firms, advocated removal of trade barriers to gain easy access to cheap supplies of feedstock. The final commitments included in the accession protocols were quite comprehensive, as shown in Table 1.

TABLE 1:

China's commitments for WTO accession having an impact on the soybean sector

Content	
General commitment	- Substantially reducing agricultural tariffs. - Ceasing export subsidies. - Capping domestic support within allowed *de minimis*. - Eliminating all sanitary and phytosanitary (SPS) barriers and technical barriers to trade having no sound scientific basis. - Permitting any entity, including foreign enterprises, to import most agricultural products into any part of China and to engage in the full range of distribution services within a three-year period.
Commitments specific to soybeans and derived products	- A tariff-only system is applied to soybean with a tariff rate of 3 percent. - A tariff-only system is applied to soybean meal with a tariff rate of 5 percent. - A tariff-rate quota system is applied to soybean oil (and rape oil and palm oil) during the implementing period (2002–2005). The import quota rises from 2.518 million tonnes in 2002 to 3.5871 million tonnes in 2005. The in-quota tariff is 9 percent and the above-quota tariff is reduced from 75 percent to 25 percent in the 2002–2005 period. Two-thirds of the quota is retained for non-state trading enterprises. The TRQ system is to be replaced by a "tariff-only" system in 2006 with a 9 percent tariff applied uniformly for soybean oil, rape oil and palm oil.[163] - State trading in soybean exports is retained.

Source: Author's compilation based on WTO 2001

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[163] According to the statistics released by Ministry of Commerce (2007), the fill rates of the TRQ for soybean oil ranged between 34.6 to 80.8 percent during 2002–2005.

In order to curb the expected negative impact, the Chinese government took a series of domestic measures to support the soybean sector both before and after the WTO accession. For instance, in 1998 the government implemented the "soybean action plan" aiming at improving soybean productivity and profitability, and this was later extended as a "soybean rehabilitation programme" launched in 2002. In 2002, rail transportation of soybeans was exempted from the special levy for railroad construction in order to reduce the costs for domestic soybean users. Soybean production also benefited from a series of supporting measures directed towards grains that were adopted after the WTO accession.

The government also took measures to regulate the development of the domestic soybean-processing industry. In response to the appeals of soybean processors, after heated debates the government removed the VAT exemption for imported soybean meal. Meanwhile, measures were taken to encourage domestic soybean processors to export meal to nearby markets where large demands existed. However, excessive expansion of soybean-crushing capacity, dominance by TNCs in China's soybean-crushing industry and high dependence on imported feedstock became issues of policy concern, leading to adoption of measures to control further expansion in 2008. When inflation became a challenging issue in recent years, the government also took measures to stabilize consumer prices of soybean products, such as temporarily reducing the import tariff to 1 percent for soybean and 2 percent for soybean meal in 2008 and providing a one-off subsidy to certain processing firms in exchange for having them sell their products at cheaper prices in early 2010.

As a component of the market-oriented reforms taken in the early 1990s, China established several commodity exchanges for trading of agricultural futures. Trading of soybean futures began in 1993 in the Dalian Commodity Exchange (DCE). The initial contract made no distinction between GMO and non-GMO soybean. Responding to the regulations on GMO products introduced in 2002, the DCE redesigned the soybean futures contract in 2002, with type 1 for non-GMO products and type 2 for GMO products. A primary consideration for making this distinction was creating a mechanism for discovering the price of Chinese soybean. In subsequent years, the trading of futures became increasingly active (DCE 2011). In 2000, the total transactions of soybean futures amounted to 25 million contracts.[164] The volume peaked in 2008 with 227.4 million contracts, probably because of speculative anticipation of rising prices in the future. The volume of transactions was reduced by more than half in the next two years. So far, the volume of transactions of type 2 futures in recent years remains small. DCE also conducts trading of futures of soybean meal and oils. By 2010, the transactions reached 251.2 million contracts for soybean meal, and 181.8 million contracts for soybean oil.

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[164]   Ten tonnes per contract.

Huang *et al*. (2009) assessed changes in policy distortions regarding agricultural products and found that protection for soybean fell from around 30 percent to almost zero during the period 1995–2005, indicating a strong commitment to trade liberalization for soybean. However, the study by OECD (2011) derived different findings. According to OECD, the levels of policy support to soybean, as measured by producer single commodity transfers, fluctuated noticeably during the 1995–2010 period around an upward trend, such that these transfers went from being negative to being positive. These contradictory findings suggest that China's policy and market information is still not transparent enough.

In brief, the Chinese government responded to anticipated large deficits of soybean and derived products in the domestic market with unilateral liberalization of soybean trade before the WTO accession. As a result, the integration with the world market was notably enhanced and WTO accession only pushed this process further. Seen from this angle, the impacts on soybean sector are related intrinsically to trade liberalization and WTO accession has had less impact. However, the role of WTO accession should not be played down. In essence, it assured the direction of reforms in the long run by binding China with the WTO rules and disciplines.

Impact on domestic production, consumption and trade

The reforms of domestic and trade policies during the past two decades have had profound impacts on soybean supply, demand and trade. The major aspects are discussed below.

### *Close integration with the world market*

Transmission of the world price into the domestic market is the primary channel for trade liberalization to have an impact on soybean production, which in turn affects producers' incomes and national food security. With the installation of a free market system and the liberalization of trade arrangements, China's soybean market has become closely integrated with the world market. As a result, changes in world prices can be transmitted to the domestic market quickly (see Figure 12). Apart from a close co-movement of the world price and China's wholesale price,[165] the producer price also changes in a similar pattern. The relative rise of the farmgate price in 2007 was partially as a result of reduced production in that year. Lately, the domestic policies implemented after the 2008 global crisis prevented the farmgate price from falling sharply.

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[165] The statistical tests on the data shown in Figure 12 confirm that co-integration exists between the world market price and the domestic wholesale price with a Granger causality directed from the former to the latter. The same tests cannot be carried out for the farmgate price as it has a different frequency.

FIGURE 12:

Co-movement of soybean prices in the domestic and the world markets
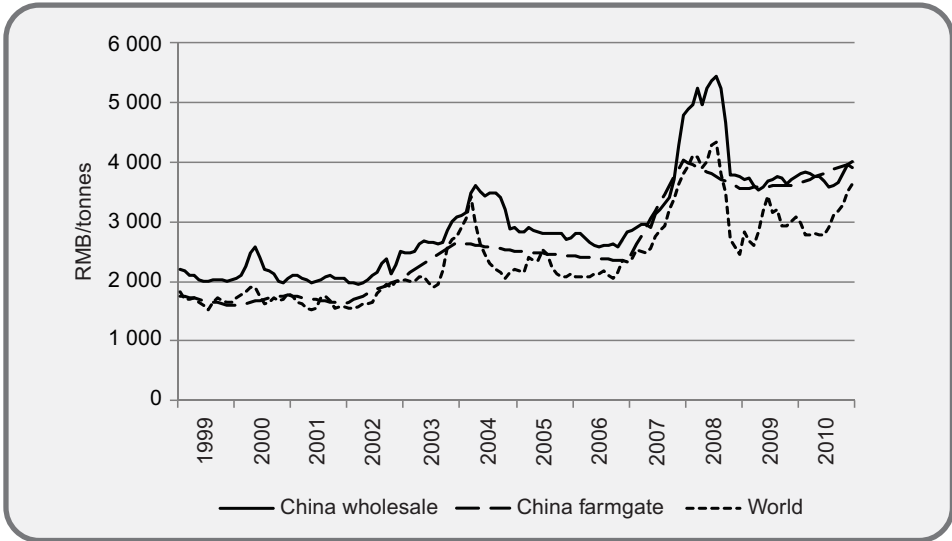
Note: The world price is represented by c.i.f. Rotterdam price of US soybean, converted to RMB using the official exchange rate. The China wholesale price is grade 3 soybean for crushing. The monthly China farmgate price is converted from the annual price reported in NDRC's farm production cost survey with linear-match last method.

Empirical studies have found strong evidence that co-integration in soybean prices exists between the Chinese market and the world market (e.g. Hua and Chen 2004; Han 2008), between China's soybean futures market and spot market (e.g. Zhao 2004), and between producing regions and consumption regions within China (Wu 2001). Apart from lower trade barriers, the active trading of soybean futures is also conducive to enhancing the price linkage between the domestic market and the world market. As a result, China's soybean production tends to be increasingly determined by price signals in the world market. Although this development may lead to an improved resource allocation, it also leads to the constant exposure of Chinese producers and consumers to external market risks.

The enhanced price linkage with the world market has a bearing on policy determination. In the early 2000s, the major policy concern was whether the domestic market price would be depressed to an unsatisfactory level that might generate negative impacts on both production and farmers' incomes. However, in recent years, the sharp price fluctuations in the world market have become the focus, and this is seen as undesirable for the maintenance of domestic market stability. The latter phenomenon is related to a general rise of agricultural prices driven by the growing

demand for food and for feedstock in the bioenergy industry, as well as excessive price volatility caused by macroeconomic shocks and unregulated speculation.

Rapid decline in rate of self-sufficiency

The most remarkable change in China's soybean market during the past two decades has been the sharp reduction in self-sufficiency for soybeans. It can be seen from Figure 13 that China's rate of self-sufficiency declined sharply from over 100 percent to a mere 22 percent.

FIGURE 13:

Soybean production and ratio of self-sufficiency
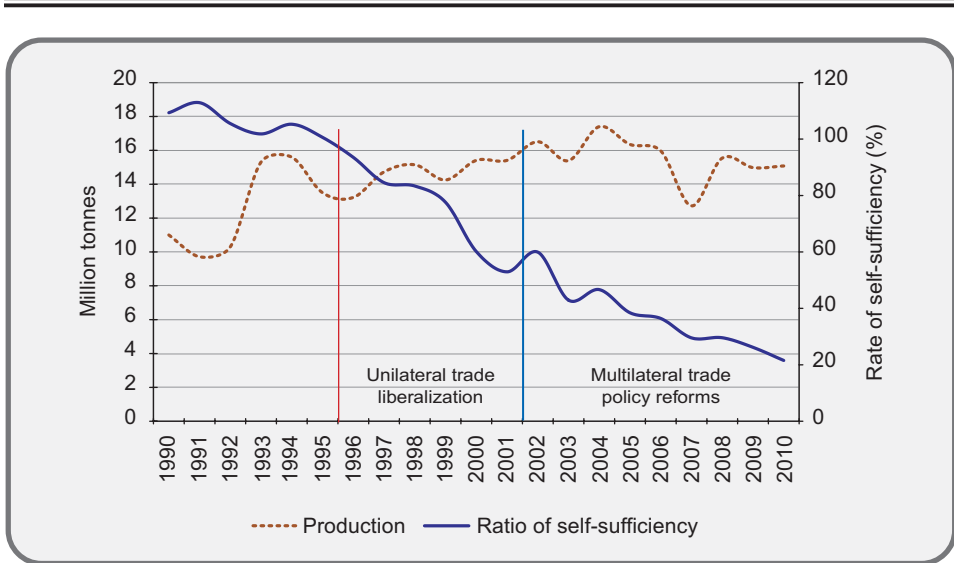
Source: Ministry of Agriculture 2011

As mentioned above, China's soybean trade turned from net-exporting to net-importing in 1996 when China adopted a liberal trade scheme for soybean. The growth of imports accelerated after the WTO accession. Such an apparent coincidence is widely regarded as evidence that trade liberalization had a negative impact on China's soybean sector through depressing demand for domestic products and prices (e.g. Wan 2007).

Although this conclusion is logically sound, it may not be the true explanation for the rate of import growth. It can be observed that the declining self-sufficiency began in the early 1990s, when China still adhered to the central planning regime

and the level of production was low. The data suggest that there must have been a sharp upward turn in the demand for soybean in 1993 and thereafter. Available information indicates that the expansion of the livestock sector was a major factor leading to the growing demand for protein meal, which was met first by reducing soybean export and then by increasing imports of both soybean and meal.[166] The growth of consumers' demand for vegetable oils was also a factor. The government responded to the demand changes by reducing trade barriers. From this perspective, it was not the opening of the market that led to growth of imports, but the inability of domestic sources to meet demand that led to the adoption of freer import arrangements.

Later, the freer trade scheme for soybean was locked in through the WTO negotiations. Apart from this, China also accepted the need to liberalize soybean oil imports in a gradual way (see Table 1 for detailed commitments). Low trade barriers are crucial for imported soybean and soybean products to maintain their competitive edge over domestic products. Therefore, when China's domestic consumption is pushed up by strong economic growth, the incremental increases in demands are met predominantly by imports. It is fair to say that the evolution of China's soybean sector in the past two decades has been driven primarily by the growth of domestic demand.

Whether the decline in soybean self-sufficiency adversely affects national food security is still a debatable issue. Experience shows that the role of soybean in China's food system has changed over time. Before the 1990s, soybean was a major protein source for consumers, and thus was given the same importance as cereal crops. In fact, soybean is still classified as a kind of grain and covered by the government grain programmes. However, given a sustained growth of income, consumers demand more and more meats and vegetable oils. As a result, soybean production is no longer regarded as a key component for national food security. Instead, as consumers spend a major share of their incomes on meats and oils, stable supply of such food products at reasonably low prices begins to take precedence in policy-making. It is in this context that the surge in soybean imports has been allowed. Nevertheless, the government continues to adhere to the principle that an appropriate rate of grain self-sufficiency is the basis for national food security in the long run (State Council 2008).

It was anticipated before the WTO accession that China would have to import more cereals in order to meet the expanding demand for food and feed. However, China increased imports of soybean, and at the same time maintained net exports of

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[166] According to the official statistics, the annual growth rate of pork production was somewhat higher than 10 percent during 1993–1996 and that of poultry production was about 20 percent. However, it should be noted that China's livestock production data were not very accurate during this period.

cereals in most of the decade beginning in 2000. Such a situation belies those earlier expectations. To a large extent, importing soybeans saves land for production of cereals, which in turn, allows China to maintain a high degree of self-sufficiency in cereals at relatively low economic costs. Table 2 shows the results of calculated potential impacts of soybean trade on national food security. At the average yields of soybean and corn in the 2007–2009 period, a total of 39 million hectares of sown area would be required for China to produce the required amount of soybean domestically. This is equivalent to a 25 percent increase of China's current total sown area, which is virtually impossible because China has no such spare land resources. If the incremental production of soybean were to be achieved by sacrificing corn production, it would be a disaster for national food security since, even if China were to convert all the area under corn to soybean, the incremental soybean output would be smaller than the amount imported in recent years. Given the fact that the corn yield is about three times as high as the soybean yield, a shift towards soybean production would mean a decline in grain self-sufficiency. In such a context, importing soybean should be regarded as a sound component in China's strategy for national food security. Furthermore, importing soybean saves valuable land for other more remunerative crop products, leading to an improvement in resource utilization, which is also very important with respect to raising rural incomes.

TABLE 2:

Counterfactual impact of soybean trade on China's national food security

	Import in 2010 (million tonnes)	Area required for production domestically (million ha)	Output of corn forgone (million tonnes)	Parameters used in calculation
Soybean	54.8	34.3	182.9	Soybean yield = 1 624 kg/ha
Soybean oil	1.3	4.7	24.9	Corn yield = 5 350 kg/ha
Total	–	39.0	207.8	Oil content = 18 percent

Source: Authors' calculation

Stagnant soybean production

The impacts on soybean production and producers' incomes were important policy concerns before and after the WTO accession. In order to cope with these anticipated consequences, the Chinese government took some actions to assist the soybean sector in advance, in order to make it ready for competition. However, the data suggest that China was unable to narrow the yield gap between itself and the major exporters and between soybean and competitive crops (mainly corn). China's soybean yield in recent years is about 60 to 70 percent of the yields in Argentina, Brazil and the United States of America (FAO 2011). The average yield in the

2008–2010 period was roughly the same as in the 1999–2001 period. In contrast, the yield of corn rose by 14 percent during the same period. As a result, China's soybean production stagnated (see Figure 13).

The extent to which the stagnation of soybean yield and output is related to domestic policies and trade policies is an unanswered question. It is certain that the soybean price increased in both the world market and China's domestic market over the period of 1996–2010 (World Bank 2011; NBS 2011a), suggesting that the stagnation should not be regarded as a result of trade liberalization.

Empirical studies show that Chinese soybean producers are reasonably responsive to changes in prices of soybean and competitive crops as well as inputs (e.g. Aubert and Zhu 2002; Chen 2004). Therefore, whether soybean production is attractive to farmers depends on its relative returns to family resources. In most parts of China, corn is the major competitive crop for soybean. Survey data of NDRC (2010) revealed that during the past two decades the net earning per hectare of soybean remained about 20 percent lower than that of corn without an apparent trend (see Figure 14). In contrast, the net earnings per labour-day of soybean were not only constantly higher than that of corn, but also trended upwards. Although labour inputs in both soybean production and corn production fell during the period 1993–2009, the rate of decline was faster for soybean, leading to a relative rise of net return per labour-day.

FIGURE 14:

The relative price and returns in soybean production
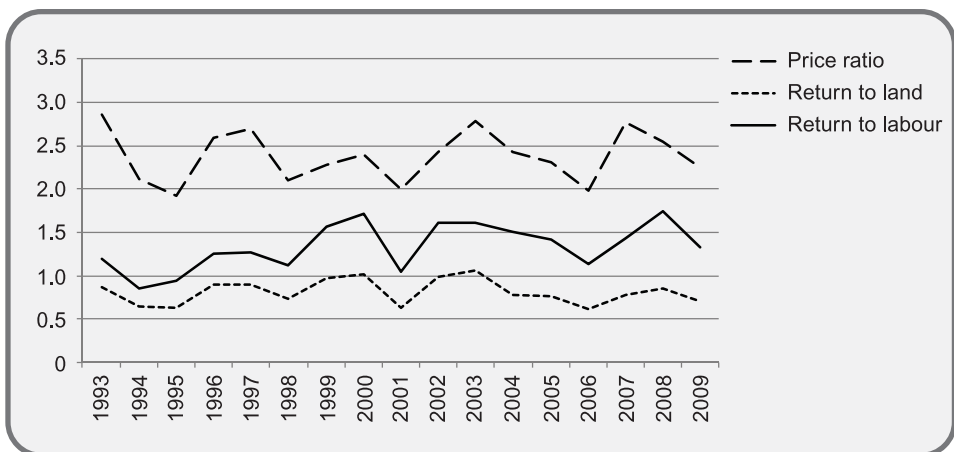
Note: The price and returns from corn production are used as the basis. Net return is defined as gross value of product minus all material costs and wages to hired labour.
Source: NDRC 2010

It seems that the stagnation of soybean production is more likely the result of failures in domestic policies. As previously mentioned, the role of soybean in China's food system has changed. Given the low yield, soybean is not a favoured crop from the viewpoint of local governments; promoting soybean production cannot make a contribution to the binding goal of grain outputs, nor to the growth of the local economy. The processing firms prefer to use imported soybean because it has the merits of high oil content, uniform quality, large lots, etc. Even more importantly, firms can obtain supply with a letter of credit, which enables them to avoid the cumbersome procedures and financial costs incurred in purchase, shipment and stock maintenance when using domestic products. The farmers tend to allocate more labour to off-farm activities that produce higher earnings, and this leads to carelessness in farm production. In general, Chinese consumers are not very conscious about GMO soybean and even when they are, current food-safety regulations are not effective enough to provide consumers with reliable information. Such an environment cannot create appropriate incentives for research and development on soybean production technologies. As a result, soybean production has become stagnant.

Growing dominance of TNCs in the soybean value chain

However, the freer trade arrangements have created a favourable environment for the expansion of the soybean-processing industry. During the mid-1990s, the Chinese government implemented a wide range of policy incentives for FDI. In order to capture the value added from processing oilseeds into protein meal and vegetable oil, in the late 1990s some TNCs began to invest in soybean-crushing facilities on a large scale or to obtain capacity through merger and acquisition of Chinese firms.

So far, official statistics on the soybean-processing industry are incomplete and inconsistent, particularly for those related to TNCs. Information from the State Grain Administration (personal communication, 2011) indicates that the total soybean-crushing capacity rose from about 30 million tonnes in the early 2000s to about 70 million tonnes in 2010. During the same period, the total crushing capacity owned by TNCs rose from about 1.7 million tonnes to 25.6 million tonnes.

Based on foreseen trade liberalization, in the later 1990s and early 2000s TNCs and domestic investors chose to establish new crushing capacity in the coastal provinces for easy access to the world market. The new soybean-crushing plants are characterized by large-scale, modern technology, distribution in clusters, and branded products. This pattern of development led to a rapid increase in demand for imported soybean as feedstock.

At present, the TNCs are gaining dominance in China's soybean value chains. So far, the TNCs have limited involvement in input supply, production and domestic purchase, but they conduct all other activities in the value chain. TNCs are usually

better equipped for gathering and analysing worldwide market information, sourcing cheap feedstock globally, accessing electronic trading of futures, and selling products at best prices. All of these factors make TNCs more competitive than the domestic enterprises. It is difficult to describe the actual shares of TNCs since their penetration into the Chinese market has multiple forms, such as wholly-owned facilities or joint ventures.[167]

The high and growing share of TNCs in the Chinese soybean market is regarded as a potential risk to China's soybean sector. Technically, some of the TNCs have the ability to use business strategies like transfer pricing to avoid custom duties or domestic taxes, or even to manipulate the market deliberately by controlling feedstock imports or product sales. If they do so, Chinese consumers, producers and processors might be exposed to market risks resulting from an asymmetry of information and capacity. It is a concern of the government that it would have no way to influence the behaviour of TNCs and thus might become incapable of realizing its policy objectives. Another serious concern is that TNCs may repeat their success in the soybean sector in the cereal sector as well. Should this happen, the government will face a real challenge to achieve national food security and market stability with traditional policy instruments, such as state purchase at guaranteed prices and state trading.

Tremendous increase in consumption of soybean products

Fundamentally, the remarkable change in China's soybean trade pattern has resulted from unanticipated strong growth of soybean consumption. However, the extent to which the strong growth in consumption is related to changes in domestic and trade policies remains debatable. Until the mid-1990s, consumers' food demands in China were constrained constantly by planned distribution under supply shortage. This situation began to change as a result of the reforms of the macroeconomic system and trade regime. The deregulation of domestic marketing and the liberalization of trade allowed unsatisfied demands to be revealed. The rapid growth of the national economy resulted in increasing incomes. Reduction of trade barriers in combination with notable appreciation of the RMB lowered costs of imported products.[168] The

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[167] It is reported by the National Grain and Oil Information Center that enterprises wholly-owned by TNCs account for 43 percent of soybean imports, 37 percent of crushing capacity, and 47 percent of oil refinery capacity. These numbers are subject to large error considering that the distinction between TNCs and domestic firms is not always clear-cut. The actual market share of TNCs is likely to be much larger than these numbers suggest, given that some "domestic firms" are in fact joint ventures. Moreover, these domestic firms often use major TNCs as agents for importing feedstock.

[168] China introduced a managed floating exchange rate system in 1994 as part of its macroeconomic reforms. The appreciation of the RMB against the USD underwent three distinct stages in the subsequent years: slow appreciation during 1994–1997; stability as a result of adopting an exchange rate system pegged to the USD alone during the period of 1998–2004; and notable appreciation after July 2005 when China switched to a system of managing the RMB with reference to a basket of currencies. The RMB-USD rate was 8.62 RMB in 1994, 8.29 RMB in 1997, 8.28 RMB in 2004 and 6.46 RMB in 2011.

entrance of TNCs brought about increased diversity of products and efficient management of supply chains. All these factors are responsible for the sustained growth of soybean consumption in the Chinese market and the dramatic increase in import of soybean and soybean products during the past two decades. It is certain that consumers' food security and welfare have improved through the past development of the soybean sector. Meanwhile, the strong growth in domestic demand may push up the world soybean price when China increases imports, which in turn would relieve some of the competition pressure on the Chinese soybean producers.

Overall assessment

China's soybean sector has undergone profound changes since the mid-1990s, in parallel with profound reforms of domestic and trade policies. In assessing the experience, many questions can be asked. For example: What would have been the consequences if China had not liberalized the soybean trade? What if China had liberalized the soybean trade without implementing new domestic policies? Technically, these counterfactual scenarios can be assessed quantitatively with CGE or PE models. However, as discussed above, fundamental structural changes have occurred in the Chinese soybean sector and have lead to difficulties in modeling the market with appropriate accuracy. Therefore, in this paper, the overall impacts are assessed only qualitatively. Two scenarios are considered here: 1) China would use TRQ management for trade in soybean; and 2) China would liberalize trade as committed to WTO without domestic policy measures.

If China were able to maintain the TRQ management for trade of soybean, the government would have a much larger policy space for regulating the soybean market in line with its prioritized objectives. Given the changing role of soybean in the national food system, as well as the changing resource endowments, the government is unlikely to attach very much importance to soybean production for national food security. Therefore, as domestic demand rises, imports would be bound by the out-quota tariff, leading to higher domestic prices and higher soybean production at the costs of other competitive crops. In such a context, imports of all kinds of vegetable oils as well as soybean meals would increase to some extent, given the low barriers to their imports. China might also become a net importer of corn earlier. Although such a scenario might offer (limited) benefit to soybean producers, the welfare of consumers would be sacrificed. In terms of grain self-sufficiency, the outcome would be inferior to what has actually turned out.

Because of the complexity of the policy measures and the different practices in the actual implementation at lower administrative levels it is difficult to assess the second scenario. In general, these policies provide soybean producers with incremental increases in incomes through the setting of a price floor and reduction in production costs. The data from NDRC (2010) reveal that soybean producers received

about RMB 800 per hectare, equivalent to about a 15 percent increase of net returns to household resources. However, these measures have no apparent effect on land productivity, as discussed above; they have simply helped to maintain a certain level of production. Without the supports, China might have imported more soybean and soybean derived products, leading to further deterioration in self-sufficiency. The TNCs might also have played a larger role in the Chinese soybean market. Such changes might not have had negative impacts on consumer welfare in the short term, as consumers would turn to imported products. However, this would be a situation of concern to policy-makers with respect to how to ensure food security and industrial security.

5. Concluding remarks

The development of China's soybean sector in the past two decades is rather exceptional, with a mixture of successes and failures. In general, the impacts on production and farm income have been less severe than initially anticipated, but surging imports have gone far beyond expectations. The penetration of TNCs has fundamentally altered the soybean value chain. Although this development has led to some desirable changes, such as supplying the domestic market with diversified quality products, it has caused deep concerns regarding the security of the industry for the Chinese policy-makers. It is perceived that TNCs might exercise their market power for their own interests, which are not always consistent with the policy objectives for food security and market stability. Establishing an appropriate system of governance becomes a crucial issue. There are indications that the overall performances of some domestic firms are improved through learning by doing. However, China's soybean production is still hampered by low productivity and low profitability, even though large fiscal subsidies are spent on various programmes supporting the soybean sector. The government continues to face a series of internal and external challenges. For healthy development of the soybean sector, it seems that China needs to push ahead with internal reforms, including: empowering farmers in general and soybean growers in particular; enhancing regulations to constrain various malpractices in soybean marketing; and improving market information collection and distribution. Meanwhile, appropriate attention should be paid to improvement of international rules and disciplines aiming at reducing excessive price volatility, such as those proposed by FAO *et al*. (2011).[169]

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[169] This interagency report made comprehensive recommendations on measures to cope with price volatility and food insecurity. With regard to commodity marketing and trade, the report proposed to improve agricultural market information systems, to promote policy coherence and coordination in times of crisis, to increase transparency in futures and over-the-counter markets and encourage appropriate rules to enhance their economic functions, and to strengthen international disciplines on all forms of import and export restrictions as well as domestic support schemes that distort production incentives, discourage supply in response to market demand, and constrain international trade of food and agriculture products.

The remarkable development of China's soybean sector during the past two decades has multifaceted implications for other developing countries coping with trade liberalization. The important implications drawn from China's experiences are described below.

- Trade liberalization will result in improvement in resource allocation, provided it is accompanied by the necessary domestic reforms of policies and institutions. The more a country can anticipate potential outcomes, the more likely it is to minimize any negative impacts.

- Impacts of trade liberalization on a specific sector should be assessed within the framework of the national economy. To a large extent, negative impacts on a certain sector can be offset by gains of other sectors. Therefore, removal of various barriers to microlevel structural adjustment, redistribution of benefits and provision of relief to those affected should be included in overall adjustment programmes.

- In most cases, trade restricting measures cannot solve domestic problems effectively. Moreover, the policy space allowed to governments of developing countries is confined by the multilateral trading system. In such a circumstance, governments should combine domestic measures and trade intervention into policy packages that address both short- and long-term problems in a coherent way.

- The world soybean market is typical in that it has small number of large players and some TNCs are deeply involved in multiple key stages of the global value chain. The soybean market features asymmetry in market power. The fact that most of the large TNCs in agribusiness value chains come from developed countries raises the political issues of how much freedom should be allowed for TNCs and the extent to which domestic firms should be protected from competition from TNCs. In these cases, governments of developing countries need to improve value-chain governance as well as market regulations, even though these measures may look like discrimination against TNCs. Key tasks in this regard include increasing transparency of business operations, balancing the negotiation power of partners, and practicing regular surveillance of the behaviour of large players.

- Very few developing countries have the capacity to gather and analyse worldwide market information. The existence of an information gap is a major factor leading to the lack of capability of domestic firms to compete with TNCs. From this angle, it would be helpful if international organizations, such as FAO, were to improve the dissemination of information.

- Trade liberalization will result in adjustment of economic and political power among different interest groups. With regard to agriculture, agribusinesses are

becoming increasingly influential in policy-making in general. The potential risk is that the interests of smallholders might be neglected as they have no formal channel through which to participate in the decision-making process in many developing countries.

● Macroeconomic shocks may generate larger impacts on a specific agricultural sector than does trade liberalization. There are many such shocks to the world soybean market. For instance, development of biofuels in the United States of America and the European Union leads not only to higher prices of oilseeds and oils as a result of the expanded demand for feedstock, but also to a close co-movement of the soybean price with the petroleum price, which fluctuates wildly with macroeconomic conditions. Changes in macroeconomic conditions may also alter flows of speculative capital, which in turn magnifies price fluctuations of futures and spot markets, as shown during the recent global financial crisis. Consequently, the needed reforms are by no means confined to agricultural commodity markets, but include all financial markets.

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Annex

TABLE A1:

Evolution of the policies directed to the soybean sector

Year	Focus	Description
1993	Trade	Soybean importing and exporting remained subject to quota and licence control.
1993	Marketing	Soybean futures began to be traded in Dalian Commodity Exchange. The contracts did not distinguish between GMO and non-GMO products.
1996	Trade	A TRQ system for import was introduced but was not effectively implemented. Under the arrangement, the in-quota and above-quota Most-Favoured Nation tariff rates were 3 percent and 114 percent. The quantity of quota was not publicly announced.
1997	Marketing	New marketing arrangement for cereals and soybean was installed, aimed at both stabilizing grain prices and reducing budgetary burden to the state. Soybean market was essentially liberalized whereas state purchases at the guaranteed prices remained only in Heilongjiang and Inner Mongolia.
1999	Trade	China reached an agreement with the United States of America on the protocols for China's accession to the WTO, and this laid the framework of China's protocols for WTO accession.
1999	Production	The Ministry of Agriculture released a programme for adjusting the agricultural production structure in line with the expected WTO accession. The programme aimed to increase planting of soybean varieties with high quality or high oil content.
2001	Trade	China's protocols for WTO accession were finally signed. China committed to liberalize substantially trade of soybean and derived products. A tariff-only scheme for soybean imports was installed. The TRQ for import of soybean oil continued until 2006 when it was turned into a tariff-only scheme as well. Quota and license control on soybean exports was removed.
2001	Production and consumption	The State Council proclaimed Regulations on Safety Management of Agricultural GMOs. Three complementary directives were subsequently issued by the Ministry of Agriculture on safety assessment, import and labeling of such products.
2002	Trade	The government issued regulations on import of GMO products.
2002	Marketing	The government waived the levy on railroad construction for rail transportation of soybean in order to increase domestic consumption. Dalian Commodity Exchange redesigned soybean futures contracts with non-GMO products as type 1 and GMO products as type 2. Trade of type 1 began in March 2002 and type 2 in December 2004.
2002	Production	Ministry of Agriculture issued zoning of oil-rich soybean production in advantaged areas (2003–2007), a series of measures designed to improve soybean production in the Northeast region. The

Year	Focus	Description
		government also launched the "Soybean rehabilitation programme" aimed at raising competitiveness of domestic products through the application of improved production technologies.
2002	Processing	The revised "Industrial catalogue of foreign investment guidance" listed vegetable oil processing as a restricted industry for FDI.
2003	Trade	China formally allowed imports of GMO soybeans from Argentina and Brazil.
2004	Production	The government introduced subsidies on the use of improved seeds, and these covered soybean. The government also implemented a temporary programme to purchase soybean in the Northeast region for the central reserve aiming at maintaining price incentives to soybean producers. These programmes were extended in later years.
2004	Marketing	Marketing and pricing of grains (including soybeans) were fully deregulated. The government retained rights to intervene whenever it deemed necessary for market stability.
2008	Consumption	In order to ensure domestic supply and to curb the rising prices, the government decided to implement temporarily a package of measures with regard to trade of soybean and derived products, and these measures included the removal of the VAT rebate for export, the reduction of the import tariff on soybean from 3 percent to 1 percent, and imposition of export tariffs (5 percent for soybean).
2008	Processing	The NDRC issued the "Guideline for healthy development of soybean processing industry" to control processing capacity (75 million tonnes in 2010 and 65 million tonnes in 2012). The revised "Industrial catalogue of foreign investment guidance" further enhanced restrictions on FDI in soybean crushing.
2008	Production	The Chinese government issued the "Outline for national food security in the period of 2008–2020" in which it proposed to enhance support to soybean production so as to raise the yield and to improve the quality. The Ministry of Agriculture issued the "Zoning of soybean production in advantaged areas (2008–2015)" to guide regional adjustment of production. In October the government initiated a programme for the temporary reserve of soybean in the Northeastern region in order to prevent prices from declining further as a result of the global financial crisis. The programme continued in 2009 and 2010.
2009	Production	The Chinese government issued a programme for an incremental production capacity of 50 million tonnes of grains for the period 2009–2020. The temporary restriction on soybean export was removed. The government provided a special subsidy to designated soybean-crushing enterprises for processing domestic soybean.
2010	Consumption	The government sold reserved soybean to designated processing firms at subsidized prices in order to curb the sharp rise in vegetable oil prices.

Note: Compiled by authors based on various official sources of information.