

Addressing marketing and processing constraints that inhibit agrifood exports

A guide for policy analysts
and planners



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by
Michael Westlake
FAO Consultant

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Acronyms

AoA	(Uruguay Round) Agreement on Agriculture
AGOA	(USA) Africa Growth and Opportunity Act
ACP	African, Caribbean and Pacific
AMS	Aggregate Measure of Support
EBA	Everything but Arms
EPA	EU-ACP Economic Partnership Agreement
EU	European Union
EUREP	The Euro-Retailer Produce Working Group
GAP	Good Agricultural Practice
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of (Tariff) Preferences
IFI	International Financial Institution
KTDA	Kenya Tea Development Authority
LDC	Least Developed Country
MFI	Micro Finance Institution
MFN	Most Favoured Nation
MRL	Maximum Residue Limits
OECD	Organisation for Economic Co-operation and Development
SPS	Sanitary and Phytosanitary
SSA	Sub-Saharan Africa
TCDA	(South Africa–EU) Trade, Development and Cooperation Agreement
UHT	Ultra Heat Treated
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

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Executive summary

BACKGROUND

One of the main objectives of the Agreement on Agriculture (AoA) negotiated under the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) is to improve the access of developing countries to foreign markets. Constraints on the domestic supply chains of many of these countries, along with weak marketing support and trade facilitation services, have prevented them, however, from exploiting the opportunities provided by the AoA and by other improvements in market access.

The aim of this guide is to inform policy analysts on issues that should be considered while developing policies and measures to break the main post-harvest constraints that prevent their countries from fully exploiting their agrifood export potential.

The paper has four main chapters. The key points and arguments in each are summarized below.

MAIN TRADE ARRANGEMENTS AND AGREEMENTS FOR DEVELOPING COUNTRIES

International trade in agricultural commodities is subject to a complex set of international, regional and bilateral agreements and to measures imposed by individual nations and regional groupings of countries. Although the efficiency of agricultural trade has improved over the past decade, the global agricultural economy remains heavily distorted by international trade measures and by internal measures in importing nations and regions that affect international competitiveness.

The Uruguay Round of negotiations under the GATT was the first serious international attempt to address this problem. It continues to be addressed in the ongoing Doha Round of negotiations. The Uruguay Round led to an international Agreement on Agriculture and a separate agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement). The AoA seeks to reduce border protection from imports and the subsidization of exports and also to reduce trade-distorting subsidization of domestic

production. The SPS Agreement aims both to ensure that countries can continue to prevent importation of agricultural products that are hazardous to human, animal or plant health and to prevent countries from using SPS measures as a means of protecting domestic agriculture from foreign competition. Both agreements have led to improvements in market access. However, a decade after the agreements came into force, developing countries still face major barriers to exporting to developed countries. Import tariffs on commodities that are also produced by developed countries remain high. The attempt through the AoA to eliminate import quotas has led to a plethora of complex tariff rate quotas. There is still considerable tariff escalation that inhibits value adding in exporting countries, and, although there has been a significant move towards making subsidies less trade-distorting, the subsidization of domestic agricultural production remains high in the United States of America, the European Union (EU) and Japan. Furthermore, reductions in support and import duties have tended to undermine the value of preferences granted to least-developed countries.

The SPS Agreement has improved the transparency of SPS measures, but SPS standards have been tightened and exporters now face substantially more health and quality-based barriers to importation than a decade ago. Importers and supermarket groups are now imposing conditions in excess of those specified by the governments of importing countries. Governments as well as commercial enterprises have introduced standards relating to the production and transformation processes of agricultural commodities.

Since 2000, both the United States and the EU have adopted and extended regimes that allow duty-free access for imports from sets of developing countries. In 2000, the United States Government passed the African Growth and Opportunity Act (AGOA), which provides preferential market access for African countries that meet economic, social and political standards set by the United States. To date this has been of only limited benefit to imports of agricultural commodities and products. The EU adopted an Everything-but-Arms (EBA) regulation in 2001, which allows duty-free access for an unlimited period to virtually all imports from least-developed countries. The regulation is being phased in progressively for bananas, sugar and rice.

UNDERSTANDING AND ANALYSING SUPPLY CHAINS

Agricultural commodities are produced by large numbers of farmers and consumed by large numbers of households. For each important agricultural commodity there are millions of supply chains globally. These range from individual farmers to a multitude of retail outlets. Commodities that are exported move down supply chains within which they are loaded, off-loaded, transported, stored, cleaned, graded and processed. Supply chains form a complex web within which: farmers often sell their output to more than one buyer; traders and processors combine the output of individual farmers; the commodity is divided into two or more products; it is sorted on one or more occasions into separate grades; and, it is combined with other commodities prior to being retailed.

An important aspect of supply chains is that they consist of some associated but distinct flows. One is the physical flow of the commodity referred to above. Another is the flow of money realized from final sale back to the producer and all the enterprises that have been involved in processing and marketing. The efficiency and effectiveness of the practices and procedures that govern this latter flow are as important as the technical efficiency with which the commodity is produced, processed and marketed. A third flow is that of information along the chain. When this does not function properly, we are likely to see dysfunctions in supply chain performance.

Under a free market, supply chains for a commodity develop to reflect its production, marketing and processing characteristics, such as the size structure of farms, the extent to which production is seasonal, the ease with which grades and standards can be assessed at points in the supply chain, and the storability of the product and how this is changed by processing. In practice, the organization of supply chains that emerges in a particular situation also depends on a host of other social, economic and political factors such as the strength of domestic cooperative movements and the openness of the economy to foreign investment.

The governments of developing countries have often sought to influence the organization of supply chains and marketing and processing practices, moving them away from those that would have evolved naturally under a completely

free market. In some areas of the developing world, such as Sub-Saharan Africa (SSA), it is rare to find marketing and processing systems for major commodities that have developed without some form of government intervention that has significantly influenced their organization.

Following periods of structural adjustment and market liberalization, many developing countries are still in a period of adaptation in which, as in all economies, new enterprises are created, expand, contract, merge, split and go out of business. Market forces will tend to lead progressively to supply chains that are more efficient and better adapted to domestic physical and socio-economic conditions. An important role of government is to support and help accelerate this process through policies and measures that facilitate transition, minimize its costs and ensure that enterprises do not have excessive market power.

Each supply chain is characterized by a series of distinct activities. The most important of these are (a) movement of the commodity from points of production to points of consumption, (b) storage to facilitate processing and trade and to make the commodity available at some future time, (c) processing to separate the commodity into its components, change it chemically and physically and/or combine it with other products, and (d) price formation and the payment of suppliers. The nature of each of these varies markedly between commodities, between countries and between supply chains within countries. For this reason, analysis must be case-specific.

A key feature of supply chains is that every stage of the chain is linked to and dependent upon activities at other points in the chain. Aspects of activities at one point in the supply chain interact with and affect other points in the chain. Consequently it is possible for a problem experienced at one point to be the result of a change or an event at some other point or some combination of such changes and events that have interacted to cause the observed problem. Effective analysis of constraints on exporting requires determination of the fundamental underlying cause of the constraint, which may be different and far removed from the observed constraint. The analysts must then identify the set of possible solutions. There may be one simple cost-effective measure at some point in the supply chain that can break the constraint. A combination of a set

of measures may be required, or it may be more cost-effective to simply take measures to ameliorate the adverse impact of the basic cause.

THE IMPACT OF STRUCTURAL ADJUSTMENT AND GLOBALIZATION ON SUPPLY CHAINS

In the 1980s and 1990s, many governments took steps to eliminate government participation in economic activity and to reduce public control of the economy. Over the past decade, there has also been significant liberalization of international trade and important changes in the structure and product requirements of markets for agricultural imports. These latter changes, together with other aspects of globalization, have had an important impact on the organization of agricultural supply chains and the relationships between enterprises in these chains.

Over time, public regulatory standards have become more rigorous and complex, buyers have sought more differentiated fresh and processed products, and food distribution and retailing in developed countries have become increasingly concentrated in the hands of supermarket chains. This has been accompanied by a progressive change in the commercial relationships between enterprises within the supply chains, as the standards and requirements of importers have become more exacting. There is now less selling through impersonal commodity markets and more communication and coordination between units within supply chains. This, in turn, has affected power relationships and governance within these chains.

While the process of notification under the Sanitary and Phytosanitary (SPS) Agreement has contributed to the transparency of official food safety and agricultural health measures, there has been a proliferation of private standards that fall outside the purview of the World Trade Organization (WTO). These standards are subject to frequent change and the problem that this creates is magnified by differences in how the standards are monitored and enforced among different importing enterprises. Despite some harmonization and consolidation of the standards set by private importing firms into industry-wide codes of standards, a large number of private standards that vary widely between firms still remain and are simply communicated through supply

chains. These trends favour large exporters, since the activities and competences necessary to comply with them are subject to economies of scale.

ADDRESSING CONSTRAINTS THAT INHIBIT EXPORTING

Efficient and effective production, processing and trading of agricultural commodities requires a stable and predictable macroeconomic environment, an appropriate and efficient legal structure and sound financial institutions.

Domestic constraints on the processing and marketing of agricultural exports can be categorized according to the way in which they inhibit the rate of national economic growth. Thus, they may be classified as follows:

- Constraints that inhibit production.
- Constraints that raise unit processing and marketing costs.
- Constraints that reduce export prices and make them less stable and predictable.
- Constraints that reduce the number and size of accessible foreign markets.

This paper is organized according to this breakdown and the final section discusses means of addressing these constraints. A summary of these constraints and a checklist of means of addressing them are presented in Table 1. Although these constraints are necessarily discussed individually, the reader should bear in mind the systemic nature of supply chains and that an observed constraint may be caused by and be most efficiently broken by addressing problems elsewhere in the chain.

Introduction

One of the main objectives of the 1995 Agreement on Agriculture (AoA) negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) is to improve the access of developing country produce to foreign markets. This is also an important declared objective of the international trading policies of the European Union (EU), the United States of America and other OECD countries.

Although developing countries as a whole have increased and diversified their exports in recent years, many have been unable to exploit improved access to foreign markets because of significant constraints in their domestic supply chains and weak supporting marketing and trade facilitation services.¹

The aim of this guide is to inform policy analysts on issues that should be considered in developing policies and measures to break the main post-harvest constraints that prevent their country from fully exploiting its agrifood export potential. Although the guide makes use of examples from Sub-Saharan Africa (SSA), the Middle East and Southeast Asia, its usefulness is not limited to these particular regions. On the contrary, the guide should be of relevance to policy analysis in any developing country context.

This paper has four main chapters. Chapter 1 briefly examines trade agreements that relate to export market access for developing countries, including sanitary and phytosanitary measures and measures relating to domestic support. Chapter 2 explains the nature and functions of supply chains and the characteristics of efficient and effective chains. Chapter 3 describes and discusses recent changes that have affected supply chains for agricultural

¹ For example, a comprehensive FAO study based on 23 national case studies carried out in 1999 and 2002 found little evidence of any link between the AoA and either the composition or volume of trade (FAO 2003). A 2003 study by the FAO Agricultural Management, Marketing and Finance Service (AGSF) found that many countries in Sub-Saharan Africa could not exploit improved access to foreign markets because of significant constraints in the operation of domestic markets and inadequate public support for marketing and international trade.

exports and also increased the challenges faced by exporters. Chapter 4 covers policies and measures that address deficiencies in domestic supply chains and augment access to international markets.

The aim of this guide is to get analysts to think and work effectively. As their work progresses, they will need to focus carefully on the problems that they have identified and to develop solutions suited to the circumstances in which the commodity is produced, processed and marketed in their country. Analysts who feel that they need to improve their basic skills in the nuts and bolts of market analysis are encouraged to refer to Tomek and Robinson (1990), Tsakok (1990), Harrigan, Loader and Thirtle (1992), and Westlake (1993).

Chapter 1

Main trade arrangements and agreements for developing countries

International trade in agricultural commodities is subject to a complex set of international, regional and bilateral intergovernmental agreements and to national schemes that tax and otherwise regulate imports. The trade agreements apply both to trade and to domestic support for all agricultural commodities, including those that are not exported. The rationale for the inclusion of domestic support in trade agreements is that such support subsidizes exports and commodities that compete with imports in the domestic market. It thus influences trade and has the potential to distort trading patterns.

THE GENERALIZED SYSTEM OF PREFERENCES

In 1968, the United Nations Conference on Trade and Development recommended a Generalized System of Tariff Preferences (GSP) under which industrialized countries would grant trade preferences to all developing countries. To be able to implement the system, a waiver was required of Article 1 of the General Agreement on Tariffs and Trade (GATT), which prohibits trade discrimination between countries. This was granted in 1971, when the GATT contracting parties adopted an enabling clause that authorized developed countries to establish individual Generalized Schemes of Tariff Preferences.² Preferential treatment granted under the GSP should not discriminate between developing countries, except for the benefit of least-developed countries (LDCs). The preferential treatment should also be granted autonomously without negotiation and there should be no agreement under which countries make mutual concessions.

² The acronym "GSP" is used to refer to the system as a whole and also to one of the separate national *schemes*.

In practice, there is significant variation between developed countries in the preferences that they grant in their GSP schemes, with substantial differences in product coverage, rules of origin and the size of tariff reductions.

THE URUGUAY ROUND AGREEMENT ON AGRICULTURE

The most encompassing of existing trade agreements is the Agreement on Agriculture (AoA), negotiated during the Uruguay Round of the GATT, which became effective for all members of the World Trade Organization (WTO) in 1995. As of April 2004, 147 countries were members of the WTO and a further 28 countries were negotiating to join.

The AoA is seen as the first step in a continuous reform process amongst members of the WTO aimed at the progressive reduction of agricultural support and protection. A new round of WTO negotiations, the Doha Development Round, commenced in 2000.

The negotiation of the AoA was of major importance because previous rounds of GATT had not addressed the significant support and protection afforded to domestically produced agricultural commodities and processed products. This protection and support has been provided through:

- direct protection from imports in the form of import tariffs and quotas;
- the subsidization of exports;
- the subsidization and support of domestic production; and
- sanitary and phytosanitary regulations.

The AoA contains provisions to reduce the first three means of protection. A separate Agreement on Sanitary and Phytosanitary Standards was negotiated during the Uruguay Round to address the fourth (see below).

The WTO has developed a set of rules and procedures for systematically resolving disputes between member countries and regional groupings that cannot be settled by negotiation between the parties concerned. The WTO dispute settlement system works well for developed countries, most of whom have sufficient resources and expertise to have full access to it, but it needs

modification if it is to be used effectively by developing countries, especially those that are small and/or least developed.

Tariffs and tariff rate quotas

Under the AoA, quotas were converted into tariffs of equivalent value, a process referred to as ‘tariffication’. Each country then committed itself to a maximum tariff rate, referred to as ‘bound rate’, which it would levy on each type of commodity. This process is referred to as tariff ‘binding’. The AoA included an undertaking by developed countries to reduce their bound tariff rates by 36 percent over six years (i.e. by 2000) and for developing countries to make a reduction of 24 percent over 10 years (i.e. by 2004). The commitments referred to national unweighted tariff-rate averages. For individual tariff lines, minimum reductions of 15 percent and 10 percent were required for developed and developing countries respectively. LDCs were required to bind their import tariff rates but were not required to reduce them.

Developed countries often levy higher tariffs on imports that embody a greater degree of processing. Such tariff escalation provides a major impediment to establishing value-adding activities in exporting countries. This is because the entire value of the imported product bears the higher tariff rather than just the element of value that results from the added value. Thus, the activity that adds the value is taxed at a higher rate than the nominal tariff, giving a high rate of protection to the value-adding activity in the importing country. Analysts should note that it is essential that these higher rates be considered when seeking to determine whether their country has a competitive advantage in producing a value-added commodity for export.

Rather than commit to the tariffication procedure, the majority of developing countries chose to use an AoA provision that allowed them to declare a ceiling binding rate of tariff for the entire agricultural sector. This ceiling rate became effective at the start of the implementation of the AoA in 1995 and was not subject to reduction.

Tariff rate quotas (TRQs) were introduced to guarantee minimum and continued levels of imports by the end of the implementation period. A TRQ provides for the importation of a specified amount of a product over a specified

time period at a tariff rate that is lower than that levied on imports in excess of the quota. Although aimed in principle at increasing market access, in practice developed countries have often utilized TRQs as a means of protecting domestic producers from imports.

Under a Special Safeguards Provision, national governments may protect their agricultural producers against surges in import volumes or large falls in import prices by introducing offsetting tariffs on a temporary basis up to specified levels.

Export subsidization

The AoA required percentage reductions in export subsidies over the same time periods as those specified for import tariffs and by the same percentages as those specified for bound tariff rates. In addition, developed and developing countries were required to reduce the volume of subsidized exports by 21 percent over six years and 14 percent over ten years respectively.

Domestic support

Categorization of domestic support. For the purpose of regulating domestic support, the AoA allocated such support into three categories according to the extent to which it distorts trade.

- The *Amber Box* category includes domestic support that is deemed to be trade distorting, such as input subsidies and payments to farmers that are directly linked to their output. Two types of support measures are included in this category:
 - product-related support directed to individual commodities;
 - and non-product-related support available to producers of a number of, or any, commodities.

Under the AoA, the value of these trade-distorting supports is measured by an Aggregate Measure of Support (AMS) indicator, calculated according to procedures set out in the agreement. Developed and developing countries

made a commitment to bind their support at 1986-88 levels and to reduce it by 20 percent and 13.3 percent respectively over the period from 1995 to 2004. LDCs were required to bind their support at 1986-88 levels but were exempted from any reduction commitment. These provisions were qualified by a *de minimis* rule that allowed support of up to 10 percent of the value of individual commodities and up to 10 percent of the value of aggregate production that is provided as non-product-related support to producers of a number of, or all, commodities. These two types of support can be ignored in AMS calculations, allowing a country to provide 20 percent support to its domestic agriculture free of restrictions and reduction commitments. In addition, under a Special and Differential Treatment Provision, developing countries can exclude investment subsidies that are generally available to agricultural producers and also agricultural input subsidies that are generally available to low-income or resource-poor farmers. Amber Box support for farmers is particularly prevalent in the EU where over one-half of all support falls into this category. This compares with some 10 percent in the United States.

- The **Blue Box** category includes potentially distorting measures that are specifically designed to cause minimal distortion in practice, such as United States Government deficiency payments to farmers and EU commodity price support that is offset by a land set-aside programme.
- The **Green Box** category includes support that is non-distorting or minimally distorting. This is of two types:
 - payments to farmers that are not linked to production, prices or inputs; and
 - programmes relating to research, extension, environmental protection, food security reserves, disaster-related support, anti-narcotic incentives and structural adjustment.

Reduction of domestic support. Under the agreement, developed countries were required to reduce Amber Box domestic support, as measured by the

AMS, by 20 percent. For developing countries the rate was 13.3 percent. Blue and Green Box measures are permitted and therefore not subject to reduction commitments.

Sanitary and Phytosanitary (SPS) Standards

A legitimate function of national governments is to prevent the importation of goods that threaten human, animal and plant health. However, the imposition of standards at national borders can impede trade because it results either in the banning of imports or because the cost of compliance reduces the profitability of exporting. Furthermore, in addition to the legitimate imposition of standards, there is a possibility that importing countries will employ them as backdoor barriers to trade by using spurious scientific justifications for prohibiting or discriminating against certain products.

A separate agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) was negotiated during the Uruguay Round to provide a set of multilateral rules that seek to minimize the adverse impacts of SPS measures on trade, while recognizing the right of countries to protect themselves from potential hazards.

The agreement provides no more than a set of broad ground rules based on the principle that measures should not be maintained without sound scientific justification, should not be applied in an arbitrary manner and should take into account the need to minimize negative trade effects. These ground rules give significant leeway for interpretation, reflecting the fact that SPS measures are costly to implement and that they consequently must form part of the risk management strategies of each importing country. These strategies necessarily differ between countries since there are national differences both in perceptions of risk and in the resources available to address them.

The agreement has not necessarily eradicated the differential application of SPS measures and there is some evidence that countries have continued to use SPS measures to protect domestic producers by restricting access.³ Although

3 For a discussion of these, see Jaffee and Henson (2004).

evidence is difficult to gather, one would expect that, because conditions and controls in developing countries are likely to be difficult to monitor, developed countries would apply more stringent controls on imports from developing countries. Thus, developed importing countries might use SPS standards as a concealed means of protecting domestic producers from competition from developing countries where costs are low.

REGIONAL AND BILATERAL TRADE AGREEMENTS AND PREFERENCES⁴

Developed countries employ sets of tariff schedules under which the rates charged depend on the status of the exporting nation. The lowest rates are normally charged under reciprocal trade agreements, with a subsequent hierarchy of rates running from least-developed countries, developing countries, developed country WTO members, and other countries.

European Union

GSP arrangements. The European Community was the first to implement a Generalized Scheme of Tariff Preferences (GSP) in 1971. The European Union's GSP is implemented through Council regulations that are applicable for periods of at least three years and are in accordance with general guidelines that are applicable in 10-year cycles. The most recent cycle began in 1995 and expired at the end of 2004. A new scheme, the third of this cycle, began at the start of 2002 and terminated on 31 December 2004.⁵ A new GSP is under preparation. For imports to qualify for GSP treatment they must conform to rules of origin that seek to ensure that real value added has been created in the

4 Some of the discussion in this paper focuses on SSA exports to developed countries. It should be noted that within SSA itself there has been a proliferation of regional trade agreements. For example, southern African countries, such as Namibia and Lesotho are members of the Southern Africa Customs Union, the Southern Africa Development Community, and the Common Market for Eastern and Southern Africa.

5 Council Regulation (EC) No 2501/2001 contains the legal provisions for the current GSP scheme applicable from 2002 to 2004.

beneficiary country. Of the 10 300 tariff lines of the EU Common Custom Tariff, 2 100 products have a zero most-favoured-nation (MFN) rate of duty. The GSP covers the remainder, with the exception of the lines relating to arms and munitions. For the purpose of determining which countries will qualify for GSP treatment, the EU decides each year which countries it will treat as 'developing', excluding countries that it considers have reached developed status and for which there is consequently no rationale for preferential treatment. The criteria used for this are the classification of countries by the World Bank and the EU's own development index, based on the level of a beneficiary country's industrial development and its participation in international trade.

In addition, sectors within specific countries that the EU believes can grow without preferential access to its market can be 'graduated', thereby losing the benefit of GSP tariff preferences. Graduation is not applied to LDCs, to countries whose development index is lower than minus 2 or where imports of products of a given sector from a beneficiary country are below 2 percent of the imports of the same products from all beneficiary countries. Graduation does result when imports from a beneficiary country of products of a given sector exceed 25 percent of the imports of the same product from all beneficiary countries. The EU's rationale for this so-called 'lion's share' clause is that it avoids a single country making excessive use of GSP preferences at the expense of other beneficiary countries.

Five different arrangements are available for beneficiary countries under the EU's present GSP. There are two basic sets of arrangements: general arrangements that refer to all beneficiary countries and arrangements that fall under the Everything but Arms (EBA) initiative, which applies only to LDCs. In addition, for certain products three special arrangements apply, aimed at combating drug production and trafficking, encouraging the adoption of improved labour standards, and providing incentives for the sustainable management of tropical forests. The product coverage varies for each arrangement. Depending on the sensitivity of the product within the EU, it may enter duty-free or enjoy a tariff reduction. In 1995, other than for bananas, sugar and rice, the EU eliminated quotas and ceilings from its GSP, which now

comprises solely preferential rates of tariff that vary according to the sensitivity of the product within the EU market.

Preferential rates are normally equal to the MFN rate less a flat rate reduction specified in percentage points. This practice of flat rate reduction prevents the size of the reduction in percentage points being eroded as the MFN rate is reduced. As a rule, a reduction of 3.5 percentage points is applied.

The general arrangements of the EU's GSP cover roughly 7 000 products, of which 3 300 are classified as non-sensitive and 3 700 as sensitive. Non-sensitive products enjoy duty-free access, while sensitive products are subject to tariffs that are set at a discount to their MFN rate. Sensitive products are those that the EU considers require border protection to enable domestic producers to compete with duty-free imports from developing countries.

The three special arrangements of the EU's GSP provide for additional tariff reductions for dutiable products over and above those under the general arrangements. These reductions apply only to sensitive products since non-sensitive products enter duty-free under the general arrangements and there is consequently no scope for further tariff reduction.

The EU's GSP regulations provide for safeguard measures under which tariff reductions can be withdrawn to prevent imports from beneficiary countries increasing in a way that causes significant difficulty for EU producers of like or directly competing products. The regulations also contain a procedure for temporary withdrawal of preferences in the case of fraud, in the case of failure to provide administrative cooperation as required, or if the preferences provide incentives for maintaining unsustainable patterns of development.

Special GSP arrangements for least-developed countries (LDCs). The Council of the EU adopted its EBA Regulation in February 2001. Its aim is ultimately to grant duty- and quota-free access to imports of all products other than arms and munitions from countries classified as LDCs. As of April 2004, 47 countries were so classified, including 37 from SSA. The EBA

initiative currently covers all dutiable imports other than bananas, sugar and rice, for which there will be transitional periods, during which tariff rates will be gradually reduced. These periods run until 2006 for bananas and 2009 for sugar and rice. Currently, there are duty-free tariff quotas for rice and sugar that will be increased annually. The EBA Regulation specifies that the special arrangements for LDCs should be maintained for an unlimited period of time and not be subject to the periodic renewal of the EU's GSP scheme.

Support measures for food security. In the context of the Doha Development Agenda, the EU stated that enhancing the trading capacities of developing countries is a priority. It also proposed a 'food security box', including special provisions that permit support to the agricultural sector, notably for food security and rural development purposes.

European Union trade with the Republic of South Africa. South Africa is the EU's largest trading partner in SSA. South Africa is a signatory of the EU-ACP Partnership Agreement, signed in Cotonou on 23 June 2000, but its membership is subject to some qualifications. In particular, some of the trade provisions do not apply. On 1 January 2000, a Trade Development and Cooperation Agreement between South Africa and the EU entered into force. Although the agreement has not been fully ratified, its trade-related articles are being provisionally applied with the aim of creating an area of free trade between South Africa and the EU at the end of a transitional period of 12 years. During this period, the EU will open its markets at a faster pace than South Africa.

United States of America

AGOA. The President of the United States signed into law the African Growth and Opportunity Act (AGOA) on 18 May 2000 as Title 1 of the Trade and Development Act of 2000. AGOA provides African countries with the most liberal access to the United States market available to any country or region other than those with which the United States has a free trade agreement. To be eligible for the trade benefits of AGOA, African countries must pursue policies

acceptable to the United States Government.⁶ As of 2004, 37 out of 48 African countries were deemed eligible.⁷ The eleven excluded from AGOA included the Central African Republic and Eritrea, which the United States removed from the eligible list on 1 January 2004.

AGOA authorizes the United States President to provide duty-free access to the United States market under the GSP for any article that the Government considers is not import-sensitive when imported from SSA countries. In December 2000, the President extended duty-free treatment to AGOA-eligible countries for more than 1 800 tariff-line items in addition to the list of 4 600 items that is available to all GSP beneficiary countries.

The United States further extended the coverage of AGOA under the Trade Act of 2002 (AGOA II). Changes under AGOA II became effective in August 2002. These changes principally regarded technical issues relating to apparel, providing minor improvements in access to the United States market. AGOA II also reclassified Botswana and Namibia as LDCs, thereby allowing them to use third country fabric in qualifying apparel.

AGOA was further modified by the AGOA Acceleration Act of July 2004 (AGOA III). This provided for further minor changes to the access of apparel and introduced supportive measures relating to United States technical assistance, the promotion of investment in infrastructure, coordination of United States-SSA customs services, and the expansion of trade capacity through ecotourism.

Almost all products of AGOA beneficiary countries now enter the United States free of duty either under AGOA, GSP provisions or under a category for

6 The Act authorizes the United States President to designate countries as eligible to receive the benefits of AGOA if they are: judged to have established, or are making continual progress toward establishing, market-based economies, the rule of law and political pluralism; eliminating barriers to United States trade and investment; protecting intellectual property; combating corruption; increasing the availability of health care and educational opportunities; protecting human rights and workers' rights and eliminating certain child labour practices; and, adopting policies to reduce poverty.

7 Compared with 45 out of 48 that were eligible for the United States GSP.

which the United States maintains a zero normal-trade-relations rate of duty. However, United States agricultural imports remain subject to tariff rate quotas and AGOA beneficiary countries remain subject to any over-quota duties for shipments above the applicable quantitative limit.

Imports under AGOA have mainly been oil-based products, textiles and clothing. In general, the benefits of AGOA for the agricultural products of SSA countries have been relatively small since, for the majority of countries, GSP tariffs are zero and consequently AGOA affords no additional tariff rate advantages.

In 2003, over 95 percent of United States imports from AGOA beneficiary countries entered duty-free. A major advantage of AGOA is that it extends GSP treatment to 30 September 2015, which means that AGOA countries will receive more stable, longer-term access to the United States market than that enjoyed under the existing GSP programme. SSA countries are also exempted from competitive needs limitations, which cap the GSP benefits available to beneficiaries in other regions.⁸

The main impact of AGOA, aside from its impact on oil, has been on apparel. The act provides for duty- and quota-free imports to the United States of apparel made in eligible SSA countries from United States fabric, yarn and thread. Imports of apparel made from SSA fabric and yarn are also allowed duty-free entry but are subject to a cap of 3 percent of total apparel imports rising to 7 percent over an 8-year period. A provision that allows for duty-free access for apparel made in lesser-developed beneficiary countries (defined as having per capita GDP under US\$1 500 in 1998) from fabric originating anywhere in the world is currently scheduled to run until 30 September 2007. For apparel, the access afforded to the United States market has led to additional foreign investment in SSA. For example, Chinese investors have established garment factories in Lesotho and Swaziland and, in 2003, a Sri

⁸ Competitive needs limitations cause a country to lose GSP benefits on a product if imports of that product from the country in question account for more than 50 percent of total United States imports of the product or if imports of that product reach a certain maximum value (for example, US\$90 million in 1999).

Lankan company invested US\$2 million in a new textile factory in Tanzania employing 650 local workers.

For most agricultural commodities and products other than cotton-based products, AGOA has yielded little direct benefit for SSA countries since MFN import duties into the United States were zero and were bound at this rate under the WTO. This was and remains the case for tropical commodities not produced in the United States, such as green, roasted and soluble coffee, black tea, and cashew nuts. For commodities that are grown in the United States, such as green beans and peppers, all but a small number of SSA countries were afforded duty-free access under the GSP and consequently received no improved access.

One drawback of AGOA is that, because it includes developing countries as well as LDCs, it has diluted the preferences formerly available only to LDCs.

Free trade agreements. United States policy is to negotiate free trade agreements with interested SSA countries. The first such potential agreement, between the United States and the countries of the Southern African Customs Union (SACU), is currently under negotiation. The original target date for completion of negotiations was the end of December 2004, but talks stalled in September 2004, reportedly as a consequence of the existence of large gaps between the positions of the two negotiating teams.⁹

In summary, the trade arrangements and agreements discussed in this chapter open up opportunities for increased agricultural exports from developing countries. Yet, to benefit from the potentially augmented access to international markets, exporting countries must have efficiently and effectively organized agrifood supply chains. Constraints that may inhibit supply chain performance must be identified and addressed by appropriate policies and strategies. The next chapter examines the nature and functions of supply chains, as well as the characteristics that affect their competitive performance.

9 Johannesburg Sunday Times, 19 September 2004.

Chapter 2

Understanding and analysing supply chains

WHAT ARE SUPPLY CHAINS?

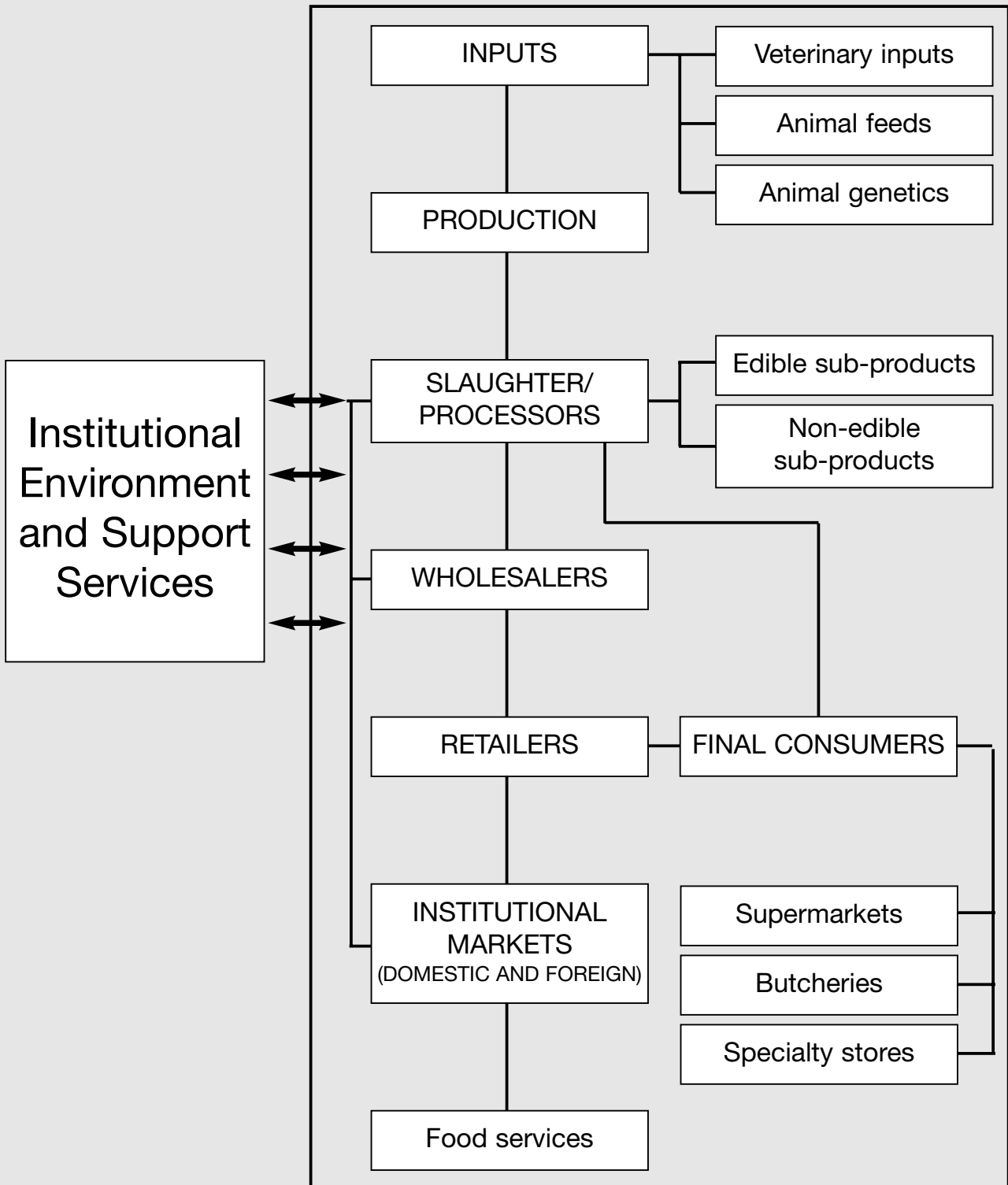
Agricultural commodities are produced by large numbers of farmers and consumed by large numbers of households. With the exception of foodstuffs consumed on-farm or sold locally, they are bought and sold a number of times between the farmgate and the final consumer or industrial user. Commodities that are exported often change hands many times between the farmgate and points of final sale. While moving between these two points, the commodity is loaded, off-loaded, transported, stored, cleaned, graded and processed. Typically each of these activities takes place on several occasions.

The conduit that runs from a farmer down to a final user, through which the commodity passes and which embodies these transactions and activities, is conventionally referred to as a ‘marketing and processing chain’, a ‘supply chain’ or a ‘value chain’. In this guide the conduit is mostly referred to as a supply chain. An example of a supply chain for an exported commodity is given in Box 1. The term ‘value chain’ has been used to characterize a vertical alliance or strategic network between a number of independent business organizations within a supply chain (Hobbs *et al.* 2000). This guide does not make this distinction. Economists also refer to the agglomeration of supply chains that serve domestic and export markets as a processing and marketing system, or, more broadly, as an agrifood system.

For each important agricultural commodity there are millions of supply chains globally that run from individual farmers through to a multitude of retail outlets. Economies of scale in trading, storage, processing and transport ensure that most of the activities in the supply chain are undertaken by a much smaller number of enterprises than are typically involved in production and retailing. Thus, there may be only one trader per 50 farmers, one primary processing plant per 1 000 farmers and one secondary processing plant per 50 000 farmers.

Box 1

**Simplified diagram of the Brazilian beef chain
(Silva and Batalha, 1999)**



The stage of greatest domestic concentration is often either where the commodity is processed into the form in which it is exported or where it is sold for export at a formal auction. It then usually passes down a progressively larger set of chains as it is exported to a set of countries. It is then further divided, often several times, until it reaches a large number of retailing units.

In practice the situation is even more complex.

- (i) Farmers may, for example, sell to more than one trader, traders may sell to more than one processing plant, and so on.
- (ii) Traders usually mix purchases from different farmers, and processors mix purchases from different traders. Since the processed commodity is divided as it moves through to the point of retail sale, the output of a single farmer usually reaches a large number of consumers.
- (iii) During processing, the commodity purchased from a farmer is often divided into two or more products that the processor sells separately and which move down distinct supply chains for that commodity.
- (iv) The commodity is usually graded by traders and/or processors and each grade is then sold separately. Thus, even if there were only one enterprise at each stage of the supply chain, the output of a single farmer would be sold as a number of grades of a number of products each of which also contains the output of other farmers.
- (v) The commodity may be combined with one or more other commodities prior to being retailed. For example, a lime may be retailed in whole form or it may be sold as part of a canned mixed fruit drink or as an ingredient in a pre-prepared frozen meat dish.

Therefore, just as it is a gross oversimplification to refer to ‘the farmer’ or ‘the consumer’, it is an equal oversimplification to talk about the ‘commodity

supply chain' when reference is being made to the output of large numbers of producers. Even with just three farmers, one processing stage that is undertaken by two processors, two products each with two grades, and three consumers, there would be a fairly complex web of supply chains. One can envisage the complexity of a web of supply chains for a typical export commodity that is grown nationally by one million farmers, processed into two different saleable products, the main one of which is sold as 10 different branded products through an average of 4 000 retail outlets in each of 30 importing countries.

An important aspect of supply chains is that they consist of some associated but distinct flows. One is the physical flow of the commodity referred to above. Another is the flow of money. The value created through production, processing and marketing is only realized when the final user pays for the product. This value must be shared by the producer and all the enterprises that have been involved in processing and marketing and therefore must flow back through the marketing chain, with each involved enterprise receiving a part. The efficiency and effectiveness of the practices and procedures that govern this are just as important as the technical efficiency with which the commodity is produced, processed and marketed.

For export products, one important aspect of the flow of money is the need to convert a part of the final sales revenue from the national currency of the importing country to that of the exporting country. This raises transaction costs and also tends to increase the instability of prices within domestic supply chains since the exchange rates between the national currency and the currencies in which the exported product sells in foreign markets change over time.¹⁰ Where national governments ration access to foreign exchange, national traders are often prevented from using instruments for managing price risk, since this usually

¹⁰ Changes in the exchange rate may in some instances offset price movements in foreign markets but the net impact over the long term will be an increase in instability. The exception is where earnings from an export commodity comprise a large proportion of national export earnings. This may be sufficient for changes in the prices fetched by the commodity in foreign markets to lead to changes in national export earnings that are large enough to cause offsetting, weakening or strengthening of the national currency.

requires making deposits in foreign currency prior to sale of the commodity in export markets. This, for example, currently prevents Ethiopian coffee exporters from hedging on the New York futures market for arabica coffee.

A third flow in supply chains is that of information exchanged between chain participants. Information passes between trading partners as part of contractual agreements and also as part of established informal trading relationships. This takes the form of buyers providing information to sellers on quantities and qualities required and also of sellers providing information to potential buyers on available or anticipated supplies. In the case of commodities for which there is frequent variation in the relative prices paid for different qualities, processors may pay for a regular supply of information on conditions of the market into which they sell. For example, brokers based at tea auctions in producing countries provide regular advice to the managers of tea factories, which allows the processors to exploit movements in the relative auction prices of different qualities. Often, brokers and the management of formal commodity exchanges publish price data and market reviews that are of potential benefit to participants at all levels of supply chains. However, this information may not be readily accessible to small-scale farmers and assembly-market traders.

One piece of information that flows along supply chains is the price actually received for particular sales. This reflects market conditions at the time of sale in the case of spot transactions and reflects market expectations where prices are negotiated in advance of sale. In the absence of other information or advice, small-scale farmers typically take such prices as indicating the prices that they will obtain in the future and make investment decisions accordingly. This leads to both national and international price cycles as high prices lead to increased levels of planting, causing higher output and lower market prices in the future.

HOW DO SUPPLY CHAINS DEVELOP A PARTICULAR FORM OF ORGANIZATION?

Under a free market, supply chains for a commodity develop to reflect its production, marketing and processing characteristics. For example, if a commodity is bulky and perishable in its raw form but becomes less bulky as a consequence of processing, processors set up close to the source of production.

Good examples of such commodities are sugar cane, which is principally low-value fibre and loses its sucrose content rapidly after harvest, and green leaf tea, which needs to be processed rapidly after plucking and loses some three-quarters of its weight during processing. Since the raw commodity cannot be transported efficiently over long distances, the scale of processing is determined by the extent to which production is concentrated. This is in contrast with a situation where production is identically structured but the commodity is storable and loses less weight during processing. Cereals, for example, lose much less than one-half their weight between the farmgate and final consumption and can be stored for months without major deterioration provided they are sufficiently dry and protected from the elements, pests and insects. For such commodities, there is less need for processors to be near farmers. In this situation, a network of small-scale traders is likely to become established, in which traders buy from farms and distribute to more distant, larger processing units that exploit economies of scale. If there are some high-volume centres of domestic consumption or points of export, it is possible that secondary traders emerge who buy from the assembly traders and transport the commodity over long distances to a single or small number of processing units. In many developing countries, this is the case for rice, maize and other cereals, despite the fact that economies of scale in cereal milling are relatively small in low-wage economies. This leads to situations where small-scale commercial and service milling in rural areas coexists with large-scale commercial milling in urban areas.

The examples above illustrate just five production, processing and market characteristics: the spatial concentration of production, the extent of the commodity's perishability, the extent of spatial concentration of consumption, economies of scale and weight loss in processing. In practice, the organization of supply chains is a function of a larger number of commodity characteristics. Examples of these characteristics for export commodities are as follows:

- Whether small- or large-scale farms dominate production.
- Whether the commodity is an annual or perennial crop, or a livestock product.
- Whether production is seasonal or continuous.

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- The extent to which national production is spatially concentrated.
 - The relative importance of the domestic market for the commodity.
 - The relationship of the production location to the main points of export and domestic consumption.
 - The extent to which there is variation in the quality of the product delivered by farmers and the ease with which quality can be assessed.
 - The number of qualities and grades conventionally employed in the international market, the stage in the supply chain at which these are applied and the ease with which they can be assessed.
 - The extent to which quality varies regionally or according to the mode of production.
 - Whether the commodity deteriorates rapidly or can be stocked.
 - Whether the perishability of the commodity changes with processing.
 - The number and importance of by-products.
 - The extent of economies of scale at each stage of processing and whether there is a tendency towards oligopoly or monopoly.
 - The need to restrict or manage export supply to meet internationally imposed export quotas or to allocate domestically tariff quotas set by importing countries.

The organization of supply chains that emerges in a particular situation also depends on a host of additional factors, such as the influence of established traditions for marketing other crops, the distribution of national income and wealth and its influence on the scale of investment, ethnic settlement patterns, the strength of domestic cooperative movements, civil and international strife, the entrepreneurial inclination and skills of the population, the legacy of former colonial ties, and the openness of the economy to foreign investment.

The governments of developing countries have often sought to influence the organization of supply chains and marketing and processing practices, moving them away from those that would have evolved naturally under a completely free market. This is partly because free markets work imperfectly, but also because governments seek to raise revenue through indirect taxes and seek to achieve distributions of income and wealth that are different from those which

emerge from the free play of market forces. Governments prior to the mid-1980s influenced the organization of agricultural processing and marketing systems through regulation, taxation and the provision of subsidies and other support measures and through direct involvement in processing and trading. In some instances, governments planned systems from scratch, as, for example, in the case of domestic smallholder tea marketing and processing in Kenya, but they normally modified systems progressively through *ad hoc* changes in response to short-term problems. Many governments intervened in the marketing of staple foodstuffs with the aim of stabilizing and influencing domestic prices. This often involved state enterprises establishing systems of buying agents, constructing stores, regulating the domestic movement of grain and taking over external trade. This, in turn, not only affected the organization of supply chains in the regulated market but also the nature of trade in parallel markets, where movement controls prevented most medium-scale traders from operating but allowed small-scale traders and large-scale influential traders to continue in business. In the past, many governments also intervened in export crop marketing. In the case of export commodities, developing country governments have also sought to monopolize trade to control export earnings, to influence the prices paid to producers, and to raise the quality of exports through controls that directly or indirectly diverted lower qualities to the domestic market. In some instances, such as that for marketing smallholder tea in Kenya, the marketing system was wholly planned by the state and operated by a state enterprise through to the point of sale to foreign buyers.

In Sub-Saharan Africa, as in other areas of the developing world, most marketing and processing systems for major commodities have developed with some form of government intervention that has significantly influenced their organization.¹¹ In the case of agricultural exports, SSA governments established or maintained four main forms of marketing and processing systems. These were (i) largely free-market (ii) rigidly structured and controlled systems that were designed to pass annual net market realizations back to farmers through

11 See Harrigan *et al.* (1992) and Westlake (1993).

revenue pooling (iii) systems that were based on marketing boards that acquired, processed and exported the commodity, and (iv) systems based on *caisse de stabilisation* that sought to establish pan-seasonal, pan-territorial producer prices and control exports without extensive government involvement in marketing and processing activities.

In some instances, two types of supply chains operated in parallel, such as the distinct assembly and processing systems for estate and smallholder tea in Kenya. Frequently elements of two or more of the four basic systems were included in a single national system. For example, the Pyrethrum Board of Kenya purchased, processed and exported commodities and also operated a pooled system of payment to farmers. Alongside direct government intervention, informal parallel markets developed that better met the needs of farmers, especially their need for cash on delivery. These were most common for staple grains, especially in eastern, central and southern Africa, where the majority of newly independent governments adopted modified versions of the intervention systems established by the former colonial governments. Parallel markets were usually less common for most export crops because of the greater difficulty of evading government control at the point of export.

Following structural adjustment and market liberalization, many developing countries are still in a period of adaptation. This involves enterprises expanding, contracting, merging, splitting, failing and being created. Market forces will tend to lead progressively to the emergence of processing and marketing systems that are more efficient and better adapted to domestic physical and socio-economic conditions. An important role of government is to support and help accelerate this process through policies and measures that facilitate transition, minimize its costs and ensure that enterprises do not have excessive market power.

WHAT ARE THE FUNCTIONS OF SUPPLY CHAINS?

This section covers the functions of supply chains and highlights features that affect their efficiency and effectiveness. Each supply chain embodies a set of conceptually distinct functions that are related to the physical and monetary dimensions of the chain.

- ***Functions relating to the physical commodity:***
 - spatial movement from the producer to the final consumer or industrial user;
 - storage; and
 - physical transformation of the raw harvested commodity into the final graded sets of products that are consumed.

- ***Functions relating to prices and payments:***
 - transmission of the final sales revenue back to those engaged in processing and marketing and to the farmer; and
 - transmission of prices back to those engaged in processing and marketing and to the farmer.

The characteristics of each of these functions are discussed below.

Spatial movement of the commodity

With the exception of on-farm consumption, all agricultural commodities must be transported before they can be used. Transportation is frequently undertaken by a hierarchy of traders, with small-scale traders assembling the commodity from a number of farms and selling to larger-scale traders located in local market towns. The commodity is progressively aggregated in this way as it moves down the supply chain. At some point in the chain the process of aggregation ceases and the product is divided and transported in progressively smaller consignments. Farmers and traders often transport commodities using their own draught animals or vehicles, but agricultural supply chains for export commodities invariably involve transportation by specialist enterprises that are paid for this service by the owner of the commodity. This applies to some overland transport by truck and to virtually all rail, sea and air transport.¹²

¹² Exceptionally, very large-scale traders of commodities who have special transport requirements may own their own vessels. For example, Brazilian exporters of concentrated citrus juice own a fleet of tankers that ply between Brazil and Europe.

A competitive national transport sector with adequate capacity is an important component of an efficient supply chain, as are adequate roads. Specialized vehicles are required for some commodities, especially those that are perishable. Most notably, refrigerated trucks are needed in warm climates for long distance transportation of fruits and vegetables. Specialized local transport in assembly markets can also increase efficiency and improve quality. For example, the Kenya Tea Development Authority (KTDA) has specialized trucks for collecting green leaf from tea smallholders that are designed to allow the leaf to be suspended in bags to ensure even withering.

International transportation can be the responsibility of the exporter or the importer, depending on the point at which the commodity changes ownership. Access to efficient international transport is usually a key determinant of the unit import cost of a commodity. The distance of a country from its main trading partners is obviously an import determinant of the total cost of supplying agricultural products and of whether or not a country has a comparative advantage in producing a commodity for export. However, converting comparative into competitive advantage requires that products can be transported at competitive international costs per km and also that seaport and airport facilities at the point of exit are adequate and efficient. Low international transport costs per km usually require the country to be on major air or sea transport routes. In the absence of this, appropriate transportation is often either unavailable or exorbitantly expensive.

Commodity storage

Export commodities are necessarily held in storage at a number of points as they move down supply chains. This usually involves storage in some type of building or enclosure, but commodities are also stored for short periods on carts and trucks. For example, in Ethiopia green and parchment coffee is stored in trucks at the Addis Ababa coffee auction while it awaits sale. For commodities sold domestically, traders frequently utilize a cart or the rear of a pickup truck as a temporary store and point of sale.

Enterprises store agricultural commodities for two distinct reasons, either as a necessary part of performing a physical function or in anticipation of a change in market prices. Stocks held for the former reason are normally referred to as

‘working stocks’. Traders hold working stocks while they assemble a truckload or wait for the arrival of buyers. Processors hold stocks of raw materials and products because processing is usually continuous while deliveries and sales are ‘lumpy’. They can thus ensure that the flow of raw material for processing is not disrupted by erratic delivery. They also hold stocks of their products as part of marketing strategies that aim at an orderly and regular supply to the market.

Over the past decade, large-scale manufacturers and retailers have placed great emphasis on developing systems for minimizing the working stocks necessary to guarantee continuous availability and ensure that shelves are always stocked. Such ‘just-in-time’ buying systems have had an important impact on the structure of supply chains (see Chapter 3).

The second reason for holding stocks is because commodity prices change over time. Stocks are held speculatively, with the aim of making a gain in value as market prices increase. This involves facing the risk of a price fall. Speculative agricultural stocks are usually held for relatively short periods to exploit anticipated seasonal price increases. One indication of an efficiently functioning closed domestic market is the existence of seasonal price increases that just cover the cost of storage, including an adequate margin for those undertaking the storage.

In the case of export crops, domestic price movements under today’s liberalized marketing systems are largely outside the control of national governments. In general, it is important that enterprises that are involved substantively in supply chains are not forced to bear a great price risk. This requires that they have access to some means of price risk management. In analysing supply chains, analysts should pay particular attention to identifying which chain participants face price risk, and the impact that this has on the structure of the chain and the behaviour of chain participants. The importance of this cannot be overstated. A downturn in prices can have a severe impact on traders and processors who are holding stocks. If it is large and unexpected, it can put them out of business. Ethiopia provides a recent example. Significant numbers of its grain traders and primary coffee processors have been forced out of business by adverse price movements, disrupting the country’s grain and coffee supply chains.

Notwithstanding the potential dangers of holding stocks, there are circumstances where stocks are held to reduce price risk. For example, an enterprise may enter into a contract to sell at a point in time in the future at a pre-agreed price that is based on the market price at the time that the agreement is negotiated. The enterprise can reduce the price risk that it faces by buying stocks immediately and holding them until the contracted date of sale is reached. However, such physical holding of stocks is costly and this has led to the development of futures markets where traders can partially offset price risk without the need to acquire physical stocks.

In addition to facing price risk, holders of stocks incur a set of costs. The largest is usually the cost of finance used to acquire the stocks. If purchased with a loan, this cost is simply the interest plus transaction costs associated with the loan. If the enterprise uses its own funds, the cost is the net interest that could have been obtained had the funds been invested in the next best alternative.

Stockholders must also bear the cost of warehousing. If the warehouse is rented, the cost is simply the rental paid. If it is owned, the cost will be equal to the rental that could be obtained if the warehouse were used by a third party. The stockholder must also bear either the cost of insuring the stocked commodity or the cost of uninsured losses. Losses are of three types: (i) physical losses in quantity resulting from spillage, theft, and pest infestation; (ii) losses in weight resulting from moisture loss from natural drying; and (iii) losses in quality. In some circumstances, moisture loss may be compensated for partially or fully by an associated increase in price.

Successful traders and processors are normally skilled at evaluating price risk, projecting losses and making rational decisions regarding storage. In developing countries, the very high costs and risks involved in the storage of agricultural commodities, coupled with the near impossibility of borrowing against the value of stocks held, means that few traders have either the incentive or the ability to hold stocks. This, in turn, leads to sharp seasonal price changes that are damaging for domestic household food security¹³ and can lower the

13 To meet urgent cash need, the poorest farm households usually sell immediately after harvest when prices are at their lowest and buy back at higher prices later in the year.

total value of agricultural exports (see Box 2). The capacity of enterprises within supply chains to hold stocks and hedge against risk is an important characteristic that analysts should seek to identify and evaluate.

Box 2

The adverse impact of the seasonality of coffee exports from Viet Nam

Over the past decade, Viet Nam moved from being a relatively minor coffee producer to being by far the largest producer of robusta coffee and the world's second largest producer by weight of all coffee. Viet Nam's annual robusta coffee harvest is relatively short, with the bulk of the crop being harvested in the months of November and December. Owing to the recent sharp falls in robusta coffee prices, a large proportion of the country's coffee farmers, especially those who have recently established coffee, are heavily indebted and consequently are forced to offer their coffee for sale as soon as it has been hulled. Viet Nam has no coffee exchange and domestic traders have no means of hedging efficiently against a fall in the value of stocks. Consequently, beyond the farmgate, there are no enterprises or institutions that hold green coffee stocks, other than the working stocks required in the export pipeline. Thus, coffee is offered for export as soon as it has been fully processed. This, coupled with farmers' inability to hold the entire national crop, leads to a seasonal post-harvest surge in the coffee being supplied for export. Buyers of Viet Nam coffee, most of whom have permanent offices in the country and staff in the main producing areas, are well aware of this situation and offer accordingly low prices. The result is that prices for robusta from Viet Nam fall to well below prices for robustas from other origins in the immediate post-harvest period. This reduces national annual export earnings from coffee and reduces farm incomes.

Processing

Processing activities and their characteristics. Virtually all marketed agricultural commodities are subject to post-harvest activities that change their chemical and physical characteristics. These include sorting, cleaning, dividing the commodity into its main component parts, heating, cooling, freezing, soaking, fermenting, compressing, cutting, shredding, waxing, combing and polishing.

The nature and extent of these activities differ greatly between commodities. Even commodities as similar in their final use as tea and coffee differ markedly in terms of what is actually done to them during processing. Black tea is manufactured almost entirely in a single factory, where the green leaf is withered, fermented, fired and graded in one continuous sequence resulting essentially in the product that is used by the final consumer.¹⁴ Coffee, on the other hand, is processed progressively as it moves down the supply chain. In the case of hard coffee, for example, the harvested cherry is sun-dried (usually by the farmer), the dried flesh of the cherry and an inner parchment skin is hulled from the bean in a separate process at a mill, and the resulting green beans are then graded and finally roasted. If the coffee is for export, the beans are invariably roasted at a plant in the importing country. Before they are usable, roasted coffee beans must also be ground, either before retail sale or by the final consumer. There are even greater differences in processing than those between tea and coffee, for example, in cotton and fresh green beans, and in wheat and sugar.

Single commodities are also often processed in quite different ways. Fresh coffee cherry, for example, can be dry-processed, as described above, or wet-processed. Wet-processed coffee is not initially dried. The soft flesh of the cherry is removed mechanically leaving the bean covered with a thin parchment skin. The bean is soaked, washed and sun-dried before the parchment skin is removed by milling. The final stage is identical to dry-processing in that the green coffee beans are then roasted and ground.¹⁵

14 Note that tea is frequently also blended prior to packaging for retail sale or use in the catering industry.

15 Wet-processed coffee tends to be milder than dry-processed, and commands generally higher prices.

Differences in the type of processing used for different commodities are, of course, largely explained by the nature of the physical and chemical transformation necessary to convert the raw commodity into its end products. The scale, location and, to some extent, also the nature of processing of each particular commodity are a function of its physical and chemical characteristics before and after each stage of processing and also of the characteristics of the economy within which the processing takes place. The combination of all these characteristics, in turn, is one of the main determinants of the configuration of supply chains. A commodity's processing characteristics are also one of the determinants of the countries and national locations that have a comparative advantage in production of the commodity. Examples of the most important processing characteristics that analysts must consider are discussed briefly in the remainder of this section.

1. Commodities differ in the extent to which they are perishable. For example, harvested seed cotton can be stored for months prior to processing whereas harvested green vegetables are highly perishable. Commodities also differ in the extent to which perishability varies with processing. For example, the washing and trimming of green vegetables has only a small impact on their perishability, whereas the processing of green leaf to black tea or of sugar cane to sugar transforms commodities that are highly perishable into products that are storable, albeit subject to gradual deterioration.
2. There are significant differences between commodities in the extent to which they are subject to economies of scale in processing. For example, the efficient production of black tea requires large factories, whereas maize and rice can be processed as cost-efficiently in small mills as in large mechanized mills in low-wage economies. As with perishability, economies of scale often differ between points in supply chains. The drying of hard coffee can be done efficiently on a small scale but there are substantial economies of scale in subsequent processing activities such as milling and electronic colour sorting.

3. The labour-intensity of processing varies markedly between commodities. For example, the preparation of vegetables and the processing of cashew nuts are much more labour-intensive than the processing of sugar cane and the manufacture of tea. Where processing is labour intensive, low-wage economies gain an advantage.

4. There are differences between commodities in the point or points at which they are most effectively graded. While this may not be an important determinant of the location or scale of processing, it has an important impact on the extent to which quality can be controlled. Where a processing unit relies on a large number of small deliveries from farmers it may not be feasible to test the quality of each delivery. Often this results in grading systems under which commodities are simply accepted or rejected on the basis of visual inspection by traders or the staff of processing plants. In Kenya, the leaf of smallholder tea producers is rejected if it contains more than the bud and the two tenderest leaves. In many countries, processors reject fresh coffee cherry if it contains unripe green cherries. Alternatively, small consignments may be classified as either 'Fair Average Quality (FAQ)' or 'Undergrade' on the basis of the visual determination of the presence or absence of a simple characteristic, such as whether seed cotton is 'clean' or 'dirty'.

In some instances, key quality characteristics may be apparent only after a particular stage of processing or the assessment of quality may require sophisticated tests that cannot be undertaken because they take time and the commodity is perishable. This can lead to serious and sometimes insurmountable problems. For example, in Viet Nam some small-scale farmers apply toxic chemicals to their tea bushes and then pluck the bushes within a few days. The many small consignments of green leaf that farmers deliver to factories daily during the main harvest season cannot possibly be tested for the presence of chemicals but these can be, and are, subsequently detected by importers of the manufactured tea. This has rendered much Vietnamese tea unacceptable to European buyers.

5. A further important point is that the most efficient form of processing often depends on the nature of the national economy and, in particular, its level of development and the associated relative costs of labour and capital. Where labour is abundant and cheap, it may, for example, be efficient to shell or sort a commodity by hand rather than by machine. It may also be efficient to use labour rather than machines to stitch and seal bags and to transport and store commodities in bags rather than in bulk.

Finally, analysts must be aware of the potential that new technologies have to change the organization of supply chains and also to open up new areas to particular activities. The invention of an efficient means of small-scale processing of a heavy or perishable crop can allow the crop to be grown and processed in a remote area where there is insufficient output to sustain a single large-scale processing unit. Newly introduced small-scale semi-washed coffee processing technology has the potential to do this in parts of Ethiopia.¹⁶ Conversely, when ultra-heat treated (UHT) milk is introduced into a market, small-scale dairies lose a part of their market for pasteurized milk but do not have the capacity to scale up to UHT technology. Their marketing chains must be reorganized by forging relationships with new retailers.

Perhaps the greatest changes in recent decades have been created by improvements in aviation. These changes have allowed perishable commodities to be transported between continents and have also allowed the demand for high-value horticultural commodities grown in Sub-Saharan Africa, South America and South and Southeast Asia to be driven by supermarkets in developed countries in other continents. Other more mundane changes, such as the introduction of containerization, have significantly changed the marketing of commodities such as coffee and tea.

16 Coffee in remote areas is currently sun-dried, whereas much of the output in high-density producing areas is fully washed.

Commodity transformation and by-products. For many agricultural commodities, processing leads to a main product and to one or more by-products of commercial value. Some examples are as follows:

Commodity	Main products
Rice paddy	rice and bran
Seed cotton	lint and cottonseed
Sugar	sucrose and molasses
Cashew nuts	kernels, cashew-nut liquid
Citrus	juice and citrus oil
Coconuts	copra, shells and coir
Cattle	meat and hides
Ostrich	skin, meat, and feathers

Some commodities, such as tea, have no significant by-products. For others, processing results in waste products that have no intrinsic commercial value and must be disposed of. Often, low-value products from agricultural processing can be used as mulch or as fuel, but the cost of transporting them to places of use often outweighs their value.

By-products are additional products that simply have less value than the main product. Thus, processing causes supply chains in effect to split into a number of subchains, one for each product, with the cost of processing being partially attributable to each product. However, in practice, when analysing the costs and margins of processing enterprises within supply chains, the most manageable and usual way of dealing with by-products is to attribute all processing costs to the main product and to count the revenue from by-products as negative processing costs.

Primary processing usually causes a loss in the weight of the main product, which can result from the separation of a by-product. For some commodities, such as cotton, the by-product (seed) weighs more than the main product (lint). Weight loss can also be mainly the result of evaporation and/or chemical change, both of which occur, for example, in the processing of green leaf to black tea and during the roasting of green coffee. A third type of loss is that

resulting from the removal of low-quality or damaged parts of the commodity, such as happens in the trimming of horticultural produce. There may also be a significant weight loss from cleaning or the removal of foreign matter such as earth, stones and insects, which is a common element in the processing of most seeds, beans and fibres.

Analysts need to be meticulous in their treatment of weight losses during processing. When collecting data from processors on unit costs it is vital that they establish whether the data refer to a unit of the raw material or of the main processed product. Similarly they need to confirm whether the weight of a by-product generated per tonne is per tonne of the raw material or per tonne of the main processed product.

Prices and payments

Perishable commodities are necessarily sold and utilized soon after harvest, but some commodities may not reach final consumers or users until months after they have been harvested. This means that, unless some sort of forward contract between farmers and buyers is used, all transactions within each supply chain must take place without knowledge of the final price and in the absence of the revenue from the final sale of the product.

In the simplest form of trading, a commodity is sold for cash at prices agreed between buyers and sellers at the time that it physically changes hands. Thus, a farmer sells to a trader at the farmgate at a price that they negotiate. The trader sells to a primary processor in a similar way, and so on through to the final consumer. This indeed still happens in the domestic markets for foodstuffs in many developing countries. A feature of these systems is that each participant in the supply chain must have the physical and financial capacity to acquire and hold working stocks of the commodity. For participants to remain in business they must also have either the capacity to bear losses from price falls that reduce the value of their stocks or the capacity to hedge or otherwise insure against such price falls.

For many commodities, and particularly for export commodities, more complex practices have developed where prices are negotiated in advance of delivery or set on the basis of pre-agreed formulae. These are often also coupled with arrangements under which the buyer provides finance to the seller. These

arrangements shift price risk and the burden of providing finance between enterprises within supply chains.

There is currently a large variety of pricing and payment practices between supply chains for specific commodities and between the chains for different commodities. At one extreme the final buyer pre-finances all activities within the supply chain, while at the other extreme each enterprise in the chain raises its own finance. In practice, most supply chains contain a mixture of these practices. As with processing, the nature of the practices in place at a level in a particular marketing chain is a function of the characteristics of the commodity and economy in question.

Trade in agricultural commodities, including international trade, can be handled through market relationships that have little need for coordination or direct communication between sellers and buyers. For most basic agricultural commodities, systems of grades and standards have developed that facilitate the efficient transfer of information on those attributes of a commodity that determine its market value. This allows importers to purchase unseen standardized commodities that have been graded in their country of origin. Production is driven principally by the signals provided by the ruling market prices of each grade, not by the requirements of particular buyers. Should buyers require qualities that differ from the standards used in trade, they can usually achieve this through purchasing and blending a set of consignments. In such systems, little coordination is needed between producers, processors in the country of origin and firms in the importing country. Commodities are produced, processed and marketed without a specific buyer being identified in advance by producers. Buyers, in turn, have no need to know the identity of the producer, since the existence of standardized grades means that they have information on the product's key characteristics and they can check the accuracy of this information by testing the delivered commodity.

For commodities for which grades and standards cannot easily be established, it is more difficult to trade on such an impersonal basis. For example, until recently most horticultural produce exported from SSA countries was acquired by exporters after negotiation with producers at the farmgate.

They then shipped the produce to Europe and sold it at wholesale markets where buyers inspected the produce. Coordination of activities along the length of marketing chains was required but not extensive.

Chapter 3

Recent changes that have affected export supply chains

In the 1980s and 1990s, many governments took steps to eliminate state participation in economic activity and to reduce public control of the economy. This was usually done as a part of structural adjustment programmes negotiated with donors and international financial institutions. In the agricultural sector, these programmes sought (a) to replace administered input and product pricing with market-determined prices, (b) to reduce or eliminate the subsidization of inputs and the indirect taxation of products, (c) to replace government enterprises and boards with private enterprises, and (d) to open the domestic economy to international market forces.

In practice, most structural adjustment programmes have not been fully implemented and there are instances of policy reversal. Despite this, structural adjustment has frequently resulted in radical changes in the institutions involved in domestic processing, marketing and foreign trade, the way in which prices are formed, and, in particular, the extent and nature of linkages between the supplying of inputs to farmers and the marketing of their output.

Over the past decade, there has also been significant liberalization of international trade and important changes in the structure and product requirements of markets for agricultural imports. These latter changes, together with improved low-cost international communication between buyers and sellers and the availability of a wealth of international market information and communication, have had an important impact on the organization of agricultural supply chains and the relationships between enterprises in these chains.

SUPPLY CHAIN GOVERNANCE

For some commodities, the past two decades have seen a progressive change within supply chains in the commercial relationships between the enterprises

involved. Standards and import requirements have become more rigorous and food distribution and retailing have become increasingly concentrated in the hands of supermarket chains in Europe, the United States, Japan, Latin America and some African and Asian countries. There is now less selling through impersonal commodity markets and more communication and coordination between units within supply chains. This, in turn, has affected power relationships and governance¹⁷ within these chains.

In Sub-Saharan Africa and developing countries in Asia and Latin America, significant changes in supply chains have been observed in the horticultural sector. Horticultural products have a high potential for differentiation in terms of place of origin, quality, extent of preparation and packaging and environmental impact. There is also an increasing demand for ready-to-eat and ready-to-cook produce that tends not to run into the problem of tariff escalation. This also gives potential for value adding that is labour-intensive and therefore suited to low-wage developing countries. Furthermore, especially for temperate fresh vegetables, the demand for processed products is rising rapidly, in excess of that for the unprocessed commodity.¹⁸

For horticultural exports from developing regions to Europe, activities along the supply chains for most processed/prepared fresh horticultural exports and a substantial proportion of unprocessed exports are now vertically coordinated with activities in buyer-driven chains. In such chains, retailers play the role of governing the activities that link widely dispersed producers to consumers in developed countries. In the majority of western European countries supermarkets have captured most of the market for imported fresh vegetables. These supermarkets do not own farms, processing facilities or import companies, but their size and market power mean that their decisions to win customers and to comply with food standard regulations define what the other

17 The term “governance” generally refers to the forms of transaction coordination exercised within a chain. It comprises the arrangements that define product specifications, including quantity and quality, prices and other commercial conditions.

18 See Humphrey (2004).

actors in the chain have to do. They determine what is produced and by whom, and the production and processing methods employed.

These changes in horticultural supply chains have been brought about by the following factors:

- There has been a proliferation and increased stringency of food safety and agricultural health standards.
- In the food markets of developed countries, there has been a trend towards product differentiation and a desire for healthy eating. This has generated additional demand for fresh produce, and particularly for fresh produce from tropical countries. Differentiation has been based on both the physical characteristics of commodities (including new varieties) and claims about so-called ‘credence characteristics’, such as potential health benefits, environmentally friendly production and labour impacts.
- There has been a progressive concentration of food importing and processing, while retailing in virtually all developed countries has become dominated by a small set of supermarket chains.¹⁹ Large supermarket groups account for 68 percent of fresh food sales in France, 72 percent in the Netherlands and 80 percent in the United Kingdom.²⁰ All of these groups have switched from traditional supply systems based on daily wholesale markets to vertically coordinated systems of supply.

These factors have made processors and retailers, and especially supermarkets, concerned not only with the characteristics of the product but also with processes back along the marketing chain to the point of production. These concerns cover the following:

- (i) Quality and safety characteristics of the product that stem from the way that it has been grown, processed and handled. These cannot be

¹⁹ A notable exception is Italy, where retail markets and small stores still account for the majority of retail sales.

²⁰ Cadilhon et al. (2003)

efficiently determined through physical inspection alone and therefore control of production, transport, processing and/or storage is required. For example, to ensure that pesticide residue is below the permitted maximum, it may be necessary to control the use of pesticides because sample tests of the pesticide content of imported consignments are not sufficiently reliable.

- (ii) Conformity with labour and environmental standards during production and processing. This must be done by inspecting the activities themselves rather than the product.
- (iii) Assuring regular and predictable supply to avoid damaging stock-outs and empty shelves, combined with minimum stocks in the pipeline to reduce inventory costs and to provide for maximum shelf-life.
- (iv) Progressive product differentiation and innovation aimed at a pipeline of new added-value products that, for a time, can be sold at high margins. This can include the introduction of company-specific standards aimed at increasing values.

The first two conditions can be achieved without the need for significant supply chain coordination if adequate certification, labelling schemes, and codes of conduct are in place. There is no need for a buyer to be able to trace the origin of the commodity or its movement down the supply chain if it is accompanied by adequate documentation. This, in turn, is of benefit to the supermarket chains since vertical coordination is expensive for them to manage.

Meeting the third condition does require supply within chains to be managed through coordination of planting, harvesting and delivery. This is particularly important for fresh vegetables and the more perishable fresh fruits. The fourth condition also needs coordination within supply chains, especially between retailing strategy and product and process development.

A further reason for supermarkets to develop close links with suppliers is that it helps in assuring access to supply. Retailers seek to be recognized as

important customers of their key suppliers and they often attempt to ensure this by requiring that their suppliers do not deal with their largest competitors. To allow the flexibility necessary in the horticultural business to react to innovation and changes in supply and demand, coordination with suppliers is normally achieved through broad agreements rather than comprehensive consignment-specific contracts.

Buyers have sought more differentiated fresh and processed products, delivered to more stringent timetables and complying with increasingly complex regulatory standards. Early entrants, such as Kenya in the case of horticulture, have developed the capacity to meet these demands over decades, as a progressive response to the transformation of the retail sector in Europe. New entrants have to establish systems of comparable complexity and quality from scratch. This makes it much harder for newcomers to horticultural exporting, such as Ethiopia and Uganda, to become established.

It would seem likely that the most promising way for such countries to become established is through foreign direct investment and partnerships with experienced exporters and developed country importers seeking new sources of supply. In the latter case, it is in the interest of importers to assist the development of local suppliers. This is mostly likely to happen when products are in short supply seasonally and a new country has favourable seasonal growing conditions and also when the supply of certain commodities from established producing countries is weak.

THE PROLIFERATION OF PRIVATE STANDARDS

While the process of notification under the SPS Agreement has contributed to the transparency of official food safety and agricultural health measures, there has been a proliferation of private standards that fall outside the purview of the WTO. These standards are subject to frequent change and there are differences between importing enterprises in the means and intensities with which the standards are monitored and enforced.

Within importing countries and between groups of importing countries there has been a certain amount of harmonization and consolidation of the standards set by private importing firms into industry-wide codes of standards. Some of

these are essentially protocols relating to food safety and hygiene, such as the Technical Food Standard of the British Retail Consortium. Others cover wider aspects relating to social and environmental practices, such as the Ethical Trading Initiative. The Fruit and Vegetable Standard of Euro-Retailer Produce Working Group for Good Agricultural Practice (EUREPGAP) was established in 1997 at the initiative of large-scale European retailers who source food from around the world, following a number of food safety scares. Its principal aim was, and remains, to ensure that food production methods are safe. However, it has expanded into an equal partnership with producers and taken on the broader aims of assuring that production is undertaken in a responsible way that respects food safety, the environment, the welfare of workers and the welfare of animals. Nevertheless, the exacting and dynamic nature of consumer demand means that there remain a large number of private standards that vary widely between firms and which are communicated through individual supply chains. This has resulted in a plethora of private standards that are normally simply communicated through individual supply chains.

It is in the interests of the more advanced exporting countries that the process of standardization and codification of private standards be accelerated. This process will not only reduce the extent of information on standards of which exporting enterprises must keep abreast, but consignments produced to a common standard will have a wider potential market. However, it may preclude less-developed late entrants that cannot achieve these standards from exporting to these markets. For these countries, variation in private standards may be preferable in that they are more likely to be able to supply a part of a market and to progressively gain a foothold.

For exporting countries and enterprises that do participate there are considerable rewards. In addition to picking and shipping, vegetables are often chopped, washed, combined into multi-product packs, labelled and bar-coded prior to export, generating jobs and contributing towards economic development.

The increasing importance of post-harvest storage, more sophisticated processing, continuity of supply and compliance with standards favours large-scale exporters, since the necessary activities and competences are subject to economies of scale. These act as barriers to participation in the chain by small-

scale exporters and, to some extent, by small-scale producers. There is clear evidence of concentration in export horticulture in established countries. There has also been some forward integration by exporters into the international freight business and backward integration into farm production. This latter move into farming by exporters is aimed both at assuring continuity of supply and accelerating the pace of innovation with new crops, crop varieties and processing methods. It also allows exporters to introduce and manage process controls more effectively.

INCREASES IN SANITARY AND PHYTOSANITARY CONTROLS

Over the past decade there has been a greatly increased public awareness and concern in developed countries with food safety in the wake of a set of internationally publicized health scares relating to food, including Bovine Spongiform Encephalopathy (BSE) in beef, *E. coli* in fast food, SARS from caged exotic animals, and influenza from poultry. Governments have reacted by making significant institutional changes in food safety oversight and reforming pertinent laws and regulations. These changes have been accompanied by a tightening of existing standards in developed and middle-income importing countries. For example, the EU has reduced the permitted level of aflatoxin contamination in coffee to a small fraction of that thought to threaten human health. New regulations are being introduced to address previously unknown or unregulated hazards and some countries are also taking a cautious approach to legalizing the importation of products based on genetically modified crops.

A further problem faced by developing countries is the substantial differences that remain between developed countries in the SPS standards that they apply. In particular, there are significant differences in the maximum residue levels (MRLs) of pesticides and fungicides and permitted levels of biological contamination that the United States, the EU and Japan permit in imports of each food product. For example, they each have different MRLs for each of the various traded fruits and vegetables and different maximum levels for the aflatoxin contained in cereals, green coffee and nuts.

The high cost of testing products at the border and the imprecise nature of sample-based testing has led to a growing number of health and safety

requirements being based on standards relating to the processes by which commodities are produced, processed, stored and marketed. While this represents a cost-efficient means for developed importing countries to minimize the risk of importing unsafe products, it requires a parallel development in exporting countries of a capacity to trace products back to each producer and to verify and certify that particular processes have been followed.

Such changes often place a high burden on exporting countries, since exporters must incur the additional costs of getting the product to the acceptable standard and getting every consignment tested and certified accordingly. Even then, in some instances it is possible for consignments to become contaminated after being tested and certified as contamination-free prior to export. When this leads to rejection at the point of import, the owner faces either loss of the cargo or the additional costs of moving it to a different, less demanding market where it invariably sells at a lower price.

From this brief discussion it is evident that product and process-based SPS import controls remain an important impediment to market access in developed countries. In some instances, such as for black tea from Viet Nam and for some animal products from countries in Sub-Saharan Africa, SPS measures imposed at the border by developed countries are the major impediment faced by exporters.

Chapter 4

Addressing constraints that inhibit exporting

This chapter first highlights the need for an enabling environment. It then discusses sets of processing and marketing constraints that prevent the full exploitation of opportunities to increase exports of agricultural commodities to developed countries. The majority of these constraints relate to deficiencies in the domestic economies of exporting countries. This chapter also covers means by which exporting countries can overcome constraints in foreign markets. The focus throughout is on constraints on established export commodities in which a country continues to have a comparative advantage.

Increasing the value of exports is not an end in itself, rather a means of accelerating the pace of economic growth. In the context of the processing and marketing of a specific commodity, economic growth is accelerated directly by increasing the value which is added between the producer and the point of export and indirectly by improving cost-efficiency. For an improvement in cost-efficiency to accelerate the rate of economic growth, a part of this improvement must be captured domestically in the form of higher prices and profits for producers and/or higher profits for traders and processors. This then leads to acceleration in economic growth as the increased profits are invested.

The most fundamental constraint on increasing domestic value added is, of course, a lack of production. Deficiencies in processing and marketing systems constrain production by reducing producer prices and by raising uncertainty over future producer price levels. They also constrain production by causing delayed payment and by being incompatible with the effective supply of finance and inputs to farmers.

Domestic constraints on the processing and marketing of agricultural exports can be categorized by the way in which they inhibit the rate of national economic growth:

- Constraints that inhibit production.
- Constraints that raise unit processing and marketing costs.
- Constraints that reduce export prices and make them less stable and predictable.
- Constraints that reduce the number and size of accessible foreign markets.

A word of caution is in order. Often what appears at first sight to be a constraint at a certain point within a supply chain is in fact a symptom of a deficiency or a combination of deficiencies elsewhere in the commodity's supply chains. For example, the low export price fetched by Viet Nam's coffee is partly a consequence of problems faced by producers, especially in the drying of cherry. However, it is also because of (a) inconsistency of quality within individual consignments that stems from green coffee assembly practices and inadequate grading and (b) the seasonal timing of export sales to the world market that results from the high price risk of holding domestic coffee stocks.

AN ENABLING ENVIRONMENT

A basic requirement for efficient export of agricultural commodities is a stable and predictable macroeconomic environment in which individuals and enterprises can engage in productive activities with confidence. The main need is for the national exchange rate, the rate of domestic price inflation and domestic interest rates to be predictable and to move together in a manner that maintains the competitive advantage of activities. This requires that the exchange rate of the national currency change systematically to reflect differences between the rate of domestic price inflation and that of important trading partners. Rates of interest, in turn, need to change to reflect changes in rates of inflation. Such coordinated changes are invariably easier to achieve when the national currency is stable and inflation and interest rates are low.

A further important requirement is a framework of effective mercantile and enterprise law that fosters the creation of flourishing business groupings and trading systems and allows processors and traders to operate efficiently and with confidence. While it is important that the outcome of disputes is equitable, a key

need is for the legal system to facilitate business rather than act as an impediment. When two businessmen engage in a dispute about a breach of contract, their main concern is not to seek vindication or assuage a feeling of injustice, but to resolve their dispute quickly and fairly, so that they can continue to operate. For agricultural marketing, where the goods traded are frequently perishable and subject to rapid seasonal changes in price, it is particularly important that disputes in areas such as grades and non-performance can be resolved quickly despite the complex technical issues that are often involved. In most cases the court system is inappropriate for such dispute resolution and there is a consequent need for a strong and appropriate legal framework for setting up systems of arbitration established by market participants. Usually these can resolve issues at least as fairly and efficiently as any judicial process and in a fraction of the time. The other important legal need is for an effective means of recovering debt, including an appropriate set of bankruptcy laws.

CONSTRAINTS THAT INHIBIT PRODUCTION

Unstable and uncertain producer prices

Market forces at the time of sale determine the prices that most farmers in developing countries receive for their output. These market prices are both unstable and unpredictable, which creates problems for farmers, especially those growing perennial crops and rearing livestock with a long gestation period. These problems are of two distinct types.

The first relates to the allocation of resources. In the absence of advice to the contrary, farmers tend to invest in activities that they observe to be profitable at the time that they make their investment decision. Investing on the basis of peak prices means that farmers often plant crops in unsuitable areas where, taking good years with bad, they will make lower profits than those obtainable from other activities. This represents a misallocation of resources.

Even for those farmers who end up selecting the activity most suitable for their location, investing at the time of peak prices is inadvisable since producers worldwide tend to do the same. For perennial crops and livestock, new output comes on stream as world prices are starting to decline as a result of the maturation of new capacity worldwide. For annual crops, high prices in one

year lead to increased planting and to lower prices in the subsequent year. Efficient investing requires production to come on stream in the upswing of perennial price cycles and in years of high annual crop prices.

There is potential to assist small-scale farmers to improve their investment decisions by providing them with training and advice on the operation of markets and the likely course of future prices. Attempts to do this through public marketing extension systems have largely proved ineffectual. Introducing or extending public marketing extension systems should be seen as very much a last resort. Analysts working in this area should first determine the extent to which private and cooperative systems of marketing extension advice have become established under contract farming arrangements. As a first step, they should seek possible means of supporting and extending these systems, such as through direct financing of the training of private-sector extension staff or indirect financial support through fiscal measures. Another possible means would be through the support of training and research at educational institutions in the area of marketing and international agricultural markets.

A word of caution relating to commercially based marketing extension is in order here. Even experienced processors and traders tend to see phases of perennial crop price cycles as heralding a long-term structural change in the relationship between supply and demand. In particular, cyclical price downswings are invariably seen as the initial stage of a long-term period of declining or depressed prices. This is reinforced by press reports based on interviews with the trade and by the publicity of non-governmental organizations (NGOs) and lobby groups seeking public support for their efforts to help producers.²¹ Thus, commercially based marketing extension may well give the wrong investment advice based on a misreading of international price prospects. While governments should not get involved in the day-to-day provision of extension advice, they are better placed than producers and the trade to see the broader world market picture and to make judgements on the

21 An extreme example of this phenomenon has been the reaction of NGOs to the recent period of low coffee prices.

future course of prices. In particular, they should seek to ensure, to the extent possible, that producers invest at times of low prices with a view to production coming on stream as world prices recover. This is particularly the case if investment requires forgoing output for a period of time, as it does, for example, for corrective pruning and coppicing of some tree crops. When prices are depressed, farmers have lower incomes that reduce their financial capacity to invest. Consequently, governments may be best able to counter inefficient cyclical investment through credit-based measures.

Market participants can reduce or offset the impact of adverse price movements, by selling forward or using risk management instruments, such as futures contracts or price insurance schemes. Contract farming usually involves some form of forward selling, but this prevents farmers from facing unexpected price falls only if the forward sale involves a fixed price rather than one linked to a market price indicator. The use of risk management instruments requires the instruments to be available and farmers to have access to them. In practice, few risk management instruments exist in developing countries. Instruments in other countries are often inaccessible or of only limited use for hedging against movements in domestic producer prices because these prices move differently from prices in the terminal markets. To the extent that inaccessibility stems from foreign exchange legislation, changes to this legislation can facilitate access. However, use of futures markets is still likely to be limited until markets with delivery points and delivery types and qualities of relevance to domestic markets are established. This has proved impossible to date, other than in special circumstances.²² Nevertheless, the importance of mitigating the impact of agricultural price instability has been widely recognized, and the World Bank, the Common Fund for Commodities and a set of bilateral donor agencies

²² An agricultural futures market has been established in South Africa. This was made possible by the dual nature of the country's economy that embodied the necessary sophisticated high-quality agricultural storage and banking systems and a large farm sector with the capacity and skills to hedge on the exchange. Similar conditions exist in Brazil, which has an efficient and fairly sophisticated futures market where both commodity contracts and financial derivatives are actively traded.

are supporting research and experimentation in developing countries with agricultural risk management instruments. It is important that analysts monitor these efforts and review the scope for transferring successful innovations into their economies. However, they must bear in mind that, in practice, price risk management instruments can only be used over relatively short periods and consequently only have the potential to reduce risk that stems from seasonal price uncertainty. They cannot be used effectively to reduce the price risk involved in the new planting or replanting of perennial crops.

The second problem stemming from world price instability applies to all farmers producing the export commodity, even those for whom it is the most appropriate alternative. All face the problem of coping with unstable gross annual income streams and often with highly unstable net income streams, possibly with a run of several years when net incomes are negative. This cannot be readily addressed by measures relating to agricultural processing and marketing, although it does, of course, stem from unstable prices and revenues that are transmitted to producers through marketing and processing chains.

The main contribution that governments can make to stabilize net incomes from export crops is to ensure a stable macroeconomic environment. Of most importance is a predictable exchange rate, in which movements offset differences in the rate of domestic inflation relative to rates in the main markets for the country's exports.²³

Delayed and late payments to producers

Under former state-run single channel marketing systems, producers usually received partial payment or no payment at all at the time of delivery. In some instances this was a planned feature of the system. Full payment was intentionally

23 Note that for a country with a single dominant export commodity, market forces are likely to lead to the exchange rate being correlated to a greater or lesser extent with the export price of the commodity. This will tend to stabilize incomes earned from export crops. However, excessive exchange rate movements caused by world price instability of a single commodity will be damaging for the rest of the economy. In particular, an increase in world prices for a dominant export commodity could harm food deficit households by raising the local currency cost of imported food commodities.

delayed because the net price payable was known only after the product had been processed and sold. It was also delayed because it took time to test quality, to make payments net of loans, or to arrange payment through banks and cooperatives. In many countries, producers often also faced long payment delays because of the inability of the state marketing board or cooperative unions and societies to raise the funds necessary to pay farmers. This was either because they were unable to dispose of the product or because under the ruling administered pricing systems they operated at a loss. In some cases funds were stolen by corrupt officials. Such delays were more damaging for farmers than delays that were planned and known since they disrupted the annual pattern of producer incomes, compromising the livelihoods of farm households and reducing their ability to acquire farm inputs. In some countries, unplanned payment delays in single channel systems significantly slowed the pace of national economic development. In Kenya, for example, payment delays in the 1980s resulted in the collapse of pyrethrum and cotton production and slowed the rate of development of smallholder coffee production.

Market liberalization has largely eliminated both planned and unplanned payment delays, although where market power lies with the buyer the seller may still be forced to wait for payment.

Farmers normally sell for cash because they do not trust traders to pay them at a later date. In the case of small-scale producers, traders know that farm households usually have an urgent need for cash and can be persuaded to accept a reduced price in return for immediate payment. One drawback of this cash-based culture is that traders may have insufficient cash to acquire the full national crop causing prices to drop sharply in the immediate post-harvest period.

The government can make an important contribution to mitigating this problem through support for the establishment of a system of credit under which traders borrow against the security of their stocks. Such inventory-based credit requires the establishment of systems of grades and standards and a system of warehouse receipts. To operate effectively, the latter requires the creation of a regulatory framework that ensures transparency and that certified warehousing enterprises are fully accountable and adopt sound business practice. The framework must also provide for the creation of a regulatory body that (a) certifies the suitability of warehouses and the competence of warehouse

operators and warehouse staff, such as weighers and samplers, and (b) monitors and regulates the system's operation. Although the regulatory body and the whole warehouse receipts and inventory credit system could eventually be undertaken by the private sector, it is likely that it will need to be initiated and established by the government.²⁴

For traders to be prepared to buy and hold stocks, it is essential that the market is as stable as possible and that they are able to make an informed judgement on the likely direction and extent of price movements. Again the role of the government is vital, since an unstable and unpredictable national exchange rate exposes traders to the risk of unanticipated currency revaluation reducing the value of their domestic stocks of export commodities.

Inadequate supply of inputs and credit to farmers

Small-scale farm households face many demands on their meagre earnings, including cash for food, school fees, medical bills, weddings and funerals. As a result, they usually do not have savings that can be used for the purchase of agricultural inputs. This is especially the case in areas of mono-modal rainfall where many months may elapse between crop sale and the need to apply fertilizer and other purchased inputs to the following year's crop. Consequently, for the majority of farmers access to seasonal credit in some form or another is essential if they are to raise output through using more than simply retained seed and family labour.

Rural credit markets for small-scale farmers fail because farm households lack collateral that is acceptable to financing institutions and face severe production and price risks that increase the likelihood of payment default. Farm households require small loans that, together with a dispersed clientele and poor transport and communications, entail high transaction costs. Together, these factors make lending to small-scale farmers costly and risky. Existing and emerging financing institutions consequently prefer to do business elsewhere. Micro-finance institutions (MFIs) focus on loans with a term of one to three

24 See Coulter and Shepherd (1995).

months, which are easier to monitor than seasonal rural credit. Throughout Sub-Saharan Africa, banks and MFIs focus primarily on non-agricultural activities in urban and peri-urban areas.

One of the few ways that small-scale farmers have been able to successfully access finance is through loans made by traders and processors. In the past, these formed an important element of state intervention aimed at supporting agricultural production and marketing. Governments established systems under which state enterprises or cooperatives supplied seasonal inputs or credit to farmers and recovered the cost from the payout for crop deliveries. These systems have largely been phased out, but it is possible for private traders and processing enterprises to operate similar ‘interlocking’ credit and marketing systems under contract farming arrangements. For such systems to be successful, it is essential that farmers cannot readily sell their crop to a second processing or marketing enterprise thereby evading loan repayment. Thus, it is usually necessary for them to be limited to crops for which there is only one local buyer. This is most likely to be the case for cash crops such as cotton, tobacco and tea, for which there is substantial weight loss during primary processing and/or the crop is rapidly perishable. There are significant economies of scale for these crops in primary processing or collecting. These characteristics gave a captive market to processors, and allowed them to exercise sufficient control over farmers’ marketing activities to ensure loan repayment.

When examining means of breaking processing and marketing constraints on exploiting export opportunities, analysts should explore the potential for raising production through the establishment of such interlocking systems. In so doing, they should focus on isolating commodities that have intrinsic and processing characteristics likely to lead to local marketing or processing oligopsonies and determine which of these already has an operating interlocking system and where there is unexploited potential. In the latter case they should seek to foster the development of contract farming. Eaton and Shepherd (2001) cite successful examples in the Philippines and India of where the government took the initiative to identify crops and livestock production suited to contract farming and then sought to arrange meetings between agribusiness entrepreneurs and farmers. Where contract farming is already in progress, analysts should focus on

identifying problems that have arisen and on means by which the government could help solve these problems. For example, the government could introduce and improve legislation relating to the arbitration of commercial disputes or measures to facilitate the importation of appropriate inputs. Where conditions appear to exist but no interlocking systems have evolved, analysts should seek to determine why. The government may be able to help break constraints by giving tax incentives to firms operating schemes with smallholders. It could also help by encouraging and supporting the formation of farmers groups where processors and traders have not been prepared to take on the administrative burden of negotiating with large numbers of individual farmers.

Notwithstanding the importance of establishing sustainable small-scale rural credit systems, it is vital for processors, traders, farmers and the economy at large that processing and marketing enterprises are not forced out of business by the failure of farmers to repay loans. Therefore, it is essential that the government only provide support to willing participants. It should not seek to induce processing and marketing enterprises to lend to farmers through subsidies or concessions if these enterprises would otherwise not do so, since this indicates that it is either too risky or that the policy and legislative environment is unsatisfactory.

Low producer prices

Producer prices are influenced by the price at which the commodity is retailed in the exporting country and by the processing and marketing costs that are deducted between points of retail sale and producers. Both are covered fully below.

CONSTRAINTS THAT LEAD TO HIGH UNIT DOMESTIC PROCESSING AND MARKETING COSTS

Poor and unreliable national infrastructure

The processing and marketing of agricultural produce is heavily dependent on domestic infrastructure. Adequate and reliable water, power and telecommunications are needed for efficient processing. Good roads, storage, telecommunications and seaports are needed for efficient domestic marketing. Poor infrastructure raises unit processing and marketing costs, leads to

deterioration in the quality of goods, undermines the profitability of domestic commodity production and reduces the potential for exporting agricultural commodities profitably.

With the exception of modern telecommunications and, to a lesser extent, electricity, many problems regarding infrastructure in developing countries stem from the fact that its provision is subjected to substantial economies of scale. This leads to natural monopolies and market power. For this reason, most infrastructure in developing countries has been either provided by the government or subject to heavy government control. Over the past two decades there has been extensive privatization of telecommunications and the provision of energy in developed countries. More recently there has been limited privatization and attempts to introduce a degree of competition into the provision of infrastructure in developing countries. However, infrastructure in developing countries remains principally in the hands of the government, with new investment being financed from public sources or by donors and the international financial institutions (IFIs). Decisions on investment in infrastructure are necessarily difficult to make because much infrastructure serves both commercial entities and households and in effect contributes directly to investment and consumption.

The technical difficulties involved in ensuring that expenditure on infrastructure is allocated efficiently are further complicated by the fact that for some infrastructure, such as roads, it is difficult to charge according to use. Consequently, prices do not ration demand or signal that new capacity is needed and often do not cover costs. The problems encountered in achieving efficient patterns of expenditure are exacerbated by pressure from interest groups and the fact that those that make decisions on the large investments involved may be influenced by the potential for personal gain. In general there is a tendency for overexpenditure on investment at the expense of potentially more productive maintenance. This is partly a consequence of donors' traditional preference for subsidizing capital rather than recurrent expenditure, but perhaps also because new investment is seen as the better means both of garnering political support and of allowing decision-makers to collect inducements.

Commodity analysts can support more efficient decision-making on infrastructure in two ways. First, they can contribute to the general debate and budgeting process by highlighting the infrastructure needs of commodity processing and marketing. Second, they can argue the case for investment in the particular infrastructure necessary for the successful exploitation of specific existing or emerging market opportunities. Since commodity analysts will not be in a position to undertake a full review of public investment in infrastructure they will need to do this through highlighting the cost of specific deficiencies, such as that of interruptions to electricity supply experienced by processing plants or the cost that exporters bear as a result of vessels lying offshore waiting to berth.

High-cost domestic transport and port facilities

The importance of domestic transport and port handling as a component of the total processing and marketing cost to the point of export varies considerably between commodities depending on the ratio of their value to their weight and particularly their value to their volume. The importance of domestic transport in export costs is, of course, also a function of the quality and state of repair of the country's road and rail networks and of the location of production relative to the nearest seaport or, in the case of high-value perishable goods, the nearest airport.

In general, road transport in developing countries is competitive, with many small transporters competing fiercely for business, because of the mobility of trucks and the relative lack of barriers to entry to the transport industry that stems from the limited economies of scale in transporting. It is also competitive because of the ease with which trucks can be bought and sold relative to assets that are installed in one location and, compared with some processing activities, the relatively small cost of single investment units. Often, the initial investment costs are reduced further by the importation of depreciated, second-hand trucks. This usually makes good commercial sense given that in developing countries the cost of the labour necessary to maintain them and keep them operating is much less than in developed countries.

Inefficient seaports are often a major cause of high marketing costs. Port labour is usually heavily unionized and notoriously inefficient. This results not only in high labour costs but also slows the time that vessels take to load and unload, leading to delays and the imposition of demurrage charges. It is important that analysts alert decision-makers to the extent to which high port costs are handicapping the ability of the country's export commodities to compete on world markets. There may be potential to introduce legislation that outlaws restrictive labour practices, provides for and regulates severance packages, allows private participation in ports, and otherwise provides a legal framework that allows the more efficient management of port labour.

Internal transport tends to attract more regulation than most other domestic processing and marketing activities. Some of these regulations are a remnant of former movement controls that were considered necessary for the effective operation of state-run marketing systems. These tend to be difficult for governments to eliminate since they have traditionally provided a source of informal income for police officers and local government officials. However, they directly increase marketing costs, lead to inefficient movement of commodities and, of course, their implementation diverts public employees from productive activities. It is essential that analysts advance strong arguments for their abolition.

Domestic overland transport also tends to attract higher indirect taxation than most other processing and marketing activities. The demand for fuel, which tends to be price inelastic, frequently makes it the subject of relatively heavy taxation. Most countries import vehicles, making them more easily taxable and subject to quantitative restriction than domestically produced goods.

Because of the extensive impact of government taxation and regulation, transport often offers more scope for productive policy change than other activities in the marketing chain. Box 3 contains an example of past government regulation in Syria, its adverse impact, and the simple measures that could be taken to make transport more efficient.

Box 3**Increasing competitiveness through simple changes in regulations: fruit and vegetable exportation from Syria**

Most of Syria's fruit and vegetable exports are assembled in mixed consignments of 17 to 18 tonnes and carried overland in refrigerated trucks. In 1999, there were some 2 000 refrigerated trucks registered in Syria, mostly owned singly by individuals, just adequate for that year's export volume. Virtually all these trucks were old, with many dating from the early 1970s. This had two major disadvantages. First the trucks had less capacity than that of most modern trucks, leading to higher unit shipment costs. Second, unlike refrigeration in more modern trucks, the entire consignment was cooled to the same temperature, leading to damage to some items in mixed shipments. The main reason for the country's very old refrigerated transport fleet was that the Government of Syria restricted imports of trucks to expensive vehicles of one year old or less, which were subjected to high import duties. This made it virtually impossible for owners of small trucks in Syria to replace their existing vehicles. Exporters had no alternative other than to use the country's old, high-cost fleet because there were virtually no refrigerated overland trucks and the government prohibited empty foreign trucks from entering the country. In this circumstance, the quality of the national transport fleet and the competitiveness of Syrian fruit and vegetable exports could have been increased simply by the government making minor policy changes that allowed (a) the importation of trucks with up-to-date characteristics but of more than one year old and (b) modern foreign-owned trucks to enter the country empty.

Underdeveloped systems of price formation

Agricultural commodities are grown under varying agroclimatic conditions, with different combinations of inputs applied with different skills. They are subject to damage from pests and diseases while growing and are damaged to a greater or lesser degree during harvesting, storage and handling. Agricultural commodities

are also subject to different levels of post-harvest cleaning and sorting, and are packaged in different ways. As a consequence of these differences, there is variation between each marketed consignment in the characteristics of the commodity offered for sale. The characteristics of consignments of livestock and livestock products also vary for similar reasons. This variation means that buyers must have information on a consignment before they are prepared to commit to a purchase and they must be confident that this information is accurate. Information can be acquired in one of three ways:

Through physical inspection of the commodity: For some types of commodities, the buyer must see the full consignment in order to assess its quality and be assured that it exists and is available for purchase. This is typically the case for livestock, since a sample cannot readily be taken and it is difficult to define quality objectively. For inspection by buyers, such commodities must be moved to the point of sale or, alternatively, individual buyers must travel to the farm or premises of the seller. At the point of sale, there must be some means of holding the commodity so that it can be inspected. For livestock, this can be a shed or field at a farm or a pen at a market. For a crop, it can be a store on a farm, a warehouse at a market or a piece of firm ground on which trucks or tractors and trailers can park.

Through the inspection of samples: For most agricultural commodities it is possible to take representative samples. Such commodities need not be moved to the point of sale, but there must be procedures for assuring the buyer that the offered consignment exists and that the sample is representative of the full consignment. In practice, it is the exception rather than the rule for samples to be viewed at a point distant from the location of the consignment itself. Most commonly, consignments are delivered to a buying point or market by head load, pack animal, cart, tractor and trailer or truck and are then sold on the basis of samples that potential buyers draw from the consignment and inspect. For export commodities,²⁵ this is an indication that there is either no adequate

25 For perishable commodities destined for sale to consumers through large numbers of small outlets, delivery to wholesale markets for sale to retailers and hawkers is logistically efficient.

system of grades or no systematic means to reliably verify that a graded commodity exists at some distant point and can be reliably purchased. Most commonly, it is an indication of both, since without one of the systems there is little point in developing the other.

Through description: Buyers purchase on the basis of a description of the characteristics of the consignment, including its size, grade and location. This requires a system of grades and a means of certifying that a consignment of a particular size and grade is stored and available for purchase at a particular location. The system can be formal or can be based on informal communication between enterprises that have developed a mutual trust.

The most appropriate means of providing buyers with the information they need is likely to vary between commodities. It will depend on the physical properties of the commodity, especially its storability, the ease with which grades can be defined, and also on the characteristics of production, processing and marketing in the country in question. Analysts need to examine whether it is possible to make cost-effective improvements to systems of price determination and marketing and feasible means of doing this. Improvements are likely to involve establishing a combination of the following:

- a formal grading system;
- a system of certified warehousing and warehouse receipts; and
- a commodity exchange.

A system involving all three may be suitable for some commodities, but the financial cost and the training and expertise necessary to get the system up and running is likely to be high. While such apparently advanced pricing and marketing systems may be appealing, the cost of establishing them may well be greater than the benefits. Many politicians and senior government officials from developing countries make brief donor-sponsored visits to sophisticated commodity markets in London, Chicago and New York and see them as a solution to their countries agricultural marketing problems. After such events, an important task of analysts will be to explain the functions of the markets

Box 4**Developing commodity exchanges in Turkey**

In 1993, Turkey had over 100 institutions that were classified as commodity exchanges. These ranged from bureaux that simply registered trades to a sophisticated exchange established in 1891 at which cotton lint, raisins and oilseeds were bought and sold daily through brokers dealing by open outcry. In 1994, an FAO project to support the development of Turkey's commodity exchanges examined the systems for marketing grains, sunflower seed, pulses, cotton, hazelnuts, tea and livestock. The project highlighted differences in the level of development of these systems, isolated key constraints in each, and identified the developments necessary to facilitate efficient marketing, including trading at exchanges. These formed the basis of subsequent national programmes in Turkey, supported by the FAO, donors and international financial institutions, to develop a regional futures market for cotton and exchange-based trading of grain.

visited and why, in their own country at its current stage of development, they might be inappropriate. However, they should not finish there. They should use the enthusiasm generated for more sophisticated systems of price formation and marketing as a vehicle for explaining and promoting effective changes to existing domestic systems. An example of this is contained in Box 4.

Inadequate and inappropriate market infrastructure

Markets are places where goods are traded. Markets must be appropriate for the form of trading, with the most important single determinant being whether the commodity in question must be moved to the market for the purpose of price formation. They can range from virtual markets located on the Internet to large physical establishments with laboratories, stores and trading halls.

Market forces normally lead to physical markets becoming established at points that minimize the cost of transport, taking into account factors such as the location of processing and the proportion of national production that is

traded internationally. However, changes in processing methods and in the spatial location of production and trade flows may render the present locations of markets inefficient or incompatible with national development strategies. For example, in Ethiopia there has been an expansion of high quality coffee in the south. This is marketed through the Addis Ababa auction, which does not lie on the shortest route to the main export point.²⁶ Problems are often exacerbated by urbanization and increases in urban road congestion that make markets in urban centres difficult for trucks to access. Urban markets also contribute to congestion and pollution, imposing a cost on third parties.

Established markets are unlikely to move to more appropriate sites without public intervention and support because traders have adapted their lifestyles and trading to the location. It is sellers, buyers and third parties, rather than the market-based traders themselves, who tend to suffer the consequences of the market's inefficiency. Rival markets are unlikely to succeed because of the difficulty of attracting the critical number of traders necessary to provide the degree of competition required by sellers and buyers.

When efficiency dictates the need for a change in market site, government involvement is likely to be necessary to ensure that the move takes place and to facilitate it. However, it is essential that existing market traders as well as sellers and buyers at the market are closely involved in and agree with both the choice of location and the design of the new market. In particular it is important that markets serve established trading patterns and that the government does not use the market to force a change in trading methods. The developing world is littered with markets for agricultural commodities and produce designed by governments and aid-financed foreign consultants that are wrongly located and inappropriately designed. Consequently, they are unused, partially used or used for a purpose different from that intended. For example, a large donor-financed wholesale market in Kathmandu was

²⁶ Note that some coffee marketed through cooperative societies is sold directly without the need to pass through the auction; however, this still has to be milled and prepared for export in Addis Ababa since all facilities for doing this are located in close proximity to the auction site.

established with UN support for the auction trading of fruits and vegetables and for the marketing of fish. Once opened, fruit and vegetable traders used the auction-trading facilities to continue their existing method of trading based on face-to-face negotiation. Fish traders could not be persuaded to move from their existing premises located elsewhere in the city. In general, traders are likely to prefer to use low-cost designs that are functional rather than expensive facilities designed to foreign standards. Since senior decision-makers as well as foreign donors may well prefer the latter, it is important for analysts to make clear the opportunity costs of over-elaborate designs and to explain the implication of these for the unit costs of marketing, market rents, and therefore the likely success of the market.

Bureaucracy

Unnecessary government controls are costly in two ways. First the bureaucracy involved diverts resources away from productive activities. Second, controls give scope for rent-seeking, which causes economic inefficiency by distorting patterns of investment and by weakening the link within the private sector between efficiency and profitability.

Liberalization has lessened public control of economic activity and has swept away much of the unnecessary bureaucracy and the associated rent-seeking that characterized many developing countries in the early post-independence period. Particularly important in this regard has been the phasing out of administered pricing. However, domestic traders, processors and especially exporters are still required to divert significant amounts of their time from productive activities to unnecessary preparation, gathering and submission of documentation.

For export supply, as with other economic activities, there remain legitimate areas in which public control and intervention are required. Governments, for example, need to accomplish the following: obtain data to support policy-making; ensure protection of labour rights and the environment; raise revenue; and, protect the reputation of their country as a reliable exporter of good quality produce. The bureaucracy involved in such activities should be kept to the absolute minimum that is necessary to perform them effectively.

For each export commodity, it is in the interest of involved enterprises to make their national industry as efficient as possible since it must be competitive with exporters in other countries.²⁷ Thus, as a general rule, governments should aim to leave as much regulation and control of the production, processing and marketing of agricultural exports as possible to the private sector. The focus of government should be on establishing the legal framework necessary for effective self-regulation.

In some circumstances, governments seek to protect new entrants to an industry by outlawing practices that they consider overly risky or otherwise not in the interest of the new entrants. For example, a government may legislate to prevent exporters from selling forward at pre-contracted prices or for more than a maximum number of months ahead. In Ethiopia, for example, the National Bank of Ethiopia permits traders to export up to six months forward at a pre-agreed fixed price and up to one year forward at a price set at a differential to the price on the New York Coffee Exchange at the time of delivery. Such rules usually apply to all exporters and often prevent experienced traders from adopting practices from which they can benefit. In such circumstance, if the protective regulation is deemed essential for new traders it is important that it applies only for a set time period from the date that they commence business. Preferably, such regulation should be replaced by the prior training of new entrants, either by a commercial trade association and/or through a domestic training institute.

Finally, there are examples in developing countries where remnants of former control systems remain. These tend to be where the government ministry responsible for trade previously undertook most regulation relating to exports but where some other ministry, such as the ministry responsible for finance, was responsible for associated measures. Thus, for example, minimum export price legislation may have been imposed to prevent transfer pricing under a regime that restricted access to foreign exchange, but may have been retained after liberalization of the foreign exchange market. Since there may be

²⁷ This is not the case for industries that only supply domestic markets, which may benefit, for example, from agreements between enterprises to restrict output at the expense of higher unit costs.

vested interests amongst politicians and government staff in the retention of restrictive controls, an important role of analysts is to develop and present convincing technical arguments for their abolition. For example, it took a barrage of recommendations from analysts before maize movement controls were abolished in Kenya, before the daily minimum export registration price for coffee set by the National Bank in Ethiopia was discontinued, and before restrictions on grain imports from South Africa were relaxed in Lesotho. An example of how decisions to remove regulations could increase the competitiveness of Syria's fruit and vegetable exports was given in Box 3.

Outdated and inadequately maintained processing technology

Low quality processing facilities typically result in operating costs that are high per unit of the raw material processed. This is for three main reasons. (i) The plant and machinery are likely to be subject to frequent breakdown and to require repair. (ii) Breakdowns lead to low capacity utilization and to the fixed costs of the facility, including the cost of permanent labour and management staff, being spread over a reduced throughput. (iii) The technology embodied in the plant and machinery is likely to be technically inefficient in terms of fuel, maintenance, labour use and the management input required.

Processing can rarely turn poor quality raw material into high quality produce, but it can do the reverse, and frequently does. The results of low quality processing are low quality products that can only be sold at a price discount. This leads ultimately to lower prices for farmers. Dilapidated processing equipment results in increased wastage or in a greater percentage of low value by-products, again reducing the total net sales value payable to farmers. These faults may arise as a direct consequence of the quality of the plant and machinery or from secondary effects, such as breakdown and the resulting deterioration of working stocks of perishable raw materials.

In general, the government should allow market forces to determine whether or not firms replace existing plant and machinery and whether they employ new or second-hand machinery when expanding. In practice, the performance of plant and machinery is highly sensitive to the skill with which it is managed and operated. Old plant and machinery that is well maintained, managed and operated

may well be as efficient as poorly managed new machinery, and possibly more efficient commercially once the cost of financing the new machinery is taken into account. If plant and machinery are poorly maintained, analysts should first seek to determine why, since it is almost certainly the result of one or more constraints faced by the processor rather than a deliberate strategy.

Governments should concentrate on correcting for market failures or government-imposed distortions that deter firms from buying the machinery that would result in maximising the ex-plant value of the processed commodity net of processing costs. In this regard, analysts should focus their efforts in two areas: import duties on new and used machinery and spare parts and the access of processors to credit. Improving the latter may involve support for inventory credit that serves to release currently available working-stock finance for investment in plant and machinery.

Inappropriate processing technology

To minimize the unit cost of commodity processing, plant and machinery must be of the right scale and reflect the relative costs of labour and capital. These facilities also need to be optimally located to minimize transport costs, including physical and quality losses during transportation. Where there are economies of scale in processing there is often a trade-off between minimizing the unit cost of processing and the unit cost of transport. Larger processing plants normally lead to the purchased commodity and the distributed product both needing to be transported over longer mean distances.

In the past, much state investment in processing was excessively large-scale and capital-intensive, partly because politicians equated large mechanized facilities with progress but also because of the greater opportunity for rent-seeking that large-scale investment afforded. In the future, privately-owned, profit-seeking firms are likely to ensure that new and replacement investment in processing facilities is efficiently structured. Existing facilities will tend to become less appropriate as new innovations in processing become available and as changes take place in the location and scale of production, in the relative prices of labour and capital, and in the products and product qualities demanded by import buyers.

Governments can facilitate private enterprise to change the scale, location and type of technology embodied in plant and machinery in the same way as described above for replacing outdated machinery.

High losses

Some loss of weight and volume is a necessary part of processing for most commodities. For many commodities weight is intentionally reduced through a reduction in moisture content to improve storability and milling quality or as an integral part of a milling or manufacturing process.²⁸ For example, rice paddy and much of the world's coffee is sun-dried prior to storage and milling. Coffee beans lose further moisture during roasting. Freshly plucked tea is withered and then fired during processing, losing most of its weight.

For many commodities the main processed product is substantially lighter or of less volume than the raw commodity because one or more by-products are removed during processing. For example, rice paddy is milled into rice grain, husk and bran. The main product, the grain, normally weighs about one-third less than the original paddy. Seed cotton is ginned into lint and seed, with the main product, lint, weighing substantially less than the seed. After slaughter, livestock are processed into meat and a set of other products. Meat is the main product in most cases, although there are exceptions.²⁹

It is essential that analysts distinguish clearly between losses that are a necessary part of processing that adds value to the raw commodity and other losses that reduce the final value of the set of products that the commodity yields. These latter financial losses are of three distinct types:

28 For many products there is a technically optimal level of moisture at each stage of the processing and marketing chain that maximizes the final sales value of the product and by-products. This is typically reflected in an increase in the market value of the commodity as it loses moisture. It is usually essential that the commodity's moisture be brought down to near this level to allow efficient storage and/or processing. There is usually no incentive to dry the commodity further since this is likely to involve expense, lead to a further reduction in its weight and reduce its price per unit of weight by making it, for example, susceptible to cracking during milling or less suitable for roasting.

29 In the case of ostrich, the skin is worth more than the combined value of the meat and other products.

- (i) Loss of weight from physical loss of the commodity through, for example, spillage during transport and handling, theft, or inadequate protection from rodents.
- (ii) Loss in quality of the raw or partially processed commodity that changes processing out-turns further down the marketing chain. Examples are a change in paddy quality that reduces the percentage of obtainable milled whole grain and a fall in the sucrose content of stored cane that reduces the percentage out-turn of raw sugar.
- (iii) Irreversible change in the smell, taste, appearance or chemical and biological characteristics of the commodity that affects the retail value of the main product or by-products. An obvious example of this is physical damage to fruits and vegetables during transport and handling. Poor processing of cashew nuts can lead to a high percentage of low value broken kernels. The cup quality and value of coffee beans is reduced by contamination with soil during on-farm sun drying of cherry. The storage of groundnuts at too high a moisture content leads to the growth of mould and to a sharp fall in value because of the possibility of contamination with aflatoxins.

Losses that damage the total value of the final products can be reduced by:

- operating existing equipment, plant and machinery, vehicles and stores more efficiently;
- additional investment on farms and in existing post-harvest establishments in more appropriate plant, storage and machinery;
- a change in the scale of operation that allows the use of more sophisticated equipment.

The existence of these options does not mean that there are necessarily cost-effective solutions. Since they carry a cost, traders and processors may simply calculate that the gains from efforts to reduce losses are insufficient to justify

the cost. Analysts should first examine this possibility before seeking to identify means of supporting farmers, traders and processors in their efforts to reduce losses.

It is, of course, possible that there are cost-efficient solutions, but that farmers, traders and processors have not adopted them. This can be because (a) they lack knowledge of efficient techniques and management practices, (b) there is a lack of technology appropriate for domestic conditions, (c) appropriate plant and equipment is not available for purchase in the domestic market, and (d) it is available, but farmers, traders and processors lack the financial capacity to invest in it. Having determined whether one or more of these constraints indeed exists, analysts will need either to investigate whether there are cost-effective means of addressing them or to draw up proposals for the necessary investigation.

Low utilization of processing capacity

An important cause of high unit costs between the farmgate and the point of export is often overcapacity in processing. Agricultural export processing capacity has a number of dimensions that make analysing and devising means of reducing the impact of overcapacity more complex than may appear at first sight. For analysts to provide clear advice on policies to reduce overcapacity they need to consider carefully how processing capacity can best be defined for the commodity in question and then to decide on the most useful definition of overcapacity.³⁰

The concepts and definition of capacity and capacity utilization. The production of most agricultural commodities is seasonal. The length of harvest seasons differs between commodities, as does the length of time that the raw harvested

30 The capacity of a processing enterprise is measured in terms of throughput per unit of time. Throughput, in turn, can be specified in terms of either units of the raw material or of the output of the main product. It is essential that it is made clear which of these alternatives the analyst has used. The unit of measurement is normally weight. For fluids it can be volume and for some commodities and products, such as cattle and hides, just numbers.

commodity can be stored prior to processing. Thus, unlike for most manufacturing industries, the supply of the raw material may dictate that processing capacity can only be used for a part of the year. Even for commodities that can be stored for a year or more, the costs of storage may mean that it is most profitable for enterprises to operate for less than a year. The position is further complicated by the fact that during a national harvest season daily output tends to build to a peak and then gradually tail off. There may also be two or more harvests annually, and the timing of harvests may differ around the country.

Given these facts, it is clear that definitions of national processing capacity that are suitable for comparison with the volume of national output must take account of the temporal pattern of the supply of the raw material and its storability.

To make analysis of capacity and capacity utilization manageable, it is usually necessary at first to assume away problems relating to the seasonality of supply. The most obvious starting point is to determine the national rated hourly capacity of all processing units within the country.

To translate this national capacity per hour into capacity per day, a number of hours worked per day must be selected. This could simply be based on the hours that are conventionally worked locally, but for most processing it is usually technically feasible to operate for longer than this by paying workers overtime or operating additional shifts. It is similarly usually possible to operate for seven days per week rather than the five or six days that each employee normally works. This flexibility means that there is no unique definition of capacity and analysts must decide upon a working definition. Normally, the most useful definition is the throughput that processors would both seek and be able to achieve if there were no raw material constraints.

Although unit fixed costs fall as output increases, the throughput that entrepreneurs seek to achieve is normally less than the throughput that would result from operating 24 hours per day, seven days per week. This is because at some point variable unit costs begin to increase as staff have to be paid overtime or work unsociable shifts, as plant and machinery become less efficient because of a lack of downtime for maintenance and, in the case of small processing enterprises, as the owner can no longer oversee all operations. At some level of

throughput, profits begin to fall as increases in variable costs outweigh the combined benefits from the spreading of fixed costs and greater sales.

In practice, entrepreneurs may not be able to achieve their profit-maximizing weekly throughput because of technical constraints, such as the need to process in the cool of the night or the impossibility of drying the commodity naturally while it is raining. They may also face periods during which they cannot operate because of a shortage of spare parts or a power cut. Poor management of the acquisition of raw materials and of the flow of the commodity through the plant may also lead to throughput being lower than its rated capacity. Analysts must try to take all these factors into account in determining achievable capacity.

Analysts will probably need to make modifications to the above-suggested means of defining and estimating capacity utilization to make them suitable for the subsector concerned. It is most important that the analysts retain a clear notion in their minds of their definition of capacity and that they specify estimates of capacity utilization explicitly in terms of this definition.

The most fundamental issue relating to processing capacity is whether existing or planned capacity is sufficient to cope with the entire national annual output. Given this, for perishable crops, it is likely to be most useful to define capacity utilization as the ratio of peak weekly output to weekly capacity, with weekly capacity being defined as described above. For storable commodities, the most useful definition will be the ratio of annual production to annual capacity, with the definition of annual capacity taking account of the complications noted above. Since analysts will not normally have access to the necessary data to estimate the commercially optimal duration of storage, they must base their estimate on interviews with processors.

There is one further complication. Should there be substantial seasonal variation around the country in the timing of the harvest, it may be necessary to break down the analysis by agroecological zone.

The importance of overcapacity as a determinant of unit processing costs.

The impact of processing capacity utilization on the price paid to the farmer and on export competitiveness depends on two main factors: the ratio of unit

processing costs to the export price; and the impact that overcapacity has on unit processing costs. The latter depends on the ratio of fixed to variable processing costs. For activities, such as large-scale sugar milling, that are capital intensive, comprise a large part of the total costs to the point of export, and involve a continuous process that is expensive to interrupt, undercapacity has a large impact on unit costs. For commodities, such as many fresh fruits and vegetables, that require relatively low-cost, labour intensive processing and packaging that can be stopped and started at little cost, low capacity utilization has a much smaller impact. Furthermore, pack houses for fruits and vegetables are typically designed to be suitable for a set of commodities. This means that throughput is less sensitive to variation in the production of a single commodity than it is, for example, for commodities such as sugar, cotton and tea for which processing plant and equipment cannot be switched to other commodities.

Means of raising capacity utilization. For any given existing level of national processing capacity, the level of capacity utilization can be raised by increasing the output of the raw commodity or by reducing overall capacity. Although the former may be seen as a case of the tail wagging the dog, it can be a justifiable policy objective for an export commodity if the increased throughput lowers unit-processing costs sufficiently for existing production to become internationally competitive.

Unless the government is directly involved in processing, it is difficult for it to reduce excess capacity because this is likely to require that private processing enterprises be forced to withdraw from the market. However, if production of the raw commodity is expanding, it may be possible to reduce overcapacity through restrictive licensing of new capacity. This could prevent the unnecessary duplication of capacity, but it could also prevent inefficient processors from being squeezed out of the industry by new, more efficient entrants. Also, in some circumstances this could lead to local monopsonies or oligopsonies and it could prevent the establishment of improved processing facilities that embody innovations or that are adapted to newly available resources, such as mains electricity. In short, reducing agricultural processing capacity is one of the more

difficult objectives for governments to achieve, which is why so much of developing country processing is characterized by overcapacity.

In addition to raising measured capacity utilization by increasing output or reducing the number of processing units, the ultimate policy objective as output expands must be to raise the throughput of existing processing units. The means by which the government can help to achieve this aim, depend on the seasonality of the commodity's production and its perishability. There are four cases that are conceptually distinct, although the dividing line between them is likely to be blurred in practice:

1. *Commodities, such as fresh coffee cherry and many tropical fruits, which are perishable in their raw form and for which production is seasonal.* For such commodities, processing capacity can only be utilized for one or more relatively short periods during the year. Annual capacity utilization can be increased by: (a) reducing the seasonality of production through measures that support the introduction of irrigation; (b) research and extension aimed at the development and adoption of varieties that mature at different times of the year; and (c) extension aimed at the adoption of crops that can be processed by the same plant and machinery. Both (b) and (c) can be facilitated through support for contract farming.
2. *Perishable commodities, such as sugar cane, for which production can be planned and sequenced so that there is output available for processing throughout the year (except for a short period for factory maintenance).* For such commodities, the key is to organize production so that the harvest is spread as equally as possible throughout the year. This requires the systematic organization of production within the catchment area of a processing facility, usually with some form of delivery contract between individual growers or growers' associations and the processing enterprise. Typically the enterprise also provides producers with technical assistance and inputs, the costs of which are deducted from the payout for deliveries. Although this is best achieved solely within the private sector, the government must ensure that there is an adequate legal framework that

assures that arrangements are both efficient and equitable. The arrangement for sugar in Swaziland, described in Box 5, is a classic example of the government providing an appropriate legal framework but leaving the operation of the arrangement solely to the private sector.

3. *Commodities, such as seed cotton, which have a distinct annual harvest period but which are storable.* For such commodities, processing can be extended well past the harvest period and, in some circumstances, through to the start of the next annual harvest. In practice, the nationally optimal processing period is a function of the cost of financing stocks, the importance of overhead costs, losses during storage, and the possibility of carrying pests and diseases through to the next season. For high capacity processing of such crops, processing enterprises need the financial capacity to hold stocks of the raw commodity, sufficient and secure storage to prevent physical losses, and some means of preventing or insuring against price falls that cause losses in the value of inventory. Probably the greatest contribution that governments can make towards meeting these needs is a stable macroeconomic environment with low interest rates together with a stable exchange rate against a basket of the currencies of the countries that are the main export destinations.

4. *Where annual production is seasonal but the crop is storable for several months and climatic conditions and/or irrigation allow two or more crops per year.* Such crops can usually be processed throughout the year. This is the situation for rice in much of Southeast Asia where three irrigated crops can be grown annually and many rice mills operate throughout the year.³¹ Since such systems usually require farmers, traders or processors to store part of the crop for a number of months, the government can assist by promoting inventory credit schemes, such as the paddy pledging scheme in Thailand and the Quezon Guarantee Fund in the Philippines. Again, a stable macroeconomic environment is essential.

31 For example, there can be almost continuous milling of paddy in the Mekong delta, where three paddy crops are grown in areas with adequate irrigation and drainage.

Box 5**Self-regulation by the Swaziland sugar industry**

Preferential arrangements and tariff protection segment the world sugar market into a number of submarkets to which developing countries can export limited quantities of sugar at prices in excess of those obtainable on the open world market. Swaziland's sugar is exported to five main markets: the European Union, the United States, the Southern African Customs Union (SACU), the Common Market for Eastern and Southern Africa, and the world market. The first three of these markets have for many years offered prices substantially above prices in the open world market.

Some form of export control is essential to ensure orderly marketing and to allow the benefits of sales to the higher priced markets to be shared equitably between Swaziland's sugar-cane growers and between its sugar mills. The proportions of net export earnings that accrue to the cane growers and to its millers must also be regulated.

Since 1967, the Swaziland sugar industry has been regulated by the Sugar Act, which created and gave wide powers to the Swaziland Sugar Association, a self-governing association of cane growers and sugar millers. The association regulates the industry, promotes its interests and is responsible for processing, conditioning, bagging and marketing beyond the point at which raw sugar is produced in the three large-scale mills. It operates a pooled payment system under which the annual revenue from national sugar sales to all markets is returned to the industry net of the association's costs. The percentage allocation of net revenue between millers and growers is determined on the basis of advice given by an independent organization. The revenue to growers is divided between growers in proportion to the sucrose content in their deliveries of cane.

This self-regulated pricing and payment system has been an important factor underpinning the success of the Swaziland sugar industry. However, a major drawback is that price signals to growers reflect the average rather than the marginal price fetched by exports. This is encouraging a continuation of the expansion of cane production, despite the fact that additional production must be sold at a loss on the low-priced world market.

Lack of competition in domestic supply chains

Virtually all trading and processing of agricultural commodities is subject to significant economies of scale. These can result in the emergence of monopsonies, especially where the density of production is low. Farmers in low-density, remote areas often have access to only one trader and, even in high-density areas, it may be efficient for the entire output to be processed in one single large plant. In such circumstances, the trader or processor can make excess profits at the expense of the farmer. This is likely to be the case particularly for export products that cannot readily be processed and sold informally, such as seed cotton where there is no tradition of small-scale processing and spinning, fresh leaf tea where there is no local market for green tea, and pyrethrum flowers³² that must be processed in a sophisticated plant. For such products, in the absence of alternative outlets, the trader or processor can buy local production at a very low price. However, those that do so discourage farmers from producing in subsequent seasons. Thus, a rational processor with investment in plant and machinery or a trader who is seeking to operate in an area for more than a single harvest will pay farmers enough to encourage them to produce the commodity in subsequent years. This requires payment of a producer price that covers the unit cost of production to the point of sale and provides a marginally greater expected return than other crops with similar production and price risk. However, this still leaves scope for monopsonistic traders or processors to earn excess profits, since they have no reason to pass upward movements in the world price back to farmers. This problem can only be addressed by farmers grouping together to negotiate with the monopsonistic buyer. This is best done within the framework of some form of contract farming.

Where there are economies of scale in processing, government policy that promotes local competition should be addressed with caution, since one of its possible effects may be to lead to overcapacity without an improvement in the spatial structure of processing.³³ There may be particularly severe problems

32 Pyrethrum is a chrysanthemum-like plant, the flowers of which contain a powerful insecticide.

33 Within a particular catchment area, a new processing enterprise will usually minimize the mean distance of its site from farmers by selecting a location close to an already existing plant.

when the establishment of private processing is made legal in the context of a system that has been based on cooperative or state-run processing enterprises. An example of such problems is given in Box 6.

Valueless or low-price by-products

For the majority of export commodities, the by-products of the processing that takes place prior to export are utilized domestically because they have a high weight-to-value or volume-to-value ratio that makes their transport to distant export markets uneconomic.³⁴ For example, the molasses that result from the processing of sugar cane are frequently utilized domestically for animal feed and the main by-product by weight, the solid remnants of the cane, is used as fuel. The bran from grain milling is used as animal feed. The cottonseed that results from the ginning of seed cotton is pressed for oil, leaving cake that serves as domestic animal feed. Cottonseed oil is often both consumed domestically and exported. Coconut processing yields either desiccated coconut or coconut oil as the main export product, with by-products of charcoal, coir and (in the case of oil) cake. These are normally utilized domestically. Exceptionally, processing leads to no significant by-products, as in the case of tea manufacturing. Finally, some processing results only in largely worthless by-products. The processing of fresh coffee cherry, for example, results in parchment coffee plus polluted water and pulp.³⁵

Where by-products comprise a significant part of the total value of the output from processing, it is essential that analysts investigate fully the domestic markets into which they are sold, including the way in which the government supports and regulates these markets. Unlike the markets for most export crops, prices in the domestic markets for by-products are a function of domestic supply. In some instances, increased domestic production that reflects success in the export market

34 A small number of export crops and livestock are processed into two or more products that are principally exported. For example, the ostrich reared in southern Africa yield a main product, the skin, an important by-product, meat, and a minor by-product, feathers. All three are utilized domestically and exported.

35 Some pulp is used as mulch, but it is of low value in this use and costly to prepare and transport back to farms.

Box 6

The combination of cooperative and private coffee processing factories in Ethiopia

Coffee is harvested in the form of fresh cherry. The parchment skin and flesh of the cherry that covers the coffee bean can be removed by sun drying and hulling or by a more costly wet-processing method that leads to milder coffee that generally sells at higher prices. Under the latter method, the cherry is soaked, the soft outer flesh is removed mechanically (pulped), the resulting parchment coffee is dried, and the parchment skin is subsequently removed by milling. Investment is lumpy in that pulping requires a mechanical unit for which there is an optimal standard size. This, together with the cost of transporting fresh cherry, means that there is a tendency towards natural monopoly other than in areas of dense production. The need to ferment, wash and sun dry the processed parchment coffee leads to a significant period of time between delivery of fresh cherry to the station and readiness of the parchment coffee for classification and sale.

In the early 1990s, a part of Ethiopia's coffee production was wet-processed in washing stations owned and run by farmer cooperative societies. Each society operated a two-payment system, under which it made a first payment to farmers shortly after delivery followed by a bonus payment based on the society's unit annual market realizations net of its unit costs and the first payment. The societies pitched their first payment at a modest level at which they were virtually assured, despite the instability of world coffee prices, of generating sufficient funds to allow them to cover their full costs and to make a bonus payment to their members. This payment system ensured that farmers had an outlet for their coffee and that the society was not at risk of losing money and going out of business.

During the 1990s, the government permitted private entrepreneurs to establish coffee washing stations in competition with cooperative

Box 6 (continued)

societies, with the aim of creating a dynamic and efficient coffee sector. The private stations make a single payment to farmers. To maximize their throughput, many entrepreneurs sited their stations close to an existing cooperative station, leading to overcapacity and intense price competition between stations to acquire cherry. The societies were forced to abandon their conservative pricing policies and to set their rates of first payment close to the price being made by the nearby private station. Since neither societies nor private stations are able to hedge or otherwise insure against price risk, both made losses during the recent period of decline in international coffee prices. Some private stations went out of business, while most societies were left with no working capital. This, in turn, has led to poor relationships between the societies and the banks that they are now heavily reliant on for working capital. As a consequence, many are unable to pay for purchases at the start of the harvest season and this results in a period each year when only the surviving private stations are in a position to buy all that is delivered. This leads to a reduction in local demand for cherry and to early season cherry prices below those justifiable by the prices for parchment coffee being fetched at the Addis Ababa auction.

Thus, the introduction of private washing stations has led to an unstable, high-cost processing sector that is not fully competitive and is characterized seasonally by both insufficient capacity and overcapacity. This is because the policy initiative to allow the uncontrolled entry of private processors failed to take account of (a) the tendency towards natural localized processing monopsony, caused by a combination of economies of scale in processing and the high cost of transporting cherry and (b) the high vulnerability of processors to price risk, caused by a combination of the time that it takes to wet-process cherry and unstable coffee prices at the Addis Ababa auction.

for the main product leads to significant price falls in the domestic markets for by-products. This can serve to stimulate other subsectors. For example, an expansion of grain exports may reduce the cost of rearing animals by lowering the domestic price of bran. An extreme example of this is Viet Nam, where during the 1990s the phenomenal success of moving from approximate national self-sufficiency in rice to being the world's second largest exporter added over a million tonnes of bran to the domestic supply of animal feed. This not only affected the domestic price of bran but also the prices of other feed crops grown in Viet Nam.

When seeking means of exploiting improved access to export markets, it is important that analysts examine the impacts that this will have on the domestic markets for by-products and on the production and demand for the goods with which these by-products compete. Once production and exports of the main commodity expand, the government should not seek to prevent these impacts, but it is important that it modify its policies to reflect them. In particular, government funding of research and development needs to take account of changes in the availability of by-products, with a re-focusing towards uses for by-products for which domestic supply has become more abundant.

CONSTRAINTS THAT REDUCE EXPORT PRICES AND COMPETITIVENESS

For export commodities, it is important to distinguish between the determinants of export prices that can and cannot be influenced effectively by national policies and actions. This section discusses the main ways that exporting countries can raise export prices or mitigate the impact of international price falls. These include measures that affect quality, since prices beyond the national boundary can be affected markedly by national policies and measures that affect actual product quality and perceptions of quality.

Import tariffs

When a country imposes or raises a tariff on imports of a commodity, this usually reduces export prices. The extent of the reduction faced by exporting countries as a whole depends on a set of factors. If the commodity is not produced in the importing country and if imports from all sources are subject to the tariff at the

same rate, the initial impact of the tariff is to raise the unit cost of the commodity to the importer. This reduces the quantity demanded in the importing country. Competition between exporters for this reduced demand forces down the import price, leading ultimately to a part of the increase in tariff being borne by producers in exporting countries and a part by consumers in the importing country. The more inelastic the export supply and the more elastic the demand in the importing country, the greater will be the fall in price experienced by producers.

Since exporting countries have the option of diverting export supplies to third countries, the elasticity of world export supply to a single destination is negatively correlated with the importance of that destination in total world trade. Thus, the extent to which a tariff increase in a single country affects producer prices in exporting countries depends on the global importance of that country as an importer.

In practice, the outcome of a tariff increase may be complicated by the importing country also being a producer and by the importing country having tariff regimes that differ between source countries. If the commodity is produced in the importing country, the imposition of a tariff has a greater adverse impact on producers in exporting countries, since the tariff does not raise the costs of consignments sourced from producers located in the importing country. Similarly a rate increase that affects only the imports of certain countries will harm their domestic producers more than an across-the-board increase.

In the years ahead it is also more likely that analysts will need to consider the impact of decreases in tariff rates rather than increases or the imposition of new tariffs. A particular problem that will arise for sub-Saharan countries, especially those that are classified as least-developed countries, is the erosion of present tariff preferences that discriminate in their favour. These preferences will fall or be eliminated as importing countries reduce their tariffs on supplies from third countries. An example of this is the recent undermining of the preferences afforded to Caribbean bananas as import markets have been opened up to supplies from other sources, especially Central America.

Other than lobbying bilaterally or as part of regional country groupings, there is little that individual developing countries can do to prevent this.

Notwithstanding this, it is important that analysts keep abreast of developments so that they can alert policy-makers to the likely impacts of changes in import tariffs. Analysts should also prepare policies to exploit or ameliorate these impacts, especially measures to assist diversification into activities that are projected to become relatively more attractive. In some instances, importing countries and groups of countries are assisting in this process. For example, the EU is actively helping the African, Caribbean and Pacific (ACP) countries to adjust to the erosion of its tariff preferences for ACP countries as it opens up its markets to other exporting countries.

Sanitary and phytosanitary border controls and production and processing standards imposed by importing countries and buyers

International sanitary and phytosanitary (SPS) legislation and product and process standards imposed by importing country governments and by importers are covered above in Chapter 1 and 3. Meeting these standards can be a major challenge, especially for late entrants to a sector such as high-value horticulture.

To meet import standards, two quite different requirements must be met. First, farmers, processors and traders in exporting countries must have the capacity to produce and export products that meet the minimum physical and process standards required by both importing country governments and enterprises. This can be hampered by constraints discussed elsewhere in this chapter, such as a lack of appropriate grades and standards, badly managed processing, poor and unreliable national infrastructure, and inadequate storage and handling at airports.

This subsection focuses on the second requirement, which is that exporters must be able to provide importing countries with reliable evidence that required minimum standards have been met. To meet this requirement, exporters must have the capacity to provide reliable guarantees that shipments are free from specific pests and diseases, that minimum standards of hygiene have been applied in the manufacture, packaging and distribution of food products, and that products do not have excessive residues of agrochemicals, veterinary drugs, or naturally occurring contaminants. In addition to developed countries, low- and middle-income countries are increasingly requiring such guarantees.

For exporters to be able to provide these guarantees, exporting countries must develop a national SPS monitoring and verification capacity. This requires both establishing appropriate institutional structures and procedures and investing in the necessary physical infrastructure and human capital. In developed countries, much of the required capacity is positioned in the private sector, but there are some crucial regulatory functions that are normally carried out by governments. In most developing countries, governments undertake SPS regulatory functions. This is likely to remain the case, at least for a transitional period during which private sector, industry-wide institutions become established.

Most developing country governments have some administrative and technical capacity for food safety and health management and verification. However, smaller and poorer countries typically suffer from an absence of accredited laboratories and internationally recognized systems for certification. Problems are experienced particularly in the management of plant and animal health (as opposed to food safety controls). Many developing countries lack the capability to undertake epidemiological surveillance and to conduct rigorous assessments that are acceptable to overseas trading partners. Furthermore, the rapidly increasing stringency of the standards applied by importing countries means that capacity must be regularly expanded and upgraded. The increased emphasis that is now being placed by importing countries on controls that relate to process rather than product also means that exporting countries must extend their controls back through domestic supply chains.

It is important to identify deficiencies in the existing public SPS regulatory systems that are inhibiting exports and to recommend actions and investments necessary to rectify them. Given that the resources available to governments, especially skilled personnel, are limited, the recommendations should focus on selectively establishing the regulatory, technical and administrative arrangements necessary to meet the requirements of importing countries. Requests for external support for efforts in this area are likely to be viewed particularly favourably by donors and the international financial institutions, as most of them see increased trade as essential for economic development. Indeed, the SPS Agreement itself calls for increased external assistance to developing countries to strengthen their capacities for food safety and agricultural health management.

In addition to health hazards, importing enterprises must be able to establish reliably that consignments comply with contracted standards. For process-related standards, which cannot be assessed by testing consignments at the point of import, a certification capacity must be established in the exporting country. Since importing firms usually cannot do this efficiently, it is normally undertaken by an accredited third party. This can be one of the existing foreign companies that specialize in such work, but their costs and charges tend to be high. It is important for exporting countries to establish their own certification capacities and parallel institutions through which certification can be accredited.³⁶

Jaffee and Henson (2004) have argued that it is possible for the industries in some countries to use product and process standards positively to reposition themselves in competitive global markets. This can be achieved by coordinated action within a domestic industry to establish and control product and process standards to a level at which they can be used as a positive marketing tool. A good example of this is the Fresh Product Exporters Association of Kenya (FPEAK), which has formulated a 31-page code of practice aimed at ensuring the export of high quality, safe produce grown and processed using ecologically sound and worker-friendly practices. Producers are required, for example, to undertake practices relating to the application of pesticides that ensure that maximum residue levels are not exceeded, and producers and processors must adhere to or exceed national standards relating to the conditions of employment of casual labour and staff. FPEAK's aim is to promote the sale of Kenyan produce through the registration of members who adhere to the code of practice, who will then be permitted and encouraged to mark their produce and marketing material with an FPEAK logo.

It is also possible for importers to work cooperatively to use product and process standards to promote a commodity. Such schemes have two potential

³⁶ Large-scale importers and supermarket groups do still frequently visit supplying processors based in developed countries. This is costly and places enterprises in the countries concerned at a competitive disadvantage compared with countries that have their own reliable certification systems.

advantages. First, they expand the demand for imports and raise world prices; second, they raise the proportion of the final selling price that goes back to producers. However, there may be drawbacks. In particular, since there are usually economies of scale in introducing new technologies or administrative systems, the need to adhere to new standards tends to lead to a concentration of production and processing in the hands of larger enterprises. This is disadvantageous in that it leads to a degree of domestic monopolization, but it may be essential if the industry is to be able to export to developed country markets that require high product and process standards and traceability. Indeed, it may simply accelerate a necessary change in the structure of the domestic industry that would have taken place more slowly in the absence of the scheme. In practice, the main role for government analysts is likely to be to predict how the structure of the domestic industry will change and to ensure that the government plans its supporting investment and services accordingly.

Price-inelastic demand for exports

Where a country has a large share of the world market for a particular commodity, export prices can be influenced by changes in the national quantities exported. This effect is likely to be particularly important for commodities for which demand is price inelastic, such as coffee. For this type of commodity the world market is heavily segmented by type and quality or by transport costs that are high compared with the commodity's import value or as a result of established trading links. Most world commodity markets are heavily segmented. Apart from geographical proximity, markets are segmented as a result of both national taste differences and income levels. For example, the market for tea is segmented into countries that consume the black and green types. The black segment is further divided on the basis of established national tastes, with, for example, most Arabic countries preferring low-grown teas that have a strong malty taste while blended mixtures that include high grown aromatic teas are preferred in western Europe. The markets within western Europe are further segmented on the basis of national tastes, household income levels and methods of brewing.

A combination of commodity-wide price inelasticity, high market segmentation and a large national share of the world market can lead to changes in national export

volume affecting retail prices in importing countries. Governments should take this characteristic into account when formulating policies on national production and export supply. In providing advice, policy analysts should take into account not only the short-term price impacts of increased national export supply but also the fact that the lower international prices that result are likely to harm competitors, thereby leading to a partial recovery of export prices over the longer term.

There may be circumstances where some form of national export supply restriction to below existing levels can be expected to bring short-term gains in increased revenue and reduced domestic costs that are sufficient to outweigh the projected long-term national loss of market share. However, since expansion normally requires greater domestic investment than contraction, it is much more likely that projected international price impacts will cause the moderation of plans to expand.³⁷

Export timing

The prices at which most commodities trade internationally exhibit some seasonal fluctuations that reflect the timing of the harvest in important exporting countries and the cost of stockholding. However, for the main grains and other important storable agricultural products, such as sugar, green coffee, made tea and cotton lint, systematic seasonal fluctuations in international prices are usually swamped by long-term price trends and shorter-term price movements that reflect short- and medium-term shifts in world supply and demand.

The situation is quite different for those soft fruits, vegetables and other perishable food commodities that can only be grown seasonally in developed countries in the Northern Hemisphere. During the off-season, prices in these countries increase making it viable to supply them with airfreighted substitutes from countries in the tropics and the Southern Hemisphere. For some commodities, there are small time windows, sometimes comprising a few weeks only, during which supply is not available from any key producers and export prices rise sharply. An ability to supply during these times can be highly

³⁷ Note that contraction can also require investment, for example, in the uprooting of perennial tree crops.

profitable. For example, for table grapes there is a short time period between the end of availability from the European harvest and the commencement of availability from South Africa. Although at a higher cost than producers in South Africa, growers in Namibia have successfully exploited this opportunity by making use of the country's ability to grow grapes under irrigation that ripen just before the start of the South African harvest.

Such opportunities can usually only be exploited by large farms with the capacity to manage sophisticated cultural practices and export operations. However, they can be significant sources of employment and domestic value added and it is important that governments place as few restrictions as possible on their establishment and operation. In particular, it is important that governments do not inhibit through taxation or licensing the importation of the sophisticated agrochemicals and other inputs that are needed to be internationally competitive.

Where a country has a large share of the world market for a commodity or type or grade of commodity, it is possible that the country's main harvest may have a systematic impact on world prices. Although such impacts may not appear significant compared with global supply and demand shifts that affect price, they tend to reduce the mean national export price in every year and have a significant impact on the net earnings of farmers. It is important that large-scale exporting countries develop their processing and marketing systems to minimize such effects. For storable commodities this requires that domestic traders are able to stock domestically without undue price risk, which, in turn, requires that they are able to sell forward or have access to price risk management instruments.

Powerful importing enterprises

In recent years there has been much debate relating to the decline in the share of developing country producers in the final retail price obtained. This has centred on coffee, for which retail prices have increased in the face of major declines in the prices received by producers. NGOs have sought to attribute this to exploitative multinational companies, pointing out the extent to which coffee roasting in importing countries and the manufacture of soluble coffee is

concentrated in the hands of just a few firms. NGOs have been able to put together scattered pieces of evidence that show that coffee manufacturers and roasters have increased their profits in recent years. However, there is no systematic evidence that the activities of multinational enterprises that are based on agricultural commodities from developing countries are more profitable than other activities.

The harsh reality is that the declining share of producers of agricultural exports in the final retail sales price is mainly the result of a progressive widening of the gap between the opportunity cost of (a) the land and labour involved in their production and (b) of the factors of production involved in downstream processing and marketing. The situation will persist until small-scale farmers and farm labourers in producing countries have the opportunity to find more remunerative activities either in agriculture or in manufacturing and service industries. Until then, the share of the retail price that accrues to factors of production in downstream processing and marketing will continue to increase, as the cost of these factors rises relative to the opportunity costs of the land and labour used in production.

Individual developing countries can do little about this general, worldwide trend. However, there are strategies that they can adopt for export commodities to seek to capture a greater percentage of retail value.

As consumers in developed countries become more sophisticated, they begin to demand higher quality and differentiated products. If differentiation is achieved through multinational branding and advertising of commodities from a number of origins, the benefits accrue to the multinationals. However, if one or a group of producers can differentiate its production and sell it at a premium in importing countries, at least a part of the benefit will accrue to producers. Differentiation can take the form of distinct product characteristics or can be based on the way that the commodity is grown or processed. Ideally these two forms of differentiation are used together. For example, where a single estate coffee, which has distinct organoleptic properties, is sold under an estate-specific label that documents adherence on the estate to minimum labour conditions.

An alternative is for a country to seek to differentiate its output from that of other countries. For a large-scale producing country, it may be possible to

appeal directly to consumers in importing countries through media advertising, as Colombia has done for coffee. However, this is expensive and requires that consumers can identify the retailed product as deriving from the country in question. This is possible for commodities packaged for retail sale in exporting countries, but otherwise must be done in partnership with importers.

For the vast majority of commodities and countries, promotion to trade buyers is likely to be more cost-effective. This is especially true where the retailed product normally contains a blend of grades or commodities from a number of countries. For commodities such as tea, for example, consumers demand a set of quality characteristics that can only be achieved by combining imports from a number of sources. It is also the case for pre-prepared chilled and frozen meals, for which retail sales are increasing rapidly in importance in developed countries as consumers' incomes rise and they place more value on their time. Promotion to the import trade is an area where exporting country governments can assist through support by national export promotion agencies and through commercial attaches in embassies in importing countries. This can run from assistance with networking to the organization of stands at trade fairs.

It is important to emphasize that no amount of promotion can substitute for a consistent and high-quality product supplied for export through a network of reliable national traders. The first priority of government should be the improvement of the intrinsic quality of the product and the channels through which it is supplied. Establishing a set of reliable national exporters is particularly important. There are many cases around the world where countries have been forced to export good quality products at significant price discounts because importers have experienced problems in the past dealing with the countries' exporters. Such discounts tend to linger long after such problems have been solved.

A widespread reaction to low producer prices for export commodities has been to seek to circumvent the main trading channels through fair trade arrangements. Viewed globally, such arrangements cannot solve the basic problem of low commodity prices because, to the extent that they raise producer prices, they also stimulate output, driving international prices lower and harming all but those producers participating in the arrangement. They also tend not to

cover the most needy producers, since involved farmers must have the capacity for group organization. Although fair trade arrangements may bring some benefit for groups of farmers in individual countries, analysts should not be sidetracked by such arrangements and the enthusiastic support given to them by NGOs.

New exporters are often faced with the problem that they do not have the capacity to meet the minimum lot sizes required by importers in developed countries. This is turning into a greater problem as retailing becomes dominated by large supermarket groups and as labour costs rise in developed countries, causing importers to seek to reduce transactions and handling costs by raising the size of import consignments. For any given level of national exports, tackling this problem necessitates that export consignments be combined. In practice, this requires a degree of consolidation of the domestic exporting industry since importers cannot buy a single consignment from two or more separate enterprises. The enterprises themselves will either have to amalgamate into a single company that exports on its own account or come to a commercial arrangement where one in effect acts as the exporting agent of the other. This latter arrangement may be problematic if the enterprises are competing in the domestic market to assemble the commodity for export. The main support that the government can provide is to ensure that there is an adequate national framework of company and mercantile law.

A lack of domestic value adding

Adding additional value to commodities prior to export is an important potential source of GDP growth. Value can be added in many different ways, including through those measures discussed elsewhere in this chapter, such as reducing losses and improving quality. Initiatives to add value by undertaking activities that have previously been carried out in the importing country are discussed here. These range from the preparation and packaging of high-value vegetables ready for retail sale and the undertaking of additional processing activities, such as refining raw sugar, to the use of the commodity in domestic manufacture, such as in the spinning and weaving of cotton.

Establishing such activities can contribute to GDP growth even if they are loss making, but they are only likely to be sustainable if they are profitable. Thus, it is

essential that the country have a competitive advantage in the activities. This is partly a function of technical factors, especially weight and volume changes during processing, but also depends on the relative unit costs of labour and capital and on the ability of the country to produce efficiently a product that is acceptable to buyers in the importing country. For products that are subject to rapid changes in taste and fashion, such as clothing, it also requires that enterprises involved in the new value-adding activity have good market intelligence and an ability to modify rapidly the products that they manufacture. This is likely to be particularly problematic for countries that do not have a well-developed manufacturing sector able to change product designs quickly and to produce packaging and other complementary products of a consistently high standard.

Developing country governments often focus on exporting value-added products to high-income OECD countries. In practice, they are likely to meet with more success in targeting middle-income countries, where packaging requirements and acceptable product standards are generally lower. For example, Sri Lanka has been very successful in exporting black tea packaged for retail sale to Middle Eastern countries and flavoured black teas to the countries of Southeast Asia where predominantly green tea is consumed, but it continues to export principally in bulk form to developed countries.

Exporting value-added products is generally more difficult than exporting basic commodities, for which there usually are established markets in which products can invariably be sold – the only issue being the price. Value-added products must normally be marketed rather than simply sold. Their greater refinement means that they usually must be targeted at a narrower market further down marketing chains than the points at which basic commodities are sold. This requires more sophisticated market intelligence relating to the detailed characteristics that buyers seek. For example, a product packed for retail sale must be labelled in language that is grammatically correct and colloquially acceptable, it must contain information that consumers seek and that the importing country's legislation requires, and it must stand out on shop and supermarket shelves.

Foreign markets, as well as the means of marketing the product into them, must be analysed more in-depth for value-added products than is necessary for

basic commodities. This, together with the need for expertise in the value-adding activity itself and the need for access to established marketing channels, means that foreign investment or commercial linkages with foreign firms is likely to be the best vehicle for establishing new value-adding activities. Given this, the main contribution that governments can make to the establishment of successful value adding is to ensure that foreign investors see the country as a profitable and safe location for investment in the development of a foreign supply source. This requires economic and political stability, and an effective legal system operating within a suitable legislative framework. The provision of fiscal incentives for foreign investors covering an initial ‘infant industry’ period may also be justifiable.

International transport constraints

The cost and availability of international transport frequently constrain agricultural commodity exports from developing countries. Since water transport is invariably much cheaper than transport overland, landlocked countries, which have no access by river or canal to a seaport, face the greatest problems.

For commodities that are shipped by sea, the distance of the main producing areas to the nearest seaport is a key factor that determines the cost of transport. Exporters in landlocked countries also often face additional taxes and charges imposed on them by countries that the commodity must transit. They may also be required to utilize national transport in these countries, leading to additional costs and to the possibility of delays if the transit countries give priority to their own produce.

Most horticultural commodities and other rapidly perishable commodities must be exported by air, unless there is a relatively short overland route that can be used by refrigerated trucks. The cost of airfreighting horticultural commodities is high and invariably comprises a substantial proportion of the total import cost. A key determinant in airfreight costs is the availability of space in existing outbound flights. These flights are of two types: returning passenger flights and returning freight flights. If there is overcapacity in returning flights, space is relatively cheap. If returning flights are full and

aircraft have to be chartered especially for agricultural exports, unit airfreight costs can more than double. This makes forecasts of the future level and pattern of international flights an essential part of policy formulation for fresh, high-value horticultural products.

The facilities available at seaports and airports and the efficiency with which they are operated are also key determinants of export competitiveness. Efficient, well-managed airport cold storage and handling facilities are essential for airfreighted perishable commodities. These facilities must be both cost-efficient and capable of getting consignments onto aircraft without significant deterioration. For storable commodities that are exported by sea, the quality of the services, while important, are less vital than for airfreighted commodities. Analysts should place emphasis on means of minimizing unit costs. Costs at ports are typically inflated by inefficient port management, high-cost unionized labour, corrupt port staff, theft, spillage, insufficient and low-quality warehousing, damage in handling, and inadequate port capacity that results in ships running up demurrage charges as they lie offshore waiting to berth.

Countries face a significant cost disadvantage if their only access to the sea is through ports that can only accommodate small vessels or are not part of established container routes to target markets. For example, many sub-Saharan exporters face much higher sea transport costs per tonne to Europe and the United States than competing countries, such as Brazil and Thailand, which export greater tonnages. There is usually little that exporting countries can do about this except for dredging and other port improvements.

The containerization of export commodities of relatively high value, such as coffee, not only requires dedicated port storage and handling facilities for containers, but also quality control systems that are compatible with containerization in producing areas. Containerization inland is likely to require the introduction of new systems of verification of export quality, based on inspection and the sealing of containers at the points at which the commodity is processed into its export form. There is, in turn, likely to be a need for new quality control legislation or, at the very least, new regulations under the existing legislation. It is important that governments recognize the importance of this, but it is equally important that they do not establish additional high-

cost public verification systems. Since it is in the general interest of exporters to assure quality, the new systems should rely principally on private verification.

CONSTRAINTS THAT REDUCE THE NUMBER AND SIZE OF ACCESSIBLE FOREIGN MARKETS

Import quotas

One of the main components of the Uruguay Round Agreement on Agriculture was the ‘tariffication’ of import quotas. This required quotas to be replaced by equivalent import tariffs. Most WTO members have complied with this provision but it has resulted in a proliferation of tariff rate quotas (TRQs). National imports in excess of the specified quantity are permitted but are subject to a higher tariff rate. Frequently such out-of-quota rates are set at high levels that prevent imports over the quota amount and, in effect, turn the TRQ into a traditional quota that limits imports to a specific amount.

All OECD countries other than Turkey impose TRQs. In March 2002, a total of 43 WTO member countries imposed 1 400 individual TRQs, with over one-half of all the TRQs set worldwide being imposed by European countries. Globally, about one-sixth of TRQs are allocated to specific exporting countries. For example, the EU has a TRQ for Egyptian potatoes. In 2002, TRQs covered an estimated 28 to 30 percent of all agricultural trade, with the highest number being for fruits and vegetables, followed by meat products and cereals.³⁸

In practice, the quantity imported into a country is less in some instances than the quota, with the result that the TRQ’s quantitative limit has no impact. Where the quota leads to some restriction of imports, there is necessarily a need to ration the amount imported between exporting countries, between exporters within exporting countries, and between importers. Clearly the means by which a TRQ is allocated between exporting countries and exporting

³⁸ Estimates for 2002 are that 28 to 30 percent of agricultural trade took place under TRQs. See Khorana (2004).

enterprises is of critical importance. Allocation between importers is similarly important. However, the AoA does not address such allocation. In the case of distribution between exporters, the only provisions within the GATT are the normative criteria specified in Article XIII (2). These in effect simply say that a TRQ should be allocated so as to approximate the structure of trade that would be observed in its absence. In the case of allocation of TRQs between national importers, GATT similarly provides only general criteria, specifying that allocation should be neutral in application and administered in a manner that is fair, equitable and no more burdensome than necessary. Thus, in practice there is little effective restriction on how importing countries impose these quotas.

There has been only a limited attempt on the part of importing countries to utilize auctioning or other market-based means of allocating TRQs. Instead, a variety of administered methods are used, none of which are particularly satisfactory in terms of either efficiency or equity. They include the following:

- *historical*, which prevents new importing firms from entering and prevents changes in market shares from reflecting changes in relative efficiencies;
- *first-come-first-serve*, which artificially concentrates imports at the start of the season, and leaves exporters uncertain whether or not their consignments will be taxed at the quota rate;
- *allocation in proportion to amounts applied for*, which leads to the overstating of requirements and under-utilization of the quota; and
- *domestic purchase requirement*, which creates artificial demand for domestically produced commodities.

Often importing countries apply a combination of these for single products, leading to a complex set of terms and conditions. For example, 525 companies in Canada qualify for the TRQ that covers the country's importation of chickens. The TRQ is divided into five pools, each of which covers a subsector of the domestic industry (traditional importers, processors, etc.) The TRQ is divided administratively between pools and the amount in each pool is then

divided between firms that qualify for that pool. Each pool has a different set of rules, and allocation is further complicated by the fact that some firms qualify for more than one pool.³⁹

There are two basic ways for exporting countries to increase exports under TRQs: by raising the proportions of national exports that are imported under existing TRQs to ensure that existing quotas are fully utilized; and, by negotiating increased national TRQs with individual importing countries.

Where TRQs or other measures imposed by importing countries provide preferential treatment for some but not all imports from individual exporting countries, there must be some mechanism either for deciding which exporters benefit or for equalizing the benefits between exporters. This is particularly problematic when the world market is administratively segmented by sets of bilateral, regional and international agreements, as it is, for example, for sugar. In such situations, there is potential for the government to play a productive role in managing exports. Box 5 describes how the Swaziland Government has provided an administrative framework under which the industry itself has developed and implemented a mechanism that ensures equity between sugar producers while ensuring that the most remunerative export markets are exploited fully.

Unstable national export supply

The extent of instability in the annual national export supply of a commodity is a function of national production instability, the importance of domestic consumption relative to exports, and the extent of instability in domestic demand.

Where virtually all of the national production of a commodity is exported, the supply of the commodity for export is roughly as unstable as domestic production.⁴⁰ This is the case, for example, for coffee in countries such as Uganda, Kenya, Rwanda, Burundi and Viet Nam, for cotton in Sudan, for cashew nuts in Viet Nam, and for sugar in Mauritius. Such examples are, however, the

39 Chicken Farmers Association of Canada, 2002.

40 The only exception is where the commodity is storable and domestic traders accumulate and run down stocks between years (as opposed to seasonally).

exception rather than the rule. For most countries and for most agricultural commodities, production is both exported and consumed domestically in significant amounts. This applies for countries that produce only small amounts and also for a surprisingly large proportion of major exporting countries.⁴¹

For countries that have significant domestic markets for export commodities, the structure and behaviour of the domestic market is invariably an important determinant of the types of market to which the country exports and its performance in these markets. Where the domestic market is dominant, a reduced national crop may mean that the domestic market clears at a price above export parity making exports less profitable than sales to the domestic market and, in effect, eliminating export supply. In such situations, it is not possible for exporters to establish stable relationships with importers, as is necessary, for example, with high-value horticultural produce. Instead exporters must sell into markets able to absorb unstable and unpredictable supplies. In the case of horticultural products this often means selling at wholesale markets located in the importing country.

For crops for which export surpluses are unstable, it is essential that export markets be targeted that do not require processing that is both commodity specific and different from the processing required for sales to the domestic market, since export processing facilities would be underutilized other than in years when the export surplus is large. In practice, the existing export trade is likely to have become adapted to these processing and market requirements. However, politicians and senior government officials may have ambitions of breaking into other less suitable markets. One role of analysts is to explain why this may not be appropriate. Box 7 demonstrates how, despite public aspirations

⁴¹ The world's second largest rice exporter, Viet Nam, exports only about one-quarter of its national output. India is by far the world's largest producer of tea, the largest consumer and one of the top three exporters. Brazil is the world's largest exporter of coffee and the second largest consumer after the United States. Brazil is also an important producer, consumer and exporter of a range of other commodities, including sugar, soya and citrus juice. Turkey is one of the world's main exporters of pulses and also a large consumer.

to export citrus into the EU market, Syrian traders have targeted markets that are suited to their country's unstable export supply.

For commodities that are still predominantly sold for export through markets where the producer does not deal directly with the buyer, consignments from countries with erratic national export surpluses can normally be sold alongside consignments from countries with more stable supplies. Notwithstanding this, as a general rule, the more stable the national supply for export the more likely it is that a specialized set of exporters will become established with the skills necessary to exploit international markets fully and will develop a sound reputation for honesty and reliability.

Box 7

Citrus exports from Syria

Syria became more or less self-sufficient in citrus production in the 1990s as a consequence of government support that led to a doubling of national output during the decade. The vast majority of the national crop is still consumed in fresh form within Syria with the result that export supply is unstable. Exports are made overland and channelled mainly through wholesale markets in Saudi Arabia and Kuwait. The flexibility of these markets to take erratic export surpluses from Syria means that they have the potential to bring some stability to the domestic market by preventing prices from falling below export parity. However, prices in the foreign wholesale markets are unstable from day to day. Since it takes several days of overland transport from Syria to reach these markets, shipping to them is risky. Syrian exporters have adapted their practices both to the unstable export supply and to this risk. Their pack houses can be used for both citrus and horticultural crops allowing them to operate continuously at high capacity. Risk is reduced by citrus being exported as a part of mixed consignments of fruits and vegetables, with citrus normally accounting for no more than one or two tonnes of 17-tonne truck shipments.

Frequently, where there is significant domestic demand for an exported commodity, the qualities that are consumed and exported become an issue. Traditionally, countries have tended to export the better qualities. Indeed the term ‘export quality’ has for many commodities and sources come to mean ‘best quality’. The main justification for a national policy of only exporting high quality grades is that it serves as a means of developing a national reputation as a quality exporter, thereby expanding the demand for the country’s output and the price premium at which it sells on world markets.

In summary, the importance of domestic markets to the performance of export markets cannot be overemphasized. It is essential that analysis of the processing and marketing of export crops takes full account of the influence that the domestic market has on the level and stability of export supply, the quality of the products available for export and the structure and practices of the export trade.

Poor information on export markets and opportunities

Until recently entrepreneurs in developing countries often faced great difficulty in investigating potential export markets for new products. This position has changed radically with the development of the Internet. It is now possible to find a wealth of information on market potential, import tariffs, SPS measures, and the activities of competing exporting enterprises simply by using a search engine. Type, for example, ‘broken rice West Africa’, or ‘organic tea certification’ into a search engine and one can invariably source a very wide range of relevant websites. One can, for example, access sites of traders seeking supplies, of governments that describe import procedures and regulations, of brokers that contain data on market prices and volumes, and of academic institutions that contain related scientific, technological and economic analyses. Since virtually all entrepreneurs and enterprises with the capacity to export have access to the Internet, this wealth of websites has largely replaced national export promotion bodies and commercial attaches in overseas embassies as providers of information. Rather than seeking to retain this role, in most circumstances it is likely to be more productive now for export promotion agencies to focus on promoting new and established exports and for commercial attaches to concentrate on solving specific problems encountered in existing trade.

SUMMARY OF CONSTRAINTS AND POTENTIAL MEASURES TO OVERCOME THEM

The constraints on increasing exports discussed in this section are summarized in Table 1, together with a checklist of some potential means of breaking or ameliorating their impact. Of course, the definition of adequate measures to overcome the identified constraints should be specific to each particular situation analysed. The measures presented in Table 1 should be seen simply as illustrative of possible courses of action.

Table 1

Constraints on exporting and means of breaking and ameliorating their impact

CONSTRAINTS	POSSIBLE MEASURES
1. Constraints that inhibit production	
Unstable and uncertain producer prices	<ul style="list-style-type: none"> - Improve macroeconomic management. - Encourage contract farming involving forward selling and/or extension advice. - Develop and use risk management instruments.
Delayed and late payment to producers	<ul style="list-style-type: none"> - Introduce inventory-based credit schemes.
Inadequate supply of inputs and credit to farmers	<ul style="list-style-type: none"> - Encourage the supply of inputs in kind through contract farming.
Low producer prices	<ul style="list-style-type: none"> - Combinations of measures in categories (2) and (3), below.
2. Constraints that lead to high unit domestic processing and marketing costs	
Poor and unreliable national infrastructure	<ul style="list-style-type: none"> - Privatize telecommunications and energy supply. - Identify and highlight to policy-makers key infrastructure needs of commodity processing and marketing.
High-cost domestic transport and port facilities	<ul style="list-style-type: none"> - Allow the importation of second-hand trucks. - Identify and highlight the causes of high port costs. - Identify, quantify and highlight the costs to agricultural processing and marketing of high import duties on vehicles, spare parts and fuel. - Abolish restrictive domestic movement controls.
Underdeveloped systems of price formation	<ul style="list-style-type: none"> - Develop and introduce appropriate systems.

Table 1 (continued)

CONSTRAINTS	POSSIBLE MEASURES
Inadequate and inappropriate market infrastructure	- Facilitate the development of appropriate, low-cost market infrastructure in close consultation with existing market traders and those who buy and sell.
Bureaucracy	- Leave as much regulation and control as possible to the private sector. - Eliminate all regulations that are unnecessary remnants of former government intervention and control. - Support new entrants with assistance rather than paternalistic restrictive regulation.
Outdated and inadequately maintained processing technology	- Address the causes, including high duties on plant, equipment and spares and the lack of processors to credit, including inventory credit.
Inappropriate processing technology	- Address the causes, including high duties on plant, equipment and spares and the lack of processors to credit, including inventory credit.
High losses	- Determine and support an appropriate combination of training, development of appropriate storage technology, improvement in manufacture and supply, and improved credit supply systems.
Low utilization of processing capacity	- Introduce measures to extend the supply period for perishable commodities. - Introduce measure to increase the capacity to store perishable commodities and to reduce the cost and risk involved in storing them.
Lack of competition in domestic supply chains	- Encourage the establishment of farmer groups within the framework of contract farming.
Valueless or low-priced by-products	- Accompany efforts to expand exports of the main product with policies that exploit and assist adjustment to the increased supply of by-products.
3. Constraints that reduce export prices and competitiveness	
Changes in import tariff rates and regimes	- Focus on forecasting the impact of tariff preference erosion and prepare in advance policies to ameliorate the impact.
Sanitary and phytosanitary measures	- Develop and regularly upgrade national SPS monitoring, verification and certification capacity.

../.

Table 1 (continued)

CONSTRAINTS	POSSIBLE MEASURES
Price inelastic demand for exports	<ul style="list-style-type: none"> - Take account of the impact of national export expansion on world and FOB prices when formulating measures that will expand exportable surpluses.
Export timing	<ul style="list-style-type: none"> - Ensure that policies are consistent with a seasonal phasing of exports that maximizes domestic value added.
Powerful importing enterprises	<ul style="list-style-type: none"> - Differentiate the export product. - Use patents and copyrights to establish countervailing monopoly powers. - Focus on cost-effective promotion to trade buyers.
Lack of domestic value adding	<ul style="list-style-type: none"> - Ensure that the country has a competitive advantage in the value-adding activity before promoting it. - Focus initially on exporting value-added products to low- and middle-income countries. - Ensure that the country is an attractive location for investment in value adding activities.
International transport constraints	<ul style="list-style-type: none"> - Ensure that airports used for exporting perishable produced are run efficiently and appropriately equipped with cold stores. - Ensure that legislation keeps pace with innovations such as containerization for export in producing areas. - Ensure that as much quality verification as possible is done by the private sector.
4. Constraints that reduce the number and size of accessible foreign markets	
Import quotas	<ul style="list-style-type: none"> - Ensure that there is an efficient and equitable means of distributing national tariff rate quotas (TRQs) amongst domestic exporters. - Ensure that quotas are fully utilized. - Negotiate increased national TRQs.
Unstable national export supply	<ul style="list-style-type: none"> - Focus on developing exports to foreign markets that are able to absorb a fluctuating supply of types and qualities supplied to the domestic market. - Avoid markets for value-added products that require dedicated domestic processing plants.
Poor information on export markets and opportunities	<ul style="list-style-type: none"> - Establish export marketing information institutions only after making certain that they will have the ability to provide information cost-effectively, additional to that now available on the Internet.

Concluding remarks

In view of the significant changes taking place in agrifood systems internationally, the attainment of competitiveness in export markets is becoming increasingly dependent on the capacity of a country to develop effective and efficient supply chains for their export products. This new dimension of competition for global market share has been highlighted in a recent report by the World Bank, where attention is explicitly drawn to the fact that agrifood systems and particular supply chains – rather than individual agro-enterprises – are now the key players in the new competitive arena (World Bank, 2003).

As illustrated in this guide, the competitiveness of a supply chain is influenced by a large number of factors related to its organizational, technological, structural, institutional and political dimensions. Knowledge about the factors that drive supply chain competitiveness is thus essential for the design of any strategy or policy that aims to promote agrifood exports. Consequently, thorough assessment of supply chains is an essential design prerequisite, which can uncover system weaknesses likely to limit overall performance and also identify comparative advantages and areas for leveraging chain strengths. Chains must be identified, characterized and evaluated, so that potential barriers affecting their performance can be removed and their strong points reinforced.

Although it is beyond the purview of this guide to discuss in detail the methodological aspects of supply chain assessments, it is hoped that the set of potential constraints discussed can be used as an initial checklist of the types of issues that should be considered in such evaluations. To complement the information provided, readers are encouraged to refer to the extensive literature on commodity chain assessment, much of which goes beyond the domestic processing and marketing aspects emphasized in this guide⁴². Indeed, a comprehensive assessment should consider also competitiveness drivers relating to agricultural production, farm input availability, support services, macroeconomic conditions, market structure, chain coordination and consumption trends.

The overall performance of a chain is a function of the interactions of a large number of variables controlled not only by private decision-makers in the specific chain segments, but also by local, provincial and national governments. Moreover, some variables, such as international trade barriers and natural resources, are likely to be outside the control of private or public decision-makers within a particular country. Hence, beyond the identification of the variables that drive competitiveness, it is important to establish whether they can be effectively controlled and by whom. This will in turn help to determine the sharing of responsibilities in executing proposed strategies and policies.

Finally, it should be pointed out that efforts to increase market shares for agrifood exports are ideally undertaken collectively by private and public stakeholders who have jointly developed a shared vision of the actions necessary to exploit foreign markets.

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One of the main objectives of the Agreement on Agriculture (AoA) negotiated under the Uruguay Round is to improve the access of developing countries to foreign markets. Constraints in the domestic supply chains of many countries, along with weak marketing support and trade facilitation services, have prevented them, however, from exploiting the opportunities provided by the AoA and by other agreements to improve market access. The aim of this guide is to inform policy analysts on issues that should be considered while developing policies and measures to break the main processing and marketing constraints that prevent their countries from fully exploiting their agrifood export potential.

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