

3. The agricultural trade policy landscape

Agricultural products have been traded for millennia as people have sought more stable and diverse sources of food. In turn, governments have intervened in agricultural production and distribution systems almost from the beginning of recorded history. Indeed, ensuring adequate supplies of food was one of the earliest tasks undertaken by governments in societies as diverse as the Roman and Incan empires (Woolf, 2003; Crow, 1992).

Governments have used a variety of policy tools to pursue their food and agriculture policy objectives – ranging from trade taxes and production quotas to import monopolies and export bans. While their policy objectives and tools have varied over time depending, among other issues, on the level of economic development and the role of agriculture in their economies and societies, governments around the world continue to view food and agriculture as an essential policy domain.

Quite often, governments pursue conflicting policy objectives. For example, efforts to support farm incomes through market price supports or import barriers could undermine national food security goals by raising food prices for poor consumers. Trade-offs between such competing objectives are usually made at the national level, with different segments of society vying for their own interests within the political system.

Similarly, at the international level, the policy interventions of one country may conflict with those of another, as when efforts to support producers at home hurt producers in foreign countries. The potential for industrial tariffs and subsidies in one country to harm the interests of another country has long been recognized by the international community, but the same problem in agriculture has been acknowledged and addressed only recently.

This chapter reviews briefly the evolution of agricultural trade policy since the middle of the twentieth century, emphasizing the accomplishments of the WTO's Uruguay Round Agreement on Agriculture (AoA) and the unfinished reform agenda currently being discussed in the Doha Round of trade negotiations. Issues regarding the measurement of agricultural support and protection are discussed and comprehensive data and estimates of the actual levels of subsidies and protection being applied on agriculture by countries around the world are presented.

Evolution of agricultural trade policy

Competing agricultural policies

Before the AoA came into force in 1995, the agriculture sector had been excluded from the disciplines of the multilateral trade system. As a result, no institutional mechanism existed to balance the policy interests of different countries. The General Agreement on Tariffs and Trade (GATT), the precursor of the WTO, came into force in 1947 to regulate international trade. The GATT prohibited the use of quantitative import barriers and most domestic and export subsidies for manufactured products and during successive rounds of negotiation reduced import tariffs on manufactured goods to low levels.

The GATT provided specific exceptions for agricultural products, however, and discussion of agricultural policy was kept largely outside the GATT framework. Over time, agricultural trade policies evolved in ways that differed radically from those applied for manufactured goods, with a host of domestic and export subsidies and non-tariff barriers emerging, including variable levies, minimum import prices, voluntary export restraints and quantitative import quotas.

These policies increasingly became a source of international friction. For example, domestic agricultural subsidies were used by many developed countries to guarantee farmers an "adequate" income. Production subsidies such as minimum market support prices tended to stimulate production far beyond the capacity of the domestic market to absorb, generating surpluses that were purchased and held by governments. Some governments then used export subsidies to sell the resulting surpluses on world markets. The United States and the EU, in particular, found their competing agricultural policies to be increasingly expensive and difficult to sustain.

Developing countries in crisis

From the 1950s to the 1970s, the dominant development paradigm involved a strategy of "import substitution" to promote rapid industrialization. Under this strategy, the agriculture sector was taxed heavily to support industrial development, primarily concentrated in the cities. Explicit taxes on agricultural commodity exports were common, but implicit taxes in the form of overvalued currency exchange rates, high industrial import tariffs and subsidies for industrial production were more pervasive.

The "urban bias" embodied in these explicit and implicit taxes systematically discriminated against the agriculture sector and rural areas (Schiff and Valdés, 1998). Many governments attempted to correct the bias against agriculture by intervening in agricultural output and input markets through price measures, compulsory state monopolies and the provision of basic services to the sector (e.g. credit, essential inputs, technical and market information, and marketing and distribution infrastructure). These interventions were often needed to overcome widespread market failures, but they sometimes created additional distortions and rigidities that hampered the sector (FAO, 2005a).

Some poorer countries also imposed trade measures that hurt their neighbours. For example, import quotas were widely used to help stabilize domestic prices in developing countries, but these measures shifted the burden for balancing domestic supply and demand onto world markets, making prices for farmers and consumers in other countries more volatile.

Although many developing countries experienced periods of relatively rapid economic growth at the macro level under these policies, by the late 1970s and early 1980s unsustainable fiscal and current account deficits, hyperinflation, external debt problems and foreign exchange crises signalled the need for policy reform. With the encouragement and support of the IMF and the World Bank, many countries embarked on structural adjustment programmes.

At the macro level, the principal policy-reform strategy involved import tariff reduction, market deregulation, privatization and fiscal stabilization pursued through currency realignments and significant budget cuts. For agriculture, the primary objective was to make the sector more market-oriented. Specific budget cuts were often made in subsidized credit and inputs and in investments in research and infrastructure.

Agricultural reforms typically involved the replacement of most quantitative import restrictions with tariffs; a reduction in both the level and dispersion of tariffs; the removal of export taxes, quotas and licences; the reduction or elimination of state trading; the elimination of domestic price controls and the gradual removal of state procurement programmes (FAO, 2005a).

Multilateral disciplines on agriculture – the Uruguay Round

Against this background of "disarray", the GATT signatory countries embarked on the Uruguay Round of trade negotiations in 1986. The goal of the agricultural negotiations was:

... to establish a fair and market-oriented agricultural trading system ... through ... strengthened and more operationally effective GATT rules and disciplines ... resulting in correcting and preventing restrictions and distortions in world agricultural markets.

(GATT, 1994, p. 39)

The Uruguay Round Agreement on Agriculture, which came into force in 1995, represented the first occasion on which a clear set of rules was set up to cover agricultural trade. Although the Uruguay Round has been sharply criticized for failing to secure a significant reduction in support and protection to agriculture, it has been credited with

BOX 2

Main provisions of the Uruguay Round Agreement on Agriculture

Domestic support

- *Reduction of domestic support.* Reduction commitments on support to agriculture were expressed in terms of a total aggregate measurement of support (total AMS), which is the sum of expenditures on non-exempted support aggregated across commodities and policies. The Agreement called for a 20 percent reduction in total AMS over six years (13.3 percent over ten years for developing countries and no reduction required for LDCs). The reduction commitments applied to total AMS and were not product- or policy-specific (product-specific not to exceed 1992 actual levels).
- *Exempt policies.* Policies considered as having no or minimal trade-distorting effects or effects on production were exempted from reduction commitments (and could even be increased) and excluded from the AMS. These so-called "green box" policies must not entail price support to producers and must be provided by publicly financed programmes not involving transfers

from consumers. The list of specific exempt policies is very long and includes general services, food security stocks, domestic food aid and certain direct payments to producers. In addition, the so-called "blue box" measures exempted direct payments under production-limiting programmes, provided that certain conditions are met.

- *De minimis exemption:* This allows any support for a particular product to be excluded from the AMS and the corresponding reduction commitment, provided the support does not exceed 5 percent of the value of the total production for the commodity in question, or 5 percent of the value of total agricultural production for non product-specific support. For developing countries, the *de minimis* ceiling is 10 percent.

Export competition

- *Export subsidies.* The AoA defined export subsidies that were to be reduced: direct subsidies, government sales from stocks at prices below

establishing a framework for the progressive reduction of trade-distorting protection of the agriculture sector. This section outlines some of the implications of the Uruguay Round Agreement and the unfinished agenda that is on the table in the Doha Round.

The AoA established disciplines on agricultural policy in three main categories: domestic support, export competition and market access (see Box 2 and below). The three categories were agreed because they are interrelated and mutually reinforcing.

Doha Development Round: Framework Agreement

The AoA included a commitment to further progressive liberalization of the sector. A new round of negotiations was launched in Doha in November 2001. This round, called the "Doha Development Round", is mandated to accord particular priority to the needs of developing countries. On 31 July 2004, the WTO's 147 Member Governments approved

a Framework Agreement (WTO, 2004b) and other agreements aimed at advancing progress and successfully concluding the Doha Development Round of trade negotiations. Annex A of the document specifically provides the framework for establishing modalities in agriculture.

The Framework Agreement affirms that:

Agriculture is of critical importance to the economic development of developing country Members and they must be able to pursue agricultural policies that are supportive of their development goals, poverty reduction strategies, food security and livelihood concerns.

(para. 2)

Furthermore:

Having regard to their rural development, food security and/or livelihood security needs, special and differential treatment for developing countries will be an integral part of all elements of the negotiation ...

(para. 39)

domestic prices, export payments financed by obligatory levies, subsidized export marketing costs and special domestic transport charges. The volume of subsidized exports was to be reduced by 21 percent and the expenditure on export subsidies by 36 percent over five years (for developing countries by 14 and 24 percent, respectively, over ten years). Reductions were to be product-specific. Countries not using export subsidies during 1986–90 were prohibited from introducing them.

Market access

• *Tarification*. Non-tariff barriers (quotas, variable levies, minimum import prices, discretionary licensing, state trading measures, voluntary export restraint agreements and similar border measures) were abolished and converted to an equivalent tariff, either specific or *ad valorem*. Developing countries were given the option of introducing bound tariff ceilings rather than calculated tariff equivalents.

- *Tariff reduction*. Tariffs, including those resulting from tariffication, were reduced by 36 percent on average over six years, starting in 1995, with a minimum reduction of 15 percent for each item (for developing countries the equivalent reductions were 24 and 10 percent, respectively; LDCs were exempt from reduction commitments).
- *Minimum access*. Where there were no significant imports, minimum access for quantities of imports corresponding to around 3 percent (rising to 5 percent) of domestic consumption in 1986–88 were to be ensured. Minimum access opportunities were to be implemented through tariff rate quotas (see Box 3).
- *Current access guarantee*. Current access (i.e. the quantity of imports in the 1986–88 period) was to be guaranteed in the event that it exceeded the minimum access level mentioned above.
- *Special safeguard provisions*. These allowed additional duties in the case of import surges (defined by specified trigger levels) or particularly low prices (both compared with 1986–88 levels).

The document refers to special and differential treatment in the areas of domestic support, export competition and market access to benefit developing countries. There is a commitment to the identification of “sensitive products” and “special products”, which will be eligible for more flexible treatment and to a “special safeguard mechanism” for developing countries.

The Framework Agreement provides some flexibility for developed countries but reaffirms their commitment to reform. With reference to the Doha Ministerial Declaration, which calls for “substantial reductions in trade-distorting domestic support”, the Agreement states that “there will be a strong element of harmonisation in the reductions made by developed Members. Specifically, higher levels of permitted trade-distorting support will be subject to deeper cuts.” A timeline for the elimination of export subsidies is to be established and as a

guiding principle for further negotiations on market access the Agreement indicates that “substantial overall tariff reductions will be achieved as a final result from negotiations”.

This is to the advantage of both developed and developing countries that have an interest in penetrating export markets. In the areas of market access and domestic support, a tiered formula is called for that represents a single approach for developed and developing country Members and at the same time recognizes their different tariff structures and levels of domestic support.

The sections below examine the existing disciplines under what are referred to as the “three pillars” of the AoA – domestic support, export competition and market access – and assess the progress made thus far in reducing trade-distorting support and protection to the sector. Particular challenges in the ongoing negotiations are highlighted.

Domestic support³

The AoA includes disciplines on domestic support in recognition of the potential of such policies to distort production and trade. All domestic support programmes defined as having distorting effects on trade or production were included in the Aggregate Measurement of Support (AMS) and countries agreed to reduce the AMS during the implementation period. Policies defined as having "no, or at most minimal, trade-distorting effects or effects on production" were categorized as "green box" measures and were exempt from the reduction commitments.

Further exemptions were granted for certain direct payments under production-limiting programmes and for supports below a *de minimis* level. Most developing countries declared their domestic agricultural support programmes under the *de minimis* category, although a few reported development-oriented expenditures that are specifically exempt under the provisions for special and differential treatment for developing countries.

Measuring domestic support to agriculture

Different indicators have been developed as measures of support to producers. The two most widely cited are the WTO's AMS and the OECD's producer support estimate (PSE). Although the two indicators take a broadly similar approach, there are a number of methodological differences, and they were developed for different purposes. The AMS is the basis for a legal commitment to reduce domestic support in the WTO AoA, whereas the purpose of the PSE is to monitor and

evaluate progress in agricultural policy reform.

The main components of AMS are

(i) market price support as measured by the gap between a fixed world reference price and the domestic administered price (which may not be the same as the current domestic market price) and (ii) the level of budgetary expenditures on domestic support policies that are considered to be trade-distorting.

The OECD's PSE indicates the annual monetary transfers to farmers from policy measures that (i) maintain a difference between domestic prices and prices at the country's border (market price support) and (ii) provide payments to farmers, based on criteria such as the quantity of a commodity produced, the amount of inputs used, the number of animals kept, the area farmed, or the revenue or income received by farmers.

Like the AMS, the PSE includes a price gap as well as the level of budgetary expenditures by governments, but there are two key distinctions:

- The market price support in the PSE is measured at the farmgate level using actual producer and border prices for commodities in a given year, whereas in the AMS it is calculated using the difference between the domestic administered support price and a world reference price fixed in terms of a historical base period (1986–88).
- The PSE covers all transfers to farmers from agricultural policies, whereas the AMS covers only domestic policies in the "amber box" category and excludes production-limiting policies ("blue box"), policies that are minimally trade-distorting ("green box") and a *de minimis* level of trade-distorting policies.

The result is that trends in the two indicators

TABLE 3
OECD producer support estimate

	1986–88	2001–03	2001	2002	2003 ¹
All OECD countries:					
Value (million \$)	241 077	238 310	227 955	229 691	257 285
Percentage	37	31	31	31	32

¹ Provisional.

Source: OECD, 2005.

³ The material in this section draws on FAO (2005b).

TABLE 4
Measures of domestic support

	OECD measures		WTO measures of domestic support ¹						
	PSE	PSE minus border protection	Exempt			AMS			
			Green box	Blue box	<i>De minimis</i>	Ceiling	(Million \$)	(Million \$)	(Percentage of ceiling)
		(Million \$)		(Million \$)		(Million \$)		(Million \$)	(Percentage consumer- financed)
EU	115 470	75 333	21 261	21 114	18.6	74 102	51 084	68.9	95.0
United States	54 433	21 597	30 591 ²	–	29.1	19 899	16 862	84.7	35.1
Japan	53 991	49 070	23 664	817	91.7	36 461	6 588	18.1	82.1
Republic of Korea	18 308	17 555	4591	–	68.7	1 578	1 306	82.8	100.5
Mexico	4 166	2 666	575	–	–	3 614	500	13.8	91.0
Canada	3 709	2 094	1 177	–	114.0	3 016	632	21.0	46.8

¹ Most recent available data.

² The United States has an additional \$33 050 million in the green box for domestic food aid.

Source: FAO, 2005b, based on de Gorter (2004), from OECD and country notifications to the WTO.

since 1986–88 show a marked difference. While the AMS has fallen significantly, the PSE has remained relatively stable. Table 3 summarizes the PSE for all OECD countries since 1986–88. While the PSE has fallen as a percentage of the value of agricultural production in the OECD countries, in monetary terms the PSE was higher in 2003 than in the base period. In contrast, the AMS for all WTO members has fallen from over \$160 billion to about \$60 billion (FAO, 2005b) over the same period.

Table 4 compares the 2003 PSE figures for selected WTO members with their levels of domestic support as measured under the AoA. The first column reports the PSE whereas the second column subtracts the component of the PSE that is provided by border protection, yielding a measure that more closely approximates domestic support to agriculture. The WTO measures are divided into exempt (“green box”, “blue box” and *de minimis*) and non-exempt, or AMS, categories. Under the AMS, the ceiling represents the maximum amount of support the country is permitted to provide under its AMS commitments. The figures notified represent the actual amount of AMS expenditures reported to the WTO. For all countries in the table, notified AMS expenditures were below the permitted ceilings. The final two columns of the table show the notified AMS as a percentage of the ceiling and the share of the AMS that is provided by consumers through market prices rather than through transfers from taxpayers.

The vast majority of AMS expenditures are accounted for by the EU, Japan and the United States, with several other OECD countries reporting relatively high AMS levels. Most OECD countries were able to meet their AMS reduction commitments by reformulating their policies to satisfy the criteria for “green box” or “blue box” exemptions. Furthermore, since the AMS commitments are not commodity-specific, some countries met their commitments by reallocating expenditures among commodities within the AMS (Tangermann, 1998). Thus, although the countries having AMS commitments are generally agreed to have met the requirements of the AoA, and some policies have been redesigned to be less trade-distorting, the overall level of support to agriculture in these countries (measured by economic criteria rather than the negotiated criteria used in the Agreement) has fallen very little, if at all.

An unfinished agenda on domestic support

A major criticism of the domestic support provisions of the AoA is that they are unbalanced in the treatment of developed and developing countries. Because most developing countries did not declare domestic support under the AMS, they are constrained to provide support only under the *de minimis* provisions or other exempt policies. It is argued that developing countries lack the administrative or budgetary capacity to implement most

"green box" policies, for example, and thus should be allowed to use policies such as domestic price supports that would be categorized under the AMS.

This criticism is weakened because most developing countries are currently providing far less support than is permitted under the *de minimis* provisions, which for developing countries are 10 percent per commodity and 10 percent of the total value of agricultural production. Of more serious concern are the continued high levels of support and protection in some developed countries and whether developing countries should be permitted to provide offsetting protection for their farmers. This topic is explored more fully in the section on market access below.

A more fundamental criticism of the AoA concerns the degree to which different types of domestic support measures are in fact decoupled from production and trade. Empirical evidence on the degree to which exempt domestic supports (as defined by the WTO) distort production and trade is limited because they have only been in operation for a relatively short time – since the 1992 Common Agricultural Policy (CAP) reforms in the EU and the 1996 Farm Bill in the United States. The OECD has conducted simulation exercises to predict the production-distorting effects of alternative domestic support payments relative to the equivalent amount of direct market price support (Anton, 2004). The results suggest that direct payments based on the area planted to a single crop are only 36 percent as production-distorting as market price supports. If the direct payments are further decoupled (i.e. made on total area planted regardless of the crop) their distortiveness falls to less than 20 percent of the distortion caused by market price supports.

Decoupled support to agriculture could influence production decisions through a number of mechanisms beyond the subsidy effects described above. Direct payments influence farmers' perception of risk by changing their wealth status and by providing a form of insurance. They may also influence farmers' decisions about whether to continue farming or exit from the sector. Other factors related to policy design, costs of compliance and enforcement, programme size and the combinations of policies can also influence production decisions.

Several studies have attempted to measure the significance of these so-called "non-price effects". Although partial in their coverage, most of these studies reach a general consensus that non-price effects can be more significant than the subsidy effects reported by Anton (2004). Research from the OECD (2004) suggests that commodity-specific area payments serve to reduce the risk associated with crop production, and that incorporating this insurance effect increases the degree of production distortion associated with these payments to 45 percent of that provided by an equivalent level of market price support. Young and Westcott (2000) argue that crop-insurance schemes that are not commodity-specific implicitly provide different subsidies to individual commodities depending on their relative net returns, with riskier commodities receiving a higher implicit subsidy.

Considerable debate surrounds the impact of decoupled payments on the level and quality of resources devoted to agricultural production. Depending on the details of programme design, decoupled payments may increase overall net returns to agriculture and/or shift the distribution of net returns in favour of smaller, more marginal farms. This would tend to keep more land (including more marginal land) in production. Decoupled payments may thus affect individual producers' decisions to exit farming and influence whether their land and other resources are withdrawn from production or simply transferred to other producers and/or other commodities. Evidence suggests that the number of farmers in the OECD countries is falling, but that the level of resources devoted to agricultural production is not.

Given the limitations of the AMS in measuring actual levels of support to agriculture and the conceptual and empirical difficulties associated with assessing the impact of decoupled payments on production and trade, considerable uncertainty surrounds the potential impact of further domestic support disciplines currently being negotiated in the Doha Round. FAO has highlighted elsewhere (FAO, 2005b) the need for a number of issues to be addressed:

- Criteria for the categorization of policies as exempt from reduction, particularly

those classified as decoupled, require effective review and clarification.

- Mechanisms to allow the reallocation of support across the different categories or boxes need to be established in a way that facilitates the shift towards less trade-distorting support but prohibits the exemption of policies that are, in effect, trade-distorting.
- Weaknesses in the way domestic support is currently measured in the WTO should be reviewed to ensure that further disciplines are effective.

Export competition⁴

The second of the three pillars of the AoA dealt with export competition. Although the original GATT 1947 prohibited the use of export subsidies in most sectors, an exception was made for primary products, including agricultural products. Export subsidies were prohibited in the manufacturing sector because they permit goods to be sold at less than the cost of production in the home country, a practice known as “dumping”, which was agreed to constitute unfair competition. The AoA sought to redress this omission by establishing disciplines on export subsidies and other forms of export competition.

Under the Agreement, export subsidies had to be notified to the WTO and new measures of this type were prohibited. In addition, the budget outlay on export subsidies and the volume of subsidized exports were capped and reductions were required during the implementation period. The AoA also required Members to negotiate disciplines on the use of export credit guarantees and food aid shipments that might be used to circumvent the disciplines on direct subsidies.

The WTO Framework Agreement calls for the development of modalities that will ensure the parallel elimination of all forms of export subsidies and disciplines on all export measures with equivalent effect. While there is little disagreement on

proceeding with negotiations along these lines, determining “equivalent effects” is not a simple task. There is a danger that some policy instruments that have little effect on world market conditions in comparison with their potential benefits will be disciplined too stringently.

Three broad components of export competition are the focus of the current negotiations: (i) policies in direct support of an exported commodity, such as export subsidies and officially supported export credits; (ii) interventions in support of state trading enterprises; and (iii) food aid, notably that component of food aid used to facilitate the disposal of a country’s surplus production.

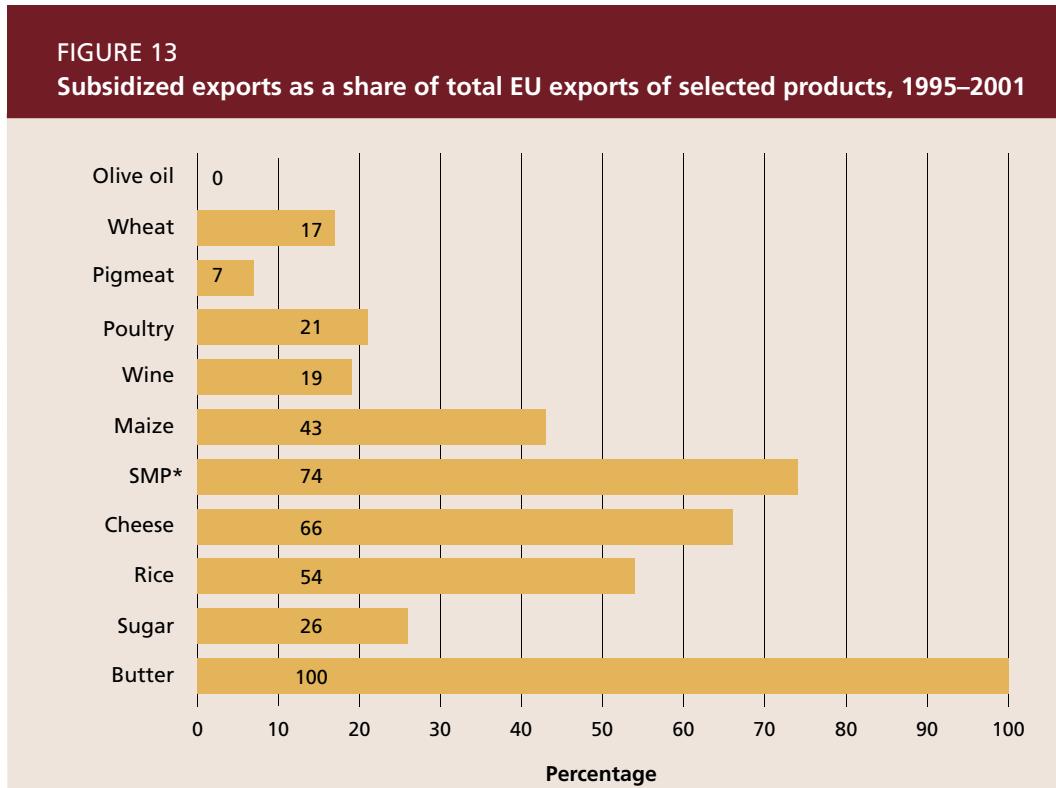
Incidence of direct export subsidies

Of the 21 WTO Members that have the right to use export subsidies under the AoA, nine currently use them.⁵ Of these countries or groupings, the EU is dominant, accounting for 90 percent of the value of export subsidies notified to the WTO during the period 1995–2001. Switzerland follows, with 5.3 percent of the total, and Norway and the United States each account for 1.4 percent. The use of export subsidies has declined significantly over the past decade – from some \$7.5 billion in 1995 to less than \$3 billion in 2001. The reductions observed in the EU have occurred not just as a reflection of meeting commitments under the AoA (given that the EU has not reached close to its ceiling for most commodities), but as a result of parallel domestic policy reform that has reduced, for many products, the need for such extensive use of export subsidies. As Figure 13 clearly illustrates, however, some EU exports are far more dependent on export subsidies than others. It should also be noted that the proportion of EU sugar exports that benefit from export subsidies is disputed.

⁴ The material in this section draws on FAO (2005c).

⁵ The EU (including Cyprus, the Czech Republic, Hungary, Poland and Slovakia), Israel, Mexico, Norway, Romania, Switzerland, Turkey, the United States and the Bolivarian Republic of Venezuela. Notification data generally lag by a few years; for some of the listed countries the most recent data are for 1998.

FIGURE 13
Subsidized exports as a share of total EU exports of selected products, 1995–2001



* Skimmed milk products.

Source: Jales, 2004.

Equivalence and incidence of indirect export subsidies

The equivalence of indirect export subsidies with direct export subsidies is usually discussed in terms of the effect of a given policy or activity on transactions and trade flows, or in terms of the gross expenditure on that policy or activity. Alternative approaches to analysis of the market effect of indirect subsidies include the extent of cost reduction (i.e. the reduction in cost to a foreign buyer relative to the domestic buyer of the commodity) and, related to this, the budgetary transfer involved in disposing of the commodity.

Export credits

The OECD (2000a) has attempted to determine the subsidy equivalence of export credits by country. This study defined export credit as "a guarantee, insurance, financing, refinancing or interest rate support arrangement provided by a government which allows a foreign buyer of exported goods and/or services to defer payments over a period of time".

Information on the incidence of the use of export credits is extremely difficult to obtain

given that countries are not currently obliged to notify their use of such expenditure to the WTO and the terms under which export credits are provided are deemed to be of a confidential nature. Most analyses and viewpoints are based upon information presented by the OECD and using data from the period 1995–98 only.

In aggregate, export credits increased from \$5.5 billion in 1995 to \$7.9 billion in 1998. The majority of export credits and fully 95 percent of long-term credits were used by the United States. In the EU, the other significant user, the level of export credits was significantly lower than the use of export subsidies.

The OECD estimates of the subsidy equivalent of export credits provided by different countries take into account a number of factors related to repayment terms (interest rate, repayment period, etc.). For three OECD countries (Australia, Canada and the United States), the subsidy elements of export credit operations were higher than their export subsidy expenditures. The OECD found that the export credits from the United States in 1998 had a higher per unit subsidy equivalent than those from

other countries, mainly by virtue of their longer repayment terms. Even so, the subsidy equivalent indicates that the importers paid, on average, 6.6 percent less for those transactions that were facilitated by United States export credits than they would have done without access to this support. These numbers are corroborated by estimates of about 9.9 percent from the United States General Accounting Office.

Given the relatively small export subsidy component of these export credits, which essentially focus on the "price" element of the credit (i.e. how much cheaper they make the exports compared with commercial alternatives not benefiting from credits), perhaps a more relevant issue relates to how sensitive export patterns are to the use of credits. A key question for further research is whether the removal of credits associated with long-term trade arrangements will cause a switch in the sourcing of the commodity away from the country previously extending the credit. This would depend on the elasticity of substitution of an importing country's imports from different countries, with higher elasticities implying greater scope for substitution.

State trading enterprises

As in the case of export credits (and unlike the case of export subsidies), there is an unresolved debate as to the balance of the relative merits and costs of the existence of state trading enterprises (STEs). On the one hand, such entities have been criticized in relation to their use of their monopoly status to influence market conditions and trade flows, and for the lack of transparency regarding their actions. For example, they may be granted subsidies by governments to facilitate their operations at below cost. Against this, others argue that STEs are a useful response to imperfect world commodity markets. Activities such as price pooling and the underwriting of losses, which can produce similar effects to those of export subsidies, can also be beneficial in reducing risks to farmers and traders (Young, 2004a). In addition, their large size (in terms of the volumes transacted) allows them to compete with large multinational trading companies, whose own use of market power has attracted criticism.

In determining whether, and indeed how, to eliminate or discipline certain actions undertaken by STEs, it is important to bear in mind these relative merits and to try to understand more clearly whether, on balance, the activities of individual STEs are detrimental (and should therefore be restricted) or beneficial (where more care might be required before attempting to restrict certain activities).

The OECD (2000b, 2000c) provides a comprehensive review of the existence and activities of STEs in OECD member countries. In developing countries, examples include China's COFCO, trading in cereals, oils and foodstuffs, and Indonesia's Bulog. However, the latter are believed to have limited market power. From a political point of view the perceived importance of a relatively small number of key STEs drives the argument for more stringent disciplines. These include the Australian Wheat Board and the Canadian Wheat Board, which together account for 40 percent of the global wheat market; the United States Commodity Credit Corporation; and Fonterra in New Zealand,⁶ which accounts for 30 percent of global dairy exports (Young, 2004a).

From an empirical viewpoint, there is little evidence that the STEs cause significant market distortion. Sumner and Boltuck (2001) and Carter and Smith (2001) found no evidence of market power for the Canadian Wheat Board and no evidence that its actions harmed United States exporters. Indeed, there are no widely accepted studies indicating that existing STEs are currently distorting markets in a significant way. Concern remains, however, that these STEs could increase their activities, which would also raise their potential to create market distortion if their activities are not subject to discipline at the same time as other components of export competition.

Theoretical analysis can be used to gain insights into the potential distorting impact under a range of situations and to identify STE characteristics that may be more market-distorting than others. McCorriston and MacLaren (2004) attempted to operationalize a definition of subsidy

⁶ The former New Zealand Dairy Board STE is now a farmer-owned cooperative, renamed Fonterra.

equivalence as "the export subsidy that would be paid to ... private firms to replicate the same quantity of exports that arise in a given STE environment". They found that a subsidy equivalent defined in this way can be positive or negative. Factors determining the impact of an STE include (i) how competitive the market would be in the absence of the STE and (ii) the actual configuration and actions of the STE – different STEs will not necessarily have the same magnitude of impact or even the same direction of impact in terms of trade distortion.

In terms of equivalence, evidence (both empirical and theoretical) suggests that an increase in export levels will always be higher with the use of direct export subsidies than if the same amount of support is provided via financial assistance to an STE. In relation to the insights arising from the theoretical framework proposed by McCorriston and MacLaren (2005), a number of observations can be made:

- *Competitiveness of the market.* There are widely held concerns about private exporters, given that the international trade of many agricultural commodities is concentrated in the hands of a few private multinational firms with the capacity to exert considerable market power. It is argued that international markets are far from being perfectly competitive and that private exporters compete with STEs in an oligopolistic market. Scoppola (2004) argues that there is, however, some debate as to whether either multinational firms or STEs can exert market power on, for example, international grain markets. Analyses by Caves and Pugel (1982), Carter, Loyns and Berwald (1998) and Carter and Smith (2001) suggest that they cannot. Others have argued that both can exert market power and are able to influence international prices in oligopolistic markets (e.g. Larue, Fulton and Veeman, 1999; McCorriston and MacLaren, 2002; Hamilton and Stiegert, 2002).
- *Exclusive rights vs ownership.* Theory suggests that the issue concerning competitive behaviour of STEs is not whether they are publicly or privately owned, but the nature of rights that they have to procure and to disburse

products. Exclusive rights for exporting STEs can apply in both the domestic or export markets and/or apply both to sales and procurement. These rights differ across STEs. For example, the Canadian Wheat Board has exclusive rights in the domestic and export markets, while others only have exclusive rights in the domestic market. STEs and private firms can also differ with respect to their objective function. STEs often have a wider social mandate, for example in reducing consumer food prices or stabilizing producer prices, than that of private firms, which are concerned more with maximizing returns to stakeholders. A number of authors argue that this can result in significantly different trade impacts (e.g. Dixit and Josling, 1997; McCorriston and MacLaren, 2002; Carter, Loyns and Berwald, 1998; and Carter and Smith, 2001).

Food aid

Disciplines on mechanisms by which food aid is procured and/or disbursed are under negotiation primarily in response to fears that the use of food aid as a mechanism for surplus disposal will increase if countries become more constrained in their access to other mechanisms for supporting exports. However, food aid, by definition, is also a humanitarian issue and there are grave concerns that disciplining food aid in an indiscriminate manner, while reducing the scope for the use of forms of food aid that are potentially more distorting, will also have a negative impact on its beneficial aspects.

Food aid is disbursed in a number of forms that may displace commercial imports to different degrees. Food aid can be categorized as "emergency" or "non-emergency", with a number of subdivisions within the latter category. The view that emergency food aid should not be restricted is broadly supported because any commercial trade displacement or international market distortion resulting from emergency food aid is likely to be minimal. Emergency food aid accounts for around 60–70 percent of total food aid disbursement.

In the case of non-emergency food aid, there is some dispute about the impacts of

different mechanisms for both procurement and disbursement. Non-emergency food aid can be divided into targeted food aid, which is given as food to recipients (examples include food-for-work or school lunch programmes) and monetized food aid, which is sold on local markets and the cash from its sale used to fund development projects.

The impact of food aid on markets is measured using the concept of additionality. Food aid is defined as additional if it is given to people who, because of their inability to access food by other means, would not have consumed the equivalent amount of food otherwise. Intuitively, emergency food aid should be closest to being fully additional in consumption as the recipients are, by definition, in distress and would not otherwise have access to alternative sources of food. Food aid that is wholly additional would have no distorting effects on production or commercial trade.

Although there are few empirical estimates of the additionality of monetized food aid, the extent of additionality is likely to be less than for targeted food aid and will depend upon how it is delivered. Against this, the benefits to recipients of, for example, agricultural development projects funded via the monetization of food aid need to be considered (Young, 2004b).

Additionality is likely to be situation-dependent. In conflict situations, the ability to import may otherwise be restricted and food aid would be expected to be more additional. Rates of inflation can also be high and wage earners unable to work in such situations – both factors contributing to the reduced ability of individuals to access alternative food sources (Young, 2004b). Additionality can also depend on programme design and implementation. The use of funds generated and whether they enhance demand or supply (i.e. whether they are used to increase direct consumption or to fund supply-enhancing agricultural projects) will contribute to the extent of additionality.

The way forward on export competition

The export competition issue is central to the ongoing round of trade talks. It is expected that direct export subsidies will be phased out eventually, along

with the subsidy element in other export programmes. Moreover, certain practices have been challenged through the WTO dispute settlement process, putting further pressure on both the EU and the United States to make substantial reforms in this area.

Agreements in the WTO have generally been developed on the basis of simple rules, and not on the results of complex models. The measurement of equivalence, while conceptually feasible, is in practice likely to require sophisticated analysis to determine the relative effect of various components of export competition. To move the negotiations on export competition forward, it will be necessary to develop simple rules to discipline trade-distorting activities without removing the benefits that they provide in reducing market imperfections in, for example, capital markets, and their associated development and humanitarian benefits.

One general approach to developing such rules would be to group activities in terms of their likelihood to influence trade flows, not on the basis of their price equivalence, even where this could, in theory, be measured, because the latter would require a more complicated set of rules and criteria.

The combination of measures may matter more than their individual effects. Developing a workable grouping would therefore depend on how substitutable the practices are. If, at the extreme, they were perfectly substitutable it would be necessary to discipline them all. Evidence suggests, however, that this is not necessarily the case, and although some level of reinstrumentation could occur, stringent disciplines are likely to be inappropriate.

In considering the development of new rules on export competition, the form of WTO notifications will also be important. Decisions will need to be taken on which practices should be included in the notification obligations. Once decided, it will also be necessary to identify the information required in order to understand how these policies might work. To ensure workable disciplines and compliance, notifications would also need to be more timely than at present.

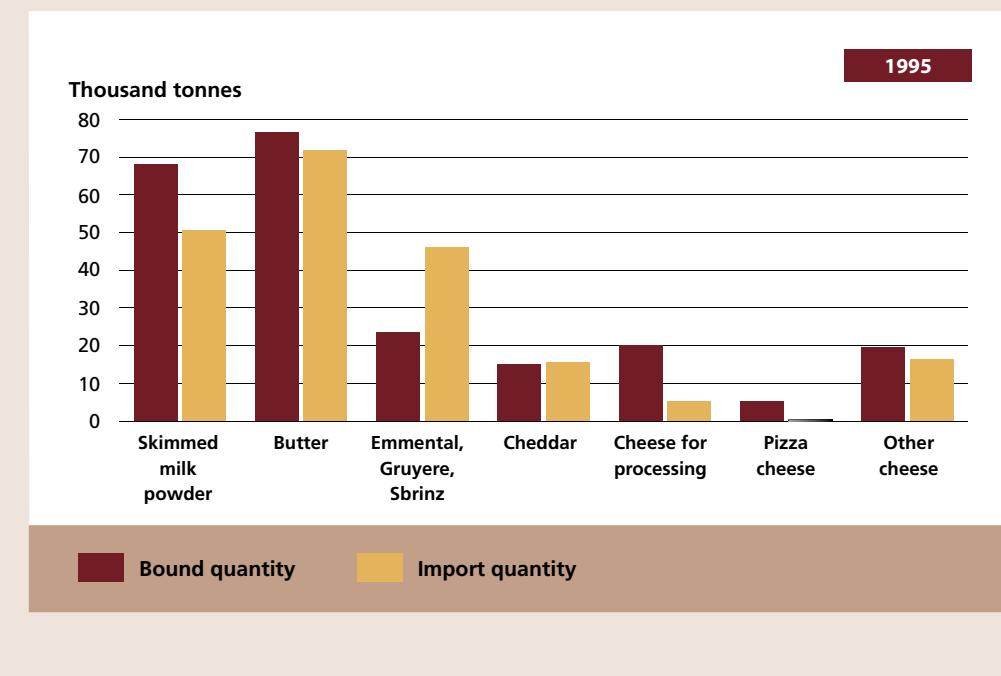
BOX 3

The European Union's tariff rate quota regime for dairy products

The figures below provide an overview of the 1995 and 2000 allocation of dairy quotas by the EU. In both periods covered, roughly 95 percent of dairy imports, by value, were covered by TRQs. Several features are apparent. First is the complexity of the regime, which involves separate TRQs for skimmed milk powder, butter and five categories of cheese, with different quota levels, in-quota

tariffs and out-of-quota tariffs for each category.

The second feature is that in 1995 the in-quota tariffs for some product categories were so high that the import quota levels (based on current access commitments, or Uruguay Round base imports) were not even met, leading to an apparent erosion of market access since the Uruguay Round base period.



Market access

The market access provisions of the AoA are extremely complex because of the wide variety of market barriers imposed on agriculture prior to the negotiations and because of the critical role of market access in disciplining other forms of support to agriculture.

Many domestic agricultural policies and export subsidies cannot function without restrictions on market access. If a country is open to imports, there is a natural limit to the degree of support it can provide to its own farmers because farmers in other countries will quickly expand their exports to capture part of the support. The United

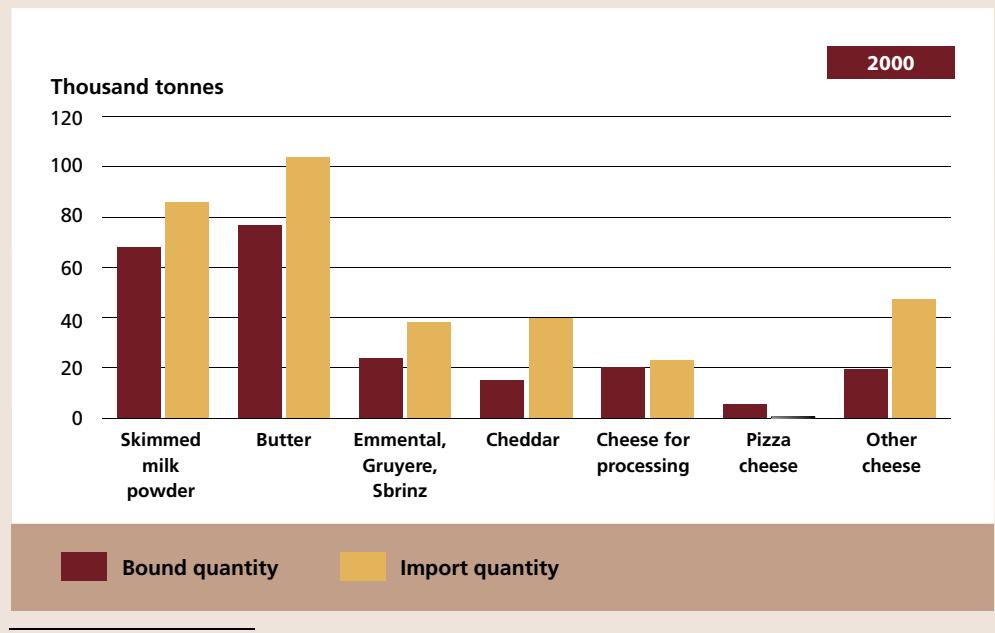
States experienced this in the early years of the US-Canada Free Trade Agreement when its efforts to raise domestic barley prices through the use of export subsidies were met with a surge of barley imports from Canada (Haley, 1995).

A wide range of tariffs and non-tariff barriers (NTBs) such as import quotas and variable levies were applied to agricultural products before the Uruguay Round. The elimination of NTBs was a particular focus of the Uruguay Round negotiations because such barriers tend to distort markets more severely than an equivalent tariff and are less transparent. Unlike tariffs, NTBs block the transmission of price signals between the world market and domestic markets. This prevents domestic supply and demand

In contrast with 1995, in 2000 all quotas except for pizza cheese were exceeded, meaning that the binding constraint on further imports was the out-of-quota tariff (and that quota rents accrue on the in-quota amounts – roughly half of imports).

Because of the bilateral allocation of quotas, the system discriminates against third-country suppliers. For example, the

full butter quota for 1995 was allocated exclusively to New Zealand, while the Cheddar cheese quota was shared by Australia, Canada and New Zealand. In 2000, all quotas were overfilled, though again with a bias towards those countries given import quotas and hence preferential access.



Source: Francois 2001a; AMAD database.

from adjusting in response to world market conditions and it shifts the burden for domestic market stabilization onto world markets (i.e. to countries that do not use such measures). Tariffs, in contrast, allow price signals to be transmitted more readily between world and domestic markets, reducing the distortion of world market prices.

During the negotiations, a variety of mechanisms were used to convert NTBs to tariffs and to reduce the resulting tariffs. The stated objective was to reduce the level of protection and the degree of trade distortion created by that protection. Some of the specific mechanisms employed and the rules on tariff reduction limited the amount of real market access liberalization that took place.

It can even be argued that some of the new mechanisms themselves constitute NTBs. The major criticisms of the Uruguay Round market access provisions focus on the mechanisms for converting NTBs to tariffs, the tariff-reduction formula and a perceived imbalance between the rights and obligations of developed and developing countries.

Under the Uruguay Round negotiations, developed countries agreed to convert their NTBs to equivalent tariffs through a process known as "tariffication", while developing countries were given the option of simply replacing their NTBs and unbound tariffs with bound tariffs, known as "ceiling bindings". The resulting tariffs were reduced on the basis of a simple unweighted average.

The tariffication process was meant to ensure that developed countries established tariffs that were no more trade-restrictive than the NTBs they replaced. Where tariffication was used, countries were required to introduce tariff rate quotas (TRQs) to ensure that effective market access was not eroded. TRQs involved commitments on current access, made in quantity terms, while some liberalization was to be guaranteed through the creation of minimum access commitments, set at 5 percent of 1986–88 consumption levels.

In addition, for tariffified commodities, countries could claim the right to increase tariffs through a special safeguard (SSG) mechanism if an import surge or sudden price drop threatened their producers. Thirty-eight WTO Members established TRQ commitments for a total of 1 379 quotas and claimed SSG privileges on 6 072 individual tariff items. Very few developing countries are among this group.

In practice, TRQs have done little to improve market access. The combination of current access and market access commitments has led directly to quantitative commitments (and in some cases quantitative restrictions) on market access. Furthermore, many countries allocated the quotas to traditional suppliers and counted pre-existing preferential access quotas as part of their minimum access commitments with the result that no new market access was created.

Unlike simple tariffs, TRQs generate market rents that may be captured by various groups (producers, exporting governments, importing governments and traders) depending on the administrative mechanism and the degree of market competition. It has been estimated that new access volumes created by TRQs typically accounted for less than 2 percent of world trade for the commodities in question, and TRQ utilization rates or fill rates have averaged only about two-thirds. Thus, TRQs have not been as effective in ensuring an increase in market access as expected. One example of the operation of TRQs is the EU's dairy policy, described in Box 3.

Most developing countries and LDCs chose the option of adopting tariff ceilings to replace their import quotas instead of going through the tariffication process

(often declaring a single bound tariff rate for all agricultural commodities). Developing countries were also allowed to reduce their bound tariffs by smaller amounts than were the developed countries (24 percent versus 36 percent) and the LDCs were exempt from reduction commitments. These provisions were meant to provide special and differential treatment, but in practice they resulted in an imbalance between developed and developing countries that is arguably in favour of the former. Because most developing countries and LDCs did not tariffify they did not create TRQs and could not claim SSG privileges. Thus, bound tariffs are their only form of border protection. Because TRQs and SSGs are more trade-restrictive than tariffs, developed countries have retained more latitude to protect sensitive commodities.

Many developing countries and LDCs had already eliminated import quotas and substantially reduced import tariffs in the context of the structural adjustment programmes that were being undertaken simultaneously with the Uruguay Round negotiations. As a result, when the AoA came into force in 1995, their applied import tariffs were much lower than the tariff bindings they agreed under the Agreement. This had two implications. First, the AoA required relatively little reduction in applied tariffs for these countries. Second, they had already undertaken significantly greater market access liberalization under structural adjustment than was required under the AoA. Box 4 discusses the importance of tariff revenues for the fiscal budgets of many developing countries.

In addition to the problems created by the tariffication process, the Uruguay Round formula for tariff reduction limited the amount of actual market access that was achieved and further distorted markets. Because the tariff reduction commitments were based on a simple average, countries could strategically reduce tariffs on "sensitive" high-tariff products by the minimum amount (15 percent and 10 percent, respectively, for developed and developing countries) while reducing tariffs on less-sensitive products by greater amounts to reach the average requirement. As a result, many of the highest pre-Uruguay Round tariffs were reduced by the smallest

BOX 4

Tariffs as tax revenue

One reason why tariff reductions concern many developing countries is their potentially negative impact on tax revenue. In more than 25 developing countries tariff revenue can exceed 30 percent of the government's total tax revenue. In high-income countries, tariff revenues typically represent less than 2 percent of total tax revenue.

The WTO highlights two revenue implications of trade liberalization. First, trade liberalization that substitutes tariffs for non-tariff barriers (e.g. quotas and restrictive licensing requirements) may have a positive revenue impact. Second, once trade protection is based on tariffs, the revenue implications of reductions in applied rates depend on the price elasticity of imports. Simulations suggest that price elasticities in open economies have to be much higher than empirically observed elasticities for trade liberalization to be self-financing (Devarajan, Go and Li, 1999). These findings imply that significant tariff

reductions should be accompanied by reform of the general tax system to avoid the emergence of fiscal deficits or curtailment of government expenditure (Ebrill, Stotsky and Groppe, 1999).

On the other hand, the empirical evidence on the impact of major trade liberalization programmes to date shows that revenue implications are not necessarily significant. For Bangladesh, Chile and Mexico, trade liberalization since the mid-1980s involved cuts in applied tariffs of more than 10 percentage points, reducing the ratio of duties to total tax revenue significantly in Bangladesh, but only slightly in Chile and Mexico. In each case, import growth accelerated sharply. Interestingly, in the initial years of trade liberalization in Chile and Mexico, the ratio of import duties to total tax revenue rose, but declined steadily thereafter.

Source: WTO, 2003.

amounts, while already-low tariffs were reduced more. This created little new market access and increased the dispersion of the tariff rates of many countries, arguably increasing the distorting effect of tariffs on their markets.

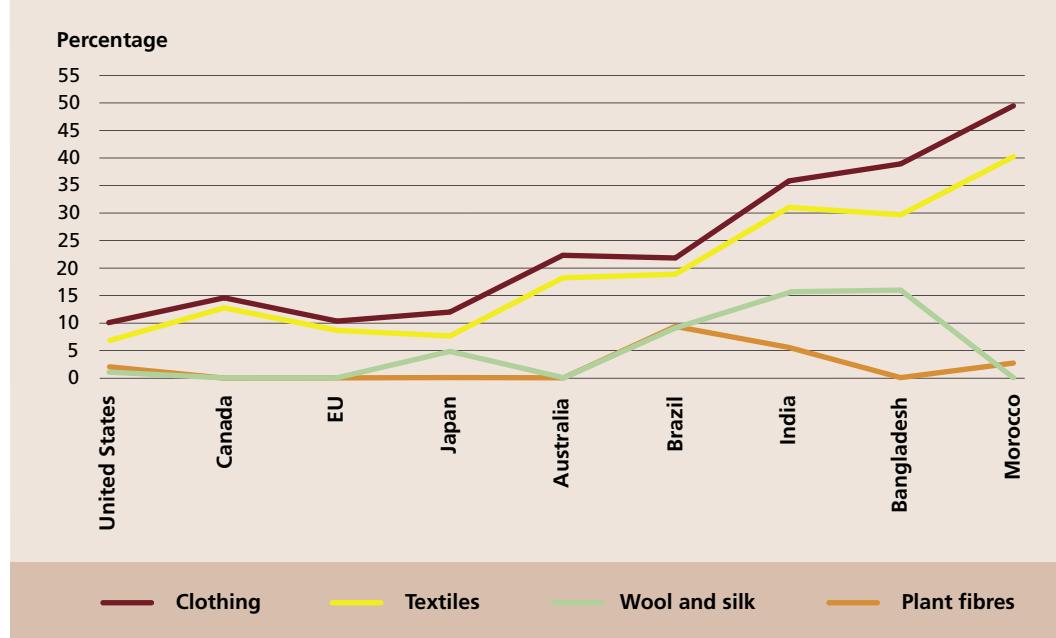
Tariff escalation is a particular type of tariff dispersion that is of special importance to developing countries. It occurs when tariff levels increase with the degree of processing of a product. This favours imports of raw materials and discourages local processing in the exporting country. As developing countries attempt to add value to their agricultural products and take advantage of greater returns to differentiated value-added goods, tariff escalation works against their efforts. Given the higher income elasticity of demand for processed products, the impact of tariff escalation on the production and trade of processed products and on rural employment could be significant.

Tariff escalation is particularly pronounced in agriculture, with processed agricultural

products being subject to significantly higher tariffs than raw farm products. Figure 14 shows most-favoured nation (MFN) tariffs for plant- and animal-based fibres (basic raw materials), textiles (intermediate goods) and clothing (a final good at the end of the processing chain). For these products, tariff escalation exists in both rich and poor countries. The relative gap is often higher in the OECD countries, though the absolute gap can be very high for developing countries also.

The fact that the developed countries' tariff structures protect the market for processed products more than they do for primary products is seen as an obstacle for the industrial and economic development of developing countries (FAO, 2004a). Many developing economies also tend to apply systematic tariff escalation and high tariffs to the final stage of processing. Bangladesh and Morocco, for example, both engage in far greater absolute tariff escalation than do the OECD countries. High absolute levels

FIGURE 14
Tariff escalation for fibres, textiles and clothing



Source: Comtrade and GTAP v. 6.4 databases.

of tariff escalation in developing countries suggest that potentially large gains could be realized if escalation were removed by developing economies themselves (Rae and Josling, 2003).

Measuring agricultural protection

Given the complexity of the market access commitments made in the Uruguay Round, their importance in facilitating the use of domestic and export subsidies, and their prominence in the Doha Round of negotiations, this section explores the measurement of market access barriers in greater detail.

Measuring the extent of agricultural protection may seem simple, as tariff schedules typically provide information at a high level of detail. However, there are difficulties involved, not least because of the differences between bound rates (the policy variable considered in WTO schedules of concessions) and applied tariff rates. Complications also arise when aggregating from the fine level of detail in tariff schedules up to the broader commodity aggregates that allow an overall evaluation and comparison with protection regimes in other countries. This analysis attempts

to take many of these complexities into account.

Table 5 summarizes a market access data set consisting of 65 305 tariff lines at the six-digit level of the Harmonized System for 103 countries for the period 2000–02.⁷ It incorporates *ad valorem* equivalents for tariffs that include a specific element. This is important because, as shown in Messerlin (2003) and World Bank (2005a), these *ad valorem*-equivalent specific tariffs are frequently much higher than the *ad valorem* tariffs alone. As the primary focus of current WTO negotiations is on increasing market access rather than the redistribution of quota rents, in-quota tariffs for tariff rate quotas are excluded from the analysis.

⁷ This data set was compiled by Martin and Zhi (2005), from two major sources: the UNCTAD/TRAINS database and a dataset developed at the United States Department of Agriculture (USDA) (Wainio, Gibson and Whitley, 2001; Wainio and Gibson, 2004).

TABLE 5
Country-level agricultural tariff data, 2000–02

Countries	Simple average		Coefficient of variation		Weighted average		Binding overhang (Percentage of bound rate)	Tariff lines		Maximum rate	
	Applied	Bound	Applied	Bound	Applied	Bound		Bound at zero	Total (Number)	Applied	Bound
	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage)		(Number)	(Percentage)	(Percentage)	
INDUSTRIAL COUNTRIES											
Australia	1.3	3.2	176.9	143.8	2.4	4.9	51.0	224	724	13	29
Canada	9.8	14.1	266.3	308.5	11.7	17.1	31.6	267	636	161	620
European Union	19.8	22.5	157.6	167.6	17.4	21.3	18.3	152	604	327	479
Iceland	47.8	114.7	218.4	139.1	24.5	60.9	59.8	115	617	584	963
Japan	24.2	48.4	269.8	281.6	20.9	51.6	59.5	179	613	716	1 646
New Zealand	1.6	5.9	143.8	122.0	2.4	8.0	70.0	342	685	7	31
Norway	83.2	168.6	219.2	126.4	36.4	116.4	68.7	126	648	3 424	3 424
Switzerland	28.1	51.7	198.2	138.9	21.2	44.2	52.0	77	572	646	666
United States	5.0	6.1	220.0	203.3	5.0	6.6	24.2	170	596	97	100
All industrial countries	24.1	47.7	336.3	246.3	14.1	24.9	43.4	1 652	5 695	3 424	3 424
DEVELOPING COUNTRIES											
East Asia and the Pacific	17.0	48.6	380.0	286.4	39.1	59.4	34.2	112	4 466	2 565	7 696
China	15.7	15.8	72.0	72.8	12.6	12.8	1.6	18	670	65	65
Indonesia	7.5	46.8	261.3	46.4	3.2	54.8	94.2	–	734	150	210
Republic of Korea	54.7	64.9	228.2	197.4	103.7	112.9	8.1	11	563	800	887
Malaysia	11.8	35.6	998.3	950.8	29.2	86.6	66.3	79	594	2 565	7 696
Myanmar	8.6	103.1	91.9	90.8	10.5	141.3	92.6	4	631	40	550
Papua New Guinea	17.6	43.3	103.4	49.2	8.1	34.6	76.6	–	607	75	100
Philippines	9.3	34.7	114.0	32.9	8.3	29.9	72.2	–	667	58	80
Europe and Central Asia	13.9	29.1	127.1	140.7	15.8	51.1	69.1	412	6 429	336	336
Albania	9.4	9.4	58.5	58.5	9.5	9.5	0.0	73	671	20	20
Armenia	7.1	14.8	64.8	8.8	6.6	15.0	56.0	3	671	10	15
Bulgaria	18.0	35.8	81.7	75.7	20.6	33.5	38.5	34	577	74	98
Croatia	8.3	9.4	80.7	95.7	9.3	10.5	11.4	104	605	25	44
Estonia	11.5	17.6	133.9	80.7	7.6	13.4	43.3	115	671	59	59
Kyrgyzstan	8.4	12.4	51.2	38.7	8.6	11.7	26.5	8	657	18	25
Latvia	11.3	34.8	115.0	53.7	9.9	23.7	58.2	14	667	50	55
Lithuania	9.1	15.4	153.8	92.2	9.0	13.1	31.3	55	666	87	100
Romania	24.1	99.1	94.2	83.5	32.0	141.5	77.4	1	671	248	333
Thailand	34.8	43.0	94.8	81.4	15.3	51.4	70.2	5	573	336	336
Latin America and Caribbean	13.4	59.2	92.2	64.1	18.4	51.8	64.5	55	18 726	254	257
Argentina	12.1	32.3	41.3	23.2	13.7	31.1	55.9	2	734	22	35
Belize	16.7	101	99.4	3.9	12.9	100.8	87.2	–	606	110	110
Bolivia	10.0	40.0	8.0	1.0	9.9	40.0	75.3	–	734	17	40
Brazil	12.2	35.5	42.6	28.2	11.5	42.5	72.9	14	734	44	55
Chile	7.9	25.7	3.8	7.8	8.0	26.3	69.6	–	734	9	32
Colombia	14.8	91.6	35.1	36.6	14.6	112.3	87.0	–	734	20	227
Costa Rica	11.8	42.1	120.3	56.1	10.8	33.5	67.8	–	734	99	233
Cuba	9.8	36.9	77.6	28.5	10.0	31.1	67.8	31	671	30	40
Dominica	19.2	112.8	125.5	19.2	22.3	125.4	82.2	–	649	140	150
Dominican Republic	15.7	40.0	61.1	0.0	12.5	40.0	68.8	–	641	38	40
Ecuador	14.6	25.3	36.3	36.8	14.3	26.7	46.4	–	551	20	72
El Salvador	10.8	42.0	83.3	46.7	12.5	43.6	71.3	–	734	40	164
Grenada	16.0	101.2	90.0	33.2	15.0	82.7	81.9	5	602	40	200

TABLE 5 (cont.)

Countries	Simple average		Coefficient of variation		Weighted average		Binding overhang (Percentage of bound rate)	Tariff lines		Maximum rate	
	Applied	Bound	Applied	Bound	Applied	Bound		Bound at zero	Total	Applied	Bound
	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage)		(Number)	(Number)	(Percentage)	(Percentage)
Guatemala	9.9	49.8	74.7	79.9	10.9	63.8	82.9	—	733	33	257
Guyana	17.6	100.0	96.6	0.0	18.0	100.0	82.0	—	605	100	100
Honduras	10.2	32.2	72.5	21.7	10.6	28.2	62.4	—	734	55	60
Jamaica	15.5	100.0	109.0	0.0	16.4	100.0	83.6	—	648	75	100
Mexico	20.9	41.1	123.4	71.8	28.2	51.8	45.6	1	599	254	254
Nicaragua	8.1	40.4	87.7	6.9	11.1	41.9	73.5	—	606	53	60
Panama	12.8	27.4	103.1	51.8	11.7	22.2	47.3	2	626	144	144
Paraguay	11.6	35.0	39.7	0.0	16.2	35.0	53.7	—	649	31	35
Peru	17.2	30.9	38.4	17.8	16.5	40.1	58.9	—	577	30	68
Saint Kitts and Nevis	14.0	108.8	111.4	26.7	18.1	98.1	81.5	—	602	130	250
Saint Lucia	14.2	114.4	104.2	23.1	15.5	116.7	86.7	—	605	45	250
Saint Vincent	15.4	114.8	93.5	23.0	15.9	115.0	86.2	—	602	40	250
Suriname	11.4	19.9	65.8	3.5	13.2	19.9	33.7	—	343	20	20
Trinidad and Tobago	14.5	100.2	109.7	3.3	13.9	100.0	86.1	—	604	70	156
Uruguay	12.3	33.9	39.8	21.2	13.9	33.1	58.0	—	671	30	55
Venezuela (Bolivarian Republic of)	14.8	55.5	35.1	60.9	16.2	74.2	78.2	—	664	20	135
Near East and North Africa	31.0	61.0	124.1	297.4	22.4	50.0	55.2	6	4 039	600	3 000
Djibouti	20.5	47.5	56.6	85.9	18.5	54.1	65.8	—	647	40	450
Egypt	21.8	96.0	122.5	448.3	6.3	23.6	73.3	—	661	600	3 000
Jordan	20.1	23.9	123.9	129.3	13.8	18.4	25.0	6	667	180	200
Morocco	41.0	54.6	100.2	91.6	27.0	81.9	67.0	—	734	289	289
Oman	11.0	28.3	208.2	161.5	39.9	66.1	39.6	—	663	100	200
Tunisia	70.0	115.9	75.6	35.0	46.9	75.2	37.6	—	667	200	200
South Asia	23.0	100.9	60.1	66.5	22.3	132.4	83.2	10	3 129	150	300
Bangladesh	23.5	187.8	57.4	22.7	14.3	160.2	91.1	—	635	38	200
India	35.3	114.8	52.7	47.3	28.4	147.2	80.7	10	621	150	300
Maldives	18.4	48.5	40.8	139.4	16.9	66.4	74.5	—	624	50	300
Pakistan	18.4	100.1	44.6	10.1	12.6	109.0	88.4	—	648	30	150
Sri Lanka	19.2	50.0	53.1	0.0	16.2	50.0	67.6	—	601	50	50
Sub-Saharan Africa	17.5	74.6	75.0	53.6	16.2	73.5	78.0	78	17 117	133	200
Angola	9.4	52.8	87.2	17.8	13.0	49.3	73.6	—	668	35	55
Benin	13.9	61.4	48.2	19.7	14.9	54.8	72.8	—	671	20	100
Burkina Faso	13.9	98.1	48.2	12.7	14.0	81.4	82.8	—	671	20	100
Burundi	31.6	95.4	42.7	20.4	29.3	84.4	65.3	15	623	40	100
Cameroon	22.1	80.0	43.4	0.0	18.4	80.0	77.0	—	631	30	80
Central African Republic	22.1	30.0	43.0	0.0	23.7	30.0	21.0	—	667	30	30
Chad	22.1	80.0	43.4	0.0	25.6	80.0	68.0	—	631	30	80
Congo	22.1	30.0	43.4	0.0	23.5	30	21.7	—	631	30	30
Côte d'Ivoire	10.9	14.9	41.3	34.9	9.7	14.7	34.0	1	671	20	64
Gabon	22.1	60.0	43.0	0.0	22.2	60.0	63.0	—	667	30	60
Guinea-Bissau	13.8	40.0	48.6	0.0	17.4	40.0	56.5	—	626	20	40
Kenya	20.3	100.0	55.7	0.0	25.0	100.0	75.0	—	625	100	100
Madagascar	5.8	30.0	84.5	0.0	3.8	30.0	87.3	—	671	20	30
Malawi	15.1	121.5	60.9	13.3	14.1	118.6	88.1	—	635	25	125
Mali	13.9	59.2	48.2	11.8	13.5	54.2	75.1	—	671	20	75
Mauritania	12.6	37.7	60.3	44.6	8.0	43.9	81.8	—	671	20	75
Mauritius	18.6	119.3	124.2	11.8	12.7	96.9	86.9	—	578	80	122

TABLE 5 (cont.)

Countries	Simple average		Coefficient of variation		Weighted average		Binding overhang	Tariff lines		Maximum rate	
	Applied	Bound	Applied	Bound	Applied	Bound		Bound at zero	Total	Applied	Bound
	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage)	(Percentage of bound rate)		(Number)	(Percentage)	(Percentage)	
Mozambique	17.2	100.0	66.3	0.0	13.0	100.0	87.0	–	689	30	100
Niger	13.9	83.4	48.2	75.9	13.3	68.5	80.6	–	671	20	200
Nigeria	39.0	150.0	58.5	0.0	29.1	150.0	80.6	–	626	133	150
Rwanda	12.2	74.2	73.0	25.1	10.7	64.9	83.5	17	626	25	80
Senegal	14.0	29.8	47.9	5.0	11.5	28.3	59.4	–	671	20	30
South Africa	10.3	35.5	118.4	85.9	8.9	38.7	77.0	45	252	55	160
Togo	13.9	80.0	48.2	0.0	11.8	80.0	85.3	–	635	20	80
Uganda	12.6	77.7	28.6	10.2	9.3	78.5	88.2	–	698	15	80
Zambia	20.6	123.2	75.2	9.5	17.5	117.0	85.0	–	622	125	125
Zimbabwe	28.9	145.6	70.6	15.9	21.0	141.1	85.1	–	619	100	150
High-income non-OECD countries	14.4	57.8	499.4	238.6	61.8	79.6	22.4	61	6 267	3 788	8 334
Antigua and Barbuda	14.6	105.1	91.1	17.0	20.3	107.2	81.1	–	648	40	220
Bahrain	8.0	37.7	188.8	53.6	11.0	42.2	73.9	–	624	125	200
Barbados	25.6	111.0	127.7	22.3	33.0	108.8	69.7	–	654	163	223
Brunei	14.9	54.5	1 249.0	748.3	33.7	96.7	65.1	–	600	3 788	8 334
Cyprus	21.8	59.0	156.9	49.2	23.3	98.2	76.3	6	336	245	245
Kuwait	1.7	100.0	517.6	0.0	5.1	100.0	94.9	–	631	100	100
Malta	2.7	33.8	148.1	55.0	2.3	29.9	92.3	16	231	16	88
Qatar	4.9	26.3	159.2	163.9	6.6	26.5	75.1	–	629	70	200
Singapore	0.0	9.5	0.0	21.1	0.0	8.9	0.0	24	710	0	10
Slovenia	11.3	23.5	102.7	56.2	14.0	22.0	36.4	4	641	45	45
All developing countries	16.3	61.7	189.9	136.7	24.4	60.0	59.3	723	59 610	3 788	8 334
Upper middle-income countries	13.7	56.5	211.5	146.1	23.1	54.1	57.3	377	13 541	2 565	7 696
Lower middle-income countries	18.0	51.4	122.4	176.6	14.4	41.8	65.6	230	19 043	600	3 000
Low-income countries	17.0	75.7	80.6	64.2	15.5	95.6	83.8	55	20 759	150	550
WORLD	17.0	60.5	224.2	145.1	18.0	38.2	52.9	2 375	65 305	3 788	8 334

Source: Martin and Zhi, 2005.

Simple average tariffs

The first two columns of Table 5 present the simple average applied and bound agricultural tariffs by country and by regional and economic groupings. The country-group averages are calculated by weighting each country's simple average tariff by the size of its total agricultural imports, to allow for the fact that some economies are much larger than others. Several observations can be made from an examination of simple average tariffs.

First, it appears that simple average applied tariffs are higher in industrial countries

(24 percent) than in developing countries (16 percent). This may be misleading because of the exclusion of in-quota tariffs on products subject to TRQs. TRQs are much more prevalent in the industrial countries, and the in-quota tariffs on these products are, on average, about half the rate of out-of-quota tariffs (Wainio, Gibson and Whitley, 2001).

Second, there is a striking degree of variation within both the industrial country group and the developing country group (countries classified as developing by the WTO). In some industrial countries, such

as Australia and New Zealand, average applied tariffs are less than 2 percent. At the other extreme, Norway has an average of more than 80 percent. Within the developing country group, most countries have average applied rates of between 5 and 25 percent, although a few countries such as Tunisia (70 percent), the Republic of Korea (55 percent), Morocco (41 percent), Nigeria (39 percent), India (35 percent) and Thailand (35 percent) have substantially higher average rates.

Third, simple average bound rates appear to be much higher than applied rates, both in industrial and developing countries. For the industrial countries, the average bound rate of 48 percent is almost twice as high as the average applied rate. For the developing countries, the average bound tariff of 62 percent is more than three times the applied rate of 16 percent. Average bound rates are much higher for developing countries as a group, partly because these countries made more use of the option to bind tariffs using ceiling bindings in the Uruguay Round (Hathaway and Ingco, 1996). South Asia has the highest average bound tariffs, at more than 100 percent, with sub-Saharan Africa having the second-highest, at 75 percent.

Tariff dispersion

The trade-distorting effect of a tariff regime is influenced by both the average level of tariffs and the dispersion of tariff rates around the average. The coefficient of variation (CV) measures the dispersion or variability of tariffs relative to the mean. A tariff schedule that applies the same tariff rate to all products has a CV of zero. While a flat tariff schedule may discourage trade, depending on the level of the tariff, it does so equally for all products; therefore, it is less trade-distorting than is a tariff schedule having a high degree of dispersion.

The CVs of the industrial countries and the developing countries differ considerably. The variation of tariffs is typically much higher in industrial countries than in developing countries, with the CV for applied tariff rates in the industrial countries averaging 336 percent, as against 190 in developing countries. For bound rates, the difference is similarly striking, with the

industrial country CV of 246 percent being almost twice the corresponding value of 137 in developing countries.

Among the developing countries, the higher-income countries have significantly higher tariff CVs than those of the low-income countries. In low-income countries, the CV of applied tariffs is generally less than 100 percent. Bound tariffs in developing countries are typically much less variable than applied rates, with some African countries having completely uniform tariff bindings indicated by CVs of zero.

Weighted average tariffs

Simple average tariffs give equal weight to all tariff lines and thus may be overly influenced by tariffs on unimportant items. Weighting tariffs according to the product's importance in trade can provide a more representative picture of a country's tariff schedule. Trade-weighting can introduce a downward bias, however, if some tariffs are so high that they eliminate trade altogether. With this caveat in mind, trade-weighted applied and bound tariffs are shown in the fifth and sixth columns of Table 5.

The weighted average tariff rates present a different picture than do the simple averages. The weighted average applied tariff is 14 percent in the industrial countries – well below the simple average of 24 percent. This is partly because many of the peak tariffs in industrial countries are so high that they restrict imports to very low levels, thus giving them too little weight in the average and underestimating their actual trade restrictiveness. For the developing countries, the opposite pattern emerges: the weighted average applied rate, at 24 percent, is above the simple average rate of 16 percent. Tariffs are less variable in developing countries and there are fewer mega-peak tariffs that effectively eliminate imports of the goods to which they are applied. The existence of these mega-peak tariffs in the industrial countries highlights the importance of ensuring that future tariff reductions bring about reductions in the highest tariffs.

Binding overhang

Another important factor to consider is the gap between bound and applied tariffs, or "binding overhang" (Francois, 2001b;

Francois and Martin, 2004; Francois, van Meijl and van Tongeren, 2005). Because negotiated tariff reductions generally involve bound tariffs rather than applied rates, a large overhang implies that even deep reductions in bound rates may lead to little actual liberalization. The measure of binding overhang is expressed using weighted average tariff data. The results in Table 5 are presented as percentages of the initial bound rate, providing an indication of the extent to which average bound rates would need to be cut to bring about substantial improvements in market access.

These data point to very high levels of binding overhang in both industrial and developing countries. In the industrial countries, the average binding overhang for agriculture is 43 percent. The 60 percent overhang in Japan inflates this figure. While discussions of binding overhang frequently emphasize developing countries, this result makes it clear that, at least in agriculture, the issue is also of importance in the industrial countries.

Nevertheless, the results confirm that the extent of binding overhang is greater in developing countries than in the industrial countries. The average in these countries is 59 percent. All income groups have binding overhang above 50 percent, except for the high-income group, where it is 22 percent. The East Asia region is the only developing country region where binding overhang is below 50 percent. In South Asia, however, it is an extraordinary 83 percent.

Yet another area where there are sharp differences between industrial and developing countries is in the share of tariff lines bound at zero. In the industrial countries, 29 percent of all tariff lines (at the six-digit level) are bound at zero, compared with 1.2 percent for developing countries. Among the developing countries, only those in Central Asia and Europe have any significant proportion of their tariffs bound at zero.

The last two columns in Table 5 show the maximum applied and bound tariff rates. The data indicate just how high the tariff peaks are in some countries, even when – as in this table – the tariffs analysed are at the six-digit level. While some of these peaks are on minor products, others are on potentially important products whose imports are tightly restricted.

Key findings

Governments have long intervened in food and agricultural markets, and although their policy objectives and tools have changed over time, they continue to view the sector as a vital policy domain. Until the Uruguay Round brought agriculture into the multilateral trading system, no internationally agreed rules existed to guide agricultural policy. The Uruguay Round AoA initiated a reform process in agriculture that is far from complete.

- Although many countries have redesigned their domestic agricultural support programmes to provide less-distorting forms of support, the overall level of support remains high, particularly in wealthier countries. The degree to which currently exempt forms of domestic support are decoupled from production continues to be debated, but the evidence suggests that some measures are less production-neutral than others.
- Export competition remains a contentious issue. While it may be possible to establish equivalence between export subsidies and other export competition measures at a conceptual level, caution should be exercised to avoid creating unnecessarily complicated disciplines. Further disciplines on food aid should weigh any potential market displacement effects against its humanitarian role.
- Tariff levels and other market access barriers remain high for agricultural products in both developed and developing countries. Prohibitively high tariff peaks and tariff escalation create severe distortions that systematically work against the efforts of producers in developing countries to enter the rapidly growing markets for processed products.
- Finally, the three pillars of the AoA are interlinked. Many developing countries will resist reducing their tariffs as long as their farmers must compete with subsidized production from other countries.