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SINK OR SWIM?
ASSESSING THE IMPACT OF
AGRICULTURAL TRADE LIBERALISATION
ON SMALL ISLAND DEVELOPING STATES

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AGRICULTURAL LIBERALISATION—A DOUBLE-EDGED SWORD

Small island developing states[1] face a number of structural problems that make them less competitive in agricultural trade than many other developing countries. The United Nations, and in particular UNCTAD, has been studying the problems of developing island economies since the 1970s with a view to sensitising the international community to the distinctive needs of these countries, and more recently, to their specific vulnerability (Encontre 1999).[2]

To a greater extent than in most other developing economies—and notably as a result of acute limitations in the resource base and domestic market opportunities available to small island developing states—the magnitude, structure and variability of trade constitutes the most important factors affecting the socioeconomic performance and development capacity of small island developing states. On average, the ratio of merchandise imports to GDP is 47 per cent higher in small island developing economies than in other small economies, while the ratio of their agricultural trade (exports and imports combined) to GDP is the highest among all countries. Whilst larger countries can count on both their domestic and international markets to foster economic growth, small island developing economies have to rely on their export markets as the only avenue for reaping the benefits of economies of scale and capital accumulation (Streeten 1993).

The constraints faced by small island developing economies are well documented.[3] Factors such as small size, insularity and remoteness, and problems associated with the local environment all impose a burden on small island states in achieving efficiency in production (Briguglio 1995). Because of their small land base and population, they have limited ability to exploit economies of scale in agricultural production. Land scarcity, in particular, is a binding constraint on agricultural production, making small island developing economies highly dependent on food imports. They are net agricultural importers and depend on a small number of agricultural exports to pay for their food import bill.

Similarly, small size restricts developing economies' capacity to diversify exports. The need to secure certain scale economies in production, distribution and other economic activities—together with the possibility of taking advantage of some export market opportunities—have, to varying degrees, led small island developing economies to specialise in a narrow range of agricultural products, thus exposing them to the instabilities of world markets.

Insularity and remoteness also give rise to problems associated with transportation of agricultural imports and exports. Small island states tend to import and export fragmented cargoes of agricultural products because they do not have the flexibility and convenience of road transport in handling small shipments, leading to higher shipping costs per unit. Additional costs also arise in instances where indivisible and costly public goods are needed to support agricultural production. Given the limited production involved, this process is bound to be particularly expensive.

Finally, environmental degradation (as well as susceptibility to natural disasters) and resource depletion may have serious implications for the agriculture of small island developing economies. The depletion of arable land from economic development has had a disproportionate effect on agricultural production for these states due to their size. Limited fresh water and poor water management—along with population pressures and an expanding tourism industry—have led to water scarcity, in turn jeopardising agricultural production.

Offsetting these inherent disadvantages, to some extent, are various preferential market access arrangements enjoyed by many small island developing states. These arrangements provide duty free access into specific developed markets such as the EU market for sugar.

Liberalisation is a double-edged sword for small island developing economies. Maintaining and obtaining market access is very important for trade dependent economies. On the other hand, liberalisation also provides additional competition, particularly if preferential access is eroded. While some small island developing economies will swim with the tide of liberalisation, others will need help to adjust. Against this background, the objective of this study is two-fold: first, to examine the pattern of small island developing economies' agricultural trade in the world market; and, second, to provide a quantitative assessment of the likely impacts of continued multilateral agricultural liberalisation on small island developing economies, using UNCTAD's Agricultural Trade Policy Simulation Model (ATPSM).

This chapter looks at the main characteristics of the small island developing economies' agricultural sector, focusing on trade flows and constraints hampering their competitiveness in agriculture. An overview of the preferential trading arrangements available to small island developing economies in their main markets and the actual importance of these schemes for these economies' exports is also provided. Additionally, a quantitative assessment is carried out using the Agricultural Trade Policy Simulation Model of a number of scenarios derived from 'modalities' being discussed in the ongoing WTO negotiations on agriculture. The simulations show the potential impact of liberalisation on prices, exports, government revenues, quota rents and overall welfare. While small island developing economies as a whole may be worse off under certain assumptions, policies to improve their position are examined.

SMALL ISLAND DEVELOPING ECONOMIES AND AGRICULTURAL TRADE

The agricultural sector remains the backbone of the economies of many small island states. It is characterised by a combination of large-scale commercial cash crops and a relatively small sector of food-producing crops for local consumption. The most important food crops grown are starchy staples, such as root and tuber crops, although rapid urbanisation has led to these staples being replaced by imported cereals (FAO 1999a).

Trade patterns

The agricultural trade balance of selected small island developing economies is shown in Table 4.1. The import–export ratio differs greatly between small

island developing economies (see Annexes), but as a group, these economies are net agricultural importers—for every US$1 exported, developing island economies import US$1.10. Atlantic Ocean small island developing economies have the highest import-to-export ratio, while Pacific Ocean developing economies are net agricultural exporters.

Table 4.2 provides the top five agricultural import/export products by the degree of product concentration in the agricultural trade of small island developing economies.

Small island developing economies import a wide variety of agricultural products—particularly cereals, meats, dairy products, animal and vegetable fats—which consume 20 per cent of total export earnings. For some small island developing economies, their agricultural import bill exceeds total export revenue. The agricultural import bill of Cape Verde, for example, is 240 per cent of total export revenue; while the import bills of Comoros, Haiti and Tuvalu are 197 per cent, 117 per cent and 109 per cent of export revenue respectively.

Table 4.3 compares the relative importance of agricultural trade in small island developing economies with its importance in other developed, developing, and least developed economies. As exporters, small island developing economies' agricultural exports are concentrated on a number of products, including raw cane sugar, coffee, cocoa and coconut. In many small

Table 4.1   Agricultural trade balance (average for the period 1996–2000)

| | Ratio of | Share (%) of agricultural | | |
| | ag. imports | imports in | exports in | imports in |
SIDS regions	to ag. exports	total imports	total exports	total exports
Africa	1.4	21	21	29
Caribbean	1.3	16	18	24
Pacific	0.6	18	23	14
All SIDSs	1.2	16	19	23

Notes: Africa: Cape Verde, Comoros, Maldives, Mauritius, the Seychelles, and Sao Tomé and Principe; Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago; Pacific: Cook Islands, Fiji, Kiribati, Papua New Guinea, Western Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.
Source: FAOStat <http://www.fao.org/waicent/portal/statistics_en.asp>; UNSD Comtrade <http://unstats.un.org/unsd/comtrade>.

Table 4.2   Top five agricultural imports and exports, 1996–2000 (average)

	Import Rank	Product code	Product description	% of total ag. imports	Export rank	Product code	Product description	% of total ag. exports
Africa	1.	04	Dairy produce and birds' eggs	15	1.	170111	Cane sugar	83
	2.	10	Cereals	11	2.	010600	Other live animals	2
	3.	02	Meat and edible meat, meat offal	8	3.	170310	Cane molasses	1
	4.	15	Animal or vegetable fats	10	4.	180100	Cocoa beans, whole or broken	1
	5.	22	Beverages, spirits and vinegar	9	5.	090500	Vanilla	1
			Total	53			**Total**	89
Caribbean	1.	10	Cereals	20	1.	170111	Cane sugar	35
	2.	04	Dairy produce and birds' eggs	11	2.	240210	Cigars, cheroots and cigarillos	12
	3.	15	Animal or vegetable fats	8	3.	220840	Rum and tafia	11
	4.	22	Beverages, spirits and vinegar	7	4.	080300	Bananas, including plantains	8
	5.	02	Meat and edible meat, meat offal	7	5.	090111	Coffee, not roasted	4
			Total	53			**Total**	70
Pacific	1.	02	Meat and edible meat, meat offal	24	1.	090111	Coffee, not roasted	24
	2.	04	Dairy produce and birds' eggs	11	2.	170111	Cane sugar	20
	3.	21	Misc. edible preparations	8	3.	151110	Palm oil	18
	4.	15	Animal and vegetable fats	8	4.	120300	Copra	10
	5.	10	Cereals	7	5.	180100	Cocoa beans, whole or broken	8
			Total	57			**Total**	80
All SIDs	1.	10	Cereals	18	1.	170111	Cane sugar	37
	2.	04	Dairy produce and birds' eggs	12	2.	240210	Cigars, cheroots and cigarillos	9
	3.	02	Meat and edible meat, meat offal	9	3.	220840	Rum and tafia	8
	4.	15	Animal or vegetable fats	8	4.	090111	Coffee, not roasted	8
	5.	22	Beverages, spirits and vinegar	7	5.	080300	Bananas, including plantains	6
			Total	54			**Total**	68

Notes: Africa: Cape Verde, Comoros, Maldives, Mauritius, the Seychelles, and Sao Tomé and Principe. Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, and Trinidad and Tobago. Pacific: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Western Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.
Source: UNSD COMTRADE <http://unstats.un.org/unsd/comtrade>.

Figure 4.1   Small island developing economies—main agricultural exports as per cent of total agricultural exports, 2000 (per cent)
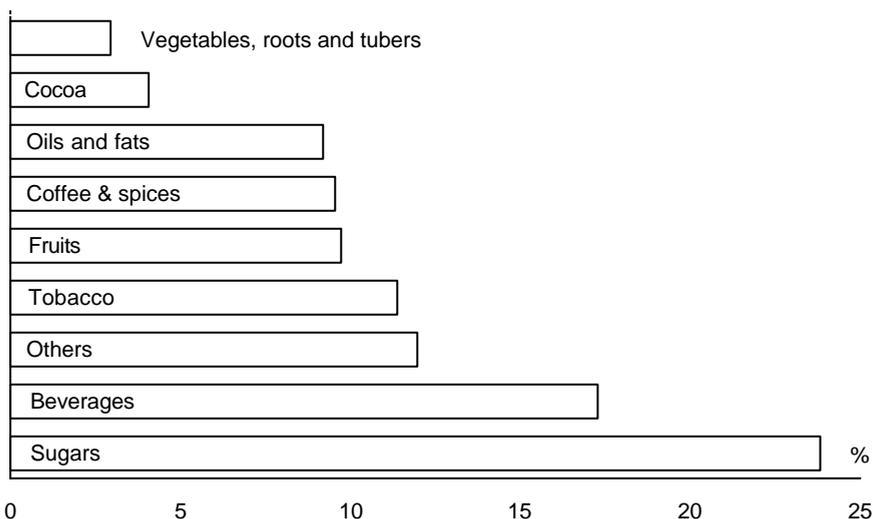
island economies, these few agricultural products are the main source of export earnings (see Figure 4.1). On average, agricultural exports (imports) by small island developing economies account for 24 per cent (14 per cent) of their total merchandise exports (imports), showing a considerably higher dependence on the agricultural sector than the developing economy average. In fact, the trade pattern of small island economies is remarkably similar to that of least developed economies. In the case of Sao Tomé and Principe, over 90 per cent of agricultural export earnings are derived from cocoa alone.

Further increasing their exposure to external shocks, small island developing economies' agricultural exports also show a concentration of destinations. As shown in Table 4.4, the European Union receives more than half of the total small island economies' agricultural exports. Accounting for 87 per cent of their agricultural exports, it is the most important market for African small island developing economies. Pacific small island developing economies (primarily Fiji and Papua New Guinea) export around 65 per cent of their agricultural products to the European Union.

Table 4.3   Importance of agricultural trade, 2000

Country groups	Agricultural exports in total exports %	Agricultural imports in total imports %	Imports/ exports ratio in agriculture	Agricultural exports/GDP (1999)[a] %	Agricultural imports/GDP (1999)[a] %
Developed	6.8	6.5	1.1	1.1	2.9
Developing (exc. LDCs)	7.2	6.7	0.98	2.7	7.0
LDCs	31.4	16.4	1.1	3.7	7.4
SIDS[b]	24.0	14.0	2.5	7.4	14.7

Notes: [a] Data on GDP only available for selected countries. Trade information from UN COMTRADE. GDP data are taken from the World Bank's World Development Indicators.
[b] SIDS for which trade data was available to compile this table include: Bahamas, Barbados, Comoros, Dominica, Fiji, Papua New Guinea, Mauritius, Grenada, Jamaica, Maldives, Saint Vincent and the Grenadines, Saint Lucia, Saint Kitts and Nevis, and Trinidad and Tobago.
Source: UNSD COMTRADE <http://unstats.un.org/unsd/comtrade>.

The United States and Canada are also important markets, though to a much lesser extent than the European Union, receiving 29 per cent of the small island developing economies' agricultural exports. The Caribbean islands sell up to 40 per cent of their agricultural exports to these markets, ranging from 50 per cent in the case of Jamaica to 20 per cent for other smaller Caribbean islands.

Japan captures only 3 per cent of total small island developing economies' agricultural exports, but it has become an important market for the Pacific island economies, absorbing more than 6 per cent of their exports. This figure is substantially greater than the small island developing economies' exports to Australia and New Zealand combined (despite the existence of a regional trade agreement, the South Pacific Regional Trade and Economic Cooperation Agreement, between most Pacific small island developing states and these two countries); Mexico; or the whole of the Southeast Asian region.

Preferential market access for small island developing economies

The high geographical concentration of small island developing economies' exports in the European Union and the United States, coupled with a high level of product specialisation, is probably due to the provision of non-reciprocal preferential market access to their products, stemming from historical trade relationships with these countries.

Preferential market access—in terms of tariff advantages and/or preferential quotas—are important for small island developing economies' agricultural

Table 4.4   Concentration of small island developing economies'
             agricultural trade, 2000 (per cent)

|	All SIDS	African SIDS	Caribbean SIDS	Pacific SIDS
European Union	52.1	87.1	41.6	65.0
United States	27.1	5.2	37.6	8.2
Canada	1.6	0.8	2.3	0.1
Japan	3.1	1.8	2.4	5.8
Australia/New Zealand	0.7	0.1	0.3	2.1
Mexico	0.5	0.1	0.8	0.0
Southeast Asia	2.6	2.0	0.3	9.4
Others	12.0	2.8	14.4	9.4
Total	100.0	10.90	65.37	23.73

exporters for two reasons. First, a preferential margin may provide substantial 'quota rents' to small island exporters. Second, preferential margins, where substantial, can compensate for a general lack of price competitiveness of agricultural exports from small island economies *vis-à-vis* low-cost exporters competing in the same markets.

This section provides an overview of preferential market access granted by the Quad countries to small island developing economies' agricultural exports, and the values of such preferences.

European Union. Being the largest market for the small island developing economies' agricultural exports, the European Union grants two preferential trading arrangements that are particularly important for small island developing economies. That is, the EU/ACP Cotonou Partnership Agreement,[4] signed in 2000 between the European Union and 77 African, Caribbean and Pacific States (31 of the 77 ACP countries are small island developing states);[5] and the 'everything but arms' initiative in favour of products originating in least developed economies (10 of the 49 least developed economies are small island developing economies) under the aegis of the EU scheme of Generalised System of Preferences.

The Cotonou Partnership Agreement, which provides for an eight-year rollover of the previous trade preferences granted under Lomé, grants small island developing economies' beneficiaries with duty-free access for most of their agricultural products.[6] For small island developing economies, particularly important are the three protocols on bananas (affecting mostly the Windward Islands), sugar (Fiji, Mauritius, Barbados, Jamaica and Trinidad and Tobago)

Figure 4.2   Small island developing economies—destinations of agricultural exports, 2000
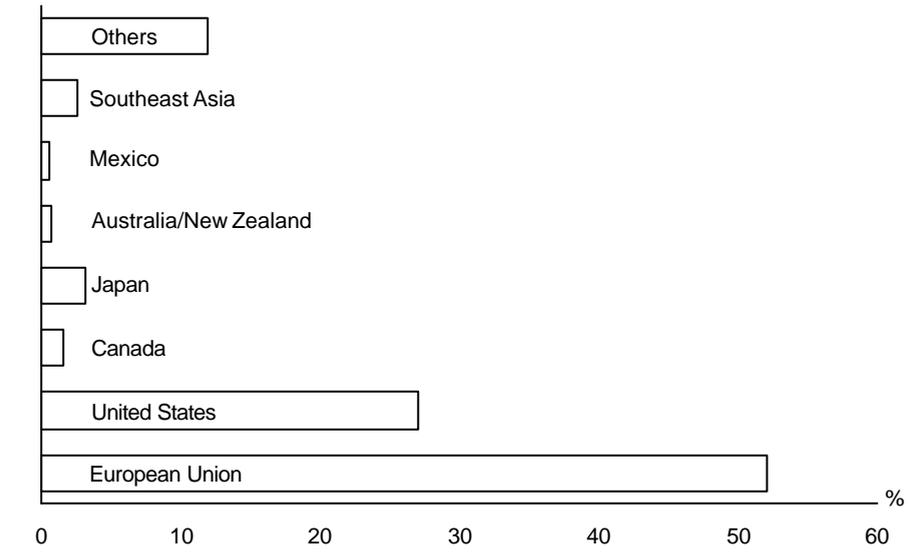
and rum (Caribbean small island developing states)—those products alone account for 69 per cent of small island developing economies' total exports to the European Union.

The Cotonou Agreement creates a considerable level of preferential tariff margin not only over applied most-favoured nation (MFN) rates, but also over most Generalised System of Preferences rates excluding the 'everything but arms' initiative. In 2000, for those products whose average MFN rates were above 20 per cent (accounting for almost half of small island developing economies' exports), small island developing economies' agricultural exports to the European Union received preferential margins of 25 percentage points against MFN rates and 15 percentage points against Generalised System of Preferences rates.

The 'everything but arms' initiative provides least developed economies with a duty-free treatment for all agricultural products (except bananas, rice and sugar until 2007), including very sensitive products such as beef, dairy products, fruit and vegetables (fresh as well as processed), cereals, starch, vegetable oils, confectionery, pasta and alcoholic beverages.[7]

For those least developed small island economies, the 'everything but arms' initiative has now made the EU Generalised System of Preferences a more favourable scheme than the Cotonou preferences in terms of tariff treatment, product coverage and preferential tariff margins. The initiative has also imparted greater stability to 'everything but arms'–Generalised System of Preferences for least developed economies, as the Euopean Union undertook to maintain this special preferential treatment for an unlimited period of time, exempting such treatment from the periodical reviews of the basic Generalised System of Preferences scheme.

United States. The United States recently renewed its Generalised System of Preferences program (applicable until 2006), which provides duty-free access for 5000 tariff line items to over 100 beneficiary countries and territories. The program covers agricultural and fishery products that are not otherwise duty-free, or are subject to tariff quotas/ceilings. An additional 1783 lines are added to the list of eligible products for recipients in least developed economies. The recently approved USA Trade and Development Act of 2000 has expanded the preferences granted to Sub-Saharan Africa under the African Growth and Opportunity Act,[8] as well as to the Caribbean Basin under the Caribbean Basin Trade Partnership Act.

The African Growth and Opportunity Act beneficiary countries (including small island economies such as Cape Verde, Sao Tome and Principe, Mauritius and Seychelles) now receive a 'super Generalised System of Preferences'[9]—duty-free access for a wider range of products than the 'normal' Generalised System of Preferences program.[10]

To 24 beneficiary countries of the Caribbean Basin Initiative,[11]—most of which are small island developing economies—the Caribbean Basin under the Caribbean Basin Trade Partnership Act provides trade preferences similar to those given under the African Growth and Opportunity Act. It also provides North American Free Trade Agreement (NAFTA)-equivalent tariff treatment for certain items previously excluded from duty-free treatment under the Caribbean Basin program (such as canned tuna). The NAFTA-parity is provided with a view to offsetting in part the negative effects in term of trade and investments diversion experienced by these countries since the entry of Mexico into NAFTA.[12]

Under these preferential schemes, approximately 60 per cent of small island developing economies' exports (which include products such as cigars, beer,

alcohol and certain food preparations) enjoy preferential margins of 4.2 percentage points on average over corresponding MFN rates. The preferential tariff margin increases as the MFN tariff increases, but these large tariff margins apply only to a small share (6 per cent) of the total small island developing economies' agricultural exports. It was not possible to calculate preferential margins for some 14 per cent of small island developing economies' exports to the United States, largely sugar, as MFN tariffs are given in non-*ad valorem* technical rates and *ad valorem* equivalents could not be calculated.[13]

Canada. Canada provides two distinct preferential market access regimes that are of immediate relevance to small island developing economies' agricultural exports: the Generalised Preferential Tariff (GPT) and the CARIBCAN or Commonwealth Caribbean Countries Tariff. The Generalised Preferential Tariff, which is equivalent to the Generalised System of Preferences, grants reduced tariff rates or duty-free access to 184 beneficiary countries and territories, including all small island developing economies. In addition to the general Generalised Preferential Tariff, least developed economies receive duty-free market access to an additional 570 tariff lines.

The CARIBCAN—a program providing the Commonwealth Carribean with economic and trade development assistance—provides most Caribbean developing economies[14] with duty-free market access for a large number of products, including all agricultural products. However, preferential tariff margins on those products are generally low as corresponding MFN tariffs are already low (duties on more than 53 per cent of small island developing states agricultural exports are already zero). As these exports consist mainly of fresh fruits and vegetables, the Caribbean exporters seem to benefit more from a geographical proximity than from the tariff preferences they receive. Thus, for the majority of agricultural exports (some 94 per cent, including those exports already receiving MFN duty free), small island developing economies receive 'empty preferences', either because of zero MFN duties or because similar preferential treatment is given to other developing countries.

Japan. Trade preferences for small island developing economies (as for other developing economies) are made available under the Japanese Generalised System of Preferences scheme, which was reviewed in 2002 and extended until 31 March 2011.[15] The extent of the product coverage and tariff treatment provided to beneficiary countries varies considerably among agricultural products.

Preferential Generalised System of Preferences tariffs applicable to developing economies range from duty-free to a 20 per cent reduction in MFN duties. Least developed economies enjoy duty-free entry for all products covered under the scheme, plus an additional list of products. Preferences to least developed economies have been improved by increasing the number of tariff items for duty-free and quota-free access specifically available to all 49 least developed economies' exports as long as they request them.[16]

Despite the existence of the Generalised System of Preferences scheme, the overwhelming majority of small island developing economies' agricultural exports enter the Japanese market on a MFN basis—66.3 per cent of small island developing economies' exports, most importantly coffee and copra, enter Japan at zero MFN rates, while for another 31.5 per cent of exports (including sugar, pumpkins and rum), preferences are simply not available. This implies that the impact of further agricultural trade liberalisation, while being rather limited on small island developing economies' preferences, might result in new trade opportunities for all those developing-economy products still affected by high MFN duties.

Liberalisation and the erosion of preferences

Further liberalisation in agriculture will affect the value of preferential market access currently provided to small island developing economies. The impact will depend on a number of factors. First, the impact of the erosion of preferences depends on the initial insurability provided by the preferential treatment *vis-à-vis* competitions with other exporters. In terms of a geographical grouping, further MFN tariff cuts may result in much faster erosion, if not elimination, of preferential tariff margins available to the Caribbean island economies than those to other island developing economies, as the preferences received by the Caribbean small island developing states on some 70 per cent of their exports are empty. However, the impact of the preference erosion on the trade flows of the Caribbean island developing economies would be, on average, less dramatic as they are already exposed to a certain degree of competition with other developing country exporters either on a MFN basis or within a Generalised System of Preferences scheme of an importing country. Conversely, the African small island developing economies enjoy the highest level of preferences in terms of preferential margins and product coverage, and are thus subject to lower levels of preference erosion following MFN tariff cuts. They will, however, lose quota rents by the reduction of outquota tariffs. Further, should these

preferences be considerably reduced as a result of the negotiations on agriculture—or be legally challenged by other WTO members[17]—adjustment costs arising from the preference erosion to these preference-dependent countries may be significant, as they have previously been sheltered against world competition.

Second, whether preferential tariffs are 'linked' to, or 'de-linked' from, MFN rates, may result in different impacts upon the values of preferences after a MFN tariff cut. In the case of the African, Carribean and Pacific–EU preferences, there are still a number of products whose preferences are expressed as a percentage of the MFN rate (and thus linked to these rates). If the initial MFN rates are sufficiently high, further MFN cuts would reduce the nominal preferential margins of the African, Carribean and Pacific preference only slightly. Beneficiaries of such preferences are more likely to retain tariff advantages not only over MFN tariffs but also over other preferences providing less extensive degree of market access treatment. This might be the case with various palm products, cigars, fruits and vegetables (such as oranges, onion, garlic, carrots, peaches and cabbages), although small island developing economies' exports of the latter items are currently limited. Where preferences to small island developing economies are de-linked from the corresponding MFN rates as in the case of the US Generalised System of Preferences scheme, the only difference among various preferential schemes is the extent of the product coverage rather than the preferential margins provided. In this case, MFN tariff cuts will inevitably reduce small island developing economies' preferential margins.

Third, the recent initiatives undertaken to provide better market access for least developed economies and countries in the Sub-Saharan African region have yet to fully materialise. As additional and substantial preferential margins for certain small island developing economies are created, the negative impact in terms of preferential margins coming from further trade liberalisation might be somehow mitigated.

Finally, current preferences, although wide, could still be expanded. For example, in the case of the European Union, the African, Carribean and Pacific–EU preferences are quite limited for agricultural and processed products that are subject to the Common Organisation of the Market (listed in the 'Joint Declaration concerning agricultural products')[18] and for products that are subject to specific rules under the Common Agricultural Policy. Many of those sensitive products (namely meat and diary products, cheese, tomatoes,

mandarins and some cereals) are subject to a combined tariff which is made up of an *ad valorem* component and a specific-rate component. Preferential market access for those products normally takes the form of an elimination of the *ad valorem* component and a reduced level of a specific-rate component, whose *ad valorem* equivalent can go up as high as 80 per cent.

Similarly, for certain categories of processed agricultural products of the 'Harmonised System' chapter 4 (milk and milk products), 17 (sugar and sugar confectionery), 18 (cocoa and cocoa preparations), 19 (processed foodstuffs), 20 (beverages) and 21 (miscellaneous edible preparations), the European Union maintains a system of a technical tariff which includes the so-called agricultural component. That is, a combination of *ad valorem* and specific duties that may vary according to the presence in different percentages or quantities of certain ingredients such as sugar, starches or glucose and milk fat or proteins contained in the final products. However, it is largely the specific component that constitutes the bulk of the protection and not the *ad valorem* part.

In addition, around 15 products, mainly fruits and vegetables as well as some processed products like fruit juices, are subject to the entry price system.[19] Neither African, Carribean and Pacific nor Generalised System of Preferences beneficiary countries are granted special preferences for the products subject to the entry price system (Article 1 of Annex V of the ACP–EU Partnership Agreement). The Cotonou Agreement foresees amelioration of the African, Carribean and Pacific preferences (Article 1 of Annex V of the ACP–EU Partnership Agreement) during the transitional period, and the European Commission has already tabled a proposal for improving the current market access conditions given to the African, Carribean and Pacific countries.[20]

SURVIVING AGRICULTURAL LIBERALISATION: A QUANTITATIVE ASSESSMENT

It is anticipated that the stalled WTO negotiations on agriculture may eventually result in further reductions, if not elimination, of tariffs and trade-distorting subsidies provided to agricultural products in the world. When this occurs, the distribution of the welfare gains will be uneven among regions, with many losers amongst the winners. A study by Vanzetti and Peters (2003), using the same Agricultural Trade Policy Simulation Model as used here, shows that 110–20 of 161 countries modelled lose from partial global agricultural liberalisation. The study suggests that welfare losses result from rising world

prices, loss of quota rents and the absence of significant allocative efficiency gains because the gap between bound and applied tariff rates means that little actual reform is undertaken in many countries. The rising world prices may benefit some countries, depending on whether countries are net importers or exporters of the products for which prices rise.

Agricultural liberalisation raises world prices of temperate agricultural products relative to prices of tropical products, leading to an increase in food import bills for those small island developing economies that import temperate products and export a narrow range of tropical products. At the same time, as MFN tariff cuts reduce the margin of preference, importers are likely to take supplies from low cost countries. For example, assuming exporters of sugar to the European Union are receiving EU prices, any lowering of those prices will make other exporters—such as Brazil—more competitive.

This section examines likely impacts of agricultural trade liberalisation on small island developing states under different liberalisation scenarios, with a view to identifying liberalisation modalities that would at least offset possible negative impacts from liberalisation, if not creating welfare gains.

The Agricultural Trade Policy Simulation Model framework

To assess the potential impacts of agricultural liberalisation on small island developing economies, UNCTAD's Agricultural Trade Policy Simulation Model Version 2.2 is used in this study.[21] The model is a partial equilibrium model that can be used to evaluate agricultural trade policy changes in the main areas covered by the Uruguay Round Agreements Act. These areas include market access, export subsidies and domestic support. The model distinguishes between bound and applied tariffs, as well as between inquota and outquota tariffs on products under tariff rate quotas. It can be used to assess the impact of policy changes on quota rents forgone and received. As quota rents are an important contributor to small island developing economies' agriculture, this feature of the model is desirable in applications discussed here.

Unlike a general equilibrium model, the Agricultural Trade Policy Simulation Model is confined to the agricultural sector and does not account for interactions with other sectors of the economy. As a result, capital and labour used in agricultural production cannot be reallocated across non-agricultural sectors in response to a shock. It is assumed that this limitation will have little bearing on the empirical results since small island developing economies have few alternative sectors for resources to shift into from agriculture.

The Agricultural Trade Policy Simulation Model can simulate and evaluate the various agricultural trade policy changes that may be suggested for or in the WTO negotiations on agriculture, such as

- most-favoured nation (bound or applied) and/or tariff rate quotas inquota tariff cuts
- change in tariff rate quota quantities
- reductions in trade-distorting domestic support (such as market price support)
- reductions in export subsidies
- different percentage changes in all the above policies applied to selected countries or country groups and commodities.

The Agricultural Trade Policy Simulation Model produces five categories of economic estimates: volumes in production, consumption, imports and exports; trade (exports, imports and trade balance); welfare (producer surplus, consumer surplus and net government revenue); prices (domestic and world); and tariff quota rents. The model is applied to 161 countries, including 25 of the 32 small island developing economy members[22] for the 36 agricultural commodities shown in Table 4.5.

The model is both simple and complex. Its simplicity derives from linear demand and supply equations. The complexity follows from the policy detail in the model. For this reason it is necessary to explain in the next section how the model works. The initial data, particularly on the distribution of rents, are examined next.

Quota rents. The Uruguay Round led to the establishment of tariff rate quotas—a two-tier tariff system based on import quotas. Imports below the quota level are levied at rates that are substantially lower than the corresponding out-of-quota (or outquota) MFN tariff rates. During the Uruguay Round, the quota quantities were either set as 3 per cent growing to 5 per cent of the level of domestic consumption observed during the 1986–1988 base period, or they were based on historical trade flows. Not all countries utilise tariff rate quotas—only 43 WTO member countries established the total of over 1370 tariff rate quotas.

The introduction of a two-tier tariff system created a new category of economic effects, the tariff quota rents. A quota rent is the difference between the outquota and inquota tariffs times the value of the quota. This is illustrated in Figure 4.3. Assuming the quota, q, is full and the domestic price reflects the

higher outquota tariff, *t2*, exporters with quota can supply goods over the lower tariff, *t1*, and receive the higher domestic price. Once the quota is filled, outquota imports are taxed at the higher tariff rate and no further rents are generated. Clearly, reduction in outquota tariffs reduces the quota rent.

An important issue is the distribution of the rents between exporters, processors, distributors, taxpayers and consumers, on which the effects of liberalisation largely depend. Rents may be captured by the government by auctioning rights to import or export, but often they accrue to other groups depending on the means by which quotas are allocated. There is, however, no one uniform method of administering the tariff rate quotas, thus there is no general rule on how quota rents and tariff revenues will change with trade liberalisation. In this study, it is assumed that, where quotas are based on a historical allocation, all the quota rents go to the exporter. The method of allocation has been tabulated by the WTO (WTO 2002) and incorporated into the Agricultural Trade Policy Simulation Model. This method applies to the markets for sugar and bananas, which account for 99 per cent of the rents captured by small island developing economies. The rents not captured by exporters are assumed to accrue eventually to government revenue in the importing country, instead of being transferred to consumers in the importing countries.

Table 4.5   Commodity coverage in the Agricultural Trade Policy Simulation Model

01100 Bovine meat	05440 Tomatoes
01210 Sheep meat	05700 Non-tropical Fruits
01220 Pig meat	05710 Citrus fruits
01230 Poultry	05730 Bananas
02212 Milk, fresh	05790 Other tropical fruits
02222 Milk, conc.	07110 Coffee green bags
02300 Butter	07120 Coffee roasted
02400 Cheese	07131 Coffee extracts
04100 Wheat	07210 Cocoa beans
04400 Maize	07240 Cocoa butter
04530 Sorghum	07220 Cocoa powder
04300 Barley	07300 Chocolate
04200 Rice	07410 Tea
06100 Sugar	12100 Tobacco leaves
22100 Oil seeds	12210 Cigars
42000 Vegetable oils	12220 Cigarettes
05420 Pulses	12230 Other tobacco - mfr.
05480 Roots & tubers	26300 Cotton linters

To estimate the actual size of a quota rent, it is necessary to have observations of global quotas, bilateral quotas, inquota and outquota tariff rates, world market prices and imports. The size of the global quotas (that is, the total level of imports at the lower tariff level) are obtained from annual notifications made to the WTO by tariff rate quota-using countries, but these notifications do not always provide a breakdown of quotas among different exporting countries. The model uses bilateral trade flows to estimate the distribution of global quotas among countries.[23] A further assumption for this analysis is that within-quota imports from small island developing economies are duty free. That is, the inquota tariff rate is not applied, implying that the initial rent accruing to small island developing economies is inflated.

The final key assumption relates to the quota fill rate (that is, the ratio of actual imports to the total tariff rate quota quantity of the product concerned). Ideally, the quota fill rate should determine the domestic price so that if the quota is unfilled, domestic prices should be determined by the inquota tariffs,

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Figure 4.3   Quota rents with a binding out-of-quota tariff

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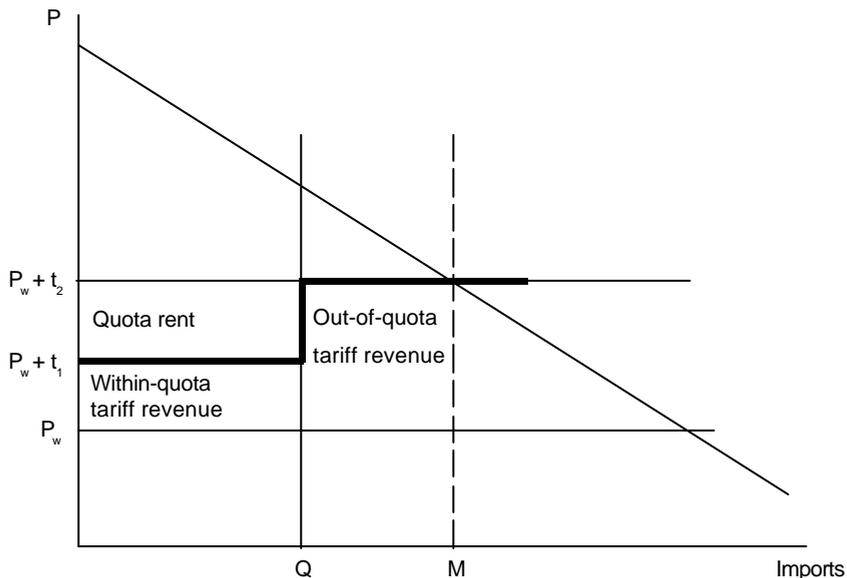
and prices should be high only if the quota is filled or overfilled. However, it is often observed that quotas are unfilled but domestic prices are nonetheless high. This may be because administrative constraints prevent the quotas being filled. More to the point, countries with high domestic prices are unlikely to be prepared to see them eroded by a shift in the supply of imports. As a result, the outquota tariffs (or possibly the applied tariffs) determine the domestic market price. This implies that global quotas should not exceed imports, and quotas are reduced to the level of imports where the data suggests this is the necessary. The calculation of tariff revenues and rents in the model is based on these assumptions.

The assumptions made above imply that changes in inquota tariffs and tariff rate quota quantities will not have price and production quantity effects, as these instruments are not binding. They do, however, change the distribution of rents.

Estimates of initial quota rents accruing to small island developing economies may be overstated because of the assumptions on inquota tariff rates and fill rates, but understated because of the method of allocating rent between countries. The calculation of initial rents affects the estimates of potential losses from liberalisation—the higher the rent, the greater the potential losses.

Data. Data on production quantity (2000) are compiled from the Food and Agriculture Organization (FAO) supply utilisation accounts (see FAOSTAT). Price data are from the FAO Yearbooks, using an average of the figures for 1996–98. Parameters on elasticities and feedshares are also provided by FAO. These are based on a trawling of the literature and are not econometrically estimated specifically for the model. Inquota tariffs, outquota tariffs and the size of the global quotas as notified to the WTO are obtained from the Agricultural Market Access Database 24 and aggregated to the Agricultural Trade Policy Simulation Model commodity level using a simple average wherever trade exists. Specific tariffs are converted to *ad valorem* equivalents based on unit values calculated for each country at the 'Harmonized System' six-digit level. Data on trade-distorting domestic support and export subsidies are derived from the notifications submitted to the WTO. Bilateral trade flow data for 1995, which were used to allocate global quotas to individual exporting countries, are provided by UNCTAD. The UNCTAD TRAINS database is a source of applied tariff information that determines whether cuts in bound rates are effective.

Current protection levels and rents

A good indicator of levels of border protection is global tariff revenues and rents, as these are the product of the level of protection and the trade flows. The base period data of these global indicators are shown in the first two columns in Table 4.6. Across commodities, temperate goods are subject to relatively higher level of border protection in developed economies than tropical products (with the notable exception of sugar and bananas). Developing economies, however, may levy substantial tariffs on tropical products.

Also shown in the table are the initial values of three variables important to small island developing economies: tariff revenues, export revenues and rent received. It is immediately apparent that sugar is the key commodity of small island developing economies, capturing more than 50 per cent of the total export revenues and 90 per cent of rents received. Sugar is followed in importance by vegetable oils (copra), coffee, cocoa and bananas. The bulk of the small island developing economies' export revenues and virtually all the quota rent received emanates from the EU and the US sugar policies. The major supplier of the EU sugar imports (1.3 million tonnes) is Mauritius with a quota of 487,000 tonnes. The United States also imports 1.1 million tonnes of sugar under a quota from developing economies plus Australia, the only developed economy exporter of cane sugar. China has imports of 0.6 million tonnes, the bulk of it from Cuba, Thailand, India and Australia.

Multilateral trade liberalisation will influence the level of the three variables. Tariff revenues and rent received are most likely to be reduced, while export revenues may improve. The next section examines the extent of such impacts and how they vary according to different trade liberalisation scenarios.

Four alternative scenarios

Taking into account the proposals and discussions made so far during the ongoing WTO negotiations on agriculture, the following four scenarios were selected for examination

- 'Ambitious': across-the-board reductions in outquota (MFN) bound tariffs using the Swiss formula with a coefficient of 25, and total elimination of export subsidies and production-distorting domestic support.
- 'Conservative—the Uruguay Round approach': a 36 per cent cut in outquota bound tariffs, 36 per cent reductions in export subsidy spending and 20 per cent cut in trade-distorting domestic support in developed economies.

Table 4.6   Global distortions: revenues and rents by commodity (US$m)

	World tariff revenue	Rent forgone	SIDS tariff revenue	Export revenue	Rent received
Apples	1,104	30	8	-	-
Bananas	537	492	1	91	28
Barley	411	613	0	0	-
Bovine meat	2,913	1,051	7	4	-
Butter	367	253	10	-	-
Cheese	886	530	16	6	1
Chocolate	1,283	139	9	7	-
Cigarettes	27	-	-	51	-
Cigars	3,684	-	14	41	-
Citrus fruits	508	43	1	23	-
Cocoa beans	61	-	-	118	-
Cocoa butter	48	-	-	10	-
Cocoa powder	44	-	-	4	-
Coffee extracts	18	-	-	0	-
Coffee green	576	3	1	183	-
Coffee roasted	19	2	-	11	-
Cotton linters	287	30	-	-	-
Maize	2,406	2,369	10	-	-
Milk, conc.	864	648	36	2	-
Milk, fresh	-	-	-	1	-
Oilseeds	2,496	326	8	34	-
Other mfr tobacco	666	-	1	-	-
Other tropical fruits	246	1	-	18	-
Pigmeat	482	199	6	-	-
Poultry	2089	259	37	3	-
Pulses	368	1	8	1	-
Rice	692	972	85	3	-
Roots and tubers	103	-	5	7	-
Sheep meat	236	594	24	-	-
Sorghum	67	25	-	-	-
Sugar	1,736	906	35	1,110	276
Tea	365	1	1	15	-
Tobacco leaves	2,112	81	1	75	-
Tomatoes	181	38	-	-	-
Vegetable oils	4,286	204	41	273	-
Wheat	1,515	2,687	27	14	1
Total	33,682	12,499	394	2,106	307

Source: The Agricultural Trade Policy Simulation Model (ATPSM) database <http://www.unctad.org>.

Two-thirds of these reductions in developing economies and no reductions in least developed economies.
- 'Tariff-50': 50 per cent cut in outquota bound tariffs in all countries.
- 'Compensatory': the previous scenario, plus removal of all tariffs on all small island developing economies' exports.

The 'ambitious' scenario—consisting of elements that have been proposed to the WTO negotiations on agriculture by major agricultural exporters such as the United States and the Cairns Group members—will lead to substantial agricultural liberalisation. A 'Swiss Formula' is designed in such a way that it eliminates tariff peaks and substantially reduces tariff escalation.[25] A maximum coefficient of 25 (as proposed by the United States and the Cairns Group) sets an effective tariff ceiling at 25 per cent, and achieves very deep cuts indeed—under this approach, tariff rates of 100 per cent, 200 per cent and 300 per cent are reduced to 20 per cent, 22 per cent and 23 per cent respectively.

The 'conservative' approach is almost a replica of the liberalisation approach employed during the Uruguay Round. The only difference is that, in this scenario, a linear cut of 36 per cent applies to the tariffs across all products, unlike the actual Uruguay Round approach, where tariffs on sensitive commodities were reduced by at least 15 per cent so long as an average cut of 36 per cent across products was achieved.

The 'tariff-50' scenario focuses purely on the impact of tariff cuts. Reductions in MFN bound tariffs—putting aside proposals to make reductions from the applied tariffs—are likely to have the greatest impact on small island developing economies, through the erosion of preferences causing reductions in quota rents. This scenario is also a reasonable middle ground between the 'ambitious' and 'conservative' scenarios, and will serve as a benchmark for assessment of the impact from the following scenario.

The 'compensatory' scenario examines the elimination of all outquota (MFN) rates applicable to small island developing economies, which is equivalent to an expansion of tariff rate quotas only to these economies. As the quota rents are determined by the outquota tariff rates and the quota quantities, changes in either of these variables (for example, global reductions of MFN tariffs) may possibly be offset by changes in the others (for example, small island developing economy-specific expansion of tariff rate quotas).

Results

In order to interpret the outcome of the simulations, we need to take into account the following elements. First, reductions in outquota tariff rates do not necessarily mean that the gap between domestic and world prices is reduced by the amount of the cut in the bound rate. In cases where applied tariffs are below the bound outquota rates, a 50 per cent cut in the outquota tariffs may result in a less than 50 per cent cut, or even no change at all, in the applied rates. Second, EU sugar and dairy production is assumed not to be responsive to changes in prices due to the existence of the production quotas for those products.

Prices. The impact on world prices for the first three scenarios is shown in Table 4.7. The price changes are correlated with the level of distortions removed. This is why the 'ambitious' scenario shows relatively greater price rises on products that are subject to high levels of tariffs, trade-distorting domestic support and/or export subsidies (including dairy products and wheat) than the other two approaches. The model estimates similar levels of price changes for the 'conservative' and 'tariff-50' scenarios. As anticipated, the results show that prices of tropical products (such as sugar, copra oils and bananas) increase less than temperate products, which implies a decline in the terms of trade facing the majority of small island developing states.

While price rises are indicative of the level of distortions, of greater interest to policymakers in small island developing economies is the impact of liberalisation on export revenues, tariff revenues, changes in quota rents and overall welfare. The welfare impact is calculated based on the changes in consumer surplus, producer surplus, and government revenues. These estimates are shown for small island developing economies and for the world in Table 4.8.

Export revenues. The comparison of estimated export revenues across different scenarios suggests that export revenues increase in proportion to the level of market access improvement. The increase in global export revenues under the 'ambitious' scenario (US$40.2 billion) is almost four times greater than the estimated increase under the 'conservative' scenario.

Under the 'tariff-50'—or benchmark—scenario, export revenues to small island developing economies rise from US$2.1 billion to US$2.4 billion, an

Table 4.7   Impact on world commodity prices of alternative scenarios

	Ambitious %	Conservative %	Tariff-50 %
Bovine meat	8.4	2.9	3.0
Sheep meat	10.9	4.2	6.6
Pig meat	4.5	1.6	2.3
Poultry	7.2	1.8	3.7
Milk, fresh	−18.6	−4.2	2.9
Milk, conc.	11.4	1.5	2.1
Butter	19.7	6.0	5.4
Cheese	6.8	2.5	4.8
Wheat	13.3	4.5	2.3
Rice	3.1	1.0	1.6
Barley	2.5	0.6	1.4
Maize	4.0	1.3	2.3
Sorghum	0.8	0.3	0.4
Pulses	4.6	0.5	1.3
Tomatoes	3.1	1.6	2.3
Roots & tubers	3.5	1.0	2.6
Apples	3.9	1.9	3.2
Citrus fruits	1.5	0.7	1.2
Bananas	1.5	0.7	1.1
Other tropical fruits	3.8	1.1	2.2
Sugar	12.5	3.8	3.8
Coffee green	0.6	0.1	0.2
Coffee roasted	0.3	0.2	0.3
Coffee extracts	4.8	0.5	1.0
Cocoa beans	0.4	0.1	0.1
Cocoa powder	1.5	0.7	1.2
Cocoa butter	0.6	0.8	1.1
Chocolate	2.2	1.4	2.0
Tea	3.0	0.6	1.3
Tobacco leaves	3.9	1.4	2.6
Cigars	0.4	0.1	0.3
Cigarettes	0.1	0.0	0.1
Other mfr tobacco	0.2	0.1	0.1
Oilseeds	1.9	0.8	1.5
Cotton linters	1.3	0.3	0.5
Vegetable oils	8.0	1.2	1.6
Total*	5.5	1.7	2.1

Note: *Total is weighted by initial import values.
Source: Authors' model simulations based on the Agricultural Trade Policy Simulation Model <http://www.unctad.org>.

increase of US$190 million (or 9 per cent). Sugar (US$77 million), other tropical fruits (US$20 million), citrus (US$16 million) and bananas (US$16 million) are the major beneficiaries. This does not show changes in export revenues from the benchmark, due to the assumption that changes in quota rents alone do not affect the supply decisions of the producers of exported products concerned (hence the level of export quantity remains the same). This assumption is reasonable for small changes in quota rents.[26]

Tariff revenues. Tariff revenues are determined by the combination of the tariff rates, import quantities and import prices. The simulation results in Table 4.8 show a wide variation in the degree of changes in government revenue across different scenarios. Concerning government revenues at the global level, the 'ambitious' scenario will lead to smaller losses than the 'tariff-50' scenario because tariff revenues forgone are offset by reductions in domestic support and export subsidies. The continuation of spending on these government subsidies results in substantial losses in government revenues in the benchmark scenarios.

Looking at the 'compensatory' scenario, reducing tariffs on small island developing economies' out-of-quota exports involves losses in tariff revenues for importing countries equalling the gains in quota rents received by small island economy exporters. Importing government revenue losses are US$110 million over and above the US$5.22 billion in the benchmark scenario. The magnitude of a global loss in tariff revenues (or an increase in quota rents for small island developing economies, from US$181 million to US$72 million in Table 4.8) is determined by the degree of rent capture. These revenue losses effectively arise from transfers between taxpayers and producers and do not involve any efficiency gains or losses. Concerning small island developing economies, the benchmark scenario leads to a fall in tariff revenues from the estimated initial level of US$394 million to US$349 million, an 11 per cent reduction.

Quota rents. Global quota rents in the agricultural sector represented in the database are initially estimated to be around US$12.5 billion prior to any policy change. In total, small island developing economies receive US$307 million in the initial database, of which US$276 million is from sugar. The rents are reduced by US$181 million under the benchmark scenario, of which US$173 million can be attributed to sugar. Some US$29 million of this loss is

Table 4.8   Impact of alternative scenarios on key variables (US$m)

	Ambitious	Conservative	Tariff-50	Compensatory
Export revenue				
SIDS	466	161	190	190
World	44209	11218	23835	23835
Government revenue				
SIDS	−148	4.4	−44	−44
World	−3440	3241	−5216	−5326
Quota rents				
SIDS	−264	−145	−181	−72
World	−7297	−1504	−2763	−2654
Welfare				
SIDS	−217	−138	−151	−42
World	24051	8851	10833	10833

Source: Authors' model simulations based on the Agricultural Trade Policy Simulation Model
<http://www.unctad.org>.

offset by allocative efficiency gains (due to tariff reductions in small island developing economies themselves) and increased export prices (due to tariff reductions in other countries).

The 'compensatory' scenario results in a US$72 million loss in the quota rents transferred from the initial level, and US$109 million improvement on the benchmark result. That is to say, removing tariffs to all small island developing economies' exports within and out of quota (which is equivalent to increasing the size of global quotas to accommodate all small island developing states' exports) is not sufficient to offset the US$181 million losses in quota rents resulting from a 50 per cent cut in MFN tariffs in importing countries.

Welfare. Putting together the various changes in production, exports, tariff revenues and quota rents, the greater the degree of liberalisation, the greater are the welfare gains to the world as a whole (the 'compensatory' scenario does not change global welfare from the benchmark). A greater global welfare increase under the 'tariff-50' (benchmark) scenario than the 'conservative' scenario arises from gains by developing economies as a whole, as more substantial tariff cuts by developing economies under the benchmark case increase largely due to

consumer surplus increases in those economies. However, the impact of liberalisation on small island developing economies appears to be negative because of loss of quota rents and rising prices of imports.

Table 4.9 provides a breakdown of welfare impacts under each of the four scenarios across different groups of countries. Most groups gain more from deeper reform, but the picture is confused by the removal of export subsidies that raise the world price while providing allocative efficiency gains predominantly to the European Union. Least developed economies experience a welfare loss under the 'conservative' scenario due to a combination of higher import prices and the absence of efficiency gains from liberalisation (these economies are exempted from making reduction commitments), though they can make welfare gains in excess of US$900 million in other scenarios. Developing economy agricultural importers lose under the 'conservative' scenario for similar reasons. Providing compensation to small island developing economies does not make other developing economies worse, according to these estimates. However, this result is driven by the assumption that quotas are filled and therefore there is no trade diversion. The major cost of the compensation policy is borne by the developed economies that provide the compensation through extended preferential access, predominantly the European Union and the United States.

A breakdown of the welfare impact under the benchmark scenario for individual small island developing states by commodity is presented in Table 4.10. The largest welfare loss is anticipated to be by Mauritius, Jamaica and Fiji. The major losses by commodity occur in sugar (due to loss of quota rents) and wheat, dairy products and meat (due to increases in food import prices). The importance of quota rents to the welfare figures highlights the assumption about their distribution. In an alternative simulation—where all rents are assumed to accrue to importers—the welfare of small island developing economies under the benchmark scenario rises by US$30 million rather than falling by US$181 million.

Some limitations

The limitation in this analysis is the lack of knowledge of the distribution of quota rents. Small island developing economies' rents received are underestimated because quotas are allocated according to historical data that are biased by overquota exports. However, quota rents are overestimated due to the assumption

that quotas are effectively filled and that outquota or applied tariffs rather than inquota tariffs drive domestic prices. A final consideration is the assumption that producers don't respond to changes in rents, which further implies no trade diversion. These are reasonable for small policy changes but less so for elimination of tariffs. Preference erosion is expected to benefit low-cost producers through liberalisation of markets in which they had been excluded from preferential market access (Brazilian sugar in the EU market, for example). These limitations are unlikely to affect the overall results in this application because most of the quota rents accruing to small island developing economies derive from sugar exports, to which the concerns listed here are not so applicable.

CONCLUSIONS

In spite of the limitations listed above, several implications can be drawn from the results.

First, preferences provide significant benefits to some small island developing economies, and trade liberalisation will lead to some erosion of these preferences. This will have a significant impact in some cases, particularly for those small island developing economies currently enjoying quota rents. Sugar and banana producers are likely to be the sectors most affected. Yet, the magnitude of the overall impact depends on the chosen scenarios, the highest being in the 'Ambitious' scenario and the lowest in the 'Conservative' scenario.

Table 4.9   Impact on welfare of four scenarios

	Ambitious $m	Conservative $m	Tariff-50 $m	Compensatory $m
SIDS	−217	−138	−151	−42
European Union	9,027	4,471	2,838	2,745
United States	−564	599	506	494
Cairns Group	2,724	661	225	225
Developing importers[1]	4,249	−81	1,798	1,905
All developed	17,953	9,042	8,244	8,136
All developing[2]	5,180	−54	1,627	1,733
Least developed countries	917	−137	962	963
World	24,051	8,851	10,833	10,833

Notes: [1] Developing countries, excluding Cairns Group members. [2] Excludes least developed countries.
Source: Authors' model simulations based on the Agricultural Trade Policy Simulation Model, <http://www.unctad.org>.

Table 4.10   Welfare impacts by commodity group from 50 per cent tariff
reduction (US$m)

	Beverages	Cereals	Dairy	Fruit	Meat	Oilseeds	Sugar	Tobacco & cotton	Vegetables	Total
Barbados	−0.02	−0.22	−0.51	−0.08	−0.67	−0.12	−8.54	0.01	−0.04	−10.20
Cuba	−0.03	−6.87	−2.37	0.28	−3.19	−1.00	19.31	0.79	−0.57	6.36
Dominica	0.02	−0.03	−0.05	−0.77	−0.21	0.00	−0.02	−0.01	0.00	−1.07
Dominican Rep.	0.16	−4.90	−1.19	−1.49	20.86	−1.52	−1.74	1.24	0.13	11.55
Fiji	−0.02	−0.24	−0.30	0.18	−0.91	0.30	−48.70	0.39	0.24	−49.05
Grenada	0.00	−0.10	−0.18	0.03	−0.37	−0.01	−0.08	−0.01	−0.01	−0.71
Haiti	0.01	2.08	−0.43	1.92	1.31	−0.45	−0.97	0.03	1.09	4.59
Jamaica	−0.04	−1.73	−1.55	−0.91	−2.91	−0.52	−27.23	−0.02	−0.01	−34.92
Maldives	−0.01	−0.15	−0.13	−0.06	−0.18	−0.01	−0.10	−0.02	−0.02	−0.69
Mauritius	−0.10	−1.23	−1.02	−0.31	1.45	−0.36	−65.86	−0.13	−0.09	−67.65
Papua New Guinea	0.49	−1.17	−0.20	0.51	−4.04	4.21	0.81	−0.01	0.63	1.24
Solomon Islands	0.00	−0.18	−0.02	0.00	0.12	0.41	−0.03	0.00	0.87	1.18
St. Lucia	−0.01	−0.08	−0.18	−2.01	−0.54	0.00	−0.06	−0.01	−0.01	−2.90
St. Vincent	0.00	−0.32	−0.07	−1.10	−0.33	0.00	−0.06	−0.01	0.02	−1.87
Trinidad & Tobago	−0.07	−0.84	−1.92	−0.13	−0.75	−0.54	−0.06	−0.04	−0.17	−4.52
Bahamas	−0.02	−0.07	−0.41	0.02	−1.01	0.00	−0.11	0.20	−0.02	−1.43
Cape Verde	−0.01	−0.27	−0.13	−0.06	−0.12	−0.07	−0.15	−0.01	−0.04	−0.87
Comoros	0.00	−0.14	−0.01	0.01	−0.17	0.00	−0.02	0.00	0.00	−0.34
Sao Tome	0.00	−0.04	−0.01	0.00	0.00	0.00	−0.02	0.00	0.00	−0.06
Seychelles	0.01	−0.05	−0.09	0.03	−0.06	−0.04	−0.03	0.06	0.00	−0.17
Vanuatu	0.00	−0.07	−0.04	0.00	0.06	0.14	−0.03	0.00	0.00	0.06
Total	0.36	−16.61	−10.81	−3.96	8.33	0.43	−133.68	2.46	2.01	−151.47

Source: Authors' model simulations based on the Agricultural Trade Policy Simulation Model,
<http://www.unctad.org>.

Second, the results of the simulations suggest that there is scope for these countries to be compensated, if it is considered desirable. This involves expanding import duty-free quotas to cover all small island developing economies' exports. According to the model estimates, this would substantially but not entirely compensate for losses in rents. Given the high degree of specialisation by small island developing economies on a limited number of products, additional preferential quotas appear therefore to guard beneficiaries against the erosion of preferential tariff margins and quota rents. However, this assumes that beneficiary countries are capable of filling the additional quotas.

There might, however, be individual small island developing economies currently not capturing quota rents that may be inclined to favour liberalisation

as estimates indicate that if quota rents are ignored there are positive net benefits from improved market access and efficiency gains from domestic reform. Similarly, low cost small island developing economy producers may find themselves shut out of markets by the import quota system and may be favoured by the erosion of preferences.

Finally, compensation, if any, might be sought both within the WTO framework and bilaterally. In fact, given the high geographical concentration of small island developing economy exports in few markets, there may yet be scope for improving the effectiveness of non-reciprocal preferential market access via expansion of product coverage, expansion of quantitative limits on preferential market access or lowering preferential tariff rates, with a view to offsetting the impacts of MFN tariff cuts.

ACKNOWLEDGMENTS

NOTES

[1]   UNCTAD considers 'small island developing states' as countries and territories with a population under 5 million people. While both the United Nations and the Commonwealth Secretariat make use of population as the benchmark for determining smallness, there is no officially agreed international definition of smallness. The Commonwealth Secretariat's *Vulnerability Report 1985* uses as a threshold a population of one million (subsequently increased to 1,5 million), but at the same time, regards as small states countries with a larger population such as Papua New Guinea and Jamaica. Others (Briguglio 1993; Downes 1988) use a composite index of population, land area and GNP.

[2]   In 1994, a Global Conference on the Sustainable Development of Small Island Developing States (Barbados, April/May 1994) resulted in a Programme of Action for the Sustainable Development of Small Island Developing States. In September 2002, the World Summit on Sustainable Development (Johannesburg, RSA) in its Plan of Implementation (paragraph 55) requested the UN General Assembly at its 57th session to consider convening a new international meeting on the Sustainable Development of Small Island Developing States.

[3]   See for example, Briguglio 1995; UNCTAD 1997; Commonwealth Secretariat, various years; Downes1988; Lockhart et al. 1993; Encontre 1999.

[4]   Pending the ratification process, the Agreement was put into provisional application on 2 August 2000, according to the modalities laid down in Decision No 1/2000 of the ACP–EC Council of Ministers of 27 July 2000 (2000/483/EC, Official Journal L 195 of 1.8.2000, p. 46).

[5]   Small island developing economies' new ACP members include Federal States of Micronesia, Marshall Islands, Palau, Nauru, Cook Islands and Niue.

[6]   Duty-free treatment is also granted to fish and fish products subject to specific rules of origin requirements.

[7]   On most such products, the pre-'Everything But Arms'–Generalised System of Preferences used to provide a percentage reduction of MFN rates rates, which would only apply to the *ad valorem* duties, thus leaving the specific duties still entirely applicable. This is no longer the case as all dutiable products that were previously granted only a limited margin of preference or were subject to quantitative limitations are now entirely liberalised for least developed economies.

[8]   For the basic US legislation on the Generalised System of Preferences program (Title V of the Trade Act of 1974 as amended) and for further details, please refer to the text and appendices of the Handbook on the Generalised System of Preferences Scheme of the United States, UNCTAD document ITCD/TSB/Misc.58, of June 2000, also available on the UNCTAD Generalised System of Preferences website. For detailed information about the African Growth and Opportunity Act, please refer to the Handbook on the Generalised System of Preferences Scheme of the United States, as published by UNCTAD, Document ITCD/TSB/Misc.58, of June 2000, also available on the UNCTAD Generalised System of Preferences website. All African Growth and Opportunity Act related documentation is available online at Internet: www.agoa.gov.

[9]   All designated African Growth and Opportunity Act (AGOA) beneficiaries, including non-least developed economies, have been granted duty-free treatment on all GSP-eligible products, including those on which only least developed beneficiary countries used to enjoy GSP treatment. This implies that former special Generalised System of Preferences least developed economies' preferences have been somewhat diluted since other sub-Saharan non-least developed economies in Africa can now benefit from them.

[10]   In addition, the 'African Growth and Opportunity Act-enhanced' Generalised System of Preferences benefits will be in place for a period of eight years, and this longer-than-usual period of time is expected to provide additional security to investors and traders in qualifying African countries.

[11]   These countries are Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Montserrat, Netherlands Antilles, Nicaragua, Panama, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, and British Virgin Islands

[12] For example, according to the Caribbean Textile and Apparel Institute, approximately 150 companies have closed their operations and relocated to Mexico since NAFTA came into force.

[13] However, the *ad valorem* equivalent of all rate components estimated by the US International Trade Commission is reported to be only 3.5 per cent (the US2002 Tariff Web-Database at http://dataweb.usitc.gov/scripts/tariff2002.asp contains further information).

[14] Anguilla, Antigua and Barbuda, Bahamas, Bermuda, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, and the Turks and Caicos Islands.

[15] Under the scheme in force for fiscal year 2002–03, Japan granted preferential treatment to 164 developing economies. For detailed information on the current scheme, please refer to the Handbook on the Scheme of Japan 2002/2003 (document UNCTAD/ITCD/TSB/Misc.42), also available on the internet.

[16] With the recent addition of Zambia, Democratic Republic of Congo, Kiribati and Tuvalu to the list of Generalised System of Preferences beneficiaries, there are currently only two least developed economies (Comoros(*) and Djibouti) that, despite being eligible for duty/quota free treatment under the Japanese scheme, have yet to request so.

[17] The current initiative to dispute the EU sugar regime by Brazil and Australia at the WTO shows how critical the situation might become.

[18] See the 'Joint Declaration Concerning Agricultural Products Referred to in Article 1(2)(a)', containing the preferential treatment applicable to agricultural products and foodstuff originating in ACP states, Annex to Decision 1/2000 of the African, Carribean and Pacific–EC Committee of Ambassadors of 28 February 2000 on transitional measures valid from 1 March 2000, EU OJ L 217, 26.8.2000, p. 189 ff

[19] The entry price system trade regime has replaced the old reference price system as one of the results of the 'tariffication' process carried out in the Uruguay Round, whereby all no-tariffs measures had to be converted into bound tariffs. To explain briefly how the entry price system works, it is useful to think of it as a dual system where two separate sets of tariffs apply according to a core variable that is represented by the entry price. Applicable tariffs are either *ad valorem* or specific duties. In this system, as long as the c.i.f. import price of a particular product complies with the entry price (that is, is either equal or higher) a 'general' bound tariff applies. However, if the import price falls below the entry price, an additional duty is charged on top of the general one up to a maximum tariff level (also bound). In reality, the system is slightly more complex, since there are several entry prices for the same product, and for each of them a different additional duty applies. Indeed, and although set *a priori*, entry prices change according to seasons, being lower during the harvest season in the European Union so as to provide maximum protection to the EU local producers.

[20] Proposal for a COUNCIL REGULATION on The Arrangements Applicable to Agricultural Products and Goods Resulting from the Processing of Agricultural Products Originating in the African, Caribbean and Pacific States; Brussels, 21.06.2002 COM(2002) 335 final 2002/0129 (ACC).

[21] The Agricultural Trade Policy Simulation Model equation structure and other details can be found in Annex 2 or in UNCTAD (2002). The model can be downloaded for free from www.unctad.org/tab.

[22] The definition of small island developing economies is somewhat debatable. Possibly contentious in the Agricultural Trade Policy Simulation Model list are Cuba, a large sugar exporter, and Haiti. Other small island developing states countries included in the Agricultural Trade Policy Simulation Model are Bahamas, Barbados, Cape Verde, Comoros, Cuba, Dominica, Dominican Republic, Fiji, Grenada, Haiti, Jamaica, Kiribati, Maldives, Mauritius, Papua New Guinea, Sao Tomé and Principe, Solomon Islands, St. Lucia, St. Vincent and the Grenadines, the Seychelles, Trinidad and Tobago and Vanuatu.

[23] For this reason, estimated rents may differ from reality in cases where a country exports at the overquota level in addition to its quota share.

[24] AMAD is available to all users at http// www.amad.org.

[25] Swiss formula takes the following structure: $T1 = (T0 \times x)/(T0+x)$, where $T1$ is the new tariff rate, $T0$ is the initial tariff rate and x is the maximum coefficient.

[26] This assumption may no longer hold if suppliers depend on the receipt of rents to cover their costs. At some point declining rents will lead to a fall in production below the quota level.

[27] The Agricultural Trade Policy Simulation Model plus the documentation and data are available free from UNCTAD on request. Email atpsm@unctad.org to request a copy.

Annex 1   Preferential trading arrangements for small island developing economies in the quad

African SIDS

EU *ACP:* Cape Verde, Sao Tomé & Principe, Comoros, Seychelles, Mauritius *GSP:* as ACP + Maldives *GSP–EBA:* Cape Verde, Sao Tomé & Principe, Comoros + Maldives
United States *GSP:* Cape Verde, Sao Tomé & Principe, Comoros, Seychelles, Mauritius *GSP–LDC:* Cape Verde, Sao Tomé & Principe, Comoros *GSP–AGOA:* Cape Verde, Sao Tomé & Principe, Mauritius and Seychelles

Canada *GSP:* Cape Verde, Sao Tomé & Principe, Comoros, Seychelles, Mauritius + Maldives *GSP–LDC:* Cape Verde, Sao Tomé & Principe, Comoros + Maldives
Japan *GSP:* Cape Verde, Sao Tomé & Principe, Comoros (*), Seychelles, Mauritius + Maldives *GSP–LDC*: Cape Verde, Sao Tomé & Principe + Maldives

Caribbean SIDS

EU *ACP:* Bahamas, Dominican Republic, Antigua and Barbuda, Barbados, Dominica, Grenada, Haiti, Jamaica, St Kitts–Nevis, St Lucia, St Vincent and the Grenadines, Trinidad and Tobago *GSP:* as ACP + Cuba *GSP–EBA:* Haiti
United States *GSP:* Bahamas, Dominican Republic, Antigua and Barbuda, Barbados, Dominica, Grenada, Haiti, Jamaica, St Kitts–Nevis, St Lucia, St Vincent and the Grenadines, Trinidad and Tobago *GSP–LDC:* Haiti *CBI/CBTPA:* same as GSP

Canada *GSP:* Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad and Tobago *GSP–LDC:* Haiti *CARIBCAN:* Antigua and Barbuda, Bahamas, Barbados, Dominica, Grenada, Jamaica, St Kitts–Nevis, St Lucia, St Vincent and the Grenadines, Trinidad and Tobago
Japan *GSP:* Antigua and Barbuda, Barbados, Dominica, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago *GSP–LDC:* Haiti

Pacific SIDS

EU *ACP:* Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Palau, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu, Samoa *GSP:* as ACP *GSP–EBA:* Kiribati, Solomon Islands, Tuvalu, Vanuatu, Samoa
United States *GSP:* Fiji, Kiribati, Palau, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu *GSP–LDC:* Kiribati, Solomon Islands, Tuvalu, Vanuatu, Samoa

Canada *GSP:* Fiji, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu, Samoa *GSP–LDC:* Kiribati, Solomon Islands, Tuvalu, Vanuatu, Samoa
Japan *GSP:* Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Palau, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu, Samoa *GSP–LDC:* Kiribati, Solomon Islands, Tuvalu, Vanuatu, Samoa

ANNEX 2

Some technical details concerning ATPSM

The Agricultural Trade Policy Simulation Model is a comparative static, deterministic, linear, partial equilibrium, global model with 36 commodities and 162 countries or regions. One principal characteristic of the model is that domestic prices are all a function of world market prices and the border protection or special domestic support measures. Thus, no data is provided about the domestic prices and no transaction costs (such as wholesale and retail margins) are taken into account. All protection measures are expressed in tariff equivalents.

A second characteristic is two-way trade. In the Agricultural Trade Policy Simulation Model database a country is often an importer and exporter of the one (aggregated) good. To accommodate this feature of trade data, composite tariffs for determining the domestic consumption and production price are estimated. The technique chosen to derive the composed tariffs is to divide the volumes into three groups, imports, exports and production supplied to the domestic market (*Sd*).

First, a domestic market tariff (td) is computed as the weighted average of two trade taxes, the export subsidy rate (tx) and import tariff (tm), where the weights are exports (X) and imports (M).

$$td = (X\ tx + M\ tm)/(M + X)$$

Then, a consumption (domestic market) tariff is computed as the weighted average of the import tariff (tm) and the domestic market tariff (td), where the weights are imports (M) and domestic supply (Sd):

$$tc = (M\ tm + Sd\ td)\ /\ D$$

Similarly, a supply (domestic market) tariff is computed as the weighted average of the import tariff (tm) and the domestic market tariff (td), where the weights are exports (X) and domestic supply (Sd) plus the domestic support tariff (tp):

$$ts = (X\ tx + Sd\ td)\ /\ S + tp$$

These calculations are applied both to the baseline and the final tariffs.

The system is essentially based on four equations, specifying domestic consumption, production, exports and imports.

The standard equation system for all countries has four equations.

$$\dot{\hat{D}}_{i,r} = \boldsymbol{h}_{i,i,r}\left[\hat{P}_{wi}\left(1+\hat{t}_{ci,r}\right)\right] + \sum_{\substack{j=1 \\ i \neq j}}^{J}\boldsymbol{h}_{i,j,r}\left[\hat{P}_{wj}\left(1+\hat{t}_{c\,j,r}\right)\right] \qquad (A4.1)$$

$$\dot{\hat{S}}_{i,r} = \boldsymbol{e}_{i,i,r}\left[\hat{P}_{wi}\left(1+\hat{t}_{pi,r}\right)\right] + \sum_{\substack{j=1 \\ i \neq j}}^{J}\boldsymbol{e}_{i,j,r}\left[\hat{P}_{wj}\left(1+\hat{t}_{p\,j,r}\right)\right] \qquad (A4.2)$$

$$\Delta X_{i,r} = \gamma_{i,r}\Delta S_{i,r} \qquad (A4.3)$$

$$\Delta \dot{M}_{i,r} = D_{i,r}\hat{D}_{i,r} - S_{i,r}\hat{S}_{i,r} + \Delta X_{i,r} \qquad (A4.4)$$

where *D, S, X,* and *M* denote demand, supply, exports and imports, respectively;

- ^ denotes relative changes and Δ absolute changes
- P_w denotes world price
- t_c denotes the domestic consumption tariff and t_p denotes the domestic production tariff
- ε denotes supply elasticity, denotes demand elasticity, and denotes the ratio of exports to production
- i and j are commodities indexes
- r is a country index.

Equation A5.3 requires that the change in exports in each market is some proportion of the change in production. This proportion is determined by the ratio of exports to production. For example, if all the initial production is exported, all the change in production is exported. If half the initial production is exported, half of the change in production is exported. This implies that the proportion of exports to production is maintained. Equation A5.4 clears the market, so that production plus imports equals domestic consumption and exports. Further details on the model are available in UNCTAD (2002).[27]

COMMENT

Ray Trewin

On reading Monge-Roffarello et al., my first thoughts were that there was a third option to 'sinking' or 'swimming' and that was 'floating'. 'Floating'— just treading water and hoping external forces will do something positive— has been the approach of many small island developing states. I think the proactive 'swim' option has much more going for it in the long run, but it may require a different stroke to what has been used in the past—that is, introducing proactive policies that will facilitate structural adjustment towards more competitive industries and building on comparative advantage rather than relying on preferential access, aid or assistance. These thoughts are based on experiences I have had at the Australian Bureau of Agricultural and Resource Economics (ABARE), The Australian National University and now the Australian Centre for International Agricultural Research (ACIAR) over the last 30 years or so. I will draw on these experiences in my comments on the paper.

First, as I was invited to make these comments with my ACIAR hat on, I should mention that ACIAR has a number of relevant projects currently underway, such as the 'Impact of policy changes on the Fiji Islands' food sector'. This project will be looking at alternative policies to current approaches, including a sugar industry based around the type of preferential access outlined in the chapter, assistance to an uncompetitive Fiji dairy industry based on failed import replacement/self-sufficiency approaches, and bans on imported lamb flaps in the hope that locally produced foods will be taken up. One such alternative policy is higher levels of research and development in neglected

local industries—such as taro—which have been crowded out by some current policies assisting other industries. Such alternative policies would not only have resource allocation benefits but also positive spillovers in terms of food health issues.

The ACIAR project previously mentioned has a structural adjustment aspect, but a more relevant story on this issue, concerns some work I was involved in on Tasmania—which could be considered a small island developing state—shortly after joining the Bureau of Agricultural Economics, now ABARE, some 30 years ago. At that time, the Huon Valley in Tasmania was highly dependent on apple exports (which had just lost preferential access to the UK market) and was also reliant on various other forms of assistance such as payments to equalise freight, payments if drinks contained apple juice as a sweetener, price support and compensation for exchange rate changes. A tree pull scheme was introduced with the loss of the UK export market, facilitating structural adjustment. Such a policy contrasts to some in Europe where payments might be made to avoid farmers having to adjust and to maintain the current rural environment. Industry and household surveys showed that adjustment took place in the Huon Valley, with some farmers replanting for new specialist markets (for example, high quality Fuji apples for export to Japan rather than poor quality juicing apples). New activities such as recreational and tourism services were also developed. This early experience was a strong lesson that policies which facilitate structural adjustment can work for the betterment of groups apparently disadvantaged by policy or market changes.

Returning to the paper, various problems are identified by Monge-Roffarello et al., but many of these could really be solutions (to quote John Lennon). For example, isolation can be an advantage for some growing 'castaway' tourism services and for specialist products, like Fiji water which is one of the country's fastest growing exports. Moreover, some of these 'problems' are diminishing. Smallness and remoteness, for example, are less of a problem now with new transport and communication technologies, and greater competitive forces from globalisation in these and other like sectors. Lastly, have Monge-Roffarello et al. identified the right problems? Often the lack of resources which is put forward as a problem is due to poor property rights such as in land-use rights.

One thing for certain is—as pointed out in the chapter—that preferential arrangements have distorted the economic structure of the relevant small island developing states away from comparative advantage, both in terms of the type

of exports and their destinations. These distortions are likely to have had negative effects on the economic structure of all small island developing states, even those not directly involved in preferential arrangements.

Assessing the impact of future trade liberalisation options involves modelling. In the modelling described here by the authors, a number of key assumptions are made. First, it is assumed that partial equilibrium modelling will do the full job. However, structural adjustment is such an important issue in trade liberalisation that you would think some computable general equilibrium (CGE) modelling—with its ability to shift resources between sectors—would be needed at some point. Another key assumption made is that quota rents go to producers, which suggests the existence of some market power that is not evident in other aspects. Some sugar exported from Africa to the European Union (EU) under preferential arrangements has been shown to be originally EU sugar. This suggests that market power is elsewhere and rents are not all going to producers. The final key assumption made by Monge-Roffarello et al. is that changes in rents do not influence supply. Experiences in Australian industries such as eggs and dairy—where arrangements that produced rents have been changed—would suggest that large supply responses can occur. All these assumption are important in terms of the measured impacts of policy changes. Although the limitations of the analysis are acknowledged, they are ignored in the conclusions drawn by Monge-Roffarello et al.The paper puts forward more of the same special and differential (SAD) treatment approaches for small island developing states instead of a structural adjustment approach through investment in infrastructure, education and better policies. Some International Food Policy Research Institute (IFPRI) work in Asian developing countries has shown large returns can be achieved through such investments.