International Trade in Fruits and Vegetables: Barriers to Trade, WTO Proposals for Reform and Modelling Alternative Outcomes

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Abstract:

Many governments provide support to horticultural production, including measures that limit competition from imports or that encourage exports. Not until the Uruguay Round of trade negotiations did the GATT seriously attempt to establish rules related to barriers to trade in horticultural and agricultural products. Tariffs levied on fresh fruits currently average 58%, somewhat less the average 68% tariff on fresh vegetables. For some countries and products, fruit or vegetable tariffs exceed 100% and constitute significant barriers to trade. While fresh fruit and vegetables accounted for only 2.5% of total global expenditures on agricultural export subsidies in 2000, they were the third highest commodity group behind beef and milk in terms of trade-distorting domestic subsidy expenditures. Despite the Uruguay Round Agreement, trade disputes arise between members, and quarantine and market access issues have been main causes of disputes over horticultural trade. The WTO Doha Round continues to attempt to reach agreement over further reductions in trade barriers. An applied general equilibrium model is used to analyse selected scenarios of tariff and subsidy reductions. Results indicate that the degree of agricultural trade reform that might be expected to result from the current WTO Round is not likely to require as great a level of adjustment from horticultural producers as in some other kinds of farm production. Horticultural exports of Central and South America, and the Middle East and North Africa can be expected to increase, as can be the net imports of the EU15, USA, Rest of Europe and Japan. China is emerging as an increasingly important horticultural exporter and this role could be boosted should trade be liberalised, especially with increased exports to Japan, Korea and the rest of Asia.

INTRODUCTION

Many governments provide support to horticultural production, including measures that limit competition from imports or that encourage exports. These support measures can distort international prices and horticultural trade flows, and give rise to economic inefficiencies. Agriculture and horticulture have always been difficult sectors in GATT negotiations, as governments have historically been unwilling to subject their agricultural policies to international discipline. Not until the Uruguay Round of trade negotiations (1986-1994) did the GATT seriously attempt to establish rules related to barriers to trade in horticultural and agricultural products. That Round agreed reductions in import protection and domestic and export subsidy spending, enhanced rules related to trade restrictions based on phytosanitary grounds, created improved structures for the settlement of trade disputes, and also created the World Trade Organisation to continue the work of the GATT. While the immediate trade impacts of this agricultural agreement would appear to have been rather modest (OECD, 2001), a more important point is that a whole new body of law for trade in agricultural and horticultural products has been established along with new measuring rods that have improved the transparency of existing distortions.

The Uruguay Round Agreement on Agriculture (URAA)

The URAA required agricultural tariffs to be cut by 36% on average, with no individual tariff reduction to be less than 15% (24% and 10% respectively for developing countries). Non-tariff import barriers were eliminated through conversion to their equivalent tariffs (tariffication), which were then subject to the above reduction commitments. For products subject to tariffication, minimum access of at least five percent of domestic consumption was to be provided through tariff-rate-quotas (TRQs). The quota import volumes were subject to tariffs lower than those computed through tariffication, with the latter applied to imports over the quota. In many cases, these above-quota tariffs were so high that such trade was prohibited and the TRQs continued to act as quantitiative barriers. Also, under-fill of the quotas has not been uncommon, suggesting problems with mechanisms used to administer and allocate quotas to importers or exporters. A two-pronged approach was taken in the URAA to reduce the use of agricultural export subsidisation. Volumes of such exports were to be reduced by 21% (14% for developing countries) and subsidy expenditures cut by 36% (24%).

Inclusion of domestic subsidy reforms in the URAA was an important breakthrough, since it indicated recognition that domestic agricultural and horticultural policies do link to international trade. The qualifying domestic support policy instruments were grouped into three categories: ‘amber’ box (programmes that do impact on production and trade, as defined by the Aggregate Measure of Support[1]), ‘blue’ box (programmes that would qualify for the ‘amber’ box were it not for associated production-limiting instruments) and the ‘green’ box (programmes that have no, or at most minimal, trade-distorting effects or impacts on production). The agreed expenditure reductions of 20% (13% for developing countries) applied only to those expenditures included in the amber box (such as output price support and input subsidies). However, compared with market access and export competition commitments, the agreed reductions

[1] Defined in Annex 3 of the URAA, and including market price support, non-exempt direct payments, and other non-exempt measures such as input subsidies and marketing cost reduction measures.

in domestic support in the URAA have been the least effective in contributing to any subsequent liberalisation of global food and agricultural markets. For example, the OECD (2001) concludes that "for many OECD countries the impact of the domestic support discipline has been imperceptible".

The Uruguay Round Agreement on Sanitary and Phytosanitary Measures also introduced important changes affecting horticultural trade. The justification of SPS measures must be based on scientific principles, measures shall be based on international standards where they exist, and notions of equivalence and transparency of measures and regulations were also introduced.

Trade Barriers Affecting Fruits and Vegetables

This section briefly reviews the current level and extent of trade barriers affecting fruits and vegetables following implementation of the Uruguay Round agreed outcomes.

Import tariffs provide protection to domestic producers by raising local prices above world levels by the amount of the tariff. Globally, agricultural and horticultural tariffs average 62%, compared with around 5% for industrial goods (Gibson et al., 2001). On average, those levied on fresh fruits (58%) are somewhat less those on fresh vegetables (68%). Average tariffs on dried, frozen, juiced and processed vegetables, while less than those on fresh vegetables, still exceed average tariffs applied to fruit. Table 1 gives bound tariffs for a number of horticultural products for major importers. Apart from nuts and live plants, US average tariffs on all these lines are in single figures. EU and Japan tariffs are in each case higher than those in the US, apart from one product in the case of Japan and four products in the EU. Import tariffs for all of the listed horticultural products in non-EU Western Europe are considerably higher than those in either the US or EU, and in most cases higher than those in Japan also. For some countries and products, fruit or vegetable tariffs exceed 100% and constitute significant barriers to trade, such as on certain fresh, frozen or dried vegetables in non-EU Western Europe and Japan. Averaged across OECD countries, tariffs on fresh or processed fruits, nuts, live plants and flowers amount to 50% or less of the average global agricultural tariff of 62%. These tariffs tend to be substantially higher in non-OECD countries and more nearly equal to the global average tariff. Tariffs levied on vegetable product imports by OECD countries are also lower than those of non-OECD importers, although the differences are not as great as in the former group of horticultural products.

Of the 1,376 tariff-rate-quotas that existed in 2000, the most prevalent commodity category was fruits and vegetables, accounting for 25% of this total. Norway and the expanded EU account for two-thirds of these quotas. Included amongst them are fruit and vegetable products on which in-quota as well as over-quota tariffs exceed 100%. For non-EU West Europe, the average in- and over-quota tariffs for fresh vegetables, roots and tubers are 100% and 201%, respectively. These tariffs for the EU were 5% and 56% respectively. For fresh fruits and nuts, in- and over-quota tariffs averaged 63% and 83% for non-EU West Europe, and 6% and 42% for the EU (Gibson et al., 2001). Within several countries using TRQs, a substantial proportion of the quotas have not been filled. In the EU, for example, over 30% of the quotas had fill rates of less than 50% in 1999. This could indicate a lack of demand, but it might also be indicative of high in-quota tariffs or administrative mechanisms that constitute barriers to trade.

When farm prices are supported above world levels, exports cannot be profitable unless a government export subsidy covers this price gap. Fresh fruit and vegetables accounted for only 2.5% (or US$74 million) of the total US$2.9 billion global expenditures on agricultural export subsidies in 2000 and even less the following year. The EU ($28 million) and Switzerland ($11 million) together accounted for over half of fruit and vegetable export subsidies in 2000. While the Swiss subsidised these fruit and vegetable exports almost to the limit agreed in the URAA, the EU's level of export subsidisation was around one-half of the permitted maximum expenditure.

'Amber box' (trade distorting) domestic support expenditures totalled $78 billion over all agricultural commodities and WTO member countries in 1999, of which fruit and vegetables contributed $10.2 billion and was the third highest commodity group behind beef and milk. Nearly all of this support to the horticultural sector was incurred by the EU ($9.9 billion), and over half of that was shared almost equally by apple and tomato production.

Horticultural Trade Disputes post-Uruguay Round

A total of 306 trade disputes have been taken to the WTO since the commencement of implementation of the Uruguay Round Agreement in 1995, reflecting dissatisfaction on the part of some WTO members as to the manner in which other members have implemented that agreement. Over 20 of these involve fresh fruits or vegetables, and SPS (quarantine) and quantitative import controls have been common causes of complaint. The former group includes two cases bought by the US against Japan's requirements and prohibitions on imports of certain fruits because of the risk of codlin moth infestation, and of apples with respect to fireblight. In each case, Japan was required to change its import regulations.

Amongst disputes over quantitative import restrictions, the banana dispute is perhaps the most famous, and has a long history in the GATT. At dispute was the European Communities preferential and duty-free importation of bananas from ACP countries and quantitative restrictions on imports from non-ACP countries including those exported by American multinationals from Latin America. Latin American countries pursued two disputes within the GATT during 1993, both of which were upheld. The Europeans each time blocked implementation of the panels' reports. Following completion of the Uruguay Round, the US and Latin American countries issued a third challenge. By then, GATT rules had changed and panel rulings were to be automatically effective unless rejected by a consensus of members. Europe was again found in violation of GATT rules. The parties then failed to each agreement over the time frame for implementing the panel's ruling, leading to further disputes and the imposition by the US of retaliatory sanctions against a wide range of European imports. Agreement was finally reached in 2001, with the EU to adopt a tariff-only regime for banana imports from 2006.

The WTO Doha Development Agenda

A new round of agricultural trade negotiations began in the WTO in March 2000, and the first year saw 126 member governments submit 45 proposals for reform. Some were for a continuation of URAA-like reforms, while others proposed much more substantial reductions in import tariffs and the complete elimination of export subsidies. These negotiations were incorporated into the broader negotiating agenda set at the Ministerial Conference in Doha, Qatar in November 2001. The Ministerial Declaration adopted at that time provided for comprehensive agricultural negotiations aimed at: "substantial improvements in market access; reductions of, with a view to phasing out, all forms of export subsidies; and substantial reductions in trade-distorting domestic support" and "special and differential treatment for developing countries shall be an integral part of all elements of the negotiations… and … non-trade concerns will be taken into account". Modalities (targets and rules to achieve the objectives as set out in the Doha Ministerial Declaration) were to be established no later than 31 March 2003, to set the parameters on the basis of which members will produce their first offers on comprehensive draft commitments. The latter was required to be done by the Fifth WTO Ministerial Conference in September 2003. The deadline for the completion of the Round was set as January 2005.

The Chair of the Committee on Agriculture released in February 2003 a first draft of modalities for achieving the objectives of the agricultural negotiations and after receiving mixed reaction from Members, a revised first draft was released in March 2003. The target of reaching agreement on agricultural reform modalities by 31 March 2003 was not met. The EU and USA released a joint paper in August 2003 in an effort to maintain negotiating momentum, to which a group of developing countries signalled their dissatisfaction by releasing their own reform plans later that month. This was soon followed by a new draft text issued by the Chair of the WTO General Council, that received strong criticism from many groups. A further revised text was released in September 2003 to assist the WTO Ministerial meeting in Cancun in November of that year, but that meeting collapsed without any agreement reached. Recent signs point to renewed momentum to progress the agricultural negotiations but the Round (scheduled to finish by January 2005) is expected to continue beyond that date.

LIBERALISATION OF AGRICULTURAL AND HORTICULTURAL TRADE: EXPERIMENTAL PROCEDURES

Scenario Design

It is not possible to model all the details of many of the proposals offered during the Doha agricultural negotiations. In addition, other simplifications and omissions are made, given the available data and trade model to be used here. For example, some proposals suggest that reductions (such as in tariff rates) be made from bound levels, others from levels that actually applied in some given base period. The data to be used here (see below) include the applied levels of tariffs, export subsidies and domestic support, rather than the bound rates.[2] The large number of tariff rate quotas (TRQs) that exist for horticultural and agricultural products provides a major aggregation problem and the possibility of aggregation bias, since the database we employ aggregates many such products into single commodities. Thus we do not attempt to model TRQs explicitly. Any agreed liberalisation will be phased in over a number of years. As the trade model used here is not dynamic but static in nature, the adjustment path to the targeted reductions in support cannot be revealed.

The scenarios designed for this research reflect some of the elements of the various agricultural proposals currently before the WTO. They incorporate changes within each of the major negotiation pillars – market access, export competition and domestic support. The scenarios are described in Table 2. The first scenario includes cuts to tariffs, export subsidies and 'amber' box domestic support based on those proposed by

[2] In OECD countries, the applied tariff rates are often similar to the bound rates. However in many developing countries, applied rates are considerably below the bound rates, so the modelled liberalisations would overstate the extent of tariff reductions in such cases, provided that any Agreement based tariff reductions on the bound rates.

the EU in December 2002. The tariff reduction modality is made similar to that of the URAA by inclusion of a smaller cut for developing countries. The second scenario involves deeper cuts in protection and includes the tariff reduction formulas as proposed in the February 2003 draft modalities document prepared by the Chair of the WTO Agricultural Committee, referred to above. This scenario also includes the draft's approach to reducing export subsidies and 'amber' box support in developed countries, with smaller commitments required of the developing countries.

The Trade Model

A modified version of the GTAP applied general equilibrium model (Hertel 1997) is used. This is a multi-region model built on a complete set of economic accounts and detailed inter-industry linkages for each of the economies represented. The GTAP production system distinguishes sectors by their intensities in five primary production factors: land (demanded by agricultural and horticultural sectors only), natural resources (extractive sectors only), capital, and skilled and unskilled labour. Labour and capital are assumed to be perfectly mobile between production sectors within each region. While GTAP allows substitution amongst the employment of these resources in any sector in response to price changes, intermediate inputs are used in fixed proportions in producing the various outputs. This assumption has been modified in this application to the extent that substitution among feedstuffs in livestock production is permitted. The model has also been modified to allow the EU's milk production quotas to be explicitly modelled. This is considered important since trade liberalisation may substantially reduce EU milk prices but if quota rents are sufficiently high, milk output may not decline and resources therefore need not flow out of this sector and into others such as fruits and vegetables. Tradable products are differentiated by country of origin, allowing bilateral trade to be modelled. This formulation of the model also assumes perfectly competitive markets and constant returns to scale in production. The model is solved using GEMPACK (Harrison and Pearson 1996).

Data

All data, including that on agricultural trade and protection, are taken from the latest GTAP Version 6 database benchmarked to the year 2001. Agricultural tariffs have been sourced from the Agricultural Market Analysis Database[3] (AMAD), converted where necessary to *ad valorem* equivalents. Agricultural export subsidies are based on country expenditure notifications to the WTO, and agricultural domestic subsidies are classified as in the OECD's PSE measure and data is taken from that source. International trade data are sourced from the UN COMTRADE database, agricultural commodity balances and producer prices came from the FAO, and input-output tables from national sources.

The GTAP Version 6 database covers 85 regions and 57 commodity sectors (including 20 in agriculture and food). Such a detailed disaggregation is unnecessary in this study. Fifteen individual countries or country groupings are specified, with remaining countries aggregated into a rest-of-the world group (Appendix Table 1). At the sectoral level, 13 of the 16 sectors modelled here represent farm or processed food production. For each country, the production of fruits, vegetables and nuts is aggregated

[3] http://www.amad.org

into a single sector and cannot be further disaggregated. All other sectors are included in either the natural resources, manufacturing or services aggregates.

RESULTS OF TRADE LIBERALISATION ANALYSIS

Reducing agricultural and horticultural import tariffs and subsidies will change relative prices within each economy, requiring demand and supply, and hence trade flows to adjust to a new global equilibrium. This requires the economies that are most heavily protective of their farming, including the EU15, EFTA and Japan, to downsize much of their agricultural sectors. This releases resources to allow expansion in the manufacturing and services sectors. But because horticultural trade barriers in these countries are relatively low compared with several other farm enterprises, the declines in horticultural production are relatively modest (Table 3) when compared with downsizing in the grains, oilseeds and cattle sectors. In other regions, trade reform results in a reallocation of resources within the wider agricultural sector. For example, livestock production increases in Australia and New Zealand, which limits expansion in horticultural production. In China and Central and South America, production of all farm commodities increases in the second scenario, especially for oilseeds (both regions) and cattle (South America), again limiting any expansion in horticulture. Under both scenarios, horticultural output expands in Canada but not the US. Reasons include a higher level of base-period protection of US horticulture, and the shift of resources into US industrial production.

In the base year (2001), the major regional exporters of horticultural crops were Central and South America, Middle East and Africa, the US, the Rest of Europe and the EU15 (excluding intra-EU trade). Leading importers were the EU15, the US, the Rest of Europe, and Japan. While both were major exporters and importers, the EU15 and the US were net importers of horticultural crops in 2001. Of these major players, both trade liberalisation scenarios increased net exports[4] of Central and South America, and the Middle East and North Africa, and increased the net imports of the EU15, US, Rest of Europe and Japan. Other notable changes to the base net trade situation included increased exports from China, and increased imports to EFTA and the Rest of Asia (Table 4).

The major horticultural bilateral trade flows in the base data (excluding intra-EU15 trade) were exports from Central and South America to the EU15 and the US, from the Middle East and Africa to the EU15, from the US to Japan and Canada, and the two-way trade between the EU15 and the Rest of Europe. The volumes traded on all these routes increased in both scenarios, except for those from the US to Canada and Japan. The largest percentage increases involving these bilateral flows were for exports from Central and South America to the EU15 (10% in scenario #1 and 15% in scenario #2). For other pairs of trading partners, volumes traded in the second scenario increased by over 20% for exports from Middle East and Africa to Rest of Europe, from China to Japan and Rest of Asia, and from both EU15 and Rest of Europe to Middle East and Africa (Table 5).

China could emerge as an increasingly important horticultural exporter should trade be liberalised, with export volumes increasing by 14% and 18% in the first and second scenarios respectively. China’s principle export markets in 2001 were Japan, Rest of Asia, the EU15 and the US. The largest percentage increases occurred in China’s trade

[4] Export value less import value.

with the Rest of Asia and Japan, but also with Korea, reflecting a greater regional concentration in China's horticultural exports.

Japan's main suppliers of horticultural imports in 2001 were the US, China, the Rest of Asia and Central and South America. With trade liberalisation, China's exports to Japan increase (by volume) by 15% to 20% depending on the liberalisation scenario, and China gains market share from the other three suppliers.

DISCUSSION

The levels of government protection and support to vegetable production and trade generally are not high when compared with some other farm sectors such as meats and dairy products. Tariffs tend to be higher for vegetables than for fruit, and also tend to be higher outside the OECD region than within. Nevertheless, some very high horticultural tariffs are applied in some OECD countries, including those specified within tariff-rate-quotas. The quantitative modelling work showed that the degree of agricultural trade reform that might be expected to result from the current WTO Round is not likely to require as great a level of adjustment from horticultural producers as in some other kinds of farm production. Indeed in several regions, lowered protection of their grains and/or livestock sectors could release resources to fuel expanded horticultural production. Yet other regions with a comparative advantage in livestock production could see their horticultural sectors downsized as meat and dairy production responds to freer trade conditions.

Turning to trade in horticultural products, the degrees of liberalisation modelled here suggest that the dominant roles of Central and South America and the Middle East - Africa as exporters, and the EU15 and the rest of Europe, US and Japan as major importers would be enhanced. While China is not a dominant horticultural exporter as yet, lowering of agricultural trade barriers globally may open new opportunities for this country to increase exports, especially to other countries in Asia.

Finally, available data required the quantitative trade modelling to be rather aggregate in terms of definition of horticultural products and seasonality. There is a need for more disaggregate analysis of horticultural trade reform, to recognise greater product detail as well as seasonality in production. Nor did the quantitative analysis recognise possible improvements in SPS regulations and their application, and hence consequent impacts on horticultural trade. Since many quotas restrict trade in horticultural products, analysis of the impacts of various approaches to modifying these should also be fruitful. These remain important areas for future investigation.

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Tables

Table 1 Mean and Median Horticultural Tariffs of Major Importers [a]

Commodity	USA		EU-15		Non-EU Western Europe		Japan	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fruit: fresh	4	1	21	12	51	20	10	6
Fruit: frozen	8	9	20	21	34	40	9	10
Fruit: dried & fresh (coconuts, dates & figs)	8	4	4	6	21	20	3	3
Fruit: dried (raisins)	2	2	2	2	19	10	1	1
Fruit: preparations	6	4	21	21	48	45	18	17
Fruit juice	0	0	37	22	49	22	22	23
Vegetables: fresh	7	4	16	10	175	50	3	3
Vegetables: frozen	9	8	14	15	146	51	10	10
Vegetables : frozen or prepared (other)	6	5	18	12	103	50	110	9
Vegetables: dried & fresh roots & tubers	6	5	38	16	70	45	7	7
Vegetables: dried	3	2	2	0	47	27	197	6
Vegetables: preparations	6	5	21	14	123	50	13	13
Vegetable juice: tomato	na	Na	16	16	26	22	26	26
Nuts	17	3	5	4	31	10	8	8
Nuts & fruit: dried, fresh & prepared	6	4	16	17	49	32	13	12
Live plants	10	1	5	7	67	17	0	0
Cut flowers & foliage	4	4	5	3	91	45	2	3
All agricultural commodities	12	3	30	13	104	45	58	10

a. Gibson et al. (2001). Tariffs are bound MFN rates based on final URAA implementation (ad valorem equivalents where non-advalorem tariffs are used)

Table 2 Trade Liberalisation Scenarios

Item	Scenario #1	Scenario #2
Change in tariffs[a]		
Developed regions	-36%	$If \quad t_o \geq 90\%, \quad t_1 = t_o * 0.4$ $If \quad 15\% \leq t_o < 90\%, \quad t_1 = t_o * 0.5$ $If \quad t_o < 15\%, \quad t_1 = t_o * 0.6$
Developing regions	-24%	$If \quad t_o \geq 120\%, \quad t_1 = t_o * 0.6$ $If \quad 20\% \leq t_o < 120\%, \quad t_1 = t_o * 0.67$ $If \quad t_o < 20\%, \quad t_1 = t_o * 0.73$
Change in Export subsidy spending		
Developed regions	-45%	-100%
Developing regions	-45%	-50%
Change in Trade-distorting support spending[b]		
Developed regions	-55%	-60%
Developing regions	No change	-20%

a. None of the scenarios incorporates changes in non-agricultural tariffs. t_0 is the base tariff which is reduced to t_1.

b. Defined for modelling purposes as output and input subsidies, and excluding all other payments such as those based on crop areas or livestock numbers

Table 3 Trade Liberalisation has Little Impact on Horticultural Production

Region	% change in horticultural output	
	scenario #1	scenario #2
Australia	0.3	0.0
New Zealand	-0.8	-3.6
Canada	1.6	2.6
USA	-0.8	-0.9
EU15	-0.8	-1.1
China	0.2	0.3
India	-0.2	-0.3
Rest of Asia	-0.2	-0.3
Japan	-0.6	-0.8
Korea	-0.2	-0.2
Cntl/South America	0.6	0.8
EFTA	-3.8	-6.0
Rest of Europe	-0.2	-0.2
Middle East & Africa	0.2	0.2

Source: Author's calculations.

Table 4 But Changes to Horticultural Trade Balances (Exports less Imports) Are More Noticeable

Region	Base Trade Balance 2001	Change in Trade Balance	
		Scenario #1 US$(million)	Scenario #2
Australia	418	9	-2
New Zealand	504	5	-18
Canada	-1401	62	98
USA	-4637	-240	-288
EU15	-11158	-462	-520
China	1232	211	294
India	35	-20	-49
Rest of Asia	-354	-60	-91
Japan	-2745	-132	-140
Korea	-84	-18	-17
Cntl/South America	7415	459	624
EFTA	-1019	-50	-76
Rest of Europe	-744	-47	-77
Middle East & Africa	1265	101	66

Source: Author’s calculations.

Table 5 Percentage Changes to Horticultural Trade Flows Among Major Traders – Scenario #2

From / To	EU15	USA	Rest_Eur	Japan	Canada	ME_Africa	Rest_Asia
C_S_Amer	14.7	2.0	2.9	-7.4	2.2	9.4	14.0
	(2821)	*(4437)*	*(416)*	*(219)*	*(403)*	*(111)*	*(39)*
ME_Africa	5.4	5.5	20.9	3.9	7.9	1.5	19.2
	(1954)	*(98)*	*(221)*	*(77)*	*(60)*	*(814)*	*(106)*
China	8.3	16.2	16.9	21.2	9.6	6.3	28.1
	(295)	*(127)*	*(92)*	*(475)*	*(50)*	*(92)*	*(375)*
USA	-0.4	..	7.4	-3.0	-2.6	-5.5	-1.3
	(432)		*(17)*	*(569)*	*(1235)*	*(91)*	*(318)*
Rest_Eur	5.2	9.7	6.2	-3.2	7.6	22.8	15.2
	(1262)	*(83)*	*(583)*	*(42)*	*(16)*	*(169)*	*(20)*
EU15	..	9.7	5.3	-0.4	10.0	24.3	4.0
	..	*(229)*	*(1000)*	*(52)*	*(50)*	*(252)*	*(64)*

Values in parentheses are trade values (fob) in the base year 2001 (US$million).
Source: Author’s calculations.

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Supplementary Tables

1. Mean and Median Horticultural Bound Tariffs: Selected Regions (% ad valorem)

Commodity	USA		EU-15		Non-EU Western Europe		Japan	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Fruit: fresh	4	1	21	12	51	20	10	6
Fruit: frozen	8	9	20	21	34	40	9	10
Fruit: dried & fresh (coconuts, dates & figs)	8	4	4	6	21	20	3	3
Fruit: dried (raisins)	2	2	2	2	19	10	1	1
Fruit: preparations	6	4	21	21	48	45	18	17
Fruit juice	0	0	37	22	49	22	22	23
Vegetables: fresh	7	4	16	10	175	50	3	3
Vegetables: frozen	9	8	14	15	146	51	10	10
Vegetables : frozen or prepared (other)	6	5	18	12	103	50	110	9
Vegetables: dried & fresh roots & tubers	6	5	38	16	70	45	7	7
Vegetables: dried	3	2	2	0	47	27	197	6
Vegetables: preparations	6	5	21	14	123	50	13	13
Vegetable juice: tomato	Na	Na	16	16	26	22	26	26
Nuts	17	3	5	4	31	10	8	8
Nuts & fruit: dried, fresh & prepared	6	4	16	17	49	32	13	12
Live plants	10	1	5	7	67	17	0	0
Cut flowers & foliage	4	4	5	3	91	45	2	3
All agricultural commodities	12	3	30	13	104	45	58	10

b. Tariffs are bound MFN rates based on final URAA implementation (ad valorem equivalents where non-advalorem tariffs are used).
Source: Gibson *et al.*

2. Average Horticultural Bound Tariffs: OECD and Non-OECD countries

Commodity	Tariff		Tariff / global average [a]	
	OECD	Non-OECD	OECD	Non-OECD
Fruit: fresh	25	65	0.4	1.1
Fruit: frozen	18	64	0.3	1.0
Fruit: dried & fresh (coconuts, dates & figs)	11	62	0.2	1.0
Fruit: dried (raisins)	7	61	0.1	1.0
Fruit: preparations	19	66	0.3	1.1
Fruit juice	25	68	0.4	1.1
Vegetables: fresh	87	64	1.4	1.0
Vegetables: frozen	61	64	1.0	1.0
Vegetables : frozen or prepared (other)	52	63	0.8	1.0
Vegetables: dried & fresh roots & tubers	75	62	1.2	1.0
Vegetables: dried	47	62	0.8	1.0
Vegetables: preparations	47	64	0.8	1.0
Vegetable juice: tomato	21	71	0.3	1.2
Nuts	21	63	0.3	1.0
Nuts & fruit: dried, fresh & prepared	22	62	0.4	1.0
Live plants	31	59	0.5	1.0
Cut flowers & foliage	33	63	0.5	1.0

a. The global average bound tariff equivalent for all agricultural commodities is 62%

Source: Gibson *et al.*

3. Tariff-rate-quotas in fruits & vegetables trade

Country	TRQs [a]		Fruit and Vegetable TRQs		
	Fruits & Vegetables	All commodities	Principle administrative method [c]	%TRQs with 100% fill [b]	%TRQs with fill rate <50%
Norway	116	232	AT	63	25
Poland	37	109	AT/MX	na	na
Hungary	33	70	LD	12	20
EU-15	25	87	FC	52	32
Barbados	25	36	AT	64	24
Korea	20	64	ST/LD/HI	55	30
Iceland	18	90	AT	67	17
Bulgaria	15	73	FC/AT	47	40
South Africa	12	53	LD/AT	25	67
Switzerland	9	28	MX	67	0

a. The remaining 48 fruit and vegetable TRQs are spread across 21 countries.
b. Latest notification year – 1999 in each case except for Bulgaria and Korea (1998). No notifications were recorded for Poland.
c. AT applied tariff
   LD licenses on demand
   FC first come, first served
   ST imported by state trading entities
   HI historical importers
   MX combination of above

Source: WTO (2001) Document G/AG/NG/S/8/Rev.1

4. Average in-quota & over-quota bound tariffs: fruits & vegetables

HS Chapter	Eastern Europe	Non-EU West Europe	EU-15
In-quota tariffs:			
07: Edible vegetables, roots & tubers	28	100	5
08: Edible fruits & nuts	25	63	6
20: Preparations of vegetables, fruits, nuts	30	357	28
Over-quota tariffs:			
07: Edible vegetables, roots & tubers	48	201	56
08: Edible fruits & nuts	37	83	42
20: Preparations of vegetables, fruits, nuts	35	249	105

Source: Gibson *et al.*

5. EU Total Amber Box Domestic Support: Fruit and Vegetables (US$m)

	1998	1999
Total: fruits and vegetables	9,381	9,909
-apples	2,153	2,286
-tomatoes	2,363	2,626
Total all farm commodities	52,331	49,690
Ceiling expenditure	71,760	69,450

Source: http://www.ers.usda.gov/db/wto/

6. Expenditures on Export Subsidies (US$mill)

	1999	2000	2001
Total – all commodities & countries	6,504	2,903	2,425
EU as % total	90.0	86.7	94.6
Fruit & vegetables as % total	1.2	2.5	1.4

Source: http://www.ers.usda.gov/db/wto/

7. Export Subsidy Expenditures on Fruit & Vegetables (fresh and frozen, US$mill)

	1999	2000	2001
Total	79.2	73.9	33.1
Of which:			
EU	44.5	28.2	21.6
Switzerland	13.1	11.3	..
Turkey	7.3	7.1	..

Source: http://www.ers.usda.gov/db/wto/

8. EU Export Subsidy Expenditures on Fruits and Vegetables (US$mill)

	1999		2000		2001	
	Permitted	Notified	Permitted	Notified	Permitted	Notified
Fresh	60.3	38.8	48.1	24.6	46.8	18.4
Processed	9.5	5.7	7.6	3.6	7.4	3.2

9. Horticultural Disputes in the WTO

Complainant/s	Dispute code	Year	Description	Responder
SPS Issues				
EC	DS287	2003	Quarantine re. a range of products incl. fresh fruits & vegetables	Australia
Nicaragua	DS284	2003	Quarantine and import licensing re black beans	Mexico
Philippines	DS271	2002	Quarantine measures re fresh pineapple imports	Australia
Philippines	DS270	2002	Quarantine measures re fresh fruit & vegetables incl. bananas	Australia
US	DS245	2002	Quarantine measures on apple imports (fireblight)	Japan
Ecuador	DS237	2001	Import procedures incl. quarantine measures for fresh fruit	Turkey
US	DS76	1997	Quarantine prohibitions on fruit imports (codlin moth)	Japan
US	DS41	1996	Quarantine measures on agric. imports, incl. horticultural products	Korea
US	DS5	1995	Shelf-life regulations, incl. frozen fruits & vegetables	Korea
Quantitative restrictions & import licensing				
EC	DS279	2003	Import restrictions (incl. hort. products) under the export & import policy 2002-2007	India
US	DS275	2002	Import licensing regime for various products incl. grapes	Venezuela
US & others	DS158	1999	Timeframe for implementing banana decision	EC
EC	DS149	1998	Import restrictions incl. horticultural products	India
EC, US & others	DS90-94, 96	1997	Quantitative restrictions on imports (incl. horticultural)	India
US & others	DS27	1996	Regime for importation, sale & distribution of bananas	EC
Safeguards & countervailing duties				
Chile	DS238	2001	Safeguard measures on preserved peach imports	Argentina
Mexico	DS49	1996	Antidumping investigation on tomato imports	US
Sri Lanka	DS30	1996	Countervailing duties on desiccated coconut imports	Brazil
Philippines	DS22	1995	Countervailing duties on desiccated coconut imports	Brazil

Complainant/s	Dispute code	Year	Description	Responder
TRQs				
Argentina	DS111	1998	Administration of groundnuts TRQ	US
Taxes				
Chile	DS255	2002	Taxes on various imports, incl. apples, grapes & peaches	Peru
Brazil	DS250	2002	Taxes on imported processed orange & grapefruit products	US