

FRUITS AND VEGETABLES: GLOBAL TRADE AND COMPETITION IN FRESH AND PROCESSED PRODUCT MARKETS

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Trade in fruit and vegetable products has been among the most dynamic areas of international agricultural trade, stimulated by rising incomes and growing consumer interest in product variety, freshness, convenience, and year-round availability. Advances in production, postharvest handling, processing, and logistical technologies—along with increased levels of international investment—have played a facilitating role. For developing countries, trade in these products has been attractive in the face of highly volatile or declining long-term trends in the prices for many traditional export products. Although many developing-country suppliers have entered the field, relatively few have achieved significant, sustained success, reflecting the fact that the industry is highly competitive and rapidly changing.

Still, the aggregate picture is favorable. Fresh and processed fruit and vegetable products accounted for 16.7 percent of total agricultural exports from developing countries in 1980–81. By 2000–01, this share had increased to 21.8 percent. Only for one other product category—fish and fisheries products—are developing countries more significant exporters (see chapter 1). Fruit and vegetable exports from developing countries are now more than double exports for tropical beverages, three times exports of grains, three times exports of livestock products, five times

exports of sugar, and seven times exports of textile fibers.

This chapter highlights major global, regional, and product-specific trends in the trade in fruit and vegetable products, and examines the major policy and other factors that have affected this trade over the past two decades.¹ Particular attention is given to the performance and position of developing countries in this trade and the policies, institutions, and infrastructure they need to succeed.

Fruit and Vegetable Production and Trade Growth

For the purpose of this study, we group fruits and vegetables in four main categories: fresh fruits, fresh vegetables, processed fruits, and processed vegetables. These categories comprise all SITC (Standard International Trade Classification) Revision 1, Chapter 5 items except nuts, roots, and tubers. They correspond to most products in Chapter 7 (edible vegetables and certain roots and tubers), Chapter 8 (edible fruits and nuts; peel of citrus fruits or melons) and Chapter 20 (preparations of vegetables, fruit, nuts, or other parts of plants) of the Harmonized System (HS) nomenclature.

Trends in World Production and Trade

World production of fruit and vegetables grew by 30 percent between 1980 and 1990 and by 56 percent between 1990 and 2003, reaching 1,274 million tons by 2003. Much of this growth occurred in China, where production grew by 134 percent in the 1980s and by 200 percent in the 1990s. China is currently the world's largest producer of fruits and vegetables, with a share of 34 percent, followed by Latin America and the Caribbean (11 percent), India (10 percent), and Africa and the European Union (EU) (both at 9 percent) (figure 13.1).

The structure of world trade in fruits and vegetables does not fully mirror that of production. Many of the largest producers are not significant traders due to a combination of domestic demand and geographical and logistical factors. For example, in China and India, where strong domestic demand is fueled by growing income and a large and rapidly growing urban population, only a small percentage of fruit and vegetable production is exported. In contrast, Latin American countries (such as Mexico, Chile, and Costa Rica) are among the world's leading exporters of fruits and vegetables, mainly because of their proximity to the large U.S. market.

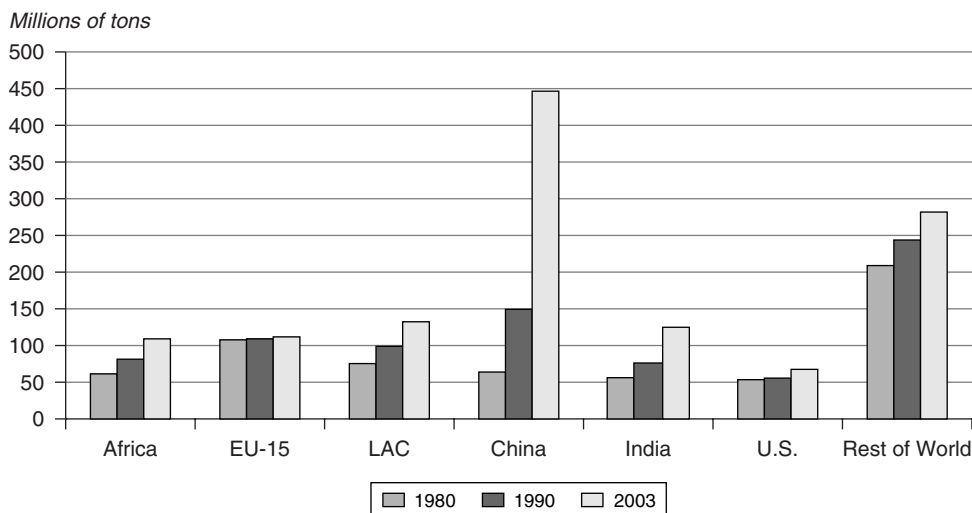
World trade in fruits and vegetables, fresh and processed, has increased by 30 percent since 1990, reaching \$71.6 billion in 2001 (table 13.1). This

followed even more robust growth in the 1980s, when trade in fruits and vegetables doubled. World trade in all categories of fruits and vegetables has grown strongly, with only slight changes in its broad composition. In 2001 fresh produce accounted for 63 percent of the total, whereas processed products accounted for 37 percent. The complexity of these definitions must be kept in mind, however. Both in Europe and the United States, one of the fastest-growing product segments is semi-prepared and packed fresh produce, including preassembled salads, vegetable dips, and sliced or mixed fruit products.

Taking all fruit and vegetable products combined, the value of world imports grew at 2–3 percent a year during the 1990s, a sharp deceleration from the 7–8 percent annual growth during the previous decade (figures 13.2–13.5). As elaborated below, the slower growth in world imports during the 1990s reflects two primary factors: a decline in world prices for many important fruit and vegetable products in the latter half of the 1990s, and stagnation in EU import demand due to market saturation.

Within the fresh fruit category, the deceleration has been sharpest for apples, grapes, and citrus (figure 13.2). Comparatively more dynamic trade has remained for various tropical fruits (especially papaya, mango, and pineapple), with average annual growth in the 1990s remaining at 8 percent.

FIGURE 13.1 Production of Fruit and Vegetables by Region
(million of tons)



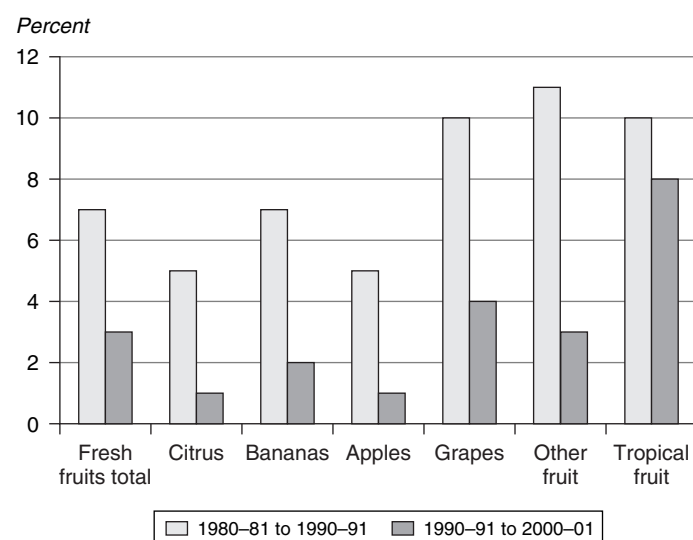
Source: United Nations Food and Agriculture Organization.

TABLE 13.1 World Fruit and Vegetable Imports, 1980–2001
(US\$ millions)

Category	1980–81	Percent Share in Total	1990–91	Percent Share in Total	2000–01	Percent Share in Total
Fresh fruits	10,971	40	20,981	38	27,978	39
Processed fruits	4,441	16	9,916	18	13,176	18
Fresh vegetables	6,805	25	13,315	24	16,914	24
Processed vegetables	5,424	20	10,883	20	13,577	19
Total	27,641	100	55,094	100	71,644	100

Source: COMTRADE.

FIGURE 13.2 Annual Growth Rates of World Imports of Selected Fruits
(Value)



Source: COMTRADE.

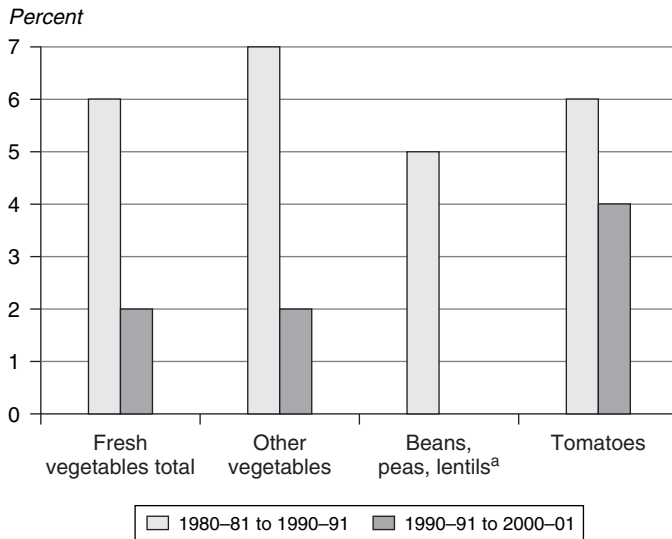
Still, these latter products represent a relatively small proportion of world fresh fruit trade (7 percent in 2001), which is still heavily concentrated in particular lines, including bananas (25 percent of the total), citrus fruit (20 percent), grapes (11 percent), and apples (10 percent). A large number of other fresh fruits, not separated in the statistics, collectively represent 28 percent of world fresh fruit imports. Prominent items in this category include melons, various types of berries, and other temperate fruits.

World import values for fresh vegetables grew at 6.9 percent a year during the 1980s, yet decelerated to 2.4 percent a year in the 1990s (figure 13.3). The deceleration affected most individual commodities. World vegetable trade is fragmented among a large number of individual items. The largest single item

is tomatoes, which account for 17 percent of the total. The category of beans, peas, and lentils accounts for another 14 percent. Other relatively major commodities in the fresh vegetable trade include onions, potatoes, asparagus, mushrooms, and various types of sweet and pungent peppers.

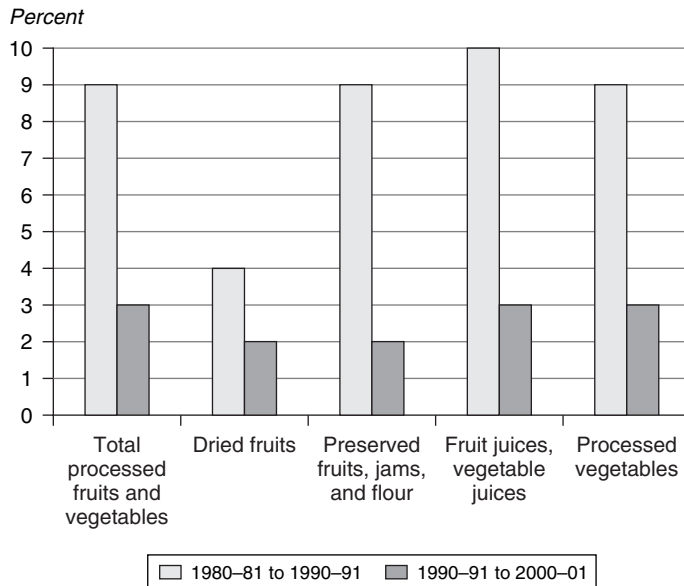
The evolution of trade in processed fruit and vegetable products mirrors that for fresh produce. The annual growth rate in trade value was 8.3 percent a year during the 1980s, yet only 3 percent during the 1990s (figure 13.4). All categories of processed products saw a deceleration in trade expansion, although fruit and vegetable juices and preserved fruits and jams fell most sharply. Processed vegetables (such as canned mushrooms, dried mushrooms, and tomato paste) account for 55 percent of world trade in all these products, fruit

FIGURE 13.3 Annual World Import Growth Rates of Selected Vegetables



a. The corresponding value for 1990-91 to 2000-01 has the value of 0%.
 Source: COMTRADE.

FIGURE 13.4 Annual Growth Rates of World Import of Major Processed Fruits and Vegetables



Source: COMTRADE.

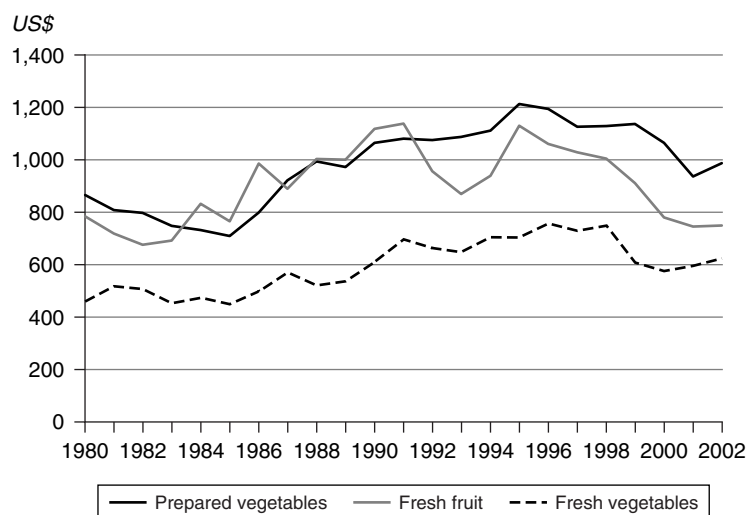
and vegetable juices for some 20 percent, and several smaller categories for the balance.

Price played a role in the observed trends. The unit values of fresh fruit and of fresh and prepared vegetables dropped sharply in the second half of the 1990s after an extended period of increase dating from the early 1980s (figure 13.5). These trends suggest that price factors played a very significant role in the declining rate of growth in the value of

fruit and vegetable imports during the 1990s. Indeed, for each of the most important traded fresh fruits and vegetables, the rate of import volume growth was modestly higher in the 1990s than in the 1980s (table 13.2).

Part of the decline in world prices is a statistical matter. The data above are recorded in U.S. dollars. During the latter half of the 1990s, the U.S. dollar appreciated vis-à-vis the yen and most European

FIGURE 13.5 World Unit Values for Fresh Fruits, Fresh Vegetables, and Prepared Vegetables
(US\$ per metric ton)



Source: FAOSTAT.

TABLE 13.2 Average Annual Growth Rates in World Import Volumes, 1980–2001

Commodity	1980–1991	1990–2001
Bananas	3.45	3.96
Oranges	1.11	1.68
Apples	1.42	2.33
Grapes	4.31	4.34
Tomatoes	3.11	4.45
Onions	3.50	4.17
Green beans	4.59	5.98

Source: FAOSTAT.

currencies, deflating Japanese and European import values upon conversion into U.S. dollars. For some commodities, however, the unit import values into Japan, Europe, and elsewhere actually did decline in local currency terms—in some cases substantially. For example, from 1996 to 2001, the average unit value of Japanese fresh vegetable imports fell by 25 percent, while that of processed vegetable imports fell by 8 percent.² A major factor in this decline was the rapidly expanding supply of low-cost production in China. During the 1990s China accounted for virtually all of the incremental expansion in Japan's vegetable trade, taking market share from other suppliers. Declining unit import values for various products in Europe can be attributed to at least three factors: the slow economic growth in the region (especially in Germany, the

leading importer); competitive and structural changes in fruit and vegetable distribution systems, which put downward pressures on trader and manufacturer margins; and greater availability of product and intensified international competition.

Sources and Destinations of Exported Fruits and Vegetables

The European Union, NAFTA (North American Free Trade Agreement), and a few middle-income countries dominate trade in fruits and vegetables (table 13.3). Eight categories of countries are distinguished. China, India, Japan, and the European Union are singled out. The United States, Canada, and Mexico are grouped together in the NAFTA category. The developing-country group minus China and India is split between low-income countries and middle-income ones.

Global Trade Patterns

The European Union is the world's largest market and supplier of fresh and processed fruits and vegetables. In 2001 its 15 member countries accounted for \$37 billion in imports, or 51 percent of world imports, while exports stood at \$28 billion, or 39.5 percent of world exports.³ EU trade in fruits and vegetables is, however, largely intraregional. Intra-EU imports represent 64 percent of EU imports, while 83 percent of EU export trade occurs among its 15 member states. Still, with its affluent

TABLE 13.3 Import and Export of Fruits and Vegetables by Region or Country
(US\$ billions)

Importers	Year	Low-Income	Middle-Income	Exporters European Union	Japan	NAFTA	Other Industrial	China	India	Total Imports
Low-income	1980–81	0.05	0.14	0.09	0.00	0.03	0.01	0.02	0.02	0.37
	1990–91	0.02	0.12	0.05	0.00	0.02	0.05	0.04	0.04	0.34
	2000–01	0.08	0.19	0.10	0.00	0.13	0.09	0.14	0.05	0.78
Middle-income	1980–81	0.10	2.24	0.88	0.18	0.84	0.21	0.39	0.09	4.94
	1990–91	0.14	2.77	0.91	0.10	1.12	0.33	0.79	0.12	6.27
	2000–01	0.44	4.69	2.22	0.05	1.88	0.58	1.04	0.17	11.08
European Union	1980–81	0.42	4.36	8.63	0.02	0.75	1.08	0.24	0.02	15.52
	1990–91	0.75	8.86	20.59	0.01	1.07	1.71	0.50	0.02	33.51
	2000–01	1.08	9.19	23.45	0.01	1.19	1.09	0.55	0.11	36.67
Japan	1980–81	0.02	0.68	0.05	0.00	0.49	0.07	0.13	0.00	1.43
	1990–91	0.01	1.49	0.17	0.00	1.21	0.25	0.56	0.00	3.69
	2000–01	0.04	1.49	0.25	0.00	1.69	0.36	1.93	0.00	5.76
NAFTA	1980–81	0.04	1.64	0.29	0.05	1.97	0.09	0.05	0.00	4.12
	1990–91	0.07	3.94	0.75	0.06	3.59	0.23	0.13	0.01	8.80
	2000–01	0.12	5.20	1.15	0.05	7.10	0.27	0.36	0.10	14.35
Other industrial	1980–81	0.01	0.31	0.61	0.00	0.13	0.11	0.02	0.00	1.20
	1990–91	0.03	0.55	1.16	0.00	0.17	0.21	0.04	0.01	2.17
	2000–01	0.03	0.56	1.10	0.00	0.23	0.21	0.08	0.01	2.22
China	1980–81	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	1990–91	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	2000–01	0.06	0.32	0.01	0.00	0.12	0.03	0.00	0.01	0.56
India	1980–81	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.06
	1990–91	0.08	0.10	0.00	0.00	0.02	0.04	0.00	0.00	0.24
	2000–01	0.10	0.03	0.00	0.00	0.08	0.02	0.00	0.00	0.23
Total exports	1980–81	0.65	9.41	10.55	0.25	4.21	1.58	0.85	0.13	27.64
	1990–91	1.12	17.86	23.62	0.18	7.22	2.83	2.06	0.20	55.09
	2000–01	1.95	21.66	28.29	0.12	12.41	2.65	4.10	0.45	71.64

Source: COMTRADE.

and aging population, its high factor costs, and its cold winters, this region represents one of the largest fruit and vegetable markets for non-EU countries (\$13.2 billion), especially for low- and middle-income countries, which exported \$1.08 and \$9 billion, respectively, to the European Union in 2001. Major middle-income suppliers to the European Union market include banana-exporting countries (mainly Colombia, Costa Rica, Côte d'Ivoire, Ecuador, and Panama⁴) and counterseasonal-supplying countries such as Argentina, Chile, and South Africa. Led by South Africa, the latter three countries dominate exports of apples, grapes, and pears to the European Union.

Intraregional trade is also significant in NAFTA, the world's second-largest fruit and vegetable

market. Trade between Mexico, Canada, and the United States accounted for 49 percent of NAFTA's imports and 53 percent of its exports in 2001. Intra-NAFTA trade is most important for fresh vegetables. For this commodity group, 90 percent of exports and 86 percent of imports occur within the trade group (Huang 2004). Still, middle-income countries (excluding Mexico) have a strong foothold in this market. By securing 71 percent of the \$7.25 billion extra-NAFTA import market in 2001, middle-income countries are major players.

Interestingly, thanks to growing incomes in the 1990s, middle-income countries have seen their own market become a major destination of fruit and vegetable exports from other countries, with import demand totaling \$11 billion in 2001. South-South

trade—trade between developing countries, excluding China and India—totaled \$5.4 billion in 2001, accounting for 45 percent of developing countries’ imports. Japan has also emerged as a significant market for fruits and vegetables over the 1990s, with import demand culminating at \$5.8 billion in 2001. China has emerged as a major supplier of horticulture to Japan with its market share doubling from 16 percent in the 1980s to 33 percent in the 1990s.

While import penetration increased in the United States and other regions, EU import demand grew little in the 1990s. As table 13.3 shows, a salient feature of world import dynamics is the sharp increase in imports of developing countries (6 percent a year) and NAFTA (5 percent a year), and the stagnation of EU imports (1 percent a year) over the 1990s. Focusing on the United States, the import penetration ratio has increased steadily over time for fresh produce (figure 13.6). In contrast, extra-EU import demand grew by just 0.2 percent a year between 1990 and 2001, indicating that the bulk of the small increase in the European Union’s horticultural trade, shown in table 13.3, occurred internally. This is a major change from the 1980s, when EU imports almost doubled. Closer examination of the data shows that the European Union’s import deceleration is largely driven by Germany, which represents 25 percent of the EU’s fruit and vegetable market. Germany’s imports dropped by

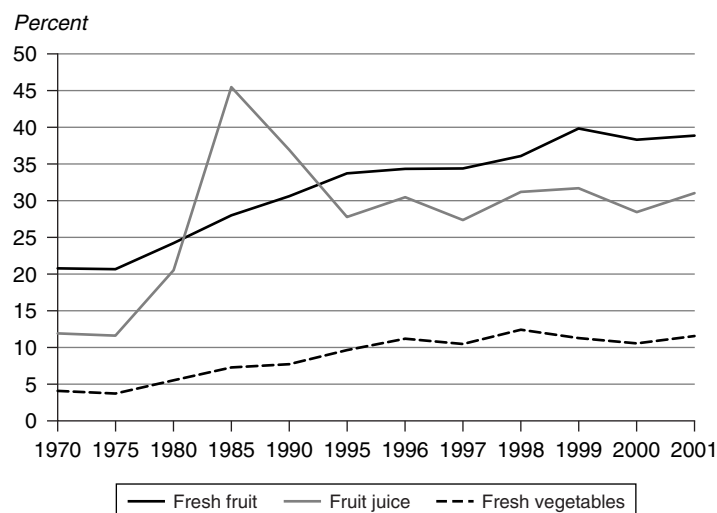
1.4 percent annually over the 1990s, reflecting its slow pace of economic growth during this decade.⁵

Income and population composition and dynamics are the major drivers of import demand. Demand for fruits and vegetables—derived from a combination of broad demand dynamics, domestic supply trends, and trade policies—is relatively income elastic. Higher incomes typically induce increased expenditures on a broader array of fresh and processed fruit and vegetable products. In addition to income, other important factors include the size, age, ethnic composition of the population, cultural and religious factors, lifestyle factors (including work patterns and urbanization), and consumer education about health matters.

Although not all of these factors can be examined statistically, we attempt here to quantify the importance of most of the factors that explain the observed cross-country differences in growth in imports of fresh fruits, fresh vegetables, and processed fruits over the 1990s. The analysis, based on a sample of 49 major importers, uses the standard imperfect substitutes model (Goldstein and Khan 1985), which assumes that imports are not perfect substitutes for domestic goods for the countries under consideration.⁶

It is well known that economic growth strongly stimulates imports of fruits and vegetables, whereas inflation reduces them (Goldstein and Khan 1985).⁷

FIGURE 13.6 Import Penetration Ratios in U.S. Fruit and Vegetable Markets, 1970–2001
(percent)



Source: USDA.

TABLE 13.4 Concentration of Fresh Fruit and Vegetable Exports among Developing Countries, 2001

Product	Leading Suppliers	Joint Percentage of World Exports (value)
Asparagus	Peru, Mexico, Thailand	94
Mangoes	Brazil, Mexico, Philippines	62
Pineapples	Costa Rica, Côte d'Ivoire	61
Bananas	Ecuador, Colombia, Costa Rica	60
Avocados	Chile, Mexico	53
Tomatoes	Mexico, Syria	52
Grapes	Chile, China, Mexico	38
Green beans	Jordan, Kenya, Mexico	49
Green peas	Guatemala, Kenya, Zimbabwe	38

Source: FAOSTAT.

But it is urbanization, not growth per se, that exercises the strongest and most significant influence on imports of fresh fruits (with the nuance that it plays a major role in developing countries only given the population shifts that are still occurring in these countries, see the Result Table A1 on the CD-ROM). Several factors could explain this relationship. First, urbanization helps to reduce the logistical and transaction costs to service demand from international sources, especially if the major cities are located in close vicinity to major ports or along efficient transport nodes. Second, with urbanization, there is greater demand for convenience in meeting food needs. Many fresh and processed fruit and vegetable products can be consumed with little or no further household preparation. Plus, these products feature heavily in menus of restaurants and catering services, most of which are in urban areas. Third, urban populations tend to be more heterogeneous in ethnic and other composition than is typical in any single rural setting. This mixing of populations increases consumer exposure to new or even exotic products, some of which may only be sourced in large quantities from abroad.

As expected, tariffs negatively affect fresh fruit trade, but the elasticity is not significantly different from zero. In sharp contrast, tariffs have a negative and statistically significant effect on processed fruit trade, highlighting the high degree of tariff escalation affecting trade in fruits and vegetables.

Developing Countries' Performance

Although many countries have entered the fresh fruit and vegetable export markets, only a few

middle-income countries have succeeded on a sustained basis. The average shares of developing countries in world exports of fresh fruits and vegetables hide the heavy domination of trade by just a handful of middle-income countries. Between 1997 and 2001, just four Latin American countries—Chile, Costa Rica, Ecuador, and Mexico—accounted for 43 percent of developing-country exports of fresh fruit (FAO 2003). These countries are leading players in the most internationally traded fruit products (table 13.4). While exports of vegetables are similarly concentrated, the geographical distribution of exporters is wider. Mexico is the world's leading exporter of tomatoes, Kenya supplies 25 percent of the world's green beans, while Guatemala and Kenya jointly lead the world market for green peas.⁸ Between 1997 and 2001, four suppliers—Argentina, China, Mexico, and the Syrian Arab Republic—accounted for 67 percent of fresh vegetable exports by developing countries (FAO 2003).⁹

A small number of medium-income countries have been successful in the processed segment of the export market, but as a group, developing countries account for a relatively low share in world exports of these products (36 percent in 2001). Chile, China, Thailand, and Turkey account for 58 percent of developing countries' exports of processed fruit and vegetable products (FAO 2003). Secondary, yet still significant exporters include Argentina, Indonesia, Mexico, and the Philippines (a combined 14 percent of developing countries' exports). Trade by developing countries in specific processed products is relatively highly concentrated (table 13.5).

TABLE 13.5 Concentration of Processed Fruit and Vegetable Exports among Developing Countries

Product	Leading Suppliers	Joint Percentage of World Exports (value)
Orange juice concentrated	Brazil	91
Canned pineapples	Indonesia, Philippines, Thailand	74
Canned mushrooms	China	52
Dried mushrooms	China	52
Dried fruits	Chile, China, Thailand	35
Tomato paste	Chile, China, Turkey	35
Apple juice, concentrated	Argentina, Chile, Turkey	31

Source: FAO 2003.

TABLE 13.6 Export Subsidy Expenditures for Horticultural Products

Country	Export Expenditure (US\$ millions)	Total Horticultural Exports (US\$ millions)	Export Expenditures as a Percent of Total Horticultural Export Value
European Union	40	5,301	0.8
Switzerland	14	69	20.6
Colombia	13	521	2.4
Turkey	11	2,348	0.0

Source: WTO 2000b and subsequent WTO notification updates. Export data from FAOSTAT.

Policy Factors Shaping International Trade Patterns

Domestic Support and Export Subsidies

Government interventions for fruits and vegetables are significantly lower than in other agricultural sectors. Consistently, domestic subsidies to producers are relatively low in OECD (Organisation for Economic Co-operation and Development) countries. Of the major industrialized regions, only the European Union reports an aggregate measure of support related specifically to several fruits and vegetables, while Japan and Canada indicate moderate levels of aggregate support for a few commodities.¹⁰ The European Union's budgetary outlays for fruits and vegetables totaled \$1.55 billion in 1999. Those expenditures covered compensation for surplus withdrawals; production aid to producers of bananas, peas, lentils, beans, pineapples, grapes, and stone fruits; and aid to producers of certain products intended for processing (tomatoes, peaches, pears) and to processors who pay

producers at least the minimum price fixed each year (for dried figs and certain prunes, for example). Japan reported price support for starches (\$179 million for potatoes and sweet potatoes in 1998) and direct payments to the vegetable and fruit sectors, but the aggregate measure of support was below the *de minimis* level. Similarly, in Canada, only its support for dry beans was above the *de minimis* levels (WTO 2000a).

Unlike in many other agricultural sectors, the use of export subsidies is not pervasive in horticulture. The export subsidy expenditures notified to the WTO in 2000 (WTO 2000b) (table 13.6) are well below those reported for other agricultural categories. In only one country, Switzerland, were expenditures large relative to horticultural exports, with export subsidies accounting for 21 percent of that country's exports. The European Union's export subsidies represented less than 1 percent of the value of its total exports. Although it did not supply information to the WTO, the United States indirectly subsidized horticultural exports, albeit

to a very limited degree, through export credit guarantees.

Tariffs and Other Import Restrictions

Regulating market access is the main instrument used to protect the fruit and vegetable sector. The European Union, Japan, and the United States use, to varying degrees, similar protection tools: low but highly dispersed ad valorem tariffs, specific duties, seasonal tariffs, tariff escalation, and preferential access along with tariff-rate quotas. Tariffs for a specific range of products depend on numerous factors, including the date of entry (seasonality factor), the degree of processing (escalation phenomenon), and the relationships with exporting countries (preferential agreements and regional and bilateral free trade agreements—FTAs).

Average applied most-favored-nation (MFN) tariffs are very low in all countries of the Quad—Canada, the European Union, Japan, and the United States. These tariffs range between 0.9 percent for fresh fruits in Canada to 9.2 percent in the European Union for the same product category (table 13.7). The average tariffs, however, do not accurately reflect the level of actual protection caused by the wide dispersion in tariffs and the prevalence of high peaks. Closer examination of the tariff structure highlights the importance of tariff peaks, especially in the European Union and the

opacity of protection. Tariff peaks in the European Union, for example, can reach as high as 128 percent for fresh fruits and 132 percent for fresh vegetables.

Viewed in closer detail, the protection structure of several OECD countries is opaque. Canada, Japan, and the United States have the lowest tariffs, with, for instance, 85 percent of U.S. tariffs under 10 percent. In sharp contrast, the Republic of Korea and the European Union apply high tariffs on many products. For instance, in the Republic of Korea, 59 percent of fresh fruit and vegetable tariff lines lie between 20 and 50 percent and 37 percent of the lines are over 100 percent. Protection of fruits remains relatively nontransparent, as well, especially in Canada and the European Union (table 13.8). The percentage of fresh fruit tariff lines that are specific, compound, or mixed stands at 31 percent in Canada and 25 percent in the European Union.

Fresh vegetable exports face, in general, higher levels of protection, reflecting the fact that tariffs on temperate horticultural commodities are higher than they are for tropical commodities, dominated by fruits. The EU tariffs are particularly high for many commodities, as 60 percent of vegetable tariff lines are in the 20–50 percent range and 23 percent of the latter are greater than 50 percent. This reflects the large number of items that are subject to ad valorem tariffs (including seasonal) augmented by specific tariffs under the European Union's minimum entry price scheme (box 13.1).

TABLE 13.7 Applied MFN Tariffs for Fresh Fruit and Vegetables in the Quad Countries, 1999 and 2001
(percent)

Country		Average ad Valorem Rate	All Rates Average	Percentage of Lines Covered	Maximum	Standard Deviation	Number of Total Lines
European Union (1999)	Fruits	7.3	9.2	75.0	127.6	15.4	89
	Vegetables	5.5	6.8	98.0	131.8	10.7	200
United States (2001)	Fruits	6.1	4.6	100.0	29.8	7.0	70
	Vegetables	4.1	3.1	98.0	24.3	5.0	189
Japan (2001)	Fruits	8.7	8.7	100.0	32.0	6.8	56
	Vegetables	3.9	3.9	94.0	40.0	5.6	185
Canada (2001)	Fruits	0.9	0.9	72.0	8.5	2.5	67
	Vegetables	1.1	1.1	74.0	16.0	2.7	216

Source: WTO Integrated Data Base at the original tariff line level (6- to 11-digit tariff line depending on the country).

TABLE 13.8 Percentage of Tariff Lines on Fresh Fruits and Vegetables in Selected OECD Countries by Tariff Levels

Tariff Levels (percent)	Canada (2001)	United States (2001)	European Union (1999)	Japan (2001)	Korea, Rep. of (2001)
<i>Fresh fruits</i>					
Duty free	60	19	2	7	0
1–10	9	66	49	64	0
11–20	0	9	22	20	0
21–50	0	6	0	9	59
Over 50	0	0	1	0	37
Specific, compound, mixed	31	1	25	0	5
<i>Fresh vegetables</i>					
Duty free	47	16	0	10	3
1–10	7	59	11	69	42
11–20	1	14	1	11	47
21–50	0	1	60	7	1
Over 50	0	0	23	0	1
Specific, compound, mixed	45	9	5	2	5

Note: Average applied out-of-quota ad valorem and ad valorem equivalent of non-ad-valorem tariffs for those equivalent data reported.

Source: WTO IDB database.

BOX 13.1 The European Union's Entry Price Scheme: Hindering Cost-Based Competition in the EU Market

Current basic rules governing trade in fruits and vegetables were defined as part of the European Union's 1996 Common Market Organization (CMO) reform. One of the most prominent features of this reform is the "minimum entry price" system. This complex tariffication system applies to imports of a large number of fruits and vegetables, including fresh or chilled tomatoes, courgettes, cucumbers, apples, grapes, pears, peaches, plums, apricots, cherries, and citrus fruits. Under the system, the European Union calculates an entry price for each of the commodities covered by the program. The tariffs levied for each item depend on its import price compared with the calculated price.¹¹ Fruits and vegetables imported at prices equal to or greater than the established entry price are charged an ad valorem duty only. Commodities valued below the entry price are charged a specific tariff in addition to the ad valorem duty. In the latter case, two situations are distinguished: if the import price is more than 8 percent below the entry price, a large

specific tariff (called the maximum tariff equivalent) is levied against the shipment, most likely prohibiting its importation. If the entry price stands between 92 and 100 percent of the entry price, an additional specific duty is levied.

Through this system, applied tariffs are actually linked to the delivered price and the season. For instance, fresh tomatoes imported between June 1 and October 30 and priced 8 percent below the reference price of €52.6 per 100 kilograms face tariffs amounting to 57 percent of the import price (Sallyards 2001). The entry prices are generally highest during the EU production season and lowest during the off-season, and the difference can be very large. The entry price for courgettes, for instance, increases from a base level of €450 a metric ton to €730 a metric ton in April and May. This system strongly restricts an exporter's ability to increase market shares in the European Union based on lower prices and efficiency, especially during the European production season.

TABLE 13.9 Percentage of Tariff Lines on Processed Fruits and Vegetables in Selected OECD Countries by Tariff Levels

Tariff Levels (percent)	Canada (2001)	United States (2001)	European Union (1999)	Japan (2001)	Korea, Rep. of (2001)
<i>Processed fruits</i>					
Duty free	35	1	0	7	1
1–10	43	14	0	62	2
11–20	20	43	0	24	44
21–50	0	34	47	4	40
Over 50	0	0	53	4	2
Specific, compound, mixed lines	2	7	0	0	10
<i>Processed vegetables</i>					
Duty free	22	3	0	8	3
1–10	31	39	6	65	6
11–20	40	50	0	24	76
21–50	0	6	88	3	5
Over 50	0	0	3	0	3
Specific, compound, mixed lines	7	2	3	0	8

Note: Average applied out-of-quota ad valorem and ad valorem equivalents of non-ad-valorem tariffs for those equivalent data reported.

Source: WTO IDB database.

The tariff structures of the European Union, Japan, the Republic of Korea, and the United States also feature a high degree of escalation. All EU processed fruit tariffs are above 20 percent, and the majority of processed fruit products entering the European Union face a tariff of greater than 50 percent (table 13.9). There is also tariff escalation in the European Union for processed vegetables, with 88 percent of these products facing a tariff in the range of 21–50 percent. The European Union's escalating tariffs for tomato and apple-based products inhibit a potentially large level of trade by nonmember countries. Tariffs facing most processed fruit and vegetable products entering Canada, Japan, Korea, and the United States are below 20 percent. These low tariffs do not exclude the use of high levels of protection for particular products, as illustrated by U.S. protection of its own orange juice industry (box 13.2).

In most middle-income countries, the tariff structure is more transparent than in the Quad, but average tariff levels are higher (table 13.10), posing a challenge to would-be external suppliers. Average applied MFN tariffs in Brazil, India, and Morocco, for example, are far higher than in the high-income

countries analyzed above. Ninety-four percent of MFN tariff lines for fresh fruits in India are between 21 and 50 percent, while all "MFN" fruits entering Morocco face a tariff of more than 50 percent. (In contrast, Indonesia and South Africa have tariff structures similar to those of Japan and the United States, with most tariff lines falling between zero and 10 percent.) The potential hindrance of these high tariffs to developing-country exports should not be underestimated. As seen above, South-South trade in fruits and vegetables is growing rapidly and now represents about one-fifth of developing countries' exports.

Preferential Market Access and Magnitude of Preference

The protection structure just described does not apply equally to all exporting countries. Many high-income countries maintain a complex system of preferential access (that is, better-than-MFN access) designed to provide privileged partners with favorable entry without undermining the protection of domestic producers. The product coverage of preferential access schemes is wide, but

BOX 13.2 The U.S.-Brazilian Trade Dispute over Orange Juice

The world market for orange juice is basically a duopolistic market structure, with only two players, the United States (mainly Florida) and Brazil, supplying roughly 85 percent of the world market. Over 95 percent of Brazil's production is exported, whereas more than 95 percent of U.S. orange juice is consumed domestically. Of the U.S. imports of concentrated orange juice, some 90 percent comes from Brazil. Imported orange juice is mixed with U.S. juice to improve its color and make up for seasonal supply shortfall. This trade pattern reflects Brazil's production cost advantages, which in turn mirror lower labor costs in Brazil, reinforced in recent years by the devaluation of the *real*. The United States levies a tariff of 7.85 cents per liter on Brazilian orange juice. In addition, an antidumping order remains in effect, with dumping duties ranging from 2 percent to 27 percent on imports of the Brazilian product.

Furthermore, Brazilian exporters pay a "Florida equalizing excise tax" on frozen orange juice concentrate, from which domestic producers in Arizona, California, and Texas whose juice is also blended with Florida orange juice are exempt. The proceeds of the tax are allocated by statute to the exclusive promotion of Florida-grown citrus products. According to one estimate, the

combined tax and duty accounts for nearly 50 percent of the cost of a ton of Brazilian concentrate. This discrimination between imported and domestic products has prompted Brazil to initiate a dispute settlement process at the WTO. In March 2002 the government of Brazil requested bilateral consultations under WTO auspices with the United States regarding the "equalizing excise tax." Brazil argued that the incidence of the tax on imported processed citrus products and not on domestic products constitutes a de facto violation of most-favored-nation and national treatment provisions of GATT (General Agreement on Tariffs and Trade) (Articles II:1(a), III:1 and III:2, GATT 1994).

Interestingly, the private sector has already taken pragmatic actions to deal with these problems, through joint investments and joint production. In an increasingly common tariff-jumping tactic, the Brazilian producers in the early 1990s began to invest directly in the Florida industry. It is estimated that foreign—mainly Brazilian—companies own as much as 40 percent of the Florida processing industry. The U.S. presence in Brazil's citrus industry started in the 1960s, when winter freezes prompted U.S. growers to seek out Brazil for planting.

Source: Thunder Lake Management 2002.

entry is often limited by quotas for "sensitive products" such as those put in special protocols (such as bananas).

The major EU preferential access schemes relevant to trade in fruits and vegetables include the Everything but Arms (EBA) initiative that benefits the 48 UN-defined least-developed countries (LDCs); the EU-ACP Lomé Conventions, under which the European Union grants unilateral preferential access to 75 African, Caribbean, and Pacific (ACP) countries, bilateral agreements such as the Euro-Med Agreements between the European Union and many Mediterranean countries, and the EU-South Africa free trade area; and the generalized system of preferences (GSP).

A large number of countries also enjoy preferential access to the United States through formal regional, bilateral, and preferential trade agreements. These include NAFTA, the African Growth Opportunity Act (AGOA), the Caribbean Basin Economic Recovery Act (CBERA), the Andean

Trade Preference Act (ATPA), and free trade agreements with Israel and Chile. Since NAFTA was signed, tropical fruits shipped from Mexico (mangoes, guavas, avocados, and papayas) have been subject to steadily reduced tariffs. Since January 2003 they have entered the U.S. market free of duty.

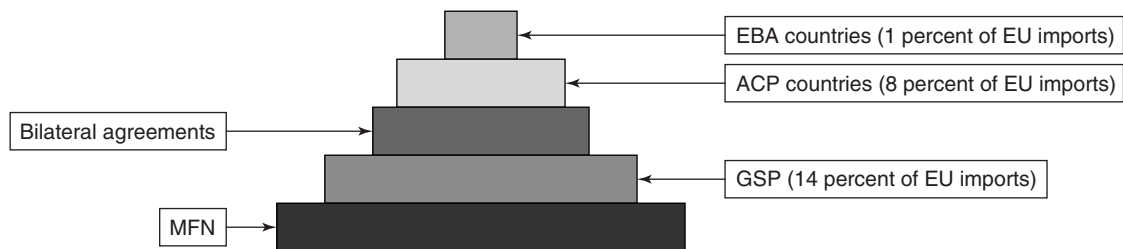
While these different agreements are not always directly comparable, it is clear that they provide varied degrees of preference to the suppliers involved. Figure 13.7, adapted from Stevens and Kennan (2000), highlights the hierarchy of preferences within the European Union's fruit and vegetable import regime as of 2003. The major changes since 2000 include the promulgation of the EBA initiative and the multiplication of bilateral agreements, which erode the preferences of those on top of the pyramid. The ranking of preferences depends on the difference between preferential versus MFN tariffs (that is, the margin of preference), the breadth of product coverage, the extent of quota limitations, and the degree of certainty of

TABLE 13.10 Percentage of Tariff Lines at Different Levels in Selected Developing Countries, 2001

Tariff Levels (percent)	Brazil	India	Indonesia	Morocco	South Africa
<i>Fresh fruits</i>					
Duty free	0	0	0	0	15
1–10	0	0	100	0	47
11–20	100	3	0	0	29
21–50	0	94	0	0	9
Over 50	0	3	0	100	0
Specific, compound, mixed lines	0	0	0	0	0
<i>Fresh vegetables</i>					
Duty free	24	0	2	0	46
1–10	0	0	98	0	6
11–20	76	85	0	13	30
21–50	0	15	0	19	13
Over 50	0	0	0	68	0
Specific, compound, mixed lines	0	0	0	0	6

Note: Average applied out-of-quota ad valorem and ad valorem equivalents of non-ad-valorem tariffs for those equivalent data reported.

Source: WTO IDB database.

FIGURE 13.7 The Hierarchy of Preferences in the European Fruits and Vegetables Market

Source: Authors' calculations using COMTRADE data and based on Stevens and Kennan 2000.

preferences. The key characteristics of the European Union's preference system are:

- Duty-free and quota-free access for LDCs under the EBA initiative.¹² The beneficiary countries generally lack the capacity to provide reliable supplies, in part because of poor infrastructure and other behind-the-border constraints. Even with EBA, they accounted in 2002 for only 1 percent of the European Union's imports of fruits and vegetables from outside the EU.
- Generous access for ACP countries, accounting for 8 percent of the European Union's third-country imports. Just a few countries—including Cameroon, Côte d'Ivoire, and Kenya—account for the bulk of this trade.
- ACP access for bananas is limited by quotas. ACP countries enjoy, within the allocated quota of 850,000 tons, duty-free access to the EU banana market (until 2008), whereas third-country suppliers face a duty of €75/ton.¹³
- Preferential access for many countries comes through bilateral agreements. The concessions granted under these agreements are typically restricted to certain tariff quotas or to certain periods of the year, depending on the EU season.

Tensions between opening markets for privileged partners and protecting domestic producers have led to a widespread use of tariff rate quotas (TRQs) in fruit and vegetable trade. In 2000 developed countries applied 355 TRQ schemes to imported fruits and vegetables, compared with 56 for tropical beverages and processed agricultural products (Jabati 2003). Quotas are typically set at low levels with low in-quota tariffs and prohibitive over-the-quota tariffs. A good example is that of winter seedless grapes, a product exported by some Southern Hemisphere suppliers, including South Africa and Namibia. Namibia may export only 900 tons per year to the European Union from November to end of January (Jabati 2003). Any over-the-quota export is subject to an import tariff of 16.4 percent. The tariff and period restrictions clearly constitute a constraint for Namibia if it wants to increase its exports.

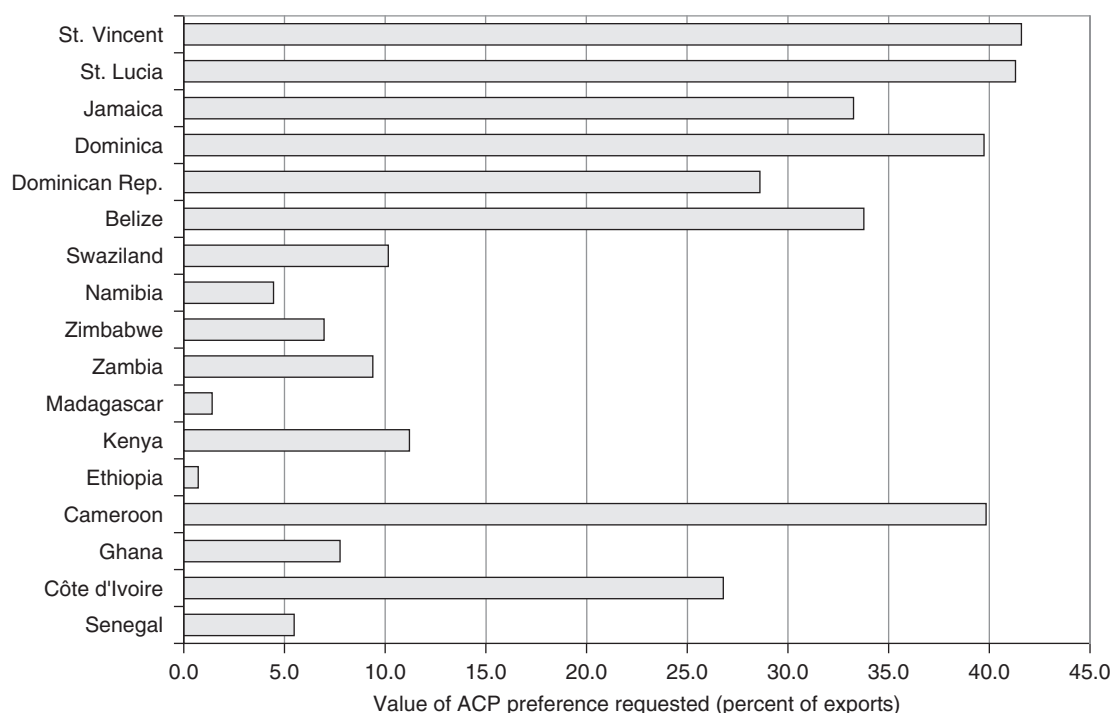
Analysis of the value of ACP and AGOA preferences show heterogeneous situations among ACP countries, while South Africa stands out as the only country taking significant advantage of the AGOA preference. It has been argued that preferential treatment has contributed to the successful penetration of some developing countries into the EU

market (Stevens and Kennan 2000). We examine here the effectiveness of ACP and AGOA preferences for fruits and vegetables exported to the European Union and United States, respectively. These indicators are preferred over changes in MFN tariffs, which do not capture the variety of specific trade regimes in the European Union and the United States that are relevant for many developing countries.

The value of an ACP preference can be defined as the product of the value of exports for which preferences have been requested and the preferential margin (figure 13.8). The value of the ACP preference in fruits and vegetables represented 12 percent of ACP country exports, with a great deal of variation around the average.¹⁴ The ACP “rent” stood at less than 5 percent for Ethiopia, Madagascar, and Namibia, but between 28 and 42 percent for major banana producers such as Cameroon, the Caribbean islands, and Côte d’Ivoire.

In terms of scope, about 82 percent of ACP fruit and vegetable exports to the European Union are eligible for preference. Use of this preference is quite high, with an average 75 percent of eligible exports requesting preference. Use rates vary widely across ACP countries, however.

FIGURE 13.8 Value of Fruit and Vegetable Preference for Major ACP Exporters, 2002



Source: World Bank staff calculations based on the EU Commission Database.

In sharp contrast with the ACP scheme, the use of the AGOA preference to export fruits and vegetables to the United States is not yet a widespread practice in Africa, since only 14 of 38 AGOA countries exported fruits and vegetables to the United States in 2002. Among those having done so, however, the use of the AGOA preference was high, averaging 73 percent (see annex table A3). The very small number of countries that have exported fruits and vegetables under AGOA is associated with the constrained logistics on African–U.S. trade in perishable products, the very limited degree of U.S. private investment in Africa in this field, and stringent U.S. phytosanitary requirements.

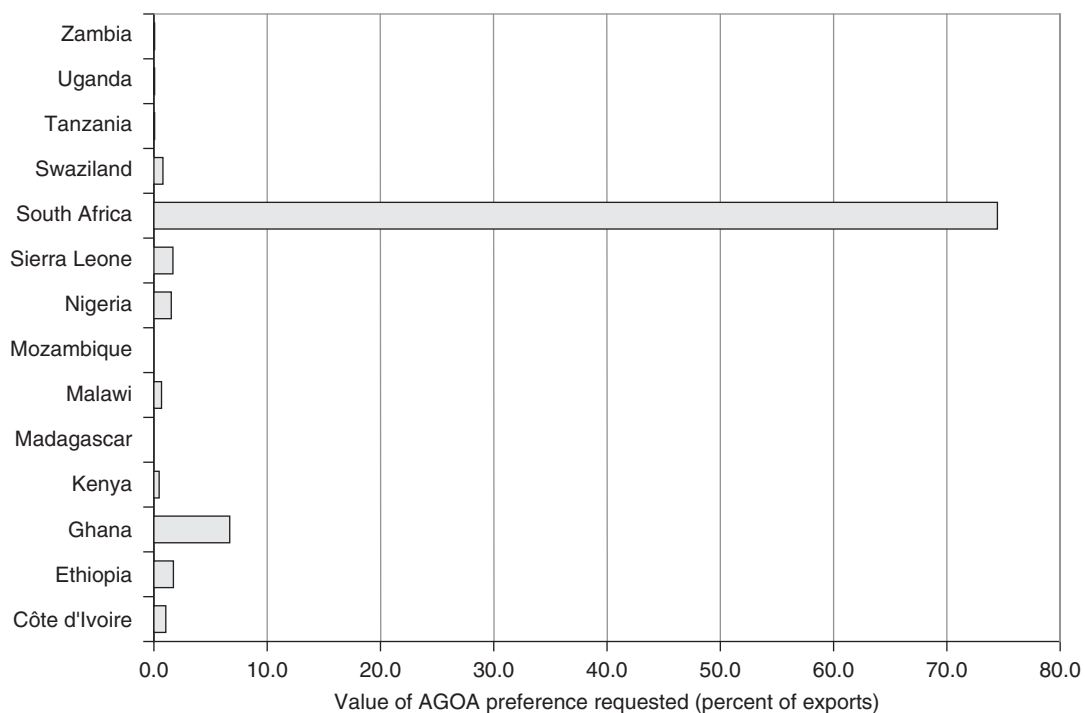
Not surprisingly, countries that have more advanced logistical systems and stronger international marketing ties (for example, South Africa) are better placed to benefit from AGOA. In fact, South Africa is the only AGOA country for which the preference “rent” represents a significant share of export values (74 percent) (figure 13.9). Few other African countries have a comparative advantage in servicing the U.S. market and, given comparative freight costs and availability, find the European market a more attractive outlet. We analyze these issues further in the next section.

As more and more countries are enjoying better-than-MFN access to the EU market, preferences are eroding and competition is stiffer—as illustrated by the experience of large middle-income exporters (figure 13.10). Morocco, South Africa, and Turkey are large exporters of fruits and vegetables that enter the European Union under bilateral agreements with limitations on some products.¹⁵ Morocco, among the first countries to sign preferential agreements with the European Union in the late 1960s, has lost ground in the EU market to Turkey since Turkey’s free-trade agreement with the European Union was signed in 1998. South Africa recently unseated Turkey in the EU market and is now the largest third-country supplier of fruits and vegetables to the European Union (with a 31 percent share). Turkey holds a slightly lower share (29 percent), while Morocco lags far behind (22 percent, down from 37 percent in 1980). In several products (citrus fruit, tomato products, dried fruit, and fruit juice), these suppliers have competed directly.

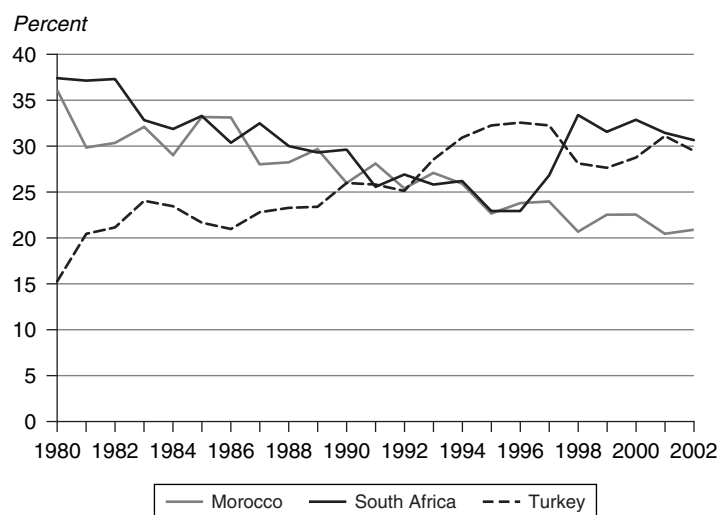
Determinants of Success in Fruit and Vegetable Export Markets

Many developing countries have sought to take advantage of emerging international markets for

FIGURE 13.9 Value of Fruit and Vegetable Preference under AGOA



Source: World Bank staff calculations based on USITC Database.

FIGURE 13.10 EU–Third Country Imports and the Share of Key Exporters

Source: COMTRADE.

fresh and processed fruit and vegetable products. Yet, as noted above, relatively few have achieved dominance in a range of such products. In Sub-Saharan Africa several dozen countries have participated in this trade, yet just three—Côte d’Ivoire, Kenya, South Africa—accounted for nearly 90 percent of the region’s trade in recent decades. Only a few other countries in the region have been able to sustain growth in their horticultural trade over time; none has emerged as a major player in the international market.

Success Factors

To succeed in exporting fruits and vegetables, a country must have important assets that provide an initial comparative advantage. Among those assets are favorable agroclimatic conditions and ample and accessible land and water resources; a physical location on the sea or close to a major market; ample and relatively inexpensive labor; and a class of entrepreneurs with commercial experience. Many countries may possess some or even most of these assets. But translating them into a competitive horticultural industry that maintains or improves its competitiveness over time requires a distinctive set of investments and institutional structures, a range of facilitative government policies, and, usually, a bit of luck (Jaffee 2003; Gabre-Madhin and Minot 2003; FAO 2003; Huang 2004).

Jaffee (1993) examines the ingredients common to the initial growth and subsequent maturation of

some of the developing world’s leading fresh and processed fruit and vegetable success stories—among them Brazil, Chile, Kenya, Mexico, and Taiwan (China). In each case, the initial take-off occurred during a period of stable macroeconomic conditions and the presence of a favorable investment climate. Important initial catalysts for export growth included sudden shortfalls in major overseas markets, new foreign direct investment or strategic partnerships, and improvements in international logistics capacity. International technical and marketing partnerships provided a vehicle for the transfer of technology, for new market penetration, and for creating an identity for the products from the exporting country.

Many countries have experienced short-term spurts in horticultural exports; few have been able to consolidate their early gains. Those that have done so invested in research and adopted international technologies, expanded and upgraded logistical facilities, strengthened vertical supply chains, developed industry organizations for collective action, and built credible systems for quality assurance and food safety management. Industry expansion induced the development of associated industries, such as packaging, equipment supply, and technical consulting, which in turn contributed to the underlying competitiveness of the industries. Further investments were made in the industries’ underlying assets, for example, through irrigation development and worker and management

training. Synergies have generally developed between export horticulture and complementary industries such as domestic catering and tourism.

With certain historical exceptions, in most of the long-standing industries the private sector dominates the commercial dimensions of the business, while governments play a substantial and multidimensional facilitative role. In the early stages of industry development, the public sector has been critical in improving transportation and port/airport infrastructure, investing in research and farm advisory services, facilitating access by investors and farmers to suitable land, helping to transfer technologies and skills, and advancing the broad array of policies that make for a conducive investment climate (box 13.3). Over time, other important functions for government have emerged, notably sanitary and phytosanitary control, promotion of competi-

tion within the industry and in critical support services, negotiation of favorable international market access, and resolution of trade disputes.

Explaining Intercountry Differences in Export Performances

Focusing on the factors identified in the literature as influencing export performance, this section attempts to quantify their importance in determining the value of fruit and vegetable exports across a sample of 45 developing countries. The theoretical anchor of the empirical investigation is Redding and Venables' geographic and trade model (Redding and Venables 2002).¹⁶

The variables assumed to have a significant impact on the value of fresh and processed fruit and vegetable exports are grouped into supply-capacity

BOX 13.3 Peruvian Asparagus Exports—A Standard Success Story?

Once the leaders of Peru's asparagus industry and government specialists realized that it was in the best interest of the country, they worked together to bring national standards in line with international norms. The industry—and Peru—have greatly benefited as a result. Over the past decade, Peru has quickly risen to become one of the world's largest exporters of asparagus. In 2002 earnings reached \$187 million, representing nearly 25 percent of Peru's total agricultural exports. Peru is able to produce quality asparagus year-round, yet because of high transportation costs, its exporters are unable to match prices with inexpensive asparagus from some other countries. Nonetheless, they have continued to increase exports and gain market share by growing asparagus of consistently higher quality that can be internationally certified. By meeting international standards, Peruvian exporters have increased production and worker efficiency, gained access to industrialized country markets, built customer loyalty, and drastically reduced the industry's risk of trade disruptions caused by poor quality, food safety hazards, and plant disease.

In 1997 Spanish health authorities asserted that two cases of botulism had been caused by consumption of canned Peruvian asparagus. Despite assurances from the Peruvian government and companies, press coverage of the botulism scare left an unfavorable impression among consumers in European markets, causing sales to slump in Peru's leading market. The

incident helped motivate the industry and government to take action, by reinforcing the fact that one careless exporter could disrupt markets.

Beginning in 1998, officials of the Peruvian Commission for Export Promotion (PROMPEX) convinced the asparagus industry to implement the Codex code of practice on food hygiene, not because it was the easiest but because it was the most appropriate. PROMPEX specialists worked closely with industry leaders and production managers to ensure proper implementation of good hygiene standards. The industry soon saw improved production methods, greater worker efficiency, and better product quality.

Thus, when the national fresh asparagus norms were published in early 2001, because the industry was already familiar with the concept of national standards, producers quickly complied with little argument. The first national norms—for fresh asparagus—established a quality and performance baseline for the industry that allowed many to generate the skills and experience needed to voluntarily certify under more stringent international standards, including HACCP (hazard analysis and critical control point), traceability systems, and Good Agricultural Practice (GAP) certification. Many large exporters have reached the level where they can now be certified under the even stricter EUREPGAP protocol.

Source: Tim O'Brien, Interamerican Institute for Cooperation in Agriculture.

variables and market-access variables. Supply-capacity variables include:

- Domestic market size, captured by the size of urban population.
- Infrastructure, proxied by the percentage of paved roads and access to telephones.
- Institutional quality and setting, captured by two variables: the number of days to enforce a contract and whether or not the country is a signatory of the International Plant Variety Protection Convention (a dummy variable).
- Human capital, captured by two separate variables: availability of semi-skilled labor, captured by the adult literacy rate, and managerial capacity, proxied here by the level of manufacturing exports.

Market-access variables include:

- Geographic variables: landlocked status (dummy), which increases distance and cost to reach markets.
- Volume of air transport freight (in millions of tons per kilometer). This variable attempts to capture freight space availability and the economies of scale in international transport (Clark, Dollar, and Micco 2002). The higher the volume of freight, the higher the economies of scale realized by shippers and the lower the transport cost.¹⁷
- Existence of a preferential agreement with the European Union or the United States (dummy variable).

Table 13.A2 (on the accompanying CD-ROM) reports our estimations of the equation for fresh fruit and vegetable exports and for processed fruits and vegetables. Common factors—notably distance (landlocked status) and the level of human capital—explain success in both fresh and processed export markets.

- Literacy and managerial capabilities exert a strong, robust, and statistically significant impact on export of fresh and processed fruits and vegetables. This result reflects two facts. First, horticulture is a knowledge-intensive business. Second, success in world markets requires the availability of a skillful class of entrepreneurs.

- Remoteness (that is, being landlocked) has a significant adverse effect on fruit and vegetable exports, corroborating the literature on geography and trade—for example, Frankel and Romer (1999), who showed that countries that are landlocked or remote from major markets tend to trade less than those that are not.
- Domestic market size comes out with a negative sign in almost all estimations (although at a statistically insignificant level), apparently contradicting the usual argument that exporting fruits and vegetables requires the prior or parallel development of domestic markets and experience in brand name merchandising (see, for example, Jaffee 1993).¹⁸

There are sharp differences in the factors explaining the intercountry performance in exports of fresh versus processed fruits and vegetables. Holding all else constant, the economies of scale obtained through large volumes of air freight are a key success factor for fresh fruit and vegetable exports but do not appear significant for processed horticultural exports (annex table A4 on the CD-ROM). This is because economies of scale translate into lower transportation costs, which claim a larger share of final value for fresh products than for processed products. Clearly, higher spoilage and handling costs make fresh produce much more expensive to transport, explaining why more countries tend to import fresh produce from the closest producers (Huang 2004). In contrast, because they are easier to handle and are almost universally shipped by sea, transport costs are smaller for processed products, making the geographical outreach of processed trade much larger.

The other factor that has a differentiated impact on fresh versus processed exports is the level of protection. While preferential access to the European Union or the United States has a positive and significant impact on export of processed horticultural products, it is not statistically significant at 5 percent for fresh product exports. This result is consistent with the structure of tariffs analyzed above, which features a high degree of escalation in OECD countries.

In conclusion, our estimations show the critical importance of proximity to major export markets and availability of human capital as common factors explaining success in exports of both fresh and

processed horticultural products. They also indicate that countries wishing to boost exports of fresh products should invest in high-quality logistics, whereas those seeking success in processed markets need to develop or tie in with leading product brands and circumvent tariff escalation through preferential agreements with major trading partners or within the framework of multilateral negotiations.

Conclusion

This chapter has highlighted the major global, regional, and product-specific trends in fruit and vegetable products trade and examined major structural and policy factors that have affected this trade over the past two decades. Growth in world imports was 2–3 percent a year in the 1990s, representing a deceleration in the rate of growth from the 1980s. This slower growth in world trade in the 1990s was strongly affected by the European Union, which experienced relatively low growth in population and income during the decade and had many mature and saturated product markets. Adverse price movements for fresh and processed products from the mid-1990s onward also contributed substantially to the overall deceleration in the growth of trade values. Robust growth in trade has continued among NAFTA countries, for sales to high-income Asian countries, and between developing countries.

For developing countries, fresh and processed fruits and vegetables is now one of the most important categories for agro-food trade, accounting for about 22 percent of their exports in 2000–01. This is far larger than their current level of trade in many traditional commodities. Still, although many developing-country suppliers have entered this field, relatively few countries have achieved sustained success at a high level—testimony that the industry is highly competitive and rapidly changing, and that it requires sustained investments in infrastructure, human capital, technology, and good governance.

Unlike the situation in many other agricultural sectors, production and export subsidies are not common in horticulture. Instead, domestic fruit and vegetable producers are protected through regulation of market access. The European Union, Japan, and the United States use, to varying

degrees, complex protection tools—among them highly dispersed ad valorem tariffs, specific duties, seasonal tariffs, tariff escalation, and preferential access along with tariff-rate quotas. A complex system of preferential access in many rich countries provides privileged partners with favorable entry without undermining protection of domestic producers. The product coverage of preferential access schemes is wide but quotas for “sensitive products” often limit entry. Tariff escalation for processed fruit and vegetable products is widespread, although its extent varies significantly between regions.

Because horticultural sectors throughout the world have traditionally seen a low level of direct government interventions, changes in domestic support cannot affect the sector broadly or significantly. Reductions in tariffs and other import restrictions, however, are critical in determining the impact of trade agreements and policies on world horticultural trade. Further tariff liberalization efforts would need to reduce tariff peaks, especially in the European Union and the Republic of Korea. Past trends suggest that the main beneficiaries from such reforms will be a limited number of middle-income countries that have developed strong production, postharvest processing, logistical marketing, and sanitary and phytosanitary management systems over the years and that continue to attract new investment. With only a few exceptions, low-income countries still face enormous supply-side challenges in taking advantage of existing and future international market opportunities.

Notes

1. More detailed tables on trade flows and tariffs are presented on the attached CD-ROM.

2. “Statistics on Foreign Trade of Vegetables.” Vegetable Supply Stabilization Fund. Tokyo. October 2002.

3. This reflects the heavy influence of Spain, which is the global leader in fresh fruit exports (mainly oranges and clementines). Italy is also a significant exporter of grapes, apples, and peaches.

4. Bananas accounted for more than 80 percent of the fresh fruit imported by the European Union from these countries (Huang 2004).

5. Between 1993 and 2003, gross domestic product growth in Germany averaged 1.4 percent, the lowest among EU member states.

6. See box A1 in annex to this chapter in the CD-ROM.

7. Lacking a better alternative, food prices are considered here as a proxy for the prices of fruits and vegetables. The main caveat associated with this is that the range of goods covered in

the food-price index is wider than what a proper (and exogenous) fruits and vegetables import price index would cover.

8. Mexico remains the world's top exporter of many smaller vegetable products—among them asparagus, eggplant, and onions.

9. The bulk of Syria's trade is with other Middle Eastern countries; Argentina's is targeted primarily to other Latin American countries.

10. The aggregate measure of support was defined in the Uruguay Round Agreement on Agriculture as an aggregate subsidy measure, designed to quantify and compare countries' annual levels of domestic support. It aggregates the effects of all trade-distorting policies (direct subsidies plus implicit subsidies from border measures) into a single measure of support.

11. An importer can choose one of the three following methods to calculate entry price: the standard import value (SIV), calculated daily by product and by origin and published in EU's Official Journal; the f.o.b. price of the product in the country of origin; the effective resale value of the shipment concerned.

12. Bananas are the only exception in the fruit and vegetable category. For this product, duty-free access is phased in between 2002 and 2006 by a 20 percent yearly tariff reduction. This is unlikely to have a significant impact in the short run, however, as all LDCs producing bananas of export quality belong to the ACP group, which enjoys duty-free access.

13. This preferential access has allowed countries like Cameroon, Côte d'Ivoire, and Dominican Republic to compete with lower-cost Latin American suppliers (Costa Rica, Ecuador).

14. For more details regarding the definitions and estimations of these indicators, see chapter 4 of this volume.

15. A recent study has identified three categories of products that receive different treatments under the European Union and Mediterranean countries trade agreements: first, the products for which the preferential margin (tariff difference with MFN) is granted without quantitative restriction but with seasonal restrictions (such as tomatoes); second, the products for which the tariff reduction applies solely if the entry price is higher than a reference price in EU; and a third group for which the impact of tariff reductions are severely limited by quota restrictions (such as bananas and olives). Chahed and Drogué (2002).

16. The empirical model and its derivation from the Redding and Venables' theoretical model is described in box A2 of the annex to this chapter in the attached CD-ROM.

17. Lack of data prevented us from using the volume of maritime freight.

18. As noted earlier, a large and rapidly growing urban population (as in China and India) can absorb very large quantities of fruit and vegetables and lead entrepreneurs to focus on servicing the domestic market.

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