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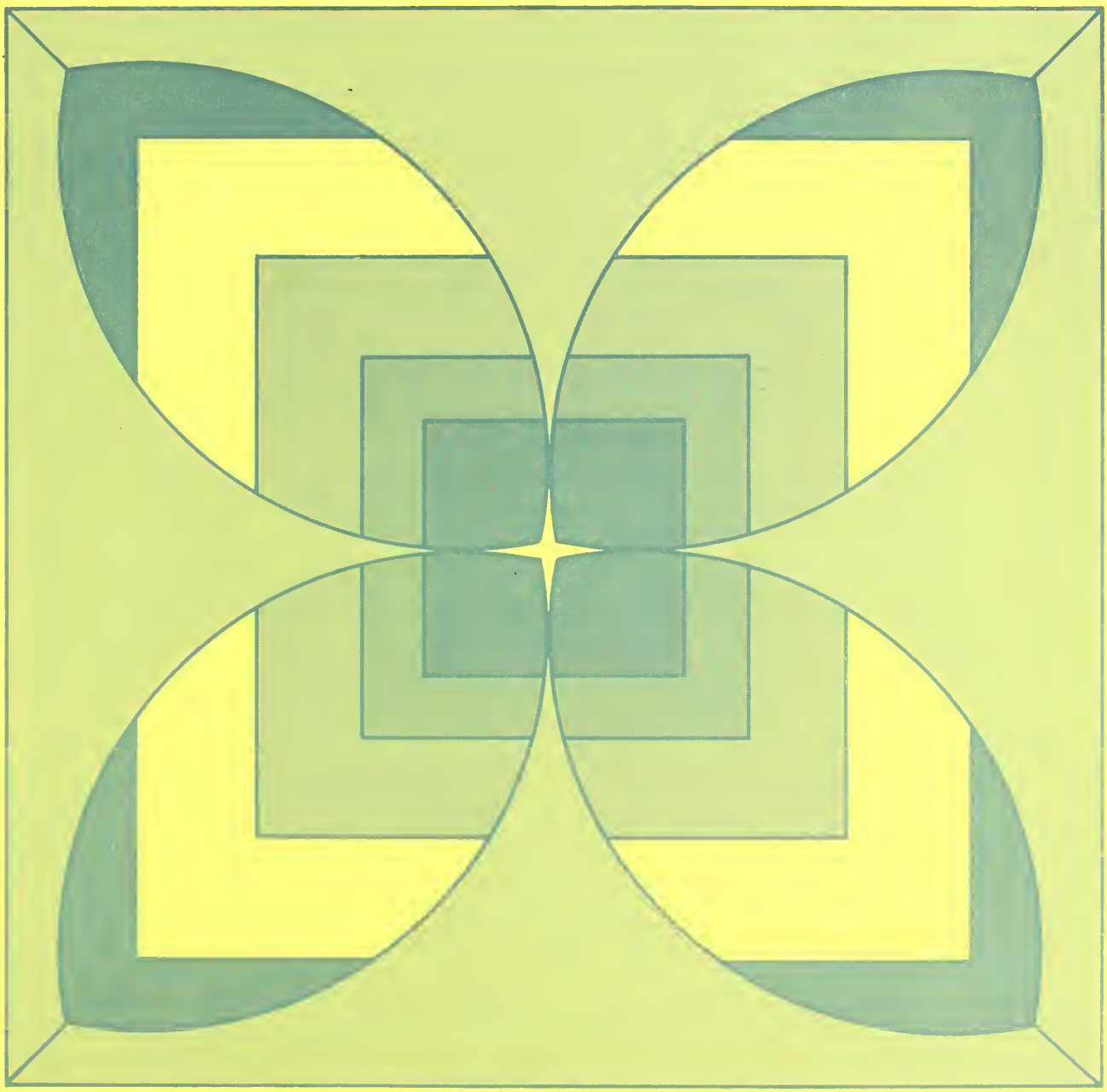
World Trade in Fruits and Vegetables

Projections for an Enlarged European Community

Alexander H. Sarris



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World Trade in Fruits and Vegetables: Projections for an Enlarged European Community, by Alexander H. Sarris, International Economics Division, Economic Research Service, U.S. Department of Agriculture. Foreign Agricultural Economic Report No. 202.

Abstract

Enlarging the European Community (EC) to include Greece, Spain, and Portugal will not significantly change the general pattern of world trade in fruits and vegetables, but will lead to larger exports to the EC by the new member countries. EC enlargement will only slightly depress prices of U.S. fruit and vegetable products from their nonenlargement projected levels. World supplies will rise faster than world demand, leading to lower prices on the international market.

Keywords: European Community, Spain, Greece, Portugal, enlargement, fruits, vegetables

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Glossary

The groups of countries discussed in this report, with their members, are identified below:

EC-9—European Community: Belgium, Denmark, Federal Republic of Germany (West Germany), France, Ireland, Italy, Luxembourg, Netherlands, United Kingdom

EC-12—European Community: EC-9 plus Greece, Portugal, and Spain

OWE—Other West European countries: Austria, Finland, Norway, Sweden, Switzerland

SGP—Spain, Greece, and Portugal

EEU—All centrally planned East European countries: Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, Soviet Union, and Yugoslavia

USA—United States of America

CNJP—Canada and Japan

OEX—Other major exporting countries (of fruits and vegetables): Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa

NAME—North African and Middle Eastern countries (with significant trade in fruits and vegetables): Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, Turkey

ACP—African, Caribbean, and Pacific countries with which the EC signed the Lomé Convention Agreement

RSW—All remaining countries of the world

Foreword

The European Community (EC), the largest market for U.S. agricultural exports, is expanding for the second time. This enlargement began when Greece joined the EC on January 1, 1981, and is expected to encompass Spain and Portugal near the mideighties.

The second enlargement appears to be even more significant than the first (which took place in January 1973 when Denmark, Ireland, and the United Kingdom joined the original six members) because it will considerably increase the economic and agricultural diversity of the EC. The second enlargement also will occur during modification of the Common Agricultural Policy (CAP) necessitated by a budget crisis. The expansion of surplus agricultural production in the EC has led to large expenditures under the CAP for surplus disposal. Expenditures are exceeding revenues available to the EC through their own resources provided by the basic treaties. Some modification of the CAP has already occurred.

To assess the implications of EC enlargement and modification of the CAP on U.S. agriculture, the Western Europe Branch, International Economics Division, Economic Research Service (ERS), U.S. Department of Agriculture (USDA), initiated a research program. This program included cooperative efforts between USDA researchers and those at various U.S. universities. Researchers at Stanford University have developed a framework for analysis of probable developments in the CAP, *Developments in the Common Agricultural Policy of the European Community,* published by ERS as FAER-172. Michigan State University researchers examined Spain's feed-livestock sector, published by ERS as FAER-180. Researchers at the University of California-Berkeley have analyzed the implications of EC enlargement for trade in selected fruits, vegetables, and nuts. This report presents a model for projecting world trade patterns in fresh, dried, and processed fruit, and fresh and processed vegetables and generates preliminary projections of EC imports in 1986. Readers are urged to obtain the companion study carried out at the University of California—FAER-191—for projections based on a detailed analysis of the structural aspects of the EC's trade in oranges, grapes, raisins, almonds, processed peaches, and processed tomatoes. A trade share analysis study of the EC market for U.S. agricultural exports was carried out and published by ERS as FAER-179. For ordering information on these and other related reports, see inside covers.

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Barbara Hiller assisted with several computations and provided helpful critique in the early stages. Her untimely death deeply shocked all who had known her and had enjoyed her cooperation. Max Leavitt contributed substantially in the computer manipulation of the large data base and also helped with some of the programs written during the course of the research. Thomas Reardon and Kostas Stamoulis also provided able research assistance. Reed E. Friend and David R. Kelch of WEB, IED, ERS, USDA, helped greatly with suggestions, data, and the tapes ultimately used in the computations and also provided several unpublished reports and other information that substantially enhanced our understanding of the fruit and vegetable trade. Timothy Josling of Stanford University, Jean Claude Montigaud of the Institut National de la Recherche Agronomique in Montpellier, France, and Roberto Pasca of the University of Naples at Portici, Italy, helped sharpen my understanding of the problem. Others who helped at various stages of the project were: J. Wolf and M. de Nigris, Food and Agriculture Organization of the United Nations, Rome; R. Mildon, European Community (EC) Commission, and D. McLaughlin, Economic and Social Council of the EC, Brussels; F. Pfahler, Statistical Office of the EC, Luxembourg; George E. Rossmiller, Foreign Agricultural Service, USDA, Washington, D.C.; T. Nederveen, Organization for Economic Cooperation and Development, Paris; G. Boddez, University of Leuven, Belgium; I. Reid, Wye College, England; F. Panagiotopoulos, Agricultural Bank of Greece; T. Lianos, Athens Graduate School of Business; D. Damianos, Meletes Consulting Group, Athens; G. E. Schuh, University of Minnesota-St. Paul; and K. Moulton, Cooperative Extension, University of California-Berkeley. Patricia Colleran, Penny Folds, Gertrude Halpern, and Natalie Nagata typed the manuscript submitted to USDA. Barbara Brygger, WEB, IED, ERS, USDA, typed the revised manuscript.

Contents

Summary

Enlarging the European Community (EC) to include Greece, Spain, and Portugal will not significantly change the general pattern of world trade in fruits and vegetables, but will lead to larger exports to the EC by the new member countries. EC enlargement will depress only slightly the prices of U.S. fruit and vegetable products from their nonenlargement projected levels. World supplies are expected to rise faster than world demand, leading to lower prices on the international market.

This study employs an empirical analysis of international trade data for five categories of Mediterranean products: fresh fruits, dried fruits, processed fruits, fresh vegetables, and processed vegetables. It estimates world trade models that differentiate products by country or region of origin for each of these product categories. The study uses these analytical models to project future trade patterns under two assumptions: that the EC will enlarge its membership to include Spain, Greece, and Portugal, and that it will not. These two sets of projections are used to isolate effects due solely to enlargement.

Current trends in exports of fruit and vegetable products, combined with forecasts of income growth, point to substantial deterioration in export prices of these products in the next 3-5 years. Dried fruits are an exception. EC enlargement will improve this situation only slightly for most exporters, but substantially for Spain, Greece, and Portugal because of tariff elimination through EC membership.

World trade patterns, as represented by export and import shares, will not change much in the next 3-5 years. EC enlargement will increase the share of Spanish, Greek, and Portuguese exports to the EC at the expense of all other EC suppliers. In absolute terms, however, the declines in other regions' exports to the EC will be much smaller than the increases of these three countries' exports.

EC enlargement will create more trade in fruit and vegetable products within the enlarged EC: about $400 million yearly in 1977 prices. Trade diversion, by contrast, is estimated at about $250 million yearly in 1977 prices. The cost of trade diversion will be borne rather uniformly across all EC suppliers except for Spain, Greece, and Portugal.

World Trade in Fruits and Vegetables: Projections for an Enlarged European Community

By Alexander H. Sarris*

Introduction

The European Community (EC) was most recently enlarged on January 1, 1981, when Greece became the 10th nation to join the EC.[1] Spain and Portugal have also applied for full EC membership, and negotiations are underway, with an expected accession near the mid-eighties. Much of the discussion concerning EC enlargement with these three countries has centered on the possibility that world trade in Mediterranean agricultural products, mainly fruits and vegetables, could thus be disrupted. This report provides a quantitative answer to this issue.

Agriculture and a common policy toward it are among the key bonds holding the EC together *(1)*.[2] Hence, agriculture has loomed large in the enlargement negotiations with Spain, Greece, and Portugal because the national product depends far more on agriculture in these three countries than in most others of the current EC. Concerns over enlargement have centered principally on the Mediterranean products (mainly fruit, vegetables, wine, and olive oil), as the climate of the three new countries clearly favors production of these crops. It is uncertain whether the protective umbrella of the EC's Common Agricultural Policy (CAP) will induce large excess supplies of these products in the enlarged EC that might adversely affect the producers of similar products in the EC.

Nations outside the EC have had different concerns regarding Mediterranean products. Considered as one market, the EC is the world's largest importer of fruit and vegetable products. Significant suppliers, besides Spain, Greece, and Portugal, have been North Africa, the Middle East, Eastern Europe, the United States, South Africa, Australia, Brazil, Argentina, and Mexico. These countries worry that the CAP, by including the three large EC suppliers of Mediterranean products in the next enlargement, will hurt exports to the EC and, hence, total exports of the remaining suppliers.

This report assesses world trade patterns and estimates both trade creation and diversion in fruit and vegetable products arising after EC enlargement with Spain, Greece, and Portugal (frequently referred to as "the Three" in this report). Trade patterns generally change because of changes in the supply and demand of trading countries and because of changes in trade barriers. EC enlargement is a clear case of a change in trade barriers. The barriers to the EC market facing the exports of the three new entrants will drop to zero. However, exports of the rest of the world to Spain, Greece, and Portugal will face different barriers; namely, those that hold under the current CAP. My objective is to assess changes in trade patterns arising both from changing supply and demand conditions and from changes in commercial policies (such as levels of tariffs). The specific effects on U.S. trade have already been discussed in *(23)*.

The analysis has two dimensions. First, I construct and use closed world trade models for the five aggregate categories of fresh fruits, dried fruits, processed fruits, fresh vegetables, and processed vegetables to assess changes in terms of trade and world trade patterns likely to arise after the next EC enlargement. This approach is impossible at the individual commodity level because sufficiently disaggregated origin/destination trade data are lacking. However, for those fruit and vegetable commodities of interest to the United States, models are built for the EC import trade pattern only, and projections are made of the trade diversion likely to arise as a consequence of the accession of Spain, Greece, and Portugal.

*The author, formerly an assistant professor of agricultural and resource economics at the University of California-Berkeley, is now a professor of economics at the University of Athens, Greece.

[1]See the glossary for a listing of the member countries of the EC-9.

[2]Italicized numbers in parentheses refer to items in the reference section.

World Trade in Fruit and Vegetable Products and the EC

The EC is the world's most important market for fruit and vegetable products. In 1977, the EC absorbed 54 percent of total world exports of fresh fruit, 47 percent of world exports of dried fruit, 53 percent of world exports of processed fruit, 60 percent of world exports of fresh vegetables, and 52 percent of world exports of processed vegetables.[3]

Although the EC is the principal market for almost all exporting regions, the United States is a significant exception because it exports the bulk of its fruits and vegetables to Canada and Japan. Trade within the EC accounts for most EC imports in all fruit and vegetable categories, except dried fruit. The EC market is critical to the export of fruit and vegetable products from Spain, Greece, and Portugal. Except for processed vegetables, the EC absorbs more than 50 percent of the Three's exports of these products. However, the Three's exports to the EC never account for more than 24 percent of total EC imports of these products. These statistics bring out the imbalance of accession negotiating power between the EC-9 and the Three regarding these products *(7)*. This imbalance manifested itself during Greek accession negotiations, which concluded with a transition period of 7 years (compared with 5 years for all other agricultural products) for the most sensitive and important Greek fruit and vegetable exports: peaches and tomatoes.

Table 1 summarizes the recent geographical distribution of EC imports of fruit and vegetable products and compares it with the geographical distribution before full enactment of the Common Agricultural Policy (CAP) in 1968. The table shows clearly that trade within the EC has increased significantly at the expense of imports from non-EC member countries. In the processed fruit category, for example, the share of EC imports from within the EC doubled from nearly 20 percent to nearly 40 percent whereas the shares of some other major suppliers of the same commodities to the EC (for instance, the United States, Australia, New Zealand, and South Africa) drastically fell by about 60 percent.

One hypothesis that may partly explain these trends is the impact of the EC's protective policy on fruit and vegetable products. This explanation is supported by data in table 2 which show the yearly growth rates (in volume terms) in total fruit and vegetable exports of several exporting countries and regions. The growth rate of processed vegetable exports (SITC 055) may illustrate the point best.[4] Table 2 indicates that, although the United States, Eastern Europe, a group of six exporters (Australia, New Zealand, South Africa, Mexico, Argentina, and Brazil), and the North African and Middle Eastern countries all exhibited percentage growth in export volume almost as great as or greater than that of the EC, their value share of EC imports dropped significantly during the same period (table 1). Thus, as supply or demand factors cannot account for this drastic shift in shares in the EC imports, the restrictive policies of the CAP would likely have contributed substantially to the result.

Changing Structure of Fruit and Vegetable Production and Consumption

Fruits and vegetables are traded internationally because of both technological and economic considerations.[5] Most fruit and vegetables were traditionally consumed close to where they were grown. Several characteristics made these products difficult to trade, such as seasonal availability, wide price swings, great variability in quality, and high perishability. Until a few years ago and in most parts of the world (even the developed parts), only a small proportion of total produce was processed. However, improved technology is producing varieties that withstand transport better and that are more homogeneous in quality and appearance. Furthermore, grades and standards that facilitate international trade are becoming internationally established.

Consumption patterns are also changing. In the developed countries and notably in the United States and Western Europe, the consumption of processed fruits and vegetables has increased compared with fresh produce. Table 3 data highlight this trend for the United States; however, some partial recent data show

[3]The tables in appendix A show the matrices of world trade (in value terms) for these five aggregate categories of fruit and vegetable products for nine world regions; the matrices of export shares (derived by dividing the elements in the world trade matrices by their row totals); and the distribution of world imports of fruit and vegetable products by country or region of origin (derived by dividing the elements of the matrices of appendix tables 1-5 by their column totals).

[4]The three-digit Standard Industrial Trade Classification (SITC) code for commodity groups analyzed in this report are as follows: fresh fruit, 051; dried fruit, 052; processed fruit, 053; fresh vegetables, 054; and processed vegetables, 055.

[5]For a cogent argument in favor of this thesis, see *(20)*.

Table 1—Origin of fruit and vegetable imports by the EC-9, value shares, c.i.f. basis

Commodity, SITC code, and year	Total[1]	EC-9[2]	Other Western Europe	Spain, Greece, and Portugal	Eastern Europe and Soviet Union	United States	Latin America[3]	North Africa and Middle East[4]	Australia, New Zealand, and South Africa	Rest of world
					Percent					
Fresh fruits (051):										
1966-67	100.0	26.3	0.2	16.9	1.2	3.1	14.5	16.3	9.9	11.7
1977-78	100.0	31.2	.3	17.7	1.3	4.8	13.1	13.8	7.2	10.3
Dried fruits (052):										
1966-67	100.0	6.5	.0	29.1	2.2	18.3	.8	27.4	15.0	.5
1977-78	100.0	7.3	.1	26.7	1.8	14.4	1.7	37.5	6.6	4.1
Processed fruits (053):										
1966-67	100.0	19.7	.9	7.6	7.3	11.3	2.8	8.4	24.5	17.5
1977-78	100.0	39.6	2.0	11.2	7.8	4.6	7.3	8.1	9.3	10.4
Fresh vegetables (054):										
1966-67	100.0	48.9	1.4	13.7	6.9	4.0	1.1	13.9	.7	9.2
1977-78	100.0	48.8	.8	12.8	3.1	2.9	2.3	8.8	.8	19.7
Processed vegetables (055):										
1966-67	100.0	41.0	.7	11.2	10.0	3.5	.8	6.7	1.0	24.8
1977-78	100.0	53.7	.4	14.2	5.0	3.8	.8	6.3	.3	15.6

Notes: c.i.f. = cost, insurance, and freight.

SITC = Standard Industrial Trade Classification.

[1]May not add to 100 because of rounding.
[2]France, West Germany, the Netherlands, Belgium, Luxembourg, Italy, United Kingdom, Ireland, and Denmark.
[3]Mexico, Central America, and South America.
[4]Turkey, Cyprus, Israel, Morocco, Algeria, Tunisia, Egypt, Iran, and Iraq.

Source: *(29)*.

Table 2—Yearly growth rates of fruit and vegetable exports, selected regions and countries, 1966-78[1]

Commodity and SITC code	EC-9	Other Western Europe[2]	Spain Greece, and Portugal	Eastern Europe and Soviet Union	United States	Australia, New Zealand, South Africa, Mexico, Argentina, and Brazil	North Africa and Middle East[3]
				Percent			
Fresh fruits (051)	3.9	−2.9	4.0	10.3	6.6	1.6	8.2
Dried fruits (052)	11.1	9.8	−.4	2.4	−.5	−2.4	3.1
Processed fruits (053)	9.7	16.3	11.7	.1	5.7	18.1	8.0
Fresh vegetables (054)	5.4	−2.3	5.0	−2.0	5.3	7.0	2.7
Processed vegetables (055)	8.6	5.3	9.9	15.3	8.4	10.3	14.8

[1]Growth rates estimated by fitting logarithmic trend lines on the volume of exports of individual countries and then weighting the individual country growth rates by the 1977 value shares in the total exports of each group.
[2]All West European countries except EC-9, Spain, Greece, and Portugal.
[3]Includes Turkey, Cyprus, Israel, Morocco, Algeria, Tunisia, Egypt, Iran, and Iraq.

Source: Computed from United Nations trade data.

that trend might be reversing. Scanty data for Western Europe also indicate the same pattern. The increasing demand for convenience foods, which arises as more homemakers become employed and as rising incomes lead to increasing consumption of food away from home, largely explains this shift.

One should view these trends recognizing that production of fruits and vegetables is still labor intensive and, furthermore, that the processing technology is mature and widely available. Thus, developing countries with relatively cheap labor will find it increasingly attractive to produce larger quantities of fruits and vegetables for export to developed countries in both fresh and processed forms.

One must place the next enlargement of the EC in the context of these wider developments. The high protective walls of the EC will probably eventually surround Greece, Spain, and Portugal, whose excess supplies of fruit and vegetable products will likely make the enlarged EC far more self-sufficient and thereby frustrate efforts of other exporters to expand supplies to international markets. This phenomenon will adversely affect the international terms of trade in fruit and vegetable products.

Structure of Protection of Fruit and Vegetables in the EC

The system of protection of fruit and vegetable products in the EC has two parts: common customs tariffs (CCT) for imports and internal regulations designed to protect EC producers.

The CAP regulations for the internal EC market in fresh fruit and vegetables are described in the EC Council Regulation No. 1035/72 *(9)*.The regulation sets quality standards for a variety of fresh fruits and vegetables[6] and another outlines a price and interven-

[6]Fruits are citrus, table grapes, dessert apples, pears, apricots, peaches, cherries, plums, and strawberries. Vegetables are cauliflower, white cabbage, brussels sprouts, spinach, lettuce, chicory, peas, beans, carrots, onions, garlic, asparagus, artichokes, tomatoes, cucumbers, and celery.

tion system for some products.[7] The regulation defines four prices:

- Basic Price—Equals the arithmetic mean of representative prices in surplus production areas of the EC for the 3 preceding marketing years.
- Withdrawal Price—Set by producer organizations. Price at which the organizations will withhold from the market products supplied by their members.
- Buying-In Price—A fixed percentage (usually 40–70 percent with variation by commodity) of the basic price. When market prices stay below buying-in prices for 3 consecutive days, member states then buy the products of EC origin.
- Reference Price—Equals the arithmetic mean of EC producer prices for the 3 preceding years plus an allowance for marketing costs of products of EC origin.

The first three prices relate to EC production and the reference price relates to imports from non-EC countries.[8] For the product of every EC importing country during the period for which reference prices are applied, the EC calculates an entry price by averaging the lowest prices recorded for the product in all EC markets for which prices are available. The entry price is further adjusted by subtracting transportation costs to the relevant EC import port and the CCT. If this entry price (which is calculated daily) stays 0.50 unit of account below the reference price for 2 consecutive market days, then a levy (countervailing charge) equal to the difference between the reference price and the average entry price of the last 2 days is applied.

This mechanism is clearly designed to keep produce of EC origin competitive with imports from third countries. Sampson and Yeats have estimated that, in 1974, the tariff equivalent of these levies for fruits and vegetables was 37.1 percent, which was substantially higher than their estimated average nominal CCT of 16.4 percent *(27)*.

[7]Products covered by the price and intervention system are cauliflower, tomatoes, sweet oranges, mandarins, lemons, table grapes, apples (other than cider apples), pears (other than perry pears), and peaches (excluding nectarines).

[8]Reference prices are applied on a seasonal basis to cucumbers, tomatoes, apples, cherries, grapes, lemons, mandarins, peaches, pears, and oranges.

The organization of the EC market in processed fruits and vegetables is outlined in Council Regulation No. 516/77 *(9)*. There are two basic mechanisms of import control besides that of the CCT. The first mechanism is a levy based on the sugar content of the produce and the difference between the threshold (analogous to reference) and import prices of sugar. The second mechanism is minimum import and floor prices which are introduced for some products at the discretion of the EC Commission. Sampson and Yeats estimated a nominal tariff equivalent of EC levies of processed fruits and vegetables of 26.8 percent in 1974 compared with an average CCT of 26 percent *(27)*.

The CCT's are complicated. They vary by year and by season for each product. They are generally higher during EC production periods and lower in off-season periods. Furthermore, the tariffs discriminate among countries of origin because the EC has signed agreements with several Mediterranean and other developing countries. Table 4 estimates the various CCT average tariff rates of the EC on fruit and vegetable imports. The average tariff rates on EC imports from Greece are low whereas the tariffs on imports from Spain are relatively high. Spanish accession with the attendant dismantling of these tariffs will obviously be the major source of any change in trade patterns in fruit and vegetable products.

Previous Literature on EC Enlargement and the Fruit and Vegetable Trade

The international trade in fruit and vegetable products occupied only a minor part of the agricultural economics literature prior to consideration of a second EC enlargement.

A World Bank study by Hunt, empirically estimating growth of supply and demand and prices of fruit and vegetable products, focused on trade in 36 fruit and vegetable products between Mediterranean countries and EC members *(18)*. The study projected production by trend extrapolation and demand by linear functions of per capita income. Trade patterns (namely, export and import market shares) were assumed unchanged. Hunt brought projected excess supplies to zero by adjusting international prices to clear each import market. He concluded that, for most fresh fruit and vegetable products, the EC import market will not be able to absorb the growing export surpluses of North Africa and the Middle East for the next 15 years. Hunt projected price declines for about two-thirds of the commodities considered. He analyzed neither processed and dried fruits nor processed vegetables.

Table 3—Per capita consumption of fresh and processed fruits and vegetables in the United States, selected years

Year	Fruits			Vegetables		
	Fresh	Processed	Total[1]	Fresh	Processed	Total[1]
			Pounds per capita			
1950	108.6	81.1	189.7	115.2	84.0	199.2
1960	93.4	102.1	195.5	105.7	96.6	202.3
1965	81.1	93.3	174.4	98.3	102.7	201.0
1970	80.1	126.3	206.4	99.1	114.6	213.1
1975	84.9	142.3	227.2	98.0	120.3	218.3
1980	89.8	135.5	225.3	107.9	110.0	217.1
1981	86.8	135.3	222.1	104.9	110.0	214.8
1982	85.7	129.4	215.1	109.4	111.4	220.9
			Shares (percent)			
1950	57.2	42.8	100	57.8	42.2	100
1960	47.8	52.2	100	52.2	47.8	100
1965	46.5	53.5	100	48.9	51.1	100
1970	38.8	61.2	100	46.5	53.8	100
1975	37.4	62.6	100	44.9	55.1	100
1980	39.9	60.1	100	49.7	50.7	100
1981	39.1	60.9	100	48.8	51.2	100
1982	39.8	60.2	100	49.5	50.4	100

[1]Some totals may not add because of rounding.

Sources: 1950-65, (*24, 25*); 1970-82, (*30, 31*).

The Food and Agriculture Organization (FAO) of the United Nations, in its 1979–80 *Commodity Review and Outlook,* included a chapter on commodity trade implications of EC enlargement in which the authors point out that the enlarged EC will be much more self-sufficient in fruit and vegetable products than it was before enlargement *(10)*. There may be some trade diversion of third-country exports to the EC due to CAP preferences toward the Three. The study does not, however, make any attempt at estimating these effects.

Several other authors (for example, Hormann *(16)* and Hinton *(15)*) have made the same point about increasing the self-sufficiency of the enlarged EC in fruit and vegetables. This point, however, which is usually made by simple division of the total quantity of a product produced within a given geographic area by the total quantity consumed (after trade external to the area has been netted out) does not indicate any direction of change in the overall trends of production, consumption, or trade.

Other studies have been of an institutional nature (for example, Montigaud and Lalfert *(22)* and Montigaud and Lauret *(21)*) and have examined the potential changes in EC policies and institutions for fruit and vegetable products. One of the points frequently made in such studies is that producer organizations in Spain, Greece, and Portugal are at an infantile stage, compared with the French and Italian ones. Hence, the pressures on the current CAP for changes favoring fruit and vegetable producers, albeit larger than current pressures, will still be small in an enlarged EC compared with pressures exerted by producers of temperate and northern products (primarily cereals and livestock products). In other words, there will be no substantive change in the current political constituency of the CAP.

Three studies by Agra Europe examine the agricultural implications of EC enlargement with Spain, Greece, and Portugal *(1, 2, 3)*. All three studies devote considerable attention to the fruit and vegetable sectors, pointing out products which could burden the CAP: peaches, tomatoes, and tomato paste for Greece; citrus, apples, peaches, nuts, and tomatoes for Spain; and processed tomatoes for Portugal. These studies, however, do not go much beyond identifying potential problem areas.

Thus, the impact of EC enlargement on trade in fruit and vegetable products seems to be an area of speculation with few hard numbers to support the arguments. The most frequent claim is that some trade diversion of exports of third countries from the EC to other areas of the world poses a threat.

Table 4—Weighted tariff rates on EC imports of fruit and vegetable products from countries with which EC has a preferential arrangement, 1974 and 1978

Country	Commodity, SITC code, and year					
	Fresh fruit (051)		Dried fruit (052)		Processed fruit (053)	
	1974	1978	1974	1978	1974	1978
	Percent					
Spain	12.08	11.74	6.00	7.98	21.26	19.91
Greece	2.12	0	.59	0	2.25	.50
Portugal	6.83	7.85	—	—	—	—
Morocco	5.38	3.41	—	16.00	21.01	10.30
Algeria	10.98	1.13	—	—	27.25	5.70
Tunisia	6.90	4.96	—	—	18.90	10.00
Egypt	9.68	4.96	—	—	18.90	10.00
Turkey	4.08	2.70	6.67	—	15.69	8.51
Cyprus	8.10	7.47	—	—	20.42	19.70
Israel	8.08	4.42	—	—	20.42	7.90
ACP[1]	16.56	.04	—	—	23.02	0
Rest of world[2]	16.40	—	—	—	26.00	—

	Commodity, SITC code, and year			
	Fresh vegetables (054)		Processed vegetables (055)	
	1974	1978	1974	1978
	Percent			
Spain	10.81	9.76	14.94	14.16
Greece	1.30	.50	1.84	.50
Portugal	7.78	14.33	17.96	12.46
Morocco	9.80	6.75	12.97	3.46
Algeria	7.45	12.96	20.00	0
Tunisia	10.52	8.56	14.79	5.39
Egypt	11.92	10.96	14.91	15.17
Turkey	3.69	2.78	14.73	11.30
Cyprus	16.67	17.08	—	22.00
Israel	10.23	10.86	17.44	15.57
ACP[1]	3.23	0	12.59	0
Rest of world[2]	16.40	—	26.00	—

— = Nil or negligible.

[1]Includes the African, Caribbean, and Pacific countries with which the EC signed the Lomé Convention Agreement.

[2]Tariff rates for world exports to EC as computed by Sampson and Yeats *(27)*. Given the preferential tariff rates, these probably underestimate the average tariffs facing the exports to the EC of countries other than the ones mentioned above.

Model for Projecting Trade Patterns

In this section, I develop a general methodology for projecting trade patterns based on the assumption that each country's exports of a particular product or product category have unique characteristics distinguishing them from similar products of other exporters. This assumption is easy to rationalize for fruit and vegetable products. Each fruit or vegetable product exported by a country carries unique characteristics. For example, there are several varieties of oranges, and each country has soil and climatic conditions favoring the production of only a few varieties. Furthermore, production seasons are highly variable among different regions and yield products at different times of the year. When we aggregate across several products, the assumption of the uniqueness of each country's exports is even more justified because the product mix in each country's exports is different.

The model outlined below originated in the seminal paper by Armington *(5)*. Armington showed how one can use the assumption of separability to derive functions that relate a particular trade flow between two countries to an importing country's index of total imports and the ratio between the cost, insurance, and freight (c.i.f.) price of the exporting country and an index of the import prices of all goods of the same type coming from different origins.

Trade models using variants of this approach have been constructed by Armington *(4)*, Branson *(8)*, Artus and Rhomberg *(6)*, Hickman *(13)*, Grennes, Johnson, and Thursby *(12)*, and others. The model outlined here is an extension of the model used by Grennes, Johnson, and Thursby.

Assume there are r exporting countries and n importing ones for a particular product. The following notation will be used throughout:

x_{ik} = Quantity of exports of the product of the ith exporting country to the kth importing country (in the base period). Because prices are normalized to 1 in the base period, this quantity will be measured by the value of the trade flow between the two countries.[9]

p_i^e = Internal export price of the ith exporting country (excludes all export subsidies or taxes). This element is normalized to 1 in the base period.

p_{ik}^m = Landed price of imports of importing country k from exporting country i (includes all duties paid at port of entry). This element is also assumed to be equal to 1 in the base period.

a_{ik} = Differential between the price of the product x_{ik} inside importing country k and the internal export price of the product in exporting country i. This element is normalized to 1 in the base period.

x_i = Total quantity of exports of the product from country i.

The export and import prices defined here are not free-on-board (f.o.b.) or c.i.f. prices. They are prices internal to each country and, hence, prices observable by the producers and consumers of the exportable commodities. In other words, the parameter a_{ik} is understood as one that excludes all export taxes or subsidies, but includes all import tariffs. Given the above definitions, the following relations hold:

$$p_{ik}^m = p_i^e \cdot a_{ik} \qquad i = 1, \ldots, r; k = 1, \ldots, n \qquad (1)$$

$$x_i = \sum_{k=1}^{n} x_{ik} \qquad i = 1, \ldots, r \qquad (2)$$

Notice that implicit in relation (2) is the assumption that each exporting country exports a homogeneous product, albeit different from the product of another exporting country. Given this assumption, x_i is well-defined and represents the aggregate quantity of exports of country i to all destinations. Notice that the number $\sum_{i}^{r} x_{ik}$ of sums of quantities of imports from different origins into the kth importing country does not represent anything tangible (that is, the quantity of some well-defined commodity) as each x_{ik} is by assumption a different product because it originates in different countries.

[9]The base period can be thought of as any year for which a trade pattern is known and which is used as a benchmark for projections. Time subscripts will be suppressed throughout to simplify notations as everything will refer to the base period and changes from it.

A quantity index of aggregate imports of the product into country k is defined by the following C.E.S. (constant elasticity of substitution) function:

$$m_k \equiv \left[\sum_{i=1}^{r} \beta_{ik} x_{ik}^{\frac{\sigma_k - 1}{\sigma_k}}\right]^{\frac{\sigma_k}{\sigma_k - 1}} \qquad k = 1, \ldots, n \qquad (3)$$

In equation (3), σ_k is the constant absolute value of the elasticity of substitution among the products of different exporting countries in the demand of country k, and $\beta_{ik} \geq 0$ (i = 1, ..., r; k = 1, ..., n). We employ a C.E.S. index because it is analytically convenient.

Assume that the utility of the consumers of country k can be written as:

$$U_k (m_k, z_{1k}, z_{2k}, \ldots, z_{qk}) \qquad (4)$$

where z_{ik} (i = 1, ..., q) are quantity indexes of other classes of products (such as other imports and various classes of domestic products).[10]

For the above model, Armington *(5)* has shown that the aggregate demand for m_k can be written as follows:

$$m_k = f_k(Y_k, p_k^m, p_k^1, \ldots, p_k^q) \qquad (5)$$

where p_k^m denotes a price index corresponding to m_k, p_k^j (j = 1, ..., q) denotes price indexes corresponding to the quantity indexes of the other consumed products, and

$$Y_k = p_k^m m_k + \sum_{i=1}^{q} p_k^i z_{ik} \qquad (6)$$

denotes the aggregate expenditure of the consumers of country k.

From specifications (3) to (6), Armington derived the demand of country k for product x_{ik} as follows:

$$x_{ik} = \beta_{ik}^{\sigma_k} m_k \left(\frac{p_{ik}^m}{p_k^m}\right)^{\sigma_k} \qquad (7)$$

where the price index p_k^m represents the "price of aggregate imports" of the product in country k from all origins and is given by the expression:

$$p_k^m = \left[\sum_{i=1}^{r} \beta_{ik}^{\sigma_k} (p_{ik}^m)^{1-\sigma_k}\right]^{\frac{1}{1-\sigma_k}} \qquad (8)$$

Given the magnitudes of x_i (i = 1, ..., r), m_k (k = 1, ..., n), a_{ik}(i = 1, ..., r; k = 1, ..., n), and the values of the parameters β_{ik} (i = 1, ..., r; k = 1, ..., n), and σ_k (k = 1, ..., n), one can use equations (1), (2), (7), and (8) to solve for the r export prices p_i^e (i = 1, ..., r). Then, using (7), one can solve for the rn trade flows x_{ik} (i = 1, ..., r; k = 1, ..., n). This procedure would generally involve finding the solution to a system of r excess demand functions for which a general equilibrium computational algorithm would have to be used.

Analysts will generally be interested in changes in trade patterns arising out of changes in various exogenous variables, such as income and export supplies, or out of changes of policies which can be represented as changes in a_{ik}. To a first order, these changes from the base period equilibrium can be approximated as the solution to a system of linear equations.

Denoted by $\tilde{w}$, the percentage change (or log derivative) of a variable w from its base period value is:

$$\tilde{w} \equiv d \log w = \frac{dw}{w_0} \approx \frac{w - w_0}{w_0} \qquad (9)$$

where the base period is denoted by a subscript zero.

Armington *(5)* showed that the changes in trade flows can be derived from equations (7) and (8) and are given by the following relations:

$$\tilde{x}_{ik} = \tilde{m}_k - \sigma_k(1 - S_{ik0})\,\tilde{p}_{ik}^{\,m} + \sum_{j \neq i}^{r} \sigma_k S_{jk0}\,\tilde{p}_{jk}^{\,m} \qquad (10)$$

$$i = 1, \ldots, r; \qquad k = 1, \ldots, n$$

In equation (10), the S_{ik0}(i = 1, ..., r, k = 1, ..., n) is the base-period value shares of imports of the product in the kth market, originating in the ith exporting region:

$$S_{ik0} = \frac{p_{ik0}^m \cdot x_{ik0}}{\sum_{i=1}^{r} p_{ik0}^m x_{ik}} \qquad (11)$$

$$i = 1, \ldots, r; \qquad k = 1, \ldots, n$$

[10]Starting from a utility over all consumed products of the form $U_k (m_k^1, \ldots, m_k^{Pm}, Z_{1k}^1, \ldots, Z_{1k}^{P_1}, \ldots, Z_{qk}^1, \ldots, Z^{Pq}_{qk})$, a condition that is sufficient for this utility to be collapsed into a utility of equation (4) is the one of want independence among products in different classes *(5)*.

The next step is to specify enough additional equations so as to render the system solvable. Log-differentiating equations (1) and (2) obtains the following linear equations in percentage changes:

$$\tilde{p}^m_{ik} = \tilde{p}^e_i + \tilde{a}_{ik} \quad i = 1, \ldots, r; \; k = 1, \ldots, n \tag{12}$$

$$\tilde{x}_i = \sum_{k=1}^{n} H_{iko} \tilde{x}_{ik} \quad i = 1, \ldots, r \tag{13}$$

In equation (13), the H_{iko} is the base-period quantity shares of exports of the product from the ith exporting region to the kth market:

$$H_{iko} = \frac{x_{iko}}{\sum_{j=1}^{n} x_{ijo}} \quad i = 1, \ldots, r; \; k = 1, \ldots, n \tag{14}$$

Equations (10), (12), and (13) can be used to solve for the endogenous variables $\tilde{p}^e_i$ and $\tilde{x}_{ik}$, given $\tilde{m}_k$: (k = 1, ..., n), $\tilde{x}_i$(i = 1, ..., r), and $\tilde{a}_{ik}$(i = 1, ..., r; k = 1, ..., n). The latter represent the changes in total import demands, export supplies, and trade policies, respectively. I take the analysis a step further by specifying the import demand and export supply changes in more detail.

First, I assume that all prices are expressed in real terms. This assumption allows writing the import demand function (5) as follows:

$$m_k = f_k(Y_k, p^m_k) \tag{15}$$

Where Y_k is now real expenditure and p^m_k is the index in equation (8) where all prices are understood as having been deflated by country k's consumer price index. From equation (15), the percentage change in quantity of imports demanded can be written as follows:

$$\tilde{m}_k = \theta_k \tilde{Y}_k - \epsilon_k \tilde{p}^m_k \tag{16}$$

In equation (16), θ_k and ϵ_k are the expenditure elasticity and absolute value of the price elasticity of the demand by country k for aggregate imports of the product in question. From equation (7), the base-period import value shares S_{iko} can be written as follows:

$$S_{iko} = \beta^{\sigma_k}_{ik}\left(\frac{p^m_{iko}}{p^m_{ko}}\right)^{1-\sigma_k} = \beta^{\sigma_k}_{ik} \tag{17}$$

$$i = 1, \ldots, r; \quad k = 1, \ldots, n$$

This equation follows from the convention that base-year prices are equal to 1. Using equation (8) and (17), one can write the percentage change in the import price index p^m_k as:

$$\tilde{p}^m_k = \sum_{i=1}^{r} S_{iko} \tilde{p}^m_{ik} \quad k = 1, \ldots, n \tag{18}$$

The assumption is also made that the export supply of ith exporting region is given by a relation of the type:

$$x_i = A_i(p^e_i)^{\eta_i} e^{\phi_i t} \quad i = 1, \ldots, r \tag{19}$$

where η_i is the ith exporting region's price elasticity of export supply and ϕ_i is a constant trend. From equation (19), we can derive the following expression:

$$\tilde{x}_i = \eta_i \tilde{p}^e_i + \phi_i \triangle t \tag{20}$$

By combining equation (10), (12), (13), (16), (18), and (20), we can obtain the following system of linear equations:

$$\tilde{x}_{ik} = \theta_k \tilde{Y}_k - \sigma_k \tilde{p}^m_{ik} + \sum_{j=1}^{r} S_{jko}(\sigma_k - \epsilon_k) \tilde{p}^m_{jk} \tag{21}$$

$$i = 1, \ldots, r; \quad k = 1, \ldots, n$$

$$\tilde{p}^m_{ik} = \tilde{p}^e_i + \tilde{a}_{ik} \quad i = 1, \ldots, r; \; k = 1, \ldots, n \tag{22}$$

$$\eta_i \tilde{p}^e_i + \phi_i \triangle t = \sum_{k=1}^{n} H_{iko} \tilde{x}_{ik} \quad i = 1, \ldots, r \tag{23}$$

In the above system, the r equations (23) represent the market-clearing equilibrium conditions which, given equations (21) and (22), can be solved and yield the percentage changes in export prices and then successively, via equations (21) and (22), the percentage changes in trade flows.

The exogenous variables are the real expenditure changes in the importing countries ($\tilde{Y}_i$), the trade policy changes ($\tilde{a}_{ik}$), and the assumed growth rates of export supplies (ϕ_i). Notice that the solution of the system is straightforward because it involves r linear equations in r unknowns.

Because the equilibrium model is nonlinear, the linearized projections are valid only for small departures from equilibrium. Because the projections spanned a period of 9 years which produced rather large departures from the base equilibrium, the time interval for the projections was first split into several equal, smaller subintervals. For each subinterval, I then

made a linearized projection (as described above), using the quantities, prices, and shares computed from the previous interval's projection as a base. This procedure of successive linearizations produced a much closer approximation to the new equilibrium than a one-shot linearized projection which is the method used in all previous models of this type.

The model, as outlined in equations (21) to (23), can be used to answer the following two questions.

1. Given that trade policies are unchanged ($\tilde{a}_{ik} = 0$, $i = 1, \ldots, r$; $k = 1, \ldots, n$), what are the projected changes in trade patterns and real export prices (terms of trade) that could arise from various assumptions about real income and export supply changes in the trading countries?

2. What are the static trade effects of various changes in trade policies (namely, assume $\tilde{Y}_k = 0$ and $\phi_i = 0$, $i = 1, \ldots, r$; $k = 1, \ldots, n$)?

One can, of course, ask various combinations of the above questions.

Empirical Specification of the Aggregate World Trade Models

In this section, I present the methodology used in estimating the parameters needed for the trade model outlined in the previous section. At the outset, I decided to confine the analysis of world trade patterns to the five three-digit SITC categories—fresh fruits, dried fruits, processed fruits, fresh vegetables, and processed vegetables (SITC categories 051, 052, 053, 054, and 055, respectively). This decision was reached because the major objective was to obtain a complete picture of the effects of EC enlargement on world fruit and vegetable trade and prices. A finer disaggregation would have been extremely time consuming because it would have necessitated the construction of world models for scores of individual products for which origin-destination trade data are unavailable. Some more restrictive disaggregated individual commodity trade models are described later.

Making the model operational requires a substantial number of parameters. First, one needs a complete trade matrix in value terms for the base period.[11] This matrix is used to compute the parameters H_{iko}, S_{ilo} ($i = 1, \ldots, r$; $k = 1, \ldots, n$). Then, one needs r parameters η_i($i = 1, \ldots, r$), the export price elasticities and 3n parameters θ_k, ϵ_k, σ_k ($k = 1, \ldots, n$), the expenditure, price, and the substitution elasticities of import demands, respectively.

Trade Matrices

The trade data used throughout the study are the United Nations (U.N.) Commodity Trade Statistics which are available on tapes from the U.N. Statistical Office. The version of the U.N. tapes used here was provided by the U.S. Department of Agriculture's Economic Research Service. These tapes provide data for every reporting country, at the three-, four-, and five-digit SITC codes on the yearly quantities and values of imports and exports by origin and destination.

For the analysis, the world was divided into nine regions considered to represent the trade patterns of fruit and vegetable products. The acronyms used and the countries included in each region are indicated in the glossary. The U.N. country data were aggregated into trade matrices for the base year and for every commodity. Two value matrices were obtained for every commodity; one was constructed from export-destination data and the other from import-origin data. In other words, one matrix includes the flows as reported in export statistics, whereas the other includes the flows as reported in import statistics. Both of these matrices ideally should be the same. For several reasons, these matrices usually differ. One has to do with the lag between the time a shipment leaves the port of origin (and is recorded as an export) and the time it arrives in the port of entry (and is recorded as an import). This is the familiar "leads and lags" problem in trade statistics. Another reason is that some countries included in a region keep or report less complete statistics than do others. This problem is particularly serious for Eastern Europe and some developing countries. Therefore, the two matrices thus constructed were compared and the larger of each of the bilateral flows was assumed to represent that year's trade flow. Transshipments—namely, the misclassification of transitory quantities of a product with the ultimate destination as a third country but recorded as imports of the intermediate country—were not a problem as the data for most of the relevant countries were reported net of re-exports. Transshipments for some of the countries were classified as Rest of World (RSW) and may have affected the figures for RSW trade. However, given that all the RSW flows were constructed from data of partner countries (because most RSW countries did not

[11] The base-period trade matrix must be in value terms because, by making the convention that all base-year equilibrium prices are equal to 1, we can treat all flows as quantity flows. The base-year shares H_{iko}, S_{iko} ($i = 1, \ldots, r$; $k = 1, \ldots, n$) can then be obtained from this matrix.

report trade flows by origin and destination), errors were minimized. The resulting trade matrices and the associated export and import shares appear in appendix A.

Estimates of the Elasticities of Substitution

The methodology used for empirically estimating the parameters σ_k follows most closely that used by Hickman and Lau *(14)* and is a slightly more general version of the Armington model outlined earlier.

Consider the ith country which imports the commodity in question from r exporting countries. Assume that the quantity index of imports of the product is given in period t by:

$$m_t = \left[\sum_{j=1}^{r} \beta_j \, e^{\gamma_i t} \, x_{it}^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{24}$$

Equation (24) is a slightly more general version of equation (3) because of the inclusion of the trend terms; otherwise, all other variables retain the same meaning as already described. Throughout this subsection, the discussion will focus on a given importing country so the subscript k used earlier will be eliminated for simplicity of notation.

Using the separability assumption already introduced and following the analysis of Armington or Hickman and Lau, we can see that the demand for imports from origin i is given by a relationship quite similar to equation (7):

$$x_{it} = \beta_i^{\sigma} e^{\gamma_i \sigma t} m_t \left(\frac{p_{it}^m}{p_t^m}\right)^{-\sigma} \tag{25}$$

where p_t^m is given by an expression similar to equation (8):

$$p_t^m = \left[\sum_{i=1}^{r} \beta_i^{\sigma} e^{\gamma_i \sigma t} (p_{it}^m)^{1-\sigma}\right]^{\frac{1}{1-\sigma}} \tag{26}$$

Consider now changes in value shares in year t from some initial year denoted by t_o. Log differentiating the value shares $S_{it} = (p_{it}^m x_{it})/(p_t^m m_t)$ and denoting the percentage change as before by a tilde ($\sim$), yield the equation:

$$\tilde{S}_{it} = \tilde{p}_{it}^{\,m} + \tilde{x}_{it} - \tilde{p}_t^m - \tilde{m}_t \tag{27}$$

Log differentiating equation (25) yields:

$$\tilde{x}_{it} = \tilde{m}_t - \sigma(\tilde{p}_{it}^m - \tilde{p}_t^m) + \gamma_i \sigma (t - t_0) \tag{28}$$

and substituting equation (28) in (27) results in:

$$\tilde{S}_{it} = (1 - \sigma)(\tilde{p}_{it}^m - \tilde{p}_t^m) + \gamma_i \sigma (t - t_0) \tag{29}$$

Log differentiating equation (26) and taking into account the expression for the base-year import value shares (which can readily be obtained from (25)) yields:

$$\tilde{p}_t^m = \sum_{i=1}^{r} S_{i0} \tilde{p}_{it}^m + \frac{\sigma}{1-\sigma}\left(\sum_{i=1}^{r} S_{i0}\gamma_i\right)(t - t_0) \tag{30}$$

where:

$$S_{i0} = \frac{p_{i0}^m x_{i0}}{p_0^m M_0} = \beta_i^{\sigma} e^{\gamma_i \sigma t_0} \left(\frac{p_{i0}^m}{p_0^m}\right)^{1-\sigma} \tag{31}$$

Combining equations (29) and (30) results in:

$$\tilde{S}_{it} = (1 - \sigma)\left(\tilde{p}_{it}^m - \sum_{j=1}^{r} S_{j0} \tilde{p}_{jt}^m\right) + \sigma\left(\gamma_i - \sum_{j=1}^{r} S_{j0}\gamma_j\right)(t - t_0) \tag{32}$$

Equation (32), with the addition of a constant term, is the basis for the econometric estimations. For the estimations, the percentage changes are approximated by:

$$\tilde{S}_{it} = \frac{S_{it} - S_{i0}}{S_{i0}}, \quad \tilde{p}_{it}^m = \frac{p_{it}^m - p_{i0}^m}{p_{i0}^m} \tag{33}$$

Equation (32) expresses the change in the value share of the ith exporting country from an initial period as a function of the change in the price of the ith exporter relative to the change in the aggregate import price index and as a function of a time trend. If there are r exporters, there are r equations such as (32), each involving the parameter σ. Given the time-series data for the value shares and prices, σ should be estimated by time-series, cross-section regression.

The estimated version of equation (32) can be written as:

$$\frac{S_{it} - S_{i0}}{S_{i0}} = \lambda_0\left(\frac{p_{it}^m}{p_{i0}^m} - \sum_{j=1}^{r} S_{j0} \frac{p_{jt}^m}{p_{j0}^m}\right) + \lambda_{1i}(t - t_0) + \lambda_{2i} + u_{it} \tag{34}$$

where λ_0, λ_{1i}, λ_{2i} ($i = 1, \ldots, r$) are parameters to be estimated and the u_{it} is an error term. In the pooled time-series, cross-section regression, the only parameter common to all equation is $\lambda_0 = 1 - \sigma$.

The following three alternative assumptions on the residuals were tried:

(1) $E(u_{it}) = 0$ for all i, t.
Var $(u_{it}) = s^2$ for all i, t.
All other covariances are zero.

(2) $E(u_{it}) = 0$ for all i, t.
Var $(u_{it}) = (s^2)/(S_{i0})$ for all i, t.
All other covariances are zero.

(3) $E(u_{it}) = 0$ for all i, t.
Var $(u_{it}) = (s^2)/(S_{i0}^2)$ for all i, t.
All other covariances are zero.

With this specification of the residuals, estimation under assumption 1 is made by Ordinary Least Squares (OLS) and estimations under assumptions 2 and 3 are made with Generalized Least Squares (GLS).

Estimations were made for all EC countries. Data were available for both values and quantities of imports from all origins for a 13-year period (1966-78). The data that presented nonzero flows in all 13 years are used in the estimations. The methodology does not unfortunately allow the inclusion of countries that were exporters for some years and were not for others; this is a well-known, unresolved problem in the empirical elasticity-of-substitution literature (*26,* p. 385). However, because few countries were occasional exporters and accounted for an extremely small share of imports by EC countries, the bias in the estimation of σ was expected to be small.

The landed import prices from various origins p_{it}^m were approximated by import unit values; that is, by dividing the c.i.f. value of imports from individual origins by the c.i.f. quantity of imports from the same origin (both as reported by the importing country). This approximation will accurately represent the changes in domestic landed prices only if the tariff rates and levies have remained constant over time. However, this assumption is only partially valid (table 4). Nevertheless, because computing yearly tariff rates for all products from all origins is an impossible task, I used the approximation (incidentally, this is the standard approximation used by all researchers).

Table 5 reports the best results of the estimated equations.[12] The elasticities of substitution of processed products are generally larger than those for fresh products.

One can obtain the elasticity of substitution for the EC as a whole for one product category by weighting the individual country's elasticities of substitution by the base-year (1977) share of each member country's imports of the product in total EC imports.

For the remaining countries and regions of the world, the estimation of import substitution elasticities for fruit and vegetable products proved impossible, mostly because of lack of data (quantity data were usually

[12]The judgment as to which of the three specifications of the residuals gave the best estimate was made on the basis of overall fit (R^2), sign of the estimated parameter σ (as is defined here, it should be positive), and significance of the estimate of σ.

Table 5—Estimated elasticities of substitution of EC imports of fruit and vegetable products

Importing country	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
France	0.578	1.654**	1.153**	0.557**	1.560**
Germany	.509**	1.260**	1.276**	1.113**	1.694**
Netherlands	.879**	.670**	1.297**	1.038**	.856**
Italy	1.090**	.876**	1.631**	1.068**	1.335**
Belgium-Luxembourg	.751**	1.095**	.505**	.990**	1.003**
United Kingdom	.804**	.617**	.592**	1.226**	.702**
Ireland	1.008**	.774**	.849**	1.210**	.847**
Denmark	.933**	1.706**	1.632**	.752**	1.185**

**Denotes statistical significance at the 1-percent level.

missing). For these other countries, the elasticity of import substitution estimates by Hickman and Lau *(14)* for aggregate imports was adopted. The regional parameters were again obtained wherever possible by a weighting similar to that just described for the EC. Table 6 presents the resulting values of the σ parameters adopted for the trade projections. Note that, except for Eastern Europe, the values of the σ parameters for the EC are usually smaller than the corresponding values of other regions. This result makes sense because the EC is by far the largest importer of these products, absorbing a major share of the exports of almost every exporter. Hence, the EC will not have as many options for substitution among exporters, given relative price changes, as it already absorbs most of the surplus of the exporting countries.

Estimates of Income and Price Elasticities of Demand for Imports of Fruits and Vegetables

The parameters θ_k and ϵ_k (see equation (16)) of the trade model represent the aggregate income and price elasticities of demand for imports of a commodity category in an importing country.

I estimated these parameters for the EC countries by applying the methodology first introduced by Houthakker and Magee *(17)*. I regressed the logarithm of the reported aggregate quantity of imports of a product category in a country against the logarithm of real consumption expenditures of that country and the logarithm of the ratio of nominal import unit value over a domestic price deflator.

Tables 7 and 8 report the results of these estimates. The income elasticities of imports are almost always significant and conform to the *a priori* reasonable expectation that the income elasticities of processed fruits and vegetables are generally higher than those of the fresh products. The estimates of the price elasticities are not as good, and some have the wrong (positive) sign. The worst estimates were obtained in the fresh fruit category. This result was expected as fresh fruit is composed of several products which are subject to the CAP reference price system and which make picking up the impact of price movements on consumption difficult. Almost all the "wrong sign" estimates were, fortunately, insignificant, and the parameter values in these cases were set at zero.

I obtained the values of the parameters for the EC as before by weighting the individual estimated parameters by each country's EC share of 1977 imports of the relevant product. This method is theoretically correct if future income growth rates of the various countries are not too different. The income and price elasticities for the remaining countries were obtained from various estimates of aggregate income and price elasticities of imports. Besides the Houthakker and Magee article *(17)*, sources included a paper by Goldstein and Khan *(11)* and a book by Stern, Francis, and Schumacher *(28)*. When no estimates were available, a value of 1

Table 6—Values of the elasticity of substitution parameters used for trade projections

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
European Community	0.66	0.99	1.06	1.01	1.38
Other Western Europe[1]	3.31	3.26	3.26	3.26	3.26
Spain, Greece, and Portugal	2.61	2.44	2.44	2.77	2.44
Centrally planned East European countries	.16	.16	.16	.16	.16
United States	1.26	1.26	1.26	1.26	1.26
Canada and Japan	1.70	1.71	1.71	1.72	1.71
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	2.59	2.59	2.59	2.59	2.59
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	1.46	1.46	1.46	1.46	1.46
Rest of world	1.23	1.23	1.23	1.23	1.23

[1]Excludes Spain, Greece, and Portugal.

for import income elasticity and a value of 0.5 for import price elasticities were assumed. Tables 9 and 10 present the values of the parameters used in the trade model.

Export Supply Price Elasticities, Export Supply Trends, and Income Trends

In many empirical studies of changes in trade patterns, the export supply-price elasticities are assumed infinite. This assumption presupposes that the importing country is a price taker in world trade. This can hardly be the case for the EC which absorbs about half the world's exports of fruit and vegetable products. Other studies assume that export supply price elasticities are zero. This amounts to fixing the quantity of exports irrespective of world price. This assumption might be justified in the short run, but is not suited for a medium- or long-term comparative statics study. The only published estimates of export supply elasticities

Table 7—Estimated income elasticities of import demand for fruit and vegetable products for the EC

Importing country	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
France	0.75**	1.06**	2.46**	1.39**	3.18**
Germany	.56**	.54*	2.58**	1.85**	1.96**
Netherlands	1.52**	.37	1.97**	2.99**	1.78**
Italy	.96*	.49	.92	.83*	1.77*
Belgium-Luxembourg	.97**	.25	2.47**	3.04**	3.53**
United Kingdom	.09	.55	.48	−.36[1]	2.05**
Ireland	.96**	.20	1.75**	.20	1.90**
Denmark	.40**	−1.04**	2.63**	3.36**	3.83**

*Denotes statistical significance at the 5-percent level.
**Denotes statistical significance at the 1-percent level.

[1]Negative sign signifies "wrong" sign.

Table 8—Estimated price elasticities of import demand for fruit and vegetable products for the EC

Importing country	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
France	0.22	−0.71	−0.61*	−0.42	−0.65**
Germany	−.34	−.19*	−.66*	−.48**	−.71**
Netherlands	−.33	−.27	−.31	−.75*	−1.43*
Italy	.37	−.50*	−1.85*	−.63*	−1.55*
Belgium-Luxembourg	.30	.10	−.52*	−.89*	−.99**
United Kingdom	−.02	−.25	.37*	−.74*	−.09
Ireland	.28*	.05	−.10	−1.21**	−1.10**
Denmark	.06	−.31*	−.26	−1.34**	.07

*Denotes statistical significance at the 5-percent level.
**Denotes statistical significance at the 1-percent level.

Table 9—Income elasticities of import demand for fruit and vegetable products used in the trade models

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
European Community	0.65	0.47	1.98	1.67	2.24
Other Western Europe[1]	1.00	1.00	1.00	1.00	1.00
Spain, Greece, and Portugal	2.64	1.72	.78	.80	.61
Centrally planned East European countries	1.00	1.00	1.00	1.00	1.00
United States	1.51	1.51	1.51	1.51	1.51
Canada and Japan	1.21	1.21	1.21	1.21	1.21
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	1.00	1.00	1.00	1.00	1.00
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	1.00	1.00	1.00	1.00	1.00
Rest of world	1.00	1.00	1.00	1.00	1.00

[1]Excludes Spain, Greece, and Portugal.

Table 10—Price elasticities of import demand for fruit and vegetable products used in the trade models[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
European Community	−0.17	−0.31	−0.468	−0.61	−0.72
Other Western Europe[2]	−.31	−.31	−.31	−.31	−.31
Spain, Greece, and Portugal	−.54	−1.43	−1.18	−.95	−1.23
Centrally planned East European countries	−.50	−.50	−.50	−.50	−.50
United States	−.80	−.80	−.80	−.80	−.80
Canada and Japan	−.74	−.74	−.74	−.74	−.74
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	−.86	−.86	−.86	−.86	−.86
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	−.50	−.50	−.50	−.50	−.50
Rest of world	−.50	−.50	−.50	−.50	−.50

[1]The parameters ϵ_k as defined in the trade models are equal to the absolute value of the figures.
[2]Excludes Spain, Greece, and Portugal.

are those for aggregate exports by Goldstein and Khan *(11)*. These estimates were adopted in this study for the EC countries and the United States whereas a value of 2.0 was used for the remaining regions. Table 11 shows the results of weighting the export supply price elasticities for individual EC countries by their EC base-year export shares and the assumed values for the other regions.

In the basic simulation, as well as in several sensitivity simulations of the trade model, I assumed that the historical growth rates of export supplies of fruit and vegetable products would continue. I estimated the historical growth rates for exports of these products by regressing the logarithm of yearly total reported quantity exported by various countries or regions on a time trend. The growth rates thus estimated were appropriately weighted to arrive at regional export-supply growth rates. Table 12 presents the estimated historical yearly growth rates. The relatively rapid growth of exports of processed fruits and vegetables by most exporters is noteworthy.

The final figures presented in this section are the forecasted growth rates for real expenditure in the various regions of the world that are specified in the model. These are assumed to be the same as the forecasted growth rates of real incomes. These growth rates are forecasts of the average yearly income growth rates for 1977-86 for all countries of the world and are weighted according to the importance of each country in a region's 1977 total fruit and vegetable imports. I estimated the average yearly growth rates for 1977-86 by computing total real income growth during the period for each country from yearly real growth income forecasts reported by Kost *(19)*[13] and then by computing the constant yearly growth rate that would yield the same total growth when compounded over the same period. When forecasts were not available for some later years, the last available growth rate was used for the remaining years. Table 13 summarizes the results of the computations. The figures generally reported the low, real growth rates in income over the 1977-80 period with somewhat more optimistic forecasts for the first half of the eighties.

Tariff and Nontariff Barrier Changes

Enlargement is simulated in the trade models by changes in the parameters a_{ij}. Recall that a_{ij} represents the price differential between the export price of the product of the ith exporting region and the domestic consumer price of the product in the jth importing region. A negative value for $\tilde{a}_{ij}$ (the percentage change in $\tilde{a}_{ij}$) means that this price differential is narrowed.

[13]Kost's pamphlet summarizes all available econometric forecasts for income for all countries of the world as of 1980 for periods ranging from 2-3 years (that is, until 1983) up to 5-6 years (that is, until 1986). It also summarizes consensus forecasts.

Table 11—Export supply price elasticities for fruit and vegetable products used in the trade models

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
European Community	1.17	2.03	2.11	2.01	1.89
Other Western Europe[1]	2.0	2.0	2.0	2.0	2.0
Spain, Greece, and Portugal	2.0	2.0	2.0	2.0	2.0
Centrally planned East European countries	2.0	2.0	2.0	2.0	2.0
United States	6.6	6.6	6.6	6.6	6.6
Canada and Japan	2.0	2.0	2.0	2.0	2.0
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	2.0	2.0	2.0	2.0	2.0
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	2.0	2.0	2.0	2.0	2.0
Rest of world	2.0	2.0	2.0	2.0	2.0

[1]Excludes Spain, Greece, and Portugal.

Hence, trade liberalization between two regions would imply a negative value for $\tilde{a}_{ij}$. A positive value for $\tilde{a}_{ij}$, in turn, would denote the institution of additional trade barriers between country i and country j.

In the simulations reported in this study, the most significant changes are the reductions in EC tariffs and levies facing the imports of fruit and vegetable products from Spain, Greece, and Portugal as well as the raising of trade barriers facing other exporters of these products to Spain, Greece, and Portugal. I obtained the current levels of EC tariffs toward Spain, Greece, and Portugal by weighting the detailed commodity-specific EC preferential tariff rates for each of these countries (exhibited earlier in table 2) by the shares of EC imports of individual products from them as derived from the analytical tables of foreign trade (NIMEXE) published by the Statistical Office of the European Communities. The tariff equivalents of levies were obtained from Sampson and Yeats *(27)*.

To compute the aggregate pre-enlargement tariff equivalent (both tariffs and levies) of the EC toward Spain, Greece, and Portugal, I used the preferential tariff rates for 1978 of the EC toward each of the Three and the 1974 tariff equivalent of levies employed by Sampson and Yeats *(27)*. The individual rates thus computed were then weighted by the import shares of Spain, Greece, and Portugal in total EC imports for each product from the Three.

I assumed, finally, that the additional barriers Spain, Greece, and Portugal would raise toward imports from third countries would equal the tariff equivalent of EC levies obtained from Sampson and Yeats *(27)*. I also assumed the tariff rates of Spanish, Greek, and Portuguese imports from the EC would not change.[14] All other changes in the parameters a_{ij} are assumed to equal zero. Table 14 summarizes the values of the nonzero percentage changes in the a_{ij} assumed in the basic simulations.[15]

[14]It was impossible to obtain information about the levels of protection of Spain, Greece, and Portugal on fruit and vegetable products. However, their imports of these products are small (less than 0.5 percent of total world imports); hence, only minimal distortions are introduced by the assumptions governing tariff rates of each of the Three.

[15]The percentage changes in a_{ij} reported in table 14 are derived from the standard formula $a_{ij} = dt_{ij}/(1 + t_{ij})$ where t_{ij} is the pre-enlargement computed or assumed levels of equivalent tariffs and where dt_{ij} is the post-enlargement tariff changes.

Table 12—Annual growth rates of export quantities of fruit and vegetable products, by regions, 1966-78

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	Percent				
European Community	3.9	11.1	9.7	5.4	8.6
Other Western Europe[1]	−2.9	9.8	16.3	−2.3	5.3
Spain, Greece, and Portugal	4.0	−.4	11.7	5.0	9.9
Centrally planned East European countries	10.3	2.4	.1	−2.0	15.3
United States	6.6	−.5	5.7	5.3	8.4
Canada and Japan	*4.4	4.8	1.1	1.6	−4.9
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	1.6	−2.4	18.1	7.0	10.3
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	8.2	3.1	8.0	2.7	14.8
Rest of world	8.3	7.6	10.0	15.5	−2.5

[1]Excludes Spain, Greece, and Portugal.

Empirical Results for the Aggregate Trade Models

Changes in trade patterns of fruit and vegetable products could arise even in the absence of the tariff changes that will accompany EC enlargement. Changes are possible because rates of expenditure growth and rates of export supply growth, as well as expenditure elasticities of import demand, differ in the various trading countries and regions. This situation will lead to different rates of growth of excess demand in each region. To bring these into balance, export prices (conceptually, these are the prices for exports viewed internally by the producers) will change and the shares of the various origins in the imports of the various importing countries will also change.

Table 13—Forecasts of average yearly real expenditure growth rates for the regions of the trade model, 1977-86

Country or region	Total real expenditure growth rate per annum
	Percent
European Community	2.7
Other Western Europe[1]	2.9
Spain, Greece, and Portugal	3.3
Centrally planned East European Countries	2.7
United States	2.9
Canada and Japan	3.8
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa[2]	4.5
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey[3]	5.5
Rest of world	5.5

[1]Excludes Spain, Greece, and Portugal.
[2]Major exporters of fruit and vegetable products excluding South Africa and the Middle Eastern countries.
[3]North African and Middle Eastern countries which are important in the world fruit and vegetable trade.

Source: Computed from *(19)*.

Base Projections

The simulations performed isolated the trade effects of income and export supply changes from those which arise solely from changes in tariffs (or tariff equivalent) that EC enlargement will entail. Using 1977 as a base year, I first projected 1986 trade patterns under the assumption of no EC enlargement. The resulting 1986 trade matrices were then used as a new base for the computation of the final trade matrices.[16] I chose 1977 as a base year because it was the latest year for which the U.N. origin-destination data appeared complete. I chose 1986 because the Greek transition period would be over by then and it might be a reasonable forecast of the date of both Spanish and Portuguese entry into the EC. It is indeed difficult to isolate the best year for a forecast because the three new members have different entry dates and different lengths of transition. The choice of an earlier or later year would only scale the results by some fixed fraction close to unity (as was found by experimentation with alternative projection years) without changing at all the direction or orders of magnitude of the projected figures.

Table 15 shows the projected real export prices in 1986 for the five categories of fruit and vegetable products considered. The left side of the table presents the projected prices under the assumption of no EC enlargement, and the right side shows the final prices after the effects of EC enlargement have been compounded to those of mere income and export supply changes. The figures at the bottom are world prices (that is, terms of trade) obtained by weighting the individual export prices by the projected value shares of each exporter in total world exports (that is, Paasche indexes).

Comparing the values on the left side of the table with those on the right side, one can see that EC enlargement slightly decreases export prices of all exporting regions except Spain, Greece, and Portugal whose prices are substantially increased by enlargement. The most disturbing feature of the table, however, is the projected decline in world terms of trade of all fruit and vegetable categories. The worst outlook is for processed fruits whose world terms of trade are projected to decline by 23 percent in the next decade. The only category for which the medium-term outlook seems tolerable is dried fruit. These results are the consequence of an increase in export supplies of these commodities coupled with a slowdown in world demand.

[16]The piecewise linearization procedure was used to project the 1986 trade patterns in the absence of enlargement. The effects of enlargement were computed in one additional step.

Table 14—Assumed percentage changes after EC enlargement in export-import price differentials

Parameter change	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
			Percent		
Spain, Greece, and Portugal; European Community	– 32.13	– 27.15	– 27.72	– 31.58	– 26.91
Other Western Europe; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8
Centrally planned East European countries; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8
United States; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8
Canada and Japan; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8
Argentina, Australia, Brazil, Mexico, New Zealand, South Africa; Spain, Greece, and Portugal,	37.1	37.1	26.8	37.1	26.8
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8
Rest of world; Spain, Greece, and Portugal	37.1	37.1	26.8	37.1	26.8

Source: For Spain, Greece, and Portugal; European Community computed; for the remainder, see *(27)*.

Table 16 summarizes the projected changes in total exports of fruit and vegetable products due to income and export supply changes as well as those due solely to the effects of EC enlargement. With the notable exception of Spain, Greece, and Portugal, the exports of all fruit and vegetable products of almost all other exporting regions will fall strictly as a result of EC enlargement. The amounts of the declines are quite small, often about two orders of magnitude smaller (in absolute value) than the corresponding large export increases projected otherwise. For Spain, Greece, and Portugal, EC accession will mean sharp increases in total exports of the same order of magnitude and in addition to the increases expected otherwise. The small effects on other exporters and the large effects on Spain, Greece, and Portugal are to be expected from the small falls in export prices of all exporters except Spain, Greece, and Portugal (table 15). Total world exports are expected to increase as a result of EC enlargement (table 16). This result comes about because a substantial trade liberalization will occur in one of the largest trade flows; namely, the one between Spain, Greece, and Portugal and the EC.

Table 17 shows the projected 1986 changes in total imports of fruit and vegetable products again caused by both income and export supply growth as well as by EC enlargement. The major change from EC enlargement alone will affect EC imports, which will expand substantially.

Table 18, which shows the changes in net fruit and vegetable exports projected in 1986, is revealing. Most of the base-year net exporting regions (SGP, OEX, and NAME) are expected to expand their net exports given expected income and export growth trends (left side of table). A notable exception is the United States, which was a net exporter of all products except processed

Table 15—Base projection: 1986 indexes of export prices of fruit and vegetable products

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1977 prices = 100				
Indexes of export prices resulting from income and export supply changes:					
European Community	88.3	78.6	81.4	95.3	89.5
Other Western Europe[1]	108.2	82.3	62.6	116.1	96.9
Spain, Greece, and Portugal	91.1	108.2	74.8	96.4	85.1
Centrally planned East European countries	73.1	99.6	105.6	115.7	69.2
United States	95.6	104.2	96.4	97.6	95.7
Canada and Japan	122.6	97.6	106.1	107.0	129.5
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	101.1	116.6	58.2	90.4	84.3
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	80.1	97.7	85.9	103.7	72.2
Rest of world	83.3	89.1	80.1	65.9	120.1
World	87.7	100.3	77.1	89.0	92.8
Final indexes of export prices (including effects of EC enlargement):					
European Community	87.7	78.3	81.1	95.4	89.0
Other Western Europe[1]	107.7	82.0	62.5	115.0	96.3
Spain, Greece, and Portugal	95.5	112.4	79.7	103.9	89.1
Centrally planned East European countries	72.9	98.9	105.2	115.6	68.8
United States	95.5	103.9	96.3	97.5	95.5
Canada and Japan	122.5	97.2	105.9	106.4	129.4
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	100.7	115.9	57.9	89.3	84.5
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	79.2	96.5	85.5	103.0	71.8
Rest of world	83.0	88.6	79.9	65.6	120.0
World	88.0	100.9	77.3	89.7	93.3

[1]Excludes Spain, Greece, and Portugal.

Table 16—Base projection: 1986 projected changes of total export value of fruit and vegetable products

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	419,437	31,030	435,487	1,010,075	627,882
Other Western Europe[1]	– 2,367	684	81,071	4,588	8,385
Spain, Greece, and Portugal	188,987	22,432	173,037	241,457	369,672
Centrally planned East European countries	69,975	4,612	22,525	29,981	114,423
United States	319,415	34,607	104,431	190,375	103,548
Canada and Japan	2,095	643	16,315	37,337	8,223
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	137,916	7,093	669 ,392	286,916	66,695
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	413,555	48,579	81,810	157,015	132,259
Rest of world	1,153,619	42,494	307,924	1,180,028	97,230
World[2]	2,702,632	192,175	1,891,992	3,137,772	1,528,317
Projected changes due only to EC enlargement:					
European Community	– 15,132	– 434	– 8,721	2,555	– 15,262
Other Western Europe[1]	– 219	– 14	– 688	– 921	– 311
Spain, Greece, and Portugal	107,702	15,080	52,188	119,766	77,176
Centrally planned East European countries	– 1,234	– 333	– 1,622	– 486	– 2,099
United States	– 11,545	– 3,872	– 2,308	– 8,015	– 3,537
Canada and Japan	– 83	– 17	– 283	– 1,818	– 111
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 6,952	– 881	– 12,674	– 19,181	596
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 11,493	– 5,699	– 2,074	– 7,791	– 2,833
Rest of world	– 27,125	– 1,332	– 5,245	– 17,571	– 1,636
World[2]	33,919	2,498	18,574	66,538	51,983

[1]Excludes Spain, Greece, and Portugal.
[2]Figures may not add up because of rounding.

Table 17—Base projection: 1986 projected changes in total import value of fruit and vegetable products

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	821,055	40,957	1,061,034	1,864,134	967,294
Other Western Europe[1]	264,177	22,824	112,708	116,940	47,462
Spain, Greece, and Portugal	39,805	4,470	26,483	45,445	3,928
Centrally planned East European countries	173,796	18,600	23,070	38,087	21,688
United States	393,912	18,502	233,929	186,093	128,073
Canada and Japan	481,146	33,541	190,959	372,563	101,874
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	120,734	13,295	33,263	99,434	43,070
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	77,110	4,585	18,325	78,153	12,490
Rest of world	330,906	35,402	192,222	336,926	202,439
World[2]	2,702,632	192,175	1,891,992	3,137,772	1,528,317
Projected changes due only to EC enlargement:					
European Community	38,034	6,838	33,953	93,655	68,865
Other Western Europe[1]	417	161	523	– 1,665	– 383
Spain, Greece, and Portugal	– 10,364	– 4,046	– 16,567	– 32,935	– 3,190
Centrally planned East European countries	– 2,187	– 1,086	– 783	135	– 844
United States	3,198	5	1,529	3,485	– 6,414
Canada and Japan	2,743	217	929	1,905	1,647
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	788	156	216	639	– 1,583
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	175	26	27	174	– 125
Rest of world	1,115	227	– 1,254	1,144	– 2,697
World[2]	33,919	2,498	18,574	66,538	51,982

[1]Excludes Spain, Greece, and Portugal.
[2]Figures may not add up because of rounding.

Table 18—Base projection: 1986 projected changes in net export value of fruit and vegetable products

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	– 401,618	– 9,926	– 625,547	– 854,059	– 339,412
Other Western Europe[1]	– 266,543	– 22,140	– 31,636	– 112,352	– 39,077
Spain, Greece, and Portugal	149,182	17,962	146,554	196,012	365,744
Centrally planned East European countries	– 103,822	– 13,988	– 545	– 8,107	92,736
United States	– 74,497	– 16,105	– 129,497	4,283	– 24,525
Canada and Japan	– 479,051	– 32,898	– 174,644	– 335,227	– 93,652
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	17,182	– 6,202	636,129	187,481	23,625
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	336,445	43,995	63,485	78,862	119,769
Rest of world	822,713	7,092	115,703	843,102	– 105,209
World[2]	0	0	0	0	0
Projected changes due only to EC enlargement:					
European Community	– 53,166	– 7,272	– 42,674	– 91,100	– 84,128
Other Western Europe[1]	– 636	– 175	– 1,212	744	72
Spain, Greece, and Portugal	118,067	19,126	68,756	152,701	80,366
Centrally planned East European countries	953	753	– 839	– 622	– 1,255
United States	– 14,743	– 3,877	– 3,837	– 11,500	2,877
Canada and Japan	– 2,826	– 234	– 1,212	– 3,723	1,536
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 7,740	– 1,037	– 12,891	– 19,821	2,179
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 11,668	– 5,725	– 2,101	– 7,965	– 2,708
Rest of world	– 28,240	– 1,559	– 3,991	– 18,715	– 1,061
World[2]	0	0	0	0	0

[1]Excludes Spain, Greece, and Portugal.
[2]Net exports for the world are zero, and hence changes in net exports are also zero.

vegetables in 1977 and is projected to substantially drop its net exports even to the point of becoming a net importer in the case of processed fruit. However, EC enlargement (right side of table), will certainly help even more the balance of payments of Spain, Greece, and Portugal, while adversely affecting most of the remaining regions. Spain, Greece, and Portugal will reap the only total benefit from enlargement at the expense of almost everyone else including EC members. The magnitude of the "injuries," however, inflicted on all the other regions is quite small compared with the magnitude of changes that are expected to arise from the effects of income and export supply growth alone.

We now turn to the changes of trade flows between regions. Tables 19 and 20 exhibit the geographical changes in EC imports and Spanish, Greek, and Portuguese exports, respectively, that are projected to occur with and without EC enlargement. The geographical changes in trade flows resulting strictly from EC enlargement are as expected. EC imports shift significantly toward Spain, Greece, and Portugal and away from all other traditional sources including other EC countries; similarly, Spanish, Greek, and Portuguese exports shift toward the EC and away from other destinations. Because the EC imports from sources other than Spain, Greece, and Portugal and the Three's exports to destinations other than the EC will diminish, it is not clear *a priori* whether exports of other exporters to destinations other than the EC will increase or not. In fact, the results are mixed. Table 21 presents the projected changes in the destination of U.S. exports of fruit and vegetable products. Although enlargement by itself decreases U.S. exports to the EC and Spain, Greece, and Portugal, it nevertheless increases exports to the remaining West European countries and to Canada and Japan, two of the largest trading partners of the United States.

The figures in the preceding tables conceal substantial variations in the trade positions of individual countries within the EC and Spain, Greece, and Portugal. To reach an understanding of these country-specific effects, I also ran the trade model in a disaggregated form. Table 22 presents the projected net export changes in fruit and vegetable products of the EC and Spain, Greece, and Portugal. The left side of the table is instructive in view of the aggregate EC figures appearing in table 18. The EC is expected to become an even larger importer of fruit and vegetable products. Although treated as one region, West Germany and, to a lesser extent, Ireland are the only countries for which the model forecasts that imports of all products will increase. France is forecasted to increase its net imports of fresh fruits, processed fruits, and fresh vegetables and to increase net exports of dried fruits and processed vegetables.

The right side of the table indicates that, as a consequence of enlargement, the increases in net imports of fruit and vegetable products for the EC as a whole will be spread rather evenly among all nine members. Of the Three, Spain will gain the most from enlargement, although surprisingly, the magnitude of accession-induced increases in net exports are not much larger than those forecast for Greece, especially in the processed products categories.

Trade creation and trade diversion due to enlargement are obtained in the following way. Trade creation refers to increased trade within the enlarged EC that arises because cheaper supplies from an enlarged Community replace more expensive products produced within the nine EC countries or in Spain, Greece, and Portugal before enlargement. We can estimate this effect by adding (algebraically) the enlargement-induced imports of the EC and Spain, Greece, and Portugal with one another. Trade diversion, in turn, refers to the switching of EC, Spanish, Greek, and Portuguese imports from traditional sources outside to more expensive sources within the enlarged area. One can obtain estimates of this effect by algebraically summing the enlargement-induced changes in imports of the EC and Spain, Greece, and Portugal from sources other than one another.

Table 23 presents the results of these calculations. On balance, the next EC enlargement will be beneficial to the enlarged EC in fruit and vegetable products. Trade creation is projected to be larger than trade diversion in all products and particularly in fresh and processed vegetables. The net gain to the enlarged EC is projected to be about $150 million in 1977 prices, a rather substantial figure given the small share of fruit and vegetable products in total EC trade. These gains will accrue mostly to EC consumers who will benefit from substantial increases in cheaper imports from Spain, Greece, and Portugal. The losses to EC producers, however, will not be large because only a small proportion of the increased fruit and vegetable imports in an enlarged EC will be obtained at the expense of previous EC exports. The relevant figures appear at the top of table 19 (right side) and are never larger (in absolute value) than 25 percent of the figures for increased EC imports from Spain, Greece, and Portugal (row 3 of table 19).

The results convey only a portion of what happens in the trade flows of the rest of the world. Appendix tables 16-20 show the complete matrices of changes in

Table 19—Base projection: 1986 projected changes in geographical origins of EC import value of fruit and vegetable products

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	268,601	8,098	383,348	812,734	514,368
Other Western Europe[1]	660	133	30,181	7,236	3,739
Spain, Greece, and Portugal	121,743	4,404	129,517	204,905	176,541
Centrally planned East European countries	19,640	862	36,895	27,683	72,325
United States	27,187	4,375	36,241	50,128	46,822
Canada and Japan	– 73	32	6,678	17,908	1,675
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	37,582	– 626	271,217	50,371	7,223
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	150,368	18,834	69,523	128,700	102,020
Rest of world	195,351	4,846	97,439	564,473	42,587
World[2]	821,055	40,957	1,061,034	1,864,134	967,294
Projected changes due only to EC enlargement:					
European Community	– 35,225	– 1,334	– 11,481	– 32,707	– 21,151
Other Western Europe[1]	– 313	– 24	– 806	– 114	– 166
Spain, Greece, and Portugal	129,910	18,339	60,434	143,593	104,528
Centrally planned East European countries	– 1,845	– 316	– 1,763	– 1,659	– 2,424
United States	– 5,480	– 2,595	– 1,769	– 1,759	– 2,720
Canada and Japan	– 45	– 11	– 389	– 493	– 363
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 9,627	– 845	– 5,273	– 123	– 437
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 16,233	– 5,327	– 2,067	– 2,910	– 3,297
Rest of world	– 23,108	– 1,049	– 2,933	– 10,173	– 5,104
World[2]	38,034	6,838	33,953	93,655	68,865

[1]Excludes Spain, Greece, and Portugal.
[2]Figures may not add up because of rounding.

Table 20—Base projection: 1986 projected changes in geographical distribution of the export value of fruit and vegetable products for Spain, Greece, and Portugal

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	121,743	4,404	129,517	204,905	176,541
Other Western Europe[1]	20,136	– 508	3,560	20,481	13,480
Spain, Greece, and Portugal	326	129	621	4,475	229
Centrally planned East European countries	33,263	11,918	8,310	515	10,374
United States	1,040	2,834	2,399	2,045	69,886
Canada and Japan	354	1,884	1,879	3,336	23,612
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	2,627	752	608	4,731	16,165
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	3,721	391	891	859	3,253
Rest of world	5,781	629	25,252	3,111	56,133
World[2]	188,987	22,432	173,037	241,457	369,672
Projected changes due only to EC enlargement:					
European Community	129,910	18,339	60,434	143,593	104,528
Other Western Europe[1]	– 18,482	– 1,010	– 2,546	– 17,372	– 4,418
Spain, Greece, and Portugal	260	95	212	848	54
Centrally planned East European countries	– 1,278	– 873	– 483	– 29	– 571
United States	– 186	– 550	– 468	– 663	– 8,588
Canada and Japan	– 81	– 467	– 442	– 1,693	– 3,702
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 821	– 271	– 232	– 3,732	– 3,422
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 725	– 79	– 190	– 262	– 450
Rest of world	– 895	– 104	– 4,098	– 924	– 6,255
World[2]	107,702	15,080	52,188	119,766	77,176

[1]Excludes Spain, Greece, and Portugal.
[2]Figures may not add up because of rounding.

Table 21—Base projection: 1986 projected changes in geographical distribution of U.S. exports of fruit and vegetable products

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	27,187	4,375	36,241	50,128	46,822
Other Western Europe[1]	1,566	1,798	– 10,366	3,844	2,755
Spain, Greece, and Portugal	6,771	879	– 201	1,808	869
Centrally planned East European countries	8,258	192	33	1,287	83
United States	0	0	0	0	0
Canada and Japan	201,144	17,553	53,357	89,956	34,308
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	10,601	2,883	278	4,711	1,894
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	709	231	1,014	11,838	405
Rest of world	63,179	6,696	24,076	26,804	16,416
World[2]	319,415	34,607	104,431	190,375	103,548
Projected changes due only to EC enlargement:					
European Community	– 5,480	– 2,595	– 1,769	– 1,759	– 2,720
Other Western Europe[1]	578	218	– 31	699	262
Spain, Greece, and Portugal	– 6,552	– 1,714	– 722	– 7,460	– 2,204
Centrally planned East European countries	– 69	– 7	– 1	5	– 2
United States	0	0	0	0	0
Canada and Japan	2	192	– 100	375	639
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 25	19	– 13	44	169
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	2	2	3	35	11
Rest of world	0	14	325	46	308
World[2]	– 11,545	– 3,872	– 2,308	– 8,015	– 3,537

[1]Excludes Spain, Greece, and Portugal.
[2]Figures may not add up because of rounding.

Table 22—Base projection: 1986 projected changes in net exports of fruit and vegetable products for EC-member countries and Spain, Greece, and Portugal

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
France	– 144,121	2,215	– 250,743	213,849	11,270
Germany	– 295,197	– 9,811	– 514,990	– 675,415	– 419,845
Netherlands	– 85,669	– 1,088	– 17,916	62,211	203,523
Italy	78,582	783	168,227	76,043	29,016
Belgium-Luxembourg	– 61,669	– 924	31,317	– 201,559	– 123,834
United Kingdom	14,472	– 7,106	– 3,817	61,495	– 83,732
Ireland	– 26,802	– 1,131	– 18,924	– 5,441	– 7,760
Denmark	692	5,791	– 23,799	– 59,309	– 14,674
Spain	109,303	4,692	23,618	187,031	200,178
Greece	78,820	24,655	127,603	39,924	203,037
Portugal	– 16,674	– 858	– 1,161	– 5,640	12,185
Projected changes due only to EC enlargement:					
France	– 2,122	– 1,837	– 9,888	– 16,794	– 19,107
Germany	– 38,238	– 484	– 22,165	– 18,548	– 12,626
Netherlands	– 8,159	– 477	– 3,149	– 16,087	– 11,620
Italy	– 7,056	– 627	– 4,816	– 2,224	– 26,237
Belgium-Luxembourg	– 19	– 7	– 3,047	– 4,466	– 4,214
United Kingdom	187	– 3,934	1,170	– 18,892	– 2,806
Ireland	– 337	53	– 75	– 291	– 1,047
Denmark	58	– 56	– 274	– 4,616	306
Spain	90,807	4,147	40,083	112,362	44,334
Greece	17,638	13,251	30,029	23,411	29,445
Portugal	32,105	154	1,408	4,063	7,698

world trade flows between 1977 and 1986 which are due only to the secular effects of income growth and export supply growth. Appendix tables 21-25 exhibit the static trade flow changes projected to occur in the 1986 trade matrix as a consequence solely of the tariff effects of EC enlargement. The tables presented in the text were derived from the more detailed tables in appendix B.

Combining the tables in appendix A with those of appendix B yields other information. For instance, by adding the base year matrix of trade flows for each product category from appendix A to the matrices of changes from appendix B, one can obtain the final matrix of 1986 projected trade flows, and from that one can compute trade shares (table 24). Factors other than the enlargement actually cause the more substantial changes in the shares of various exporting regions in the EC's imports. In fact, the principal impact of the enlargement will be to increase the share of Spain, Greece, and Portugal in the EC's imports by 2-4 percent at the expense of imports from other EC countries. The import shares of other EC suppliers of fruit and vegetable products diminish by an almost imperceptible amount. This effect is to be expected as enlargement will lead to tariff changes mainly in the trade flow of two regions.

Sensitivity Analysis

The results presented in the previous section illustrate the effects of the basic assumptions of the trade model.

Table 23—Base projection: Trade creation and trade diversion in an enlarged EC in fruit and vegetable products

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,000 dollars (1977)		
Fresh fruits (051)	104,336	100,525	3,811
Dried fruits (052)	15,576	12,901	2,675
Processed fruits (053)	50,959	36,315	14,644
Fresh vegetables (054)	136,698	75,841	60,857
Processed vegetables (055)	90,784	26,301	64,483
Total	398,353	251,883	146,470

Here I examine departures from the basic assumptions. Only some of the more interesting analyses are discussed.

The trade model presented earlier in this report relied heavily on the assumed values of the elasticity of substitution parameters σ for the predictions of changes in trade patterns. As already indicated, it was only for the EC that these parameters were estimated empirically. In the first sensitivity experiment, the values of σ, assumed for all other countries or regions except the EC, are increased to 3 (except for the parameters for Other Western Europe (OWE) whose base value is larger than 3). All other basic assumptions were retained. The rationale for assuming increases is that the originally assumed values of σ were obtained from empirical estimates of aggregate import substitution elasticities. Because fruits and vegetables are a subcategory of aggregate imports of every country, one might expect that they would respond more than total imports to relative price changes.

Table 25 presents the projected changes in the EC's import pattern. The assumptions of this simulation imply easier geographical substitutions for all world regions except the EC as compared with the base run. This simulation leads to a more even geographical distribution of total changes in EC imports compared with the base run (tables 19 and 25). However, the total changes in EC imports (bottom of table 25) are quite close to the totals in table 19. This result is uniform for most of the aggregate trade flows because the equilibrium-projected export prices differ only marginally from those of the base run. (In fact, most of the export prices are within 1 percent of the base projections.)

Table 26 presents the trade creation and trade diversion effects predicted for this experiment. The increase in the tendency toward geographic substitution of regions other than the EC simulated in this run results in more total trade creation and less total trade diversion with an attendant increase in total net trade creation from the base run of 19 percent.

The above results contrast with the set of projections where the estimated elasticity of substitution of EC imports was doubled for all products while the σ parameters for all other regions (and all other parameters) were left at their base values. The rationale for this experiment is that the empirical estimations of the σ parameters reported earlier could be biased because the data used did not reflect the internal prices faced by EC consumers. Table 27 presents the new projections for the EC import pattern. By comparing this table with the base figures in table 19, one can discern that, although total EC import changes due only to trend factors (the bottom figures in the first five columns of table 27) remain close to their base values, the total EC import changes due to enlargement decrease (except for fresh vegetables). Anyone examining the exchange in the geographical origin of EC imports due only to enlargement can see that the increases of imports from Spain, Greece, and Portugal are much higher than they were in the base projections. Of course, this result is expected given the assumption that the EC ease of geographic import substitution is much larger than in the base run.

Table 28 illustrates that a larger elasticity of substitution spurs both trade creation and trade diversion. The net effect, however, is to increase net trade creation by only 14 percent.

The price elasticities of export supply for most countries were set at an arbitrary value equal to 2 in the base run. This figure may be too low given that the analysis is for specific products whose longrun supply is expected to respond far more to relative real price changes than to a country's aggregate supply of exports because of substitution among products. A simulation was, therefore, run in which the price elasticities of export supplies were increased to 6 for all regions of the

Table 24—Base projection: EC base import shares and projected import shares in 1986 before and after enlargement

Origin of EC imports	Fresh fruits (SITC 052)			Dried fruits (SITC 052)			Processed fruit (SITC 053)		
		1986 import share			1986 import share			1986 import share	
	1977 import share	Before enlargement	After enlargement	1977 import share	Before enlargement	After enlargement	1977 import share	Before enlargement	After enlargement
					Share[1]				
European Community	0.333	.332	0.323	0.065	0.075	0.071	0.387	0.376	0.368
Other Western Europe[2]	.003	.003	.003	.001	.001	.001	.020	.023	.023
Spain, Greece, and Portugal	.171	.167	.192	.238	.268	.311	.111	.116	.138
Centrally planned East European countries	.014	.016	.015	.021	.019	.018	.077	.059	.057
United States	.048	.045	.044	.164	.148	.138	.055	.046	.045
Canada and Japan	.000	.000	.000	.001	.001	.001	.014	.011	.011
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	.093	.085	.083	.063	.051	.048	.161	.201	.196
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	.137	.145	.141	.388	.373	.353	.079	.073	.071
Rest of world	.200	.206	.200	.060	.063	.059	.095	.094	.092

	Fresh vegetables (SITC 054)			Processed vegetables (SITC 055)		
		1986 import share			1986 import share	
	1977 import share	Before enlargement	After enlargement	1977 import share	Before enlargement	After enlargement
		Share[1]				
European Community	0.489	0.470	0.455	0.519	0.525	0.499
Other Western Europe[2]	.009	.007	.007	.005	.004	.004
Spain, Greece, and Portugal	.127	.121	.146	.158	.169	.210
Centrally planned East European countries	.033	.027	.026	.044	.057	.055
United States	.032	.030	.029	.056	.053	.050
Canada and Japan	.015	.013	.013	.010	.007	.006
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	.027	.027	.026	.006	.007	.006
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morroco, Tunisia, and Turkey	.099	.088	.086	.066	.084	.080
Rest of world	.169	.217	.211	.134	.095	.090

Note: Figures may not add up to 1 because of rounding.

[1]Share based on 1.0.
[2]Excludes Spain, Greece, and Portugal.

Table 25—1986 projected changes in geographical origins of EC imports of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	270,684	7,724	384,647	821,134	508,835
Other Western Europe[2]	758	128	29,337	7,468	3,750
Spain, Greece, and Portugal	125,480	5,614	127,336	206,656	167,293
Centrally planned East European countries	17,820	767	40,439	32,471	67,419
United States	28,340	4,430	38,100	52,273	46,670
Canada and Japan	58	31	8,924	20,869	3,380
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	41,966	– 287	225,980	51,101	6,757
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	145,630	18,205	70,764	133,889	97,954
Rest of world	188,529	4,236	99,225	527,652	55,473
World[3]	819,262	40,849	1,054,748	1,853,509	957,525
Projected changes due only to EC enlargement:					
European Community	– 36,344	– 1,368	– 12,139	– 33,184	– 23,107
Other Western Europe[2]	– 317	– 24	– 861	– 110	– 204
Spain, Greece, and Portugal	132,618	19,034	62,672	144,630	106,642
Centrally planned East European countries	– 1,933	– 377	– 1,999	– 1,695	– 2,909
United States	– 5,462	– 2,598	– 1,835	– 1,729	– 2,827
Canada and Japan	– 47	– 11	– 429	– 455	– 457
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 9,713	– 865	– 5,750	– 196	– 464
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 16,660	– 5,667	– 2,269	– 2,975	– 3,673
Rest of world	– 23,226	– 1,069	– 3,328	– 10,253	– 6,089
World[3]	38,916	7,055	34,061	94,034	66,910

[1]Assumes that the elasticities of substitution of all regions except EC and OWE are raised to the value of 3.
[2]Excludes Spain, Greece, and Portugal.
[3]Figures may not add up because of rounding.

Table 26—Base projection: Trade creation and trade diversion in an enlarged EC in fruit and vegetable products[1]

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,000 dollars (1977)		
Fresh fruits (051)	110,554	81,907	28,647
Dried fruits (052)	18,964	15,815	3,149
Processed fruits (053)	53,262	35,742	17,520
Fresh vegetables (054)	141,539	80,714	60,825
Processed vegetables (055)	85,316	21,605	63,711
Total	409,635	235,783	173,852

[1]Assumes that import elasticities of substitution of all regions except EC and OWE are increased to a value of 3.

world for all five products, except for the United States where the base-run price elasticity of export supply was 6.6 and was held at that value.

Such a large export supply response to price is expected to moderate the large price declines forecast in the base run because export supplies would be withheld from the market. Table 29 illustrates this situation. The real export price indexes are all higher by varying amounts (from less than 1 percent for dried fruits to 18 percent for processed fruits) from their base values. Enlargement by itself, just as in the base run, changes these indexes only marginally (with the notable exception again of Spain, Greece, and Portugal). The reason for this effect on prices is, as expected, a fall in world exports (table 30). This table indicates that enlargement-induced total export changes are higher than in the base run. This difference is accounted for largely by the greater response in this simulation of Spanish, Greek, and Portuguese exports to the generally higher export prices they will face after joining the EC.

Table 31 shows that total trade creation will be larger than in the base run whereas total trade diversion will be lower, resulting in a substantial 37-percent improvement in total net trade creation.

Countries other than the EC, Spain, Greece, and Portugal that export large quantities of fruit and vegetable products have generally feared that, after enlargement, further increases in export supplies of the Three will hurt their own exports. This hypothesis was tested; the only difference in this simulation from the base run was that the exogenous yearly growth rates of export supplies (the parameters ϕ_i in the specification of the model) of Spain, Greece, and Portugal were increased by 50 percent from their base values in all product categories. This increase is assumed to occur in every year of the 1977-86 simulation period. Table 32 (as compared with table 15) indicates that the export price decreases expected for all regions are quite small except for Spain, Greece, and Portugal whose export terms of trade drop significantly for all products (the largest decline being 23 percent in processed fruits). In other words, large export supply increases by Spain, Greece, and Portugal cannot be absorbed in any market without large price declines.

If one compares the total export changes in table 33 with the data in table 16, it becomes apparent that although Spanish, Greek, and Portuguese exports increase significantly as expected, the exports of other world-market suppliers do not change appreciably. In fact, the losses in exports incurred by all exporters as a consequence of the enlargement are smaller than the losses incurred in the base run. For the United States, for example, if the figures for total export changes (both trend and enlargement-induced) are added across all products, then the total 1986 projected increase in U.S. exports of fruits and vegetables is $713 million. This figure compares with $723 million in the base run, a marginal decrease of 1 percent. However, the net trade creation in the EC induced by the increased excess supplies of Spain, Greece, and Portugal is significantly larger (by 67 percent) than the base-run figure (tables 23 and 34).

Similar results are obtained if, instead of increasing supplies from Spain, Greece, and Portugal, one assumes that enlargement means export subsidies on the Three's exports to countries other than the EC. A simulation was run where a 10-percent export subsidy on all product categories was assumed for exports from Spain, Greece, and Portugal to all destinations other than the EC. (For the EC, of course, the base-run tariff and nontariff reductions are assumed.) In all cases (including Spain, Greece, and Portugal), the enlargement-induced export terms of trade are within 1 percent of their base values.

Table 35 (in comparison with table 16) illustrates that EC-imposed export subsidies on Spanish, Greek, and

Table 27—1986 projected changes in the geographical origin of EC imports of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	264,853	13,064	364,985	751,173	523,851
Other Western Europe[2]	– 845	– 212	38,150	1,994	3,210
Spain, Greece, and Portugal	108,474	– 635	135,653	185,508	195,092
Centrally planned East European countries	26,643	909	11,394	5,769	93,551
United States	15,795	2,619	17,104	40,374	41,027
Canada and Japan	– 454	38	749	10,112	– 3,572
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	7,136	– 3,030	356,102	50,566	8,373
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	180,779	21,447	61,157	96,153	124,788
Rest of world	222,851	7,173	93,317	764,332	– 12,246
World[3]	825,230	41,796	1,078,608	1,905,976	974,071
Projected changes due only to EC enlargement:					
European Community	– 63,816	– 3,080	– 24,396	– 77,320	– 53,761
Other Western Europe[2]	– 577	– 56	– 2,219	– 460	534
Spain, Greece, and Portugal	215,767	29,109	96,255	217,583	172,597
Centrally planned East European countries	– 4,111	– 645	– 3,401	– 4,053	– 7,561
United States	– 11,537	– 5,513	– 4,000	– 5,544	– 8,445
Canada and Japan	– 80	– 24	– 792	– 1,537	– 777
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 18,515	– 1,590	– 15,987	– 2,385	– 1,515
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	33,964	– 10,419	– 4,371	– 8,473	– 9,517
Rest of world	– 49,986	– 2,430	– 7,566	– 35,899	– 12,034
World[3]	33,182	5,350	33,522	81,912	78,452

[1]Assumes that the EC import elasticity of substitution is double its base value.
[2]Excludes Spain, Greece, and Portugal.
[3]Figures may not add up because of rounding.

Table 28—Base projection: Trade creation and trade diversion in an enlarged EC in fruit and vegetable products[1]

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,000 dollars (1977)		
Fresh fruits (051)	164,189	141,159	23,030
Dried fruits (052)	26,812	25,459	1,353
Processed fruits (053)	73,704	56,179	17,525
Fresh vegetables (054)	167,151	116,920	50,231
Processed vegetables (055)	120,102	44,697	75,405
Total	551,959	384,414	167,545

[1]Assumes that the import elasticity of substitution is double its base value.

Portuguese exports after enlargement lead to substantially higher total exports by these three countries. However, these export increases are accompanied by only small export decreases of other exporting regions. For example, the U.S. enlargement-induced decreases of total exports of fruit and vegetable products are $32 million compared with $29 million in the base run, a marginal change due to a very small fraction of total anticipated U.S. export growth in these products attributable only to trend factors.

Export subsidies on Spanish, Greek, and Portuguese exports of fruits and vegetables lead to lower trade creation as well as to lower trade diversion (table 36). This result is to be expected as the export subsidies mean that the EC market will not be the only one that offers expanded opportunities for exports from the Three. The total net trade creation is again larger than the base run by 26 percent.

The above sensitivity experiments lead to the conclusion that the base-run projections are fairly robust with respect to prices and the basic trade flow changes. Furthermore, the projection of the total potential benefits of net trade creation likely to accrue within an enlarged EC is most probably underestimated by the base run as all sensitivity runs indicated a larger potential net trade creation.

EC Import Patterns for Individual Commodities

The previous analysis has examined the world trade patterns and export prices likely to arise out of trend factors as well as the effect of EC enlargement on aggregated categories of fruit and vegetable products.[17] In this section, more detailed analysis is presented for important commodities exported from the United States to the EC. My objective is to examine the effects of EC enlargement on the trade flows of individual commodities. The major finding is that trade liberalization in fruits and vegetables within the EC after enlargement will have only a miniscule impact on U.S. exports to the EC.

Model for EC Trade Patterns

The empirical model used for the commodity projections consists basically of the demand component of the more complete and closed model developed earlier in this report.

Equations (10), (16), and (18) are repeated here for reference:

$$\tilde{x}_{ik} = \tilde{m}_k - \sigma_k(1 - S_{iko})\,\tilde{p}^m_{ik} + \sum_{\substack{j=1 \\ j \neq i}}^{r} \sigma_k\, S_{jko}\, \tilde{p}^m_{jk} \qquad (10)$$

$$\tilde{m}_k = \theta_k\, \tilde{Y}_k - \epsilon_k\, \tilde{p}^m_k. \qquad (16)$$

$$\tilde{p}^m_k = \sum_{i=1}^{r} S_{iko}\, \tilde{p}^m_{ik} \qquad k = 1, \ldots, n \qquad (18)$$

The first equation expresses the percentage change in the share of exporter i in the kth import market for some commodity as a function of the overall percentage growth in the import market m_k and the percentage changes in the various c.i.f. prices of competing exporters, $\tilde{p}_{jk}$. The second equation expresses the percentage growth of the import market as a function of the growth of real income of the importing country and the change of an index of the real price of the imported good from all sources. Equation (18), in turn, expresses

[17]See *(23)* for a detailed discussion of the structural aspects of the EC's trade in oranges, grapes, raisins, almonds, processed peaches, and processed tomatoes.

Table 29—1986 projected indexes of export prices of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1977 = 100				
Projected changes due only to income and export supply effects:					
European Community	97.2	89.2	92.5	98.2	95.6
Other Western Europe[2]	105.4	91.0	82.5	107.8	98.9
Spain, Greece, and Portugal	97.0	103.5	89.5	98.8	93.2
Centrally planned East European countries	88.5	100.0	104.3	107.2	85.2
United States	96.3	104.3	97.8	98.5	95.8
Canada and Japan	110.7	99.0	104.0	103.7	112.9
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	101.4	107.6	80.2	96.0	92.5
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	91.8	99.0	94.9	102.0	86.7
Rest of world	93.0	95.1	91.9	84.1	109.2
World	95.4	100.8	90.7	95.7	97.4
Projected changes due only to EC enlargement:					
European Community	97.0	89.0	92.3	98.2	95.3
Other Western Europe[2]	105.2	90.8	82.4	107.2	98.6
Spain, Greece, and Portugal	98.9	105.1	92.1	102.2	95.2
Centrally planned East European countries	88.4	99.8	104.2	107.1	85.0
United States	96.1	104.0	97.7	98.3	95.6
Canada and Japan	110.6	98.8	103.9	103.4	112.8
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	101.2	107.3	80.0	95.5	92.5
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	91.6	98.5	94.7	101.6	86.5
Rest of world	92.8	94.8	91.7	83.9	109.1
World	95.5	100.0	90.8	96.0	97.6

[1]Assumes that all regions' export-supply price elasticities are increased to the value of 6. Excludes the United States.
[2]Excludes Spain, Greece, and Portugal.

Table 30—1986 projected changes in total exports of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	360,943	19,954	395,780	981,922	557,566
Other Western Europe[2]	1,736	453	53,093	11,684	8,316
Spain, Greece, and Portugal	189,196	31,124	141,318	239,900	302,550
Centrally planned East European countries	48,057	4,840	52,890	62,868	77,887
United States	367,959	35,614	141,779	226,131	106,197
Canada and Japan	12,518	624	25,972	49,259	23,774
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	190,977	16,676	426,893	258,677	51,891
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	319,529	45,945	78,752	181,108	94,749
Rest of world	935,615	35,498	261,536	798,432	205,501
World[3]	2,426,530	190,727	1,578,013	2,809,981	1,428,431
Projected changes due only to EC enlargement:					
European Community	– 26,458	– 645	– 12,028	– 5,641	– 23,033
Other Western Europe[2]	– 345	– 20	– 856	– 1,781	– 508
Spain, Greece, and Portugal	135,162	19,808	62,739	159,931	97,863
Centrally planned East European countries	– 1,636	– 381	– 2,449	– 1,563	– 2,727
United States	– 11,804	– 3,914	– 2,658	– 8,661	– 4,244
Canada and Japan	– 90	– 23	– 448	– 2,786	– 476
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 9,938	– 1,430	– 13,801	– 24,858	56
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 15,510	– 7,741	– 2,901	– 12,064	– 3,692
Rest of world	– 34,296	– 1,636	– 6,999	– 19,602	– 4,552
World[3]	35,085	4,018	20,600	82,977	58,686

[1]Assumes that all regions' export-supply price elasticities are increased to the value of 6. Excludes the United States.
[2]Excludes Spain, Greece, and Portugal.
[3]Figures may not add up because of rounding.

Table 31—Trade creation and trade diversion in an enlarged EC in fruit and vegetable products[1]

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,000 dollars (1977)		
Fresh fruits (051)	115,426	83,203	32,223
Dried fruits (052)	20,680	16,646	4,034
Processed fruits (053)	53,587	33,449	20,138
Fresh vegetables (054)	161,170	80,753	80,417
Processed vegetables (055)	84,382	20,786	63,596
Total	435,244	234,837	200,407

[1]Assumes that all regions' export supply price elasticities are increased to the value of 6.

the percentage change of the real import price index in terms of the percentage changes in the c.i.f. prices of the individual exporters.

The trade model discussed earlier was closed by the specification of export functions for all suppliers. Although export supply functions are not hard to estimate for individual commodities (compared with estimates of supply functions of aggregate commodities), the major stumbling block encountered in trying to specify closed-trade models for individual commodities is that origin-destination data for most countries are not available. EC members are the only countries that report extremely detailed origin-destination trade statistics disaggregated to the individual commodity level. Therefore, I decided to follow a simpler route. Because the projections are supposed to analyze a longrun comparative static situation in trade patterns that is presumed to arise out of a preferential trade liberalization, one can reasonably assume that the export supply curves of the individual exporters in each specific commodity are infinitely price elastic. In other words, trade patterns are determined solely by demand factors. In fact, this assumption was made in all previous studies that have analyzed individual country, longrun static trade patterns.

Given the assumption of infinitely elastic import supply curves, import quantities are determined by equations (10), (16), and (18). The exogenous variables are the growth rates of real income and the percentage changes in c.i.f. prices.

Empirical Specifications

A model like the one just discussed was specified for each of the EC countries and each of six commodities: fresh oranges, fresh table grapes, sweet almonds, raisins, processed peaches, and processed tomatoes. These commodities were chosen because there is a substantial trade flow of U.S. exports toward the EC for each and there are also substantial exports to the EC from Spain, Greece, and Portugal. Hence, these products are likely to be affected by EC enlargement. Other products are exported in significant amounts by the United States to the EC, such as walnuts and prunes. However, these products are not traded between Spain, Greece, and Portugal and the EC; hence, their trade pattern is not likely to be influenced by enlargement.[18]

For each commodity, detailed annual data were collected for the value of imports of each EC country by origin in 1979. The source for these data was the NIMEXE trade statistics published by the EC. Data were also collected for 1978, but I decided to use 1979 import trade patterns as a base rather than average the 2 years, because not only do the overall trade patterns (shares) not vary greatly in these years, but also because of substantial inflation between 1978 and 1979, the value data are not comparable.

The values for the individual parameters of the models for each EC country—namely, the elasticities of substitution σ_k, the income elasticities of import demand θ_k, and the price elasticities of import demand ϵ_k—were obtained from tables 5, 7, and 8, respectively. In other words, the parameters for oranges, table grapes, and almonds were obtained from the fresh fruit columns; the parameters for raisins, from the dried fruit columns; the parameters for processed peaches, from the processed fruit columns; and the parameters for processed tomatoes, from the processed vegetable columns in these tables.

Yearly income growth rates for individual EC countries were obtained from the data compiled by Kost *(19)*.

[18]This statement is not strictly correct because there might be intercommodity substitution among the various products. These effects are second-order and small and have been neglected in this study because the main objective is to assess the overall import demand of several fruit and vegetable categories, but not the substitution by importers among suppliers in individual products.

Table 32—1986 projected indexes of export prices of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
			1977 = 100		
Projected changes due only to income and export supply effects:					
European Community	87.8	78.5	80.9	95.1	88.7
Other Western Europe[2]	107.7	82.3	62.2	115.8	96.0
Spain, Greece, and Portugal	84.6	107.6	57.6	88.9	70.5
Centrally planned East European countries	72.9	99.6	105.1	115.4	68.6
United States	95.6	104.2	96.2	97.6	95.3
Canada and Japan	122.5	97.6	105.7	106.9	128.4
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	100.8	116.5	57.9	90.2	83.0
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	79.9	97.7	85.4	103.5	71.6
Rest of world	83.2	89.1	79.8	65.8	119.2
World	86.8	100.1	74.9	88.2	88.3
Projected changes due only to EC enlargement:					
European Community	87.3	78.2	80.6	95.0	88.2
Other Western Europe[2]	72.7	107.3	62.1	114.9	95.5
Spain, Greece, and Portugal	88.6	111.7	61.3	95.7	73.8
Centrally planned East European countries	72.7	98.9	104.7	115.3	68.3
United States	95.4	103.9	96.2	97.5	95.1
Canada and Japan	122.4	97.3	105.6	106.4	128.3
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	100.4	115.9	57.7	89.4	83.2
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	79.6	96.6	85.0	103.0	71.2
Rest of world	82.9	88.6	79.6	65.5	119.0
World	87.0	100.7	74.9	88.8	88.5

[1]Assumes that the growth rate of Spanish, Greek, and Portuguese exports of all products is 50 percent higher than in the base run.
[2]Excludes Spain, Greece, and Portugal.

Table 33—1986 projected changes in total exports of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 U.S. dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	408,276	30,981	424,757	995,737	609,618
Other Western Europe[2]	– 2,588	683	79,585	4,317	7,947
Spain, Greece, and Portugal	250,014	23,414	256,804	308,440	523,048
Centrally planned East European countries	69,007	4,610	20,688	28,464	111,922
United States	315,820	34,454	100,485	188,238	97,983
Canada and Japan	2,037	642	15,774	37,009	6,928
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	133,830	7,056	661,567	284,982	63,287
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	406,201	48,428	79,806	155,123	129,351
Rest of world	1,144,473	42,456	303,346	1,175,495	86,025
World[3]	2,727,070	192,725	1,942,812	3,177,805	1,636,109
Projected changes due only to EC enlargement:					
European Community	– 15,980	– 512	– 8,124	– 1,155	– 15,108
Other Western Europe[2]	– 198	– 13	– 500	– 710	– 254
Spain, Greece, and Portugal	110,708	15,143	61,811	126,863	91,040
Centrally planned East European countries	– 1,139	– 329	– 1,456	– 393	– 1,917
United States	– 9,702	– 3,440	– 1,939	– 6,007	– 3,062
Canada and Japan	– 75	– 14	– 254	– 1,456	– 92
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 6,587	– 788	– 10,333	– 13,868	671
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 10,834	– 5,324	– 1,884	– 6,572	– 2,715
Rest of world	– 23,785	– 1,185	– 4,358	– 14,799	– 1,526
World[3]	42,409	3,539	32,963	81,904	67,036

[1]Assumes that the growth rate of Spanish, Greek, and Portuguese exports of all products is 50 percent higher than in the base run.
[2]Excludes Spain, Greece, and Portugal.
[3]Figures may not add up because of rounding.

Table 34—Trade creation and trade diversion in an enlarged EC in fruit and vegetable products[1]

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,000 dollars (1977)		
Fresh fruits (051)	110,851	72,098	38,753
Dried fruits (052)	17,729	13,774	3,955
Processed fruits (053)	63,836	28,975	34,861
Fresh vegetables (054)	142,640	62,082	80,558
Processed vegetables (055)	104,117	18,013	86,104
Total	439,173	194,941	244,232

[1]Assumes that the growth rate of Spanish, Greek, and Portuguese exports of all products is 50 percent higher than in the base run.

The most arduous task was estimating the price equivalent of the current trade barriers that the EC imposed on imports of the above six commodities from Spain, Greece, and Portugal. There are different EC tariffs for each commodity depending not only on the country of origin, but also and more important, on the season. Very detailed data on the seasonal geographic EC pattern of trade in each commodity and differential tariff rates for each season were obtained from the GATT (General Agreement on Tariffs and Trade) tapes made available by the U.S. Department of Agriculture. The latest year for which detailed trade and tariff data were available on the tape was 1976. For each of the Three and for each of the six commodities, I obtained an average yearly tariff rate for the EC by weighting the individual season and country-specific tariff rates in 1976 by the proportions of the total yearly supplies of each exporter's exporting to the EC in each season. To obtain a price equivalent for the nontariff barriers, I weighted the figures for the nontariff barriers (mainly, reference prices) compiled by Sampson and Yeats *(27)* by the proportion of the yearly supplies of every commodity by each exporter to the EC that is marketed during the season in which reference prices apply. I then obtained the price equivalent of the combined yearly tariff and nontariff barriers of the EC toward Spain, Greece, and Portugal in each commodity by aggregating the two figures (that is, six commodities times three exporting countries). Finally, the percentage reductions in the c.i.f. import prices assumed for the simulations were obtained by the standard formula $dt/(1+t)$ where t is the average total tariff rate computed by the method outlined above and $dt = -t$ (namely, complete abolition of all tariff and nontariff barriers).

Empirical Results

Tables 37 through 42 present the base projections for the six individual commodities. These results represent the aggregation of the separate results obtained for each EC-member country's import pattern. A detailed exposition of all individual country results is not given. (There are eight EC member countries, as Luxembourg is lumped with Belgium, and six commodities, yielding a total of 36 tables like the ones presented here).

The projections are for 1986, and they isolate two effects as before: the trade effects of income growth and the tariff effects of enlargement. For all commodities and almost all exporting countries except Spain, Greece, and Portugal, the expected positive change in exports to the EC due to trend factors is much larger than the decline in exports due to the intercountry substitution projected to occur as a consequence of enlargement. In percentage terms, this trade diversion to the trade flow of countries other than the Three rarely exceeds 4 percent of the 1986 projected total flows. Processed peaches represent a notable exception; the large anticipated tariff and nontariff reductions toward imports, mainly from Greece, are projected to cause a 10-percent decline in U.S. exports to the EC and large declines in the exports of all suppliers to the EC except Spain and Greece.

The effects on oranges serve as an interesting illustration. Although the decline in the yearly price equivalent of EC tariff and nontariff barriers toward Spain (the largest supplier) is 30 percent, increased imports from Spain are only 10 percent of the 1986 projected nonenlargement Spanish-EC trade flow. This increase translates into $34 million (1979 prices) of additional exports of oranges from Spain. Total EC imports of oranges are projected to increase by $12 million, leaving $22 million of enlargement-induced trade diversion that is distributed fairly evenly among all EC suppliers. The decline in U.S. exports of oranges to all EC countries is projected to be less than $1 million, a trivial amount.

Table 35—1986 projected changes in total exports of fruit and vegetable products[1]

Country or region	Commodity and SITC code				
	Fresh fruits (051)	Dried fruits (052)	Processed fruits (053)	Fresh vegetables (054)	Processed vegetables (055)
	1,000 dollars (1977)				
Projected changes due only to income and export supply effects:					
European Community	419,437	31,030	435,487	1,010,075	627,882
Other Western Europe[2]	– 2,367	684	81,071	4,588	8,385
Spain, Greece, and Portugal	188,987	22,432	173,037	241,457	369,672
Centrally planned East European countries	69,975	4,612	22,525	29,981	114,423
United States	319,415	34,607	104,431	190,375	103,548
Canada and Japan	2,095	643	16,315	37,337	8,223
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	137,916	7,093	669,392	286,916	66,695
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	413,555	48,579	81,810	157,015	132,259
Rest of world	1,153,619	42,494	307,924	1,180,028	97,230
World[3]	2,702,632	192,175	1,891,992	3,137,772	1,528,317
Projected changes due only to EC enlargement:					
European Community	– 22,470	– 890	– 9,205	– 9,868	– 17,438
Other Western Europe[2]	– 356	– 25	– 1,016	– 864	– 410
Spain, Greece, and Portugal	137,593	20,846	60,335	138,393	111,177
Centrally planned East European countries	1,373	– 217	– 1,598	– 1,479	– 2,628
United States	– 12,031	– 4,341	– 2,869	– 7,589	– 4,855
Canada and Japan	– 133	– 22	– 361	1,564	– 571
Argentina, Australia, Brazil, Mexico, New Zealand, and South Africa	– 9,030	– 1,008	– 12,224	– 15,515	– 1,164
Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Morocco, Tunisia, and Turkey	– 16,396	– 5,508	– 2,050	– 7,114	– 3,209
Rest of world	– 29,586	– 1,374	– 5,414	– 17,020	– 5,244
World[3]	48,985	7,461	25,597	77,374	75,658

[1]Assumes that Spanish, Greek, and Portuguese exports of fruit and vegetable products enjoy 10-percent export subsidies to all destinations (except the EC) after enlargement.
[2]Excludes Spain, Greece, and Portugal.
[3]Figures may not add up because of rounding.

Table 36—Trade creation and trade diversion in an enlarged EC in fruit and vegetable products[1]

Commodity and SITC code	Trade creation (TC)	Trade diversion (TD)	Net trade creation (TC-TD)
	1,000 dollars (1977)		
Fresh fruits (051)	98,964	67,033	31,931
Dried fruits (052)	16,560	13,009	3,551
Processed fruits (053)	48,190	28,623	19,567
Fresh vegetables (054)	128,013	60,381	67,632
Processed vegetables (055)	77,247	15,363	61,884
Total	368,974	184,408	184,566

[1]Assumes that Spanish, Greek, and Portuguese exports of all products enjoy 10-percent export subsidies to all destinations (except the EC) after enlargement.

All other commodities are similarly affected. In fact, the trade diversion effects for all six commodities on the United States total $3.3 million (in 1979 prices), which represents the total decline in U.S. exports to the EC of these fruit and vegetable products. One can calculate the total decline of U.S. exports of the five three-digit categories of fruit and vegetable products to the EC that are projected to occur because of enlargement by adding the top figures in the last five columns of table 21—that is, $14.3 million. Given the aggregated nature of the earlier projections and the inclusion of many more commodities than those analyzed above, the compatibility of the two figures derived from quite different data sources is adequate.

The major conclusion is that total EC imports (from all sources) of these six products will expand, and the expansion will come about because of significant preferential trade liberalization between the EC and three of its most significant suppliers of fruits and vegetables: Spain, Greece, and Portugal. The geographical substitution effects on EC imports will be rather minor and fairly evenly distributed across all current EC suppliers of fruits and vegetables.

Implications

Current trends in export availabilities of fruit and vegetable products, combined with current forecasts of income growth over the next decade, in the absence of enlargement, suggest substantial deterioration in export prices of these products in the medium run. The only exception is dried fruits, where the projection for world export price is only slightly above the 1977 level. EC enlargement will improve export prices of fruits and vegetables in Spain, Greece, and Portugal and slightly reduce export prices of other world exporters. When weighted properly, these effects point toward slight increases in world prices of fruit and vegetable products over those forecasted without EC enlargement.

World trade patterns, as represented by export and import shares, will not change much in the next decade. EC enlargement will increase the share of Spanish, Greek, and Portuguese exports to the EC at the expense of all other EC suppliers.

EC enlargement will cause substantial increases in the net exports of fruit and vegetable products of Spain, Greece, and Portugal. Furthermore, it will slightly reduce net exports of all other exporting regions. However, in some products (notably processed vegetables), EC enlargement will slightly increase net exports of most other exporting regions.

As expected, EC enlargement will substantially change the origin of EC imports of fruits and vegetables. However, the declines in exports to the EC of exporting regions other than the Three are much smaller than the increases of exports by the Three countries to the EC.

EC enlargement is projected to benefit the enlarged Community of 12 with regard to trade in fruit and vegetable products. Trade creation between the former EC-9 and Spain, Greece, and Portugal is estimated at about $400 million (constant U.S. dollars, 1977), whereas trade diversion is estimated at about $250 million (constant dollars). These gains will not be at the expense of any single country or region. The costs of trade diversion will be borne rather uniformly across most exporters.

U.S. exports to the EC of all fruit and vegetable products, except possibly processed peaches, are expected to decline only minimally from their nonenlargement projected total.

The widespread concern generated by the prospect of EC enlargement to include Spain, Greece, and Portugal is largely unjustified regarding fruits and vegetables. The detrimental effects on the international markets for these products will come mostly from general trends in world supplies and incomes. EC enlargement will only marginally affect the general pattern of international trade in these products and will benefit the enlarged EC.

Table 37—Projections of 1986 import trade pattern for oranges for the EC from the 1979 base trade pattern

Country of origin	Base-year imports	Base import share	Changes due to income growth		Tariff and non-tariff barrier abolition (import price)	Changes due to tariff effects of enlargement		1986 final imports	1986 import share
			Proportion	Amount		Proportion	Amount		
	1,000 dollars	*Share*[1]	*Percent*	*1,000 dollars*	------ *Percent* ------			--*1,000 dollars*--	*Share*[1]
France	5,050	0.007	17.3	962	0	– 4.6	– 297	6,215	0.007
Belgium-Luxembourg	6,430	.008	18.7	1,200	0	– 5.0	– 384	7,246	.008
Netherlands	20,163	.026	13.3	2,674	0	– 5.1	– 1,160	21,677	.024
Germany	3,857	.005	19.2	742	0	– 4.4	– 204	4,395	.005
Italy	17,079	.022	14.4	2,462	0	– 3.5	– 679	18,862	.021
United Kingdom	8,078	011	36.0	2,906	0	– 0.4	– 39	10,945	.012
Ireland	583	.001	1.3	8	0	– 2.7	– 16	574	.001
Denmark	138	.000	21.2	29	0	– 4.5	8	160	.000
Spain	310,027	.404	16.5	51,006	– 29.8	9.4	34,009	395,041	.441
Greece	1,866	.002	11.2	209	– 18.1	6.7	138	2,213	.002
Morocco	74,980	.098	16.5	12,367	0	– 5.0	– 4,387	82,960	.093
Algeria	880	.001	15.2	134	0	– 4.5	– 46	969	.001
Tunisia	9,638	.013	17.8	1,720	0	– 7.4	– 839	10,519	.012
Egypt	1,006	.001	21.2	214	0	– 4.7	– 57	1,163	.001
Mozambique	446	.001	8.4	38	0	– 4.9	– 24	459	.001
South Africa	105,859	.138	12.0	12,694	0	– 4.6	– 5,432	113,121	.126
Swaziland	2,457	.003	10.4	254	0	– 4.8	– 129	2,582	.003
United States	12,811	.017	23.4	2,999	0	– 5.3	– 849	14,960	.017
Honduras	298	000	26.2	78	0	– 4.3	– 16	359	.000
Cuba	1,810	.002	19.5	353	0	– 4.1	– 89	2,074	.002
Brazil	17,750	.023	19.0	3,369	0	– 4.1	– 861	20,257	.023
Uruguay	3,709	.005	24.7	916	0	– 4.3	– 199	4,426	.005
Argentina	4,681	.006	23.1	1,080	0	– 5.4	– 308	5,452	.006
Cyprus	17,440	.023	9.0	1,571	0	– 3.4	– 637	18,375	.021
Israel	139,358	.181	11.0	15,323	0	– 3.4	– 5,184	149,497	.167
Australia	1,293	.002	22.3	288	0	– 6.0	– 95	1,486	.002
Total	768,184	1.000	15.0	115,595	[2]	1.4	12,210	895,990	1.000

Note: Figures may not add up because of rounding.

[1]Share based on 1.0.
[2]Not applicable.

Table 38—Projections of 1986 import trade pattern for the EC from the 1979 base trade pattern

Country of origin	Base-year imports	Base import share	Changes due to income growth		Tariff and non-tariff barrier abolition (import price)	Changes due to tariff effects of enlargement		1986 final imports	1986 import share
			Proportion	Amount		Proportion	Amount		
	1,000 dollars	*Share*[1]	*Percent*	*1,000 dollars*	------- *Percent* -------			--*1,000 dollars*--	*Share*[1]
France	20,076	0.054	16.5	3,309	0	– 1.0	– 231	23,154	0.055
Belgium-Luxembourg	2,701	.007	16.4	443	0	– 1.5	– 49	3,095	.007
Netherlands	5,370	.014	10.6	569	0	– 1.8	– 105	5,834	.014
Germany	6,404	.017	20.5	1,313	0	– 2.2	– 170	7,547	.018
Italy	202,956	.545	14.4	29,166	0	– 1.1	– 2,533	229,589	.542
United Kingdom	1,601	.004	34.5	553	0	– 2.8	– 61	2,093	.005
Spain	49,800	.134	9.9	4,955	– 18.4	9.8	5,347	60,102	.142
Greece	12,035	.032	14.3	1,721	– 23.7	13.6	1,872	15,628	.037
Turkey	1,239	.003	13.1	162	0	– .7	– 10	1,391	.003
Bulgaria	199	.001	12.9	26	0	– .6	– 1	223	.001
South Africa	48,435	.130	11.2	5,444	0	– 1.6	– 857	53,022	.125
United States	2,386	.006	8.4	200	0	– 2.7	– 70	2,517	.006
Colombia	156	.000	19.7	31	0	– 1.4	– 3	184	.000
Brazil	192	.001	20.7	40	0	– 1.4	– 3	228	.001
Chile	3,429	.009	17.6	603	0	– 3.4	– 136	3,896	.009
Argentina	149	.000	11.0	16	0	– 2.5	– 4	162	.000
Cyprus	12,546	.034	1.9	237	0	– 4.4	– 557	12,226	.029
Israel	2,665	.007	3.9	105	0	– 4.0	– 110	2,660	.006
Total	372,341	1.000	13.1	48,894	[2]	1.6	2,319	423,553	1.000

Note: Figures may not add up because of rounding.

[1]Share based on 1.0.
[2]Not applicable.

Table 39—Projections of 1986 import trade pattern for sweet almonds for the EC from the 1979 base trade pattern

Country of origin	Base-year imports	Base import share	Changes due to income growth		Tariff and non-tariff barrier abolition (import price)	Changes due to tariff effects of enlargement		1986 final imports	1986 import share
			Proportion	Amount		Proportion	Amount		
	1,000 dollars	*Share*[1]	*Percent*	*1,000 dollars*	------- *Percent* -------			*--1,000 dollars--*	*Share*[1]
France	1,980	0.007	16.5	328	0	−0.8	−20	2,288	0.007
Netherlands	828	.003	19.0	158	0	−1.2	−11	974	.003
Germany	11,711	.039	20.8	2,435	0	−1.1	−154	13,992	.041
Italy	24,708	.083	15.9	3,919	0	−.6	−183	28,444	.084
United Kingdom	2,370	.008	32.6	772	0	−.3	−10	3,133	.009
Switzerland	0	.000	0	0	0	−.0	0	0	.000
Portugal	4,660	.016	12.5	581	−6.5	3.7	193	5,434	.016
Spain	67,508	.227	15.4	10,376	−6.5	3.3	2,569	80,453	.236
Morocco	5,842	.020	17.5	1,024	0	−1.1	−73	6,793	.020
Tunisia	7,802	.026	17.8	1,386	0	−1.1	−104	9,084	.027
United States	163,500	.550	12.5	20,413	0	−.6	−1,194	182,718	.537
Cyprus	573	.002	6.2	36	0	−.7	−4	604	.002
Israel	3,011	.010	14.2	427	0	−1.0	−33	3,405	.010
Rest of world	2,625	.009	16.7	440	0	−1.9	−58	3,007	.009
Total	297,118	1.000	14.2	42,294	[2]	.3	916	340,328	1.000

Note: Figures may not add up because of rounding.

[1]Share based on 1.0.
[2]Not applicable.

Table 40—Projections of 1986 import trade pattern for table grapes for raisins for the EC from the 1979 base trade pattern

Country of origin	Base-year imports	Base import share	Changes due to income growth		Tariff and non-tariff barrier abolition (import price)	Changes due to tariff effects of enlargement		1986 final imports	1986 import share
			Proportion	Amount		Proportion	Amount		
	1,000 dollars	*Share*[1]	*Percent*	*1,000 dollars*	------- *Percent* -------			*--1,000 dollars--*	*Share*[1]
France	370	0.001	12.0	44	0	−0	−0	415	0.001
Netherlands	1,645	.005	12.9	213	0	−.4	−1	1,857	.005
Germany	906	.003	−1.6	−14	0	−.1	−0	892	.002
United Kingdom	1,541	.005	11.6	179	0	−.2	−0	1,720	.005
Ireland	184	.000	8.2	12	0	−.0	−0	160	.000
Spain	784	.002	19.0	149	−3.8	5.2	49	982	.003
Greece	126,720	.372	9.5	12,089	0	−.1	−8	138,801	.371
Turkey	97,475	.286	10.0	9,737	0	−.1	−10	107,202	.287
South Africa	14,308	.042	8.8	1,256	0	−.0	−0	15,563	.042
United States	19,337	.057	5.8	1,113	0	−.1	−2	20,447	.055
Cyprus	928	.003	8.6	79	0	−.0	−0	1,008	.003
Iran	37,940	.111	11.5	4,366	0	−.1	−3	42,302	.113
Afghanistan	16,798	.049	7.9	1,322	0	−.0	−1	18,119	.048
Australia	19,738	.058	11.8	2,324	0	−.1	−2	22,060	.059
Rest of world	2,091	.006	9.5	199	0	−.1	−2	2,290	.006
Total	340,729	1.000	9.7	33,069	[2]	.1	20	373,817	1.000

Note: Figures may not add up because of rounding.

[1]Share based on 1.0.
[2]Not applicable.

Table 41—Projections of 1986 import trade pattern for processed peaches for the EC from the 1979 base trade pattern

Country of origin	Base-year imports	Base import share	Changes due to income growth		Tariff and non-tariff barrier abolition (import price)	Changes due to tariff effects of enlargement		1986 final imports	1986 import share
			Proportion	Amount		Proportion	Amount		
	1,000 dollars	*Share*[1]	*Percent*	*1,000 dollars*	------- *Percent* -------			-- *1,000 dollars* --	*Share*[1]
Germany	2,030	0.016	37.2	755	0	– 12.7	– 354	2,432	0.013
France	2,298	.018	55.8	1,281	0	– 9.4	– 336	3,243	.017
Italy	19,060	.146	35.3	6,732	0	– 7.6	– 1,956	23,835	.126
Netherlands	448	.003	53.7	241	0	– 1.6	– 11	678	.004
Spain	171	.001	12.6	22	– 37	19.6	38	231	.001
United Kingdom	280	.002	49.9	140	0	– 8.3	– 35	385	.002
Greece	39,276	.302	48.8	19,153	– 37	33.9	19,829	78,258	.414
Bulgaria	384	.003	52.8	203	0	11.9	– 70	517	.003
South Africa	50,894	.391	23.6	12,013	0	– 4.9	– 3,093	59,814	.317
United States	7,885	.061	54.3	4,280	0	– 9.8	– 1,189	10,976	.058
Australia	6,287	.048	16.0	1,005	0	– 5.1	– 371	6,921	.037
Rest of world	1,352	.010	44.2	553	0	– 8.9	– 160	1,645	.009
Total	130,265	1.000	35.6	46,377	[2]	7.0	12,292	188,934	1.000

Note: Figures may not add up because of rounding.

[1]Share based on 1.0.
[2]Not applicable.

Table 42—Projections of 1986 import trade pattern for processed tomatoes for the EC from the 1979 base trade pattern

Country of origin	Base-year imports	Base import share	Changes due to income growth		Tariff and non-tariff barrier abolition (import price)	Changes due to tariff effects of enlargement		1986 final imports	1986 import share
			Proportion	Amount		Proportion	Amount		
	1,000 dollars	*Share*[1]	*Percent*	*1,000 dollars*	------- *Percent* -------			-- *1,000 dollars* --	*Share*[1]
France	1,206	0.004	60.3	728	0	– 0.0	– 0	1,934	0.004
Netherlands	1,579	.005	67.9	1,072	0	– .6	– 15	2,636	.006
Germany	2,338	.008	43.2	1,011	0	– .5	– 18	3,331	.008
Italy	185,773	.624	44.3	82,383	0	– 3.9	– 10,434	257,722	.586
United Kingdom	425	.001	70.6	300	0	1.8	13	738	.002
Switzerland	2,199	.007	62.9	1,384	0	– 5.5	– 198	3,385	.008
Portugal	15,606	.052	38.9	6,076	– 28.2	21.2	4,592	26,274	.060
Spain	21,433	.072	39.6	8,495	– 30.9	28.6	8,550	38,478	.088
Greece	41,999	.141	40.5	17,018	– 21.1	21.0	12,365	71,382	.162
Turkey	1,755	.006	33.6	590	0	– 4.0	– 94	2,251	.005
USSR	347	.001	38.8	135	0	.3	2	483	.001
Czechoslovakia	457	.002	40.2	184	0	– 4.4	– 28	612	.001
Hungary	1,610	.005	34.2	551	0	2.6	56	2,216	.005
Bulgaria	3,792	.013	41.1	1,560	0	– 3.8	– 203	5,149	.012
Morocco	6,527	.022	41.8	2,731	0	– 4.9	– 458	8,800	.020
South Africa	606	.002	35.5	215	0	– 1.4	– 11	810	.002
United States	347	.001	48.6	168	0	– 2.4	– 12	503	.001
Israel	6,780	.023	37.4	2,538	0	– 4.3	– 399	8,918	.020
China	1,455	.055	45.2	658	0	– 4.8	– 102	2,011	.005
Rest of world	1,444	.005	37.6	543	0	– 3.7	– 74	1,912	.004
Total	297,676	1.000	43.1	128,338	[2]	3.2	13,532	439,547	1.000

Note: Figures may not add up because of rounding.

[1]Share based on 1.0.
[2]Not applicable.

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Appendix A: Base-Year Values and Trade Share Matrices

The tables in this appendix show base-year (1977) trade matrices in value terms employed in all the aggregate projections as well as in the base-year matrices of export and import shares for all five fruit and vegetable product categories used in the aggregate models.

See glossary on p. ii for a key to the abbreviations used in the appendix tables.

Appendix table 1—Base-year (1977) trade pattern for fresh fruits

Exporting region	Importing region									Total exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	1,394,634	227,433	10,080	56,606	7,455	4,067	1,595	19,394	37,022	1,758,266
OWE	13,545	10,750	103	1,087	20	1	9	278	272	26,065
SGP	715,158	100,705	321	93,269	1,951	611	3,721	6,433	8,894	931,063
EEU	59,981	22,268	0	57,264	0	13	633	21	1,044	141,224
USA	200,180	50,078	8,218	23,774	0	426,346	19,757	1,458	110,876	840,687
CNJP	1,911	1,322	0	24	23,503	12,840	559	5	8,101	48,265
OEX	388,397	88,264	535	5,982	100,106	23,104	143,325	592	30,503	780,708
NAME	575,027	134,759	483	128,096	42,426	11,484	2,650	36,409	48,661	980,595
RSW	835,706	120,415	14,418	100,815	467,827	330,836	49,302	39,438	220,385	2,179,142
Total imports	4,184,539	755,994	34,158	467,517	643,288	809,202	221,551	104,028	465,758	7,686,015

Appendix table 2—Base-year (1977) trade pattern for dried fruits

Exporting region	Importing region									Total exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	20,415	12,504	980	162	780	361	259	692	3,059	39,212
OWE	387	244	2	129	3	1	32	1	7	806
SGP	74,782	4,859	337	49,880	7,697	4,299	1,802	941	1,425	146,022
EEU	6,458	2,762	4	9,867	153	214	5	4	712	20,179
USA	51,474	28,120	1,910	779	0	37,943	5,276	473	13,333	139,308
CNJP	205	0	15	0	953	3	3	3	207	1,389
OEX	19,894	3,753	719	28	1,757	16,704	20,117	102	2,956	66,030
NAME	122,174	12,990	1,902	10,512	16,883	8,016	3,096	3,612	6,644	185,829
RSW	19,000	2,092	607	4,358	9,011	5,969	2,772	1,211	25,460	70,480
Total imports	314,789	67,324	6,476	75,715	37,237	73,510	33,362	7,039	53,803	669,255

Appendix table 3—Base-year (1977) trade pattern for processed fruits

Exporting region	Importing region									Total exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	558,077	52,525	4,301	1,946	10,139	12,317	6,163	2,519	29,142	677,129
OWE	128,368	31,255	212	1,897	3,793	568	237	182	5,878	72,410
SGP	160,623	8,128	1,080	20,801	3,167	1,998	727	1,090	27,865	225,479
EEU	110,645	41,520	104	14,068	5,223	5,057	672	,143	4,388	182,820
USA	79,774	29,868	2,167	95	0	144,718	5,313	2,949	49,438	314,322
CNJP	20,397	1,549	2	2	31,424	2,623	3,563	2,486	23,130	85,176
OEX	231,641	62,150	14,772	3,175	115,144	49,232	12,302	7,786	24,148	520,350
NAME	113,572	8,491	600	4,478	6,824	1,826	814	1,059	7,579	145,243
RSW	137,586	14,865	9,284	13,900	113,630	58,537	10,691	4,925	89,428	452,846
Total imports	1,440,703	250,351	32,522	60,362	289,344	276,876	40,482	24,139	260,996	2,675,775

Appendix table 4—Base-year (1977) trade pattern for fresh vegetables

Exporting region	Importing region									Total exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	1,638,886	212,495	61,539	31,963	16,243	16,115	12,448	50,750	74,151	2,114,590
OWE	29,379	6,694	2,462	107	35	8	2,886	1,047	166	42,784
SGP	426,301	59,351	6,110	1,900	4,460	9,138	13,579	1,419	6,386	528,644
EEU	110,568	49,632	526	53,810	2,290	6,462	303	1,379	10,029	231,999
USA	107,866	12,932	8,918	4,787	0	264,996	15,184	20,371	57,317	492,371
CNJP	51,494	643	2,797	158	27,706	2,161	2,828	5,859	26,285	120,131
OEX	89,021	5,038	30,173	3,163	23,964	40,461	86,288	7,075	20,746	510,929
NAME	332,247	15,961	9,144	33,777	3,258	1,037	898	14,516	26,702	437,540
RSW	567,123	8,753	6,847	15,212	30,617	200,020	20,582	13,069	209,447	1,071,670
Total imports	3,352,685	371,699	128,516	144,877	319,573	540,398	154,996	115,485	431,229	5,550,658

Appendix table 5—Base-year (1977) trade in processed vegetables

Exporting region	Importing region									Total exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	644,544	38,889	3,878	1,050	16,988	11,263	4,300	6,644	76,927	804,493
OWE	5,816	2,896	811	391	3,718	1,050	270	155	1,366	16,473
SGP	196,623	17,950	411	28,856	93,877	24,623	18,360	4,031	62,158	446,889
EEU	54,491	10,065	736	17,649	345	1,734	627	410	8,839	94,896
USA	70,081	10,308	4,035	247	0	51,129	4,049	707	23,554	164,110
CNJP	12,858	459	721	53	12,173	1,089	2,038	416	35,221	65,928
OEX	7,889	4,566	219	44	20,741	3,746	26,290	117	13,244	76,856
NAME	82,528	4,827	545	1,503	4,900	4,792	390	2,637	5,852	107,174
RSW	166,908	44,705	671	10,629	123,853	123,020	15,222	2,555	91,165	579,728
Total imports	1,241,748	134,665	12,027	60,422	276,595	222,446	72,446	17,672	318,526	2,356,547

Appendix table 6—Base-year (1977) export shares for fresh fruits

Exporting region	Importing region									Total exports[1]
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	Percent									
EC	79.4	12.9	0.6	3.2	0.4	0.2	0.1	1.1	2.1	100.0
OWE	52.0	41.2	.4	4.2	.1	0	0	1.1	1.0	100.0
SGP	76.3	10.8	0	10.0	.2	.1	.4	.9	1.0	100.0
EEU	42.5	15.8	0	40.5	0	0	.4	0	.8	100.0
USA	23.8	6.0	1.0	2.8	0	50.7	2.4	.2	13.2	100.0
CNJP	4.0	2.7	0	0	48.7	26.6	1.2	.1	16.8	100.0
OEX	49.7	11.3	.1	.8	12.8	2.9	18.4	.1		100.0
NAME	58.6	13.7	0	13.1	4.3	1.2	.3	3.7	5.0	100.0
RSW	38.4	5.5	.7	4.6	21.5	15.2	2.3	1.8	10.1	100.0

[1]May not total to 100 because of rounding.

Appendix table 7—Base-year (1977) export shares for dried fruits

Exporting region	Importing region									Total exports[1]
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	Percent									
EC	52.1	31.9	2.5	0.4	2.0	0.9	0.7	1.8	7.8	100.0
OWE	48.0	30.3	.2	16.0	.4	.1	4.0	.1	.9	100.0
SGP	51.2	3.3	.2	34.2	5.3	2.9	1.2	.6	1.0	100.0
EEU	32.0	13.7	0	48.9	.8	1.1	0	3.5		100.0
USA	36.9	20.2	1.4	.6	0	27.2	3.8	.3	9.6	100.0
CNJP	14.8	0	1.1	68.6	.2	.2	.2	14.9		100.0
OEX	30.1	5.7	1.1	0	2.7	25.3	30.5	.2	4.5	100.0
NAME	65.7	7.0	1.0	5.7	9.1	4.3	1.7	1.9	3.6	100.0
RSW	27.0	3.0	.9	6.2	12.8	8.5	3.9	1.7	36.1	100.0

[1]May not total to 100 because of rounding.

Appendix table 8—Base-year (1977) export shares for processed fruits

Exporting region	Importing region									Total exports[1]
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	Percent									
EC	82.4	7.8	0.6	0.3	1.5	1.8	0.9	0.4	4.3	100.0
OWE	39.2	43.2	.3	2.6	5.2	.8	.3	.3	8.1	100.0
SGP	71.2	3.6	.5	9.2	1.4	.9	.3	.5	12.4	100.0
EEU	60.5	22.7	.1	7.7	2.9	2.8	.4	.6	2.4	100.0
USA	25.4	9.5	.7	0	0	46.0	1.7	.9	15.7	100.0
CNJP	23.9	1.8	0	0	6.9	3.1	4.2	2.9	27.2	100.0
OEX	44.5	11.9	2.8	.6	22.1	9.5	2.4	1.5	4.6	100.0
NAME	78.2	5.8	.4	3.1	4.7	1.3	.6	.7	5.2	100.0
RSW	30.4	3.3	2.1	3.1	25.1	12.9	2.4	1.1	19.7	100.0

[1]May not total to 100 because of rounding.

Appendix table 9—Base-year (1977) export shares for fresh vegetables

Exporting region	Importing region									Total exports[1]
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	Percent									
EC	77.5	10.0	2.9	1.5	0.8	0.8	0.6	2.4	3.5	100.0
OWE	68.7	15.6	5.8	.3	.1	.0	6.7	2.4	.4	100.0
SGP	80.6	11.2	1.2	.4	.8	1.7	2.6	.3	1.2	100.0
EEU	47.1	21.1	.2	22.9	1.0	2.7	.1	.6	4.3	100.0
USA	21.9	2.6	1.8	1.0	0	53.8	3.1	4.1	11.6	100.0
CNJP	42.9	.7	2.3	.1	23.1	1.8	2.4	4.9		100.0
OEX	17.2	1.0	5.8	.6	45.5	7.8	16.7	1.4	4.0	100.0
NAME	75.9	3.6	2.1	7.7	.7	.2	3.3	6.1		100.0
RSW	52.9	.8	.6	1.4	2.9	18.7	1.9	1.2	19.5	100.0

[1]May not total to 100 because of rounding.

Appendix table 10—Base-year (1977) export shares for processed vegetables

Exporting region	Importing region									Total exports[1]
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	Percent									
EC	80.1	4.8	0.5	0.1	2.1	1.4	0.5	0.8	9.6	100.00
OWE	35.3	17.6	4.9	2.4	22.6	6.4	1.6	.9	6.3	100.00
SGP	44.0	4.0	.1	6.5	21.0	5.5	4.1	.9	13.9	100.00
EEU	57.4	10.6	.8	18.6	.4	1.8	.7	.4	9.3	100.00
USA	42.7	6.3	2.5	.2	0	31.2	2.5	.4	14.4	100.00
CNJP	19.5	.7	1.1	.1	1.7	4.5	.6	53.4		100.00
OEX	10.3	5.9	.3	.1	27.0	4.9	34.2	.2	17.2	100.00
NAME	77.0	4.5	.5	1.4	4.6	4.5	.4	2.5	4.7	100.00
RSW	28.8	7.7	.1	1.8	21.4	21.2	2.6	.5	15.9	100.00

[1]May not total to 100 because of rounding.

Appendix table 11—Base-year (1977) import shares for fresh fruits

Exporting region	Importing region								
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
	Percent								
EC	33.3	30.1	29.5	12.1	1.2	0.5	0.7	18.6	8.0
OWE	.3	1.4	.3	.2	0	0	0	.3	.1
SGP	17.1	13.3	.9	19.9	.3	.1	1.7	6.2	1.9
EEU	1.4	2.9	0	12.2	0	0	.3	0	.2
USA	4.8	6.6	24.1	5.1	0	52.7	8.9	1.4	123.8
CNJP	0	.2	0	0	3.7	1.6	.3	0	1.7
OEX	9.3	11.7	1.6	1.3	15.6	2.8	64.7	.6	6.5
NAME	13.7	17.8	1.4	27.5	6.6	1.4	1.2	35.0	10.4
RSW	20.0	15.9	42.2	21.6	72.7	40.9	22.3	37.9	47.3
Total imports[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]May not total to 100 because of rounding.

Appendix table 12—Base-year (1977) import shares for dried fruits

Exporting region	Importing region								
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
	Percent								
EC	6.4	18.6	15.1	0.2	2.0	0.5	0.8	9.8	5.7
OWE	.1	.4	0	.2	0	0	.1	0	0
SGP	23.8	7.2	5.2	65.9	20.7	5.8	5.4	13.4	2.6
EEU	2.1	4.1	.1	13.0	.4	.3	0	1.3	
USA	16.4	41.8	29.5	1.0	0	51.6	15.8	6.7	24.8
CNJP	.1	0	.2	0	2.6	0	0	0	.4
OEX	6.3	5.6	11.1	0	4.7	22.7	60.3	1.4	5.5
NAME	38.8	19.3	29.4	13.9	45.3	10.9	9.3	51.3	12.3
RSW	6.0	3.1	9.4	5.8	24.2	8.1	8.3	17.2	47.3
Total imports[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]May not total to 100 because of rounding.

Appendix table 13—Base-year (1977) import shares for processed fruits

Exporting region	Importing region								
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
	Percent								
EC	38.7	21.0	13.2	3.2	3.5	4.4	15.2	10.4	11.2
OWE	2.0	12.5	.7	3.1	1.3	.2	.6	.8	2.3
SGP	11.1	3.2	3.3	34.5	1.1	.7	1.8	4.5	10.7
EEU	7.7	16.6	.3	23.3	1.8	1.8	1.7	4.7	1.7
USA	5.5	11.9	6.7	.2	0	52.3	13.1	12.2	18.9
CNJP	1.4	24.8	0	0	10.9	.9	8.8	10.3	8.9
OEX	16.1	24.8	45.4	5.3	39.8	17.8	30.4	32.3	9.3
NAME	7.9	3.4	1.8	7.4	2.4	.7	2.0	4.4	2.9
RSW	9.5	5.9	28.5	23.0	39.3	21.1	26.4	20.4	34.3
Total imports[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]May not total to 100 because of rounding.

Appendix table 14—Base-year (1977) import shares for fresh vegetables

Exporting region	Importing region								
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
	Percent								
EC	48.9	59.2	47.9	22.1	5.1	2.9	8.0	43.9	17.2
OWE	.9	1.8	1.9	.1	0	0	1.7	.9	0
SGP	12.7	15.9	4.8	1.3	1.4	1.7	8.8	1.2	1.5
EEU	3.3	13.4	.4	37.1	.7	1.2	.2	1.2	2.3
USA	3.2	3.5	6.9	3.3	0	49.0	9.8	17.6	13.3
CNJP	1.5	.2	2.2	.1	8.7	.4	1.8	5.1	6.1
OEX	2.7	1.4	23.5	2.2	13.5	7.5	55.7	6.1	4.8
NAME	9.9	4.3	7.1	23.3	1.0	.2	.6	12.6	6.2
RSW	16.9	2.4	5.3	10.5	9.6	37.0	13.3	11.3	48.6
Total imports[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]May not total to 100 because of rounding.

Appendix table 15—Base-year (1977) import shares for processed vegetables

Exporting region	Importing region								
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW
	Percent								
EC	51.9	28.9	32.2	1.7	6.1	5.1	5.9	37.6	24.2
OWE	.5	2.2	6.7	.6	1.3	.5	.4	.9	.4
SGP	15.8	13.3	3.4	47.8	33.9	11.1	25.3	22.8	19.5
EEU	4.4	7.5	6.1	29.2	.1	.8	.7	2.3	2.8
USA	5.6	7.7	33.5	.4	0	22.0	5.6	4.0	7.4
CNJP	1.0	.3	6.0	.1	4.4	.5	4.1	2.4	11.1
OEX	.6	3.4	1.8	.1	7.5	1.7	36.3	.7	4.2
NAME	6.6	3.6	4.5	2.5	1.8	2.2	.5	14.9	1.6
RSW	13.4	33.2	5.6	17.6	44.8	55.3	21.0	14.5	28.9
Total imports[1]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1]May not total to 100 because of rounding.

Appendix B: Projected 1986 Changes in Trade Patterns

The tables in this appendix show the changes from base-year trade patterns of all fruit and vegetable categories that are projected to occur in 1986 because of trends in incomes and export supply growth, as well as the static changes in 1986 projected to occur because of the tariff effects of enlargement. All these changes are from the base-year projections. One can calculate the final projected trade flows in 1986 by adding the base-year trade flows (exhibited in appendix tables 1-5) to the two matrices of changes shown here.

See glossary on p. ii for a key to the abbreviations used in the appendix tables.

Appendix table 16—Base-projections of fresh fruits for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	268,601	72,070	11,531	20,525	4,357	2,642	1,309	12,397	26,010	419,437
OWE	660	−3,598	39	351	5	0	1	73	101	−2,367
SGP	121,743	20,136	326	33,263	1,040	354	1,627	3,721	5,781	188,987
EEU	19,640	25,469	0	22,753	0	14	1,003	21	1,074	69,975
USA	27,187	1,566	6,771	8,258	0	201,144	10,601	709	63,179	319,415
CNJP	−73	−811	0	7	1,872	−276	−104	0	1,479	2,095
OEX	37,582	−12,674	331	2,014	36,817	8,146	50,824	227	14,648	137,916
NAME	150,368	96,134	755	48,980	31,631	10,052	3,168	30,262	42,207	413,555
RSW	195,351	65,884	20,052	37,645	318,189	259,071	51,305	29,698	176,426	1,153,619
World imports	821,055	264,177	39,805	173,796	393,912	481,146	120,734	77,110	330,906	2,702,632

Note: Figures may not add up because of rounding.

Appendix table 17—Base projections of dried fruits for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	8,098	16,125	1,469	48	671	416	440	741	3,022	31,030
OWE	133	524	0	14	3	1	1	0	7	684
SGP	4,404	−508	129	11,918	2,834	1,884	752	391	629	22,432
EEU	862	627	2	2,511	70	121	4	2	411	4,612
USA	4,375	1,798	879	192	0	17,553	2,883	231	6,696	34,607
CNJP	32	0	10	0	469	2	2	2	126	643
OEX	−626	−1,061	91	6	374	3,714	3,611	28	956	7,093
NAME	18,834	3,892	1,281	2,713	8,282	4,891	2,421	2,218	4,048	48,579
RSW	4,846	1,426	609	1,198	5,797	4,960	3,180	971	19,507	42,494
World imports	40,957	22,824	4,470	18,600	18,502	33,541	13,295	4,585	35,402	192,175

Note: Figures may not add up because of rounding.

Appendix table 18—Base projections of processed fruits for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	383,348	7,289	1,430	747	6,272	9,125	3,395	1,647	22,236	435,487
OWE	30,181	37,182	244	818	4,020	901	358	215	7,154	81,071
SGP	129,517	3,560	621	8,310	2,399	1,879	608	891	25,252	173,037
EEU	36,895	−22,718	−30	4,701	1,130	935	−117	215	1,515	22,525
USA	36,241	−10,367	−201	33	0	53,357	278	1,014	24,076	104,431
CNJP	6,678	−861	−1	1	6,585	461	−366	10	3,809	16,315
OEX	271,217	96,071	20,829	1,408	136,798	77,748	22,377	10,384	35,562	669,392
NAME	69,523	−269	113	1,675	3,633	1,130	311	586	5,107	81,810
RSW	97,439	2,820	3,477	5,377	73,093	45,424	6,419	3,364	70,512	307,924
World imports	1,061,034	112,708	26,483	23,070	233,929	190,959	33,263	18,325	19,222	1,891,992

Note: Figures may not add up because of rounding.

Appendix table 19—Base projections of fresh vegetables for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	812,734	83,220	17,155	8,737	7,754	6,281	4,797	31,904	37,500	1,100,075
OWE	7,236	−1,839	−166	25	6	0	−477	268	34	4,588
SGP	204,905	20,481	1,475	515	2,045	3,336	4,731	859	3,100	241,457
EEU	27,682	−13,175	−138	12,734	408	58	−48	361	2,098	29,981
USA	50,128	3,844	1,808	1,287	0	89,956	4,711	11,838	26,804	190,375
CNJP	17,908	−24	−179	40	8,192	336	125	2,374	8,565	37,337
OEX	50,371	3,095	13,775	896	132,567	20,410	48,320	5,209	12,272	286,916
NAME	128,700	1,223	211	8,700	1,120	225	118	6,740	9,978	157,015
RSW	564,473	20,114	12,003	5,154	34,002	251,962	37,157	18,600	23,565	1,180,028
World imports	1,864,134	116,940	45,445	38,087	186,093	372,563	99,434	78,153	336,926	3,137,772

Note: Figures may not add up because of rounding.

Appendix table 20—Base projections of processed vegetables for 1986: Changes in trade flows from base (1977) due only to income and export supply changes

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	514,368	20,734	1,574	368	11,181	9,383	2,998	4,683	62,598	627,882
OWE	3,739	631	145	131	1,947	672	115	85	921	8,385
SGP	176,541	13,480	229	10,374	69,886	23,612	16,165	3,253	56,133	369,672
EEU	72,325	18,213	931	7,007	384	2,620	1,085	512	11,346	114,423
USA	46,822	2,755	869	83	0	34,305	1,894	405	16,416	103,548
CNJP	1,675	– 272	– 335	15	914	26	– 1,033	13	7,221	8,223
OEX	7,223	3,611	128	16	15,757	3,676	24,018	97	12,169	66,695
NAME	102,020	7,577	604	585	5,074	6,673	602	3,045	6,079	132,259
RSW	42,587	– 19,267	– 218	3,110	22,930	20,909	– 2,775	397	29,556	97,230
World imports	967,294	47,462	3,928	21,688	128,073	101,874	43,070	12,490	202,439	1,528,317

Note: Figures may not add up because of rounding.

Appendix table 21—Base projections of fresh fruits for 1986: Changes in trade flows from trade patterns that arose only from income supply effect[1]

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	– 35,224	7,744	11,730	– 113	68	51	31	238	344	– 15,132
OWE	– 313	154	– 61	– 2	0	0	0	2	1	– 219
SGP	129,910	– 18,482	260	– 1,278	– 186	– 81	821	– 725	– 895	107,702
EEU	– 1,845	758	0	– 155	0	0	5	0	4	– 1,234
USA	– 5,480	578	– 6,552	– 69	0	2	– 25	2	0	– 11,545
CNJP	– 45	5	0	0	– 18	– 15	– 1	0	– 8	– 83
OEX	– 9,627	1,415	– 373	– 14	415	121	982	4	126	– 6,952
NAME	– 16,232	4,581	– 533	– 311	256	96	35	323	292	– 11,493
RSW	– 23,108	3,664	– 14,836	– 243	2,664	2,570	583	330	1,251	– 27,125
World imports	38,034	417	– 10,364	– 2,187	3,198	2,743	788	175	1,115	33,919

Note: Figures may not add up because of rounding.
[1]These changes are due only to the tariff effects of enlargement.

Appendix table 22—Base projections of dried fruits for 1986: Changes in trade flows from trade patterns that arose only from income supply effect[1]

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	– 1,334	178	710	– 2	6	2	1	2	2	– 434
OWE	– 24	10	0	0	0	0	0	0	0	– 14
SGP	18,339	– 1,010	95	– 873	– 550	– 467	– 271	– 79	– 104	15,080
EEU	– 316	62	– 4	– 85	2	3	0	0	5	– 333
USA	– 2,595	218	– 1,714	– 7	0	192	19	2	14	– 3,872
CNJP	– 11	0	– 15	0	8	0	0	0	1	– 17
OEX	– 845	43	– 492	0	18	163	217	1	15	– 881
NAME	– 5,327	606	– 1,887	– 80	401	238	138	87	123	– 5,699
RSW	– 1,049	55	– 739	– 39	119	85	52	13	171	– 1,332
World imports	6,838	161	– 4,046	– 1,086	5	217	156	26	227	2,498

Note: Figures may not add up because of rounding.
[1]These changes are due only to the tariff effects of enlargement.

Appendix table 23—Base projections of processed fruits for 1986: Changes in trade flows from trade patterns that arose only from income supply effects[1]

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	−11,481	465	1,683	−15	52	95	49	21	409	−8,721
OWE	−806	203	−166	16	10	3	1	1	80	−688
SGP	60,434	−2,546	212	−483	−468	−442	−232	−190	−4,098	52,188
EEU	−1,763	−161	−27	−103	22	29	3	7	49	−1,622
USA	−1,769	−31	−722	−1	0	−100	−13	3	325	−2,308
CNJP	−389	1	1	0	22	3	0	0	82	283
OEX	−5,273	2,062	−12,686	−24	1,314	911	324	135	564	−12,674
NAME	−2,067	87	−255	−33	45	17	8	10	114	−2,074
RSW	−2,933	122	−4,606	−107	531	412	76	39	1,221	−5,245
World imports	33,953	523	−16,567	−783	1,529	929	216	27	−2,254	18,574

Note: Figures may not add up because of rounding.
[1]These changes are due only to the tariff effects of enlargement.

Appendix table 24—Base projections of fresh vegetables to 1986: Changes in trade flows from trade patterns that arose only from income and supply effects[1]

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	−32,707	10,221	25,663	18	−108	−61	−60	−173	−239	−2,555
OWE	−114	328	−1,210	0	0	0	55	17	2	−921
SGP	143,593	−17,372	848	−29	−663	−1,693	−3,732	−262	−924	119,766
EEU	−1,659	1,418	−271	43	−8	−3	0	0	−6	−486
USA	−1,759	699	−7,460	5	0	375	44	35	46	−8,015
CNJP	−493	45	−1,792	0	118	20	37	57	190	−1,817
OEX	−123	608	−29,330	10	4,065	1,127	3,835	196	430	−19,181
NAME	−2,910	984	−6,383	66	19	12	15	172	235	−7,791
RSW	−10,173	1,403	−13,000	23	61	2,128	444	133	1,409	−17,571
World imports	93,655	−1,665	−32,935	135	3,485	1,905	639	174	1,144	66,538

Note: Figures may not add up because of rounding.
[1]These changes are due only to the tariff effects of enlargement.

Appendix table 25—Base projections of processed vegetables for 1986: Changes in trade flows from trade patterns that arose only from income and supply effects[1]

Exporting region	Importing region									World exports
	EC	OWE	SGP	EEU	USA	CNJP	OEX	NAME	RSW	
	1,000 dollars (1977)									
EC	−21,151	1,901	1,162	−9	400	283	276	175	1,700	−15,262
OWE	−166	120	−420	−3	85	25	15	4	30	−311
SGP	104,528	−4,418	54	−571	−8,588	−3,702	−3,422	−450	−6,255	77,176
EEU	−2,424	844	−737	−152	10	55	62	13	230	−2,099
USA	−2,720	262	−2,204	−2	0	639	169	11	308	−3,537
CNJP	−363	3	−175	0	105	6	48	4	262	−111
OEX	−437	55	−160	0	164	4	901	1	69	596
NAME	−3,297	407	−506	−13	145	162	38	90	139	−2,833
RSW	−5,104	444	−205	−93	1,266	881	329	27	820	−1,636
World imports	68,865	−383	−3,190	−844	−6,414	−1,647	1,583	−125	−2,697	51,983

Note: Figures may not add up because of rounding.
[1]These changes are due only to the tariff effects of enlargement.

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