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The Impact of European Economic Integration on Israel's Export of Oranges in 1970

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THE IMPACT OF EUROPEAN ECONOMIC INTEGRATION ON ISRAEL'S EXPORT OF ORANGES IN 1970

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INTRODUCTION

This thesis is an attempt to evaluate quantitatively as well as qualitatively possible future developments in international trade of oranges and tangerines, and the possible impact of these developments on the export of oranges and tangerines by Israel.

After World War II, international trade in oranges and tangerines increased rapidly, mostly as a result of the rapid rise in standards of living and the improvements in diet habits which took place in many countries at that time. These favorable marketing conditions encouraged the planting of new groves in the citrus growing areas of the world and particularly those of the Mediterranean countries.

According to a prediction made by the Food and Agriculture Organization of the United Nations (F.A.O.) concerning conditions in the international market for oranges and tangerines, supply and demand should at best balance by the year 1970. However, in the short run, complications can be expected as the market adjusts to the increase in demand for these fruits. During the same period for which these predictions were made by the F.A.O., Western Europe, the biggest consumer of oranges, will be working toward complete economic integration. The integration of the European Economic Community (E.E.C.) in particular will influence the trade of oranges and tangerines.

The two main factors which determine the E.E.C.'s policy toward oranges and tangerines are: (a) oranges and tangerines are good substitutes for apples and pears, and since the E.E.C. expects to have surpluses of apples and pears in the future, it has undertaken to protect

these fruits against the importation of fruits that might replace them, and (b) Italy is at present the only full member of the E.E.C. which produces citrus fruits and, therefore, is seeking special protection for them.

Since statistics available refer to oranges and tangerines, the study will use the term oranges as a general term for both, unless there is a need for specification, direct quote, and abstraction.

Objectives

The objectives of this thesis are to determine:

1. How will the future supply of oranges and tangerines be divided between the E.E.C. countries and the E.F.T.A. countries (European Free Trade Association) in 1970.

2. What will be the future price of oranges grown in Israel and marketed in 1970 in the selected markets.

3. What will be the average and marginal revenue for Israeli oranges and tangerines in the year 1970 in European markets.

4. What quality of ground should be committed to orange-tangerine groves in Israel at present to face 1970's prices.

5. It is hypothesized in this thesis that Israel will be able to compete in spite of the barriers to orange trade in 1970.

REVIEW OF LITERATURE

The Steering Committee of the F.A.O. (13, p. 3) on citrus fruit concludes in their study that formal arrangement in international marketing of oranges and tangerines is not feasible. The Committee notes that commodities which have formal agreements on market have some features in common that oranges do not have. These features are lack of close substitutes and possibility of long storage. However, the Committee concludes that some form of international arrangement of orange markets, as far as trade is concerned with the E.E.C., may be possible and, therefore, it needs to be kept under control.

Y. Wolf (15, p. 15) in his conclusion thinks that producers of oranges and tangerines should meet together for informal agreement about future complications. Such informal meetings may challenge importing countries not to introduce new barriers for trade in oranges and tangerines. However, he strongly believes that future decline in prices of oranges will force producing countries of oranges to meet together and to negotiate at least trade promotion.

Levhari (18, p. 35) concludes in his study that price elasticity for fresh oranges and tangerines in 1970 will be about -1. He also concludes his study by saying that Israel will still be able to compete in the international markets in oranges (he excludes tariff for 1970) because of relatively high prices for its Shamouti and because of freedom from frost.

The F.A.O. study review outlook for consumption and production for oranges and tangerines (17, p. 6) in 1970 concludes that price elasticity

for fresh oranges and tangerines will be around -.7. However, price elasticity for the same period will be in excess of unity for juices.

The F.A.O. Steering Committee (14, p. 12) concludes its study on the E.E.C. that the regulations as they are now stated may have a detrimental effect on the consumption of oranges in Europe saying, "It is therefore hoped that a solution can be found which, on one hand, will assist Italy to become a competitive supplier to the E.E.C. within the preference under the external tariff only, and on the other, to permit further expansion of the orange markets under the stimulus of efficient suppliers from countries out of the E.E.C."

ORANGES--AN INTERNATIONAL COMMODITY

Origin and Spread of the Citrus Culture

The naval and Valencia oranges as we know them today are improved fruit varieties developed from the primitive sweet orange (26) which is believed to have had its origin in China. It is believed that the sweet orange was carried to the Middle East by Arabs between the seventh and ninth century A.D., and that the Crusaders were responsible for taking the lemon and orange into Europe.

The orange was introduced into the Western Hemisphere with the second of Columbus' voyages, and by the end of the sixteenth century, sweet oranges had been definitely introduced to the American continent.

Orange Agriculture

Today's world production of oranges is generally concentrated in two belts; one in the Northern Hemisphere, which is centered along approximately 36 degrees north latitude, and the other in the Southern Hemisphere centered along approximately 30 degrees south latitude. These belts vary in width, actually merging with each other in Central America, and can be easily identified by their subtropical climate. Harvesting of the orange crops in the Northern Hemisphere is generally between October and May, and that of the Southern Hemisphere between April and December.

Frost constitutes one of the greatest hazards to oranges. Orange trees may stand up well to short periods of temperatures below 32 degrees

Farenheit, but the trees and fruit will be damaged permanently if freezing temperatures last for more than a few hours. The ability of the average tree to withstand low temperatures depends upon the age of the tree, its variety, the season of the year, and other environmental factors.

The orange tree requires a fair amount of water distributed evenly throughout the year. The average requirement has been set at between 35 and 45 inches of rain annually but varies according to local climatic conditions. In the Mediterranean area, where there is rainfall only in the winter months, irrigation is necessary in the summer months.

The physical condition and chemical content of the soil are very important in orange production. Ideally, the soil should contain the necessary nutritional elements and be deep enough to allow for the free penetration of the roots. In most cases, the natural fertility of the soil is not sufficient, and a fertilizer supplement is necessary. The best type of soil is that which is between clay and sand.

Certain areas of the world are better suited for the production of particular orange varieties due to some chemical or physical qualities of the soil. Of particular interest is the "exclusive" Jaffa orange of the Shamouti variety grown in Israel. Attempts to grow this variety of orange in other countries have failed due to factors which are as yet unidentified. This gives Israel some market advantages as the Jaffa orange sells at premium prices on most European markets.

Characteristics and Utilization of Oranges and Tangerines

There are a considerable number of varieties of oranges, distinct in size, shape, color of skin, pulp and juice content, but all varieties share one common characteristic--all are perishable. As has been

mentioned, oranges have a definite harvesting season. Although oranges can be stored for limited periods, either on the tree after ripening or for a short time after harvesting, the fruit should reach the consumer within a period of eight weeks after harvesting if the eating quality is not to suffer unduly.

The canning of oranges and tangerines has been developed in the last 20 years until now the market for processed products and that of fresh fruit depends on each other to the extent that operations in one sector affect returns from the other. In recent years, with general increases in supplies, the processing industry has gained in importance in many countries. This industry is largely dependent for raw materials on residual supplies of fruit which, for quality or other reasons, cannot be disposed of in the fresh fruit market. Suitability of oranges and tangerines for processing depends largely on sugar and juice content, and thus not all varieties of these fruits are acceptable to the industry. On the other hand, in addition to eating quality, fruits which are to be offered for sale on the fresh fruit market must have other characteristics, such as good appearance, which will aid sales.

Economic Importance of Oranges and Tangerines

Oranges and tangerines are of considerable significance as a cash crop in many countries, both in terms of exports as a source of employment and economic activity within the agricultural sector. In approximately 20 countries, oranges are a significant export item, and in some of these areas, the industry is geared specifically to produce for export.

It is convenient to divide the orange producing areas of the world into three major groups (15, p. 12): (a) North and Central America,

(b) the Mediterranean countries, and (c) the Southern Hemisphere countries and Japan, India, and Oceania.

The United States is the largest single producer of oranges and tangerines, while the Mediterranean area is the principal exporter of fresh oranges, exporting half of the total output of the region. The Mediterranean area includes Israel, Morocco, Cyprus, Algeria, Spain, Lebanon, Tunisia, Italy, Turkey, and Greece. The third group includes South America, South Africa, Japan, India, and Oceania. While the bulk of production in these regions is absorbed by local consumption, the group contains two areas which supply summer oranges to the international market; namely, Brazil and South Africa. Along with the United States of America, South Africa and Brazil are the only important international suppliers of citrus fruit outside the Mediterranean area.

Table 1 deals with production and export of oranges for these three major groups during selected periods. This table also includes quantities of oranges imported by various regions during the same periods.

Production and prices

Although orange trees begin to bear fruit two or three years after planting, they continue to develop in size and bearing capacity for many years, usually reaching their maximum yield between 30 and 40 years after planting. As a result of this pattern of planting and development through the fruitbearing years, orange production cannot easily be adjusted to yearly or short term fluctuations in market demands, although annual fluctuations in supplies of oranges do occur as a result of unfavorable weather conditions, frost, pests, and diseases (Figure 1). The orange producer or potential orange producer must depend upon long term predictions of market demands before planting new groves or

Table 1. Production, exports and imports of oranges by types and region, averages 1943-38, 1950-51, 1953-54, and annual 1963-64

Region	1,000 metric tons		
	1943-38 average	1950-51 - 1953-54 average	1963-64
Production			
North and Central America	2,570	4,627	4,840
of which United States	2,284	3,942	3,746
Mediterranean region	2,336	3,188	5,962
Other regions	2,917	4,833	6,361
of which Southern Hemisphere	2,217	3,952	4,522
World total	7,823	12,648	17,163
Exports			
North and Central America	180	316	252
of which United States	150	296	189
Mediterranean region	1,261	1,577	2,736
Other regions	367	213	451
of which Southern Hemisphere	266	195	430
World total	1,808	2,106	3,439
Imports			
Canada	91	185.8	170.0
Western Europe	1,280	1,733.0	2,802.8
E.E.C. countries	593	1,094.6	1,947.7
United Kingdom	543	387.2	400.2
Scandinavia	77	154.6	240.2
Other countries	67	96.6	214.7
Other regions	204	143.7	--
Eastern Europe and U.S.S.R.	80	40.3	--
World total	1,575	2,062.5	--

Source: Junger Wolf, The Citrus Economy and the Feasibility of International Markets Arrangements, Monthly Bulletin of Agriculture Economics and Statistics, F.A.O. Publication, Rome, Volume 14, September 1965.

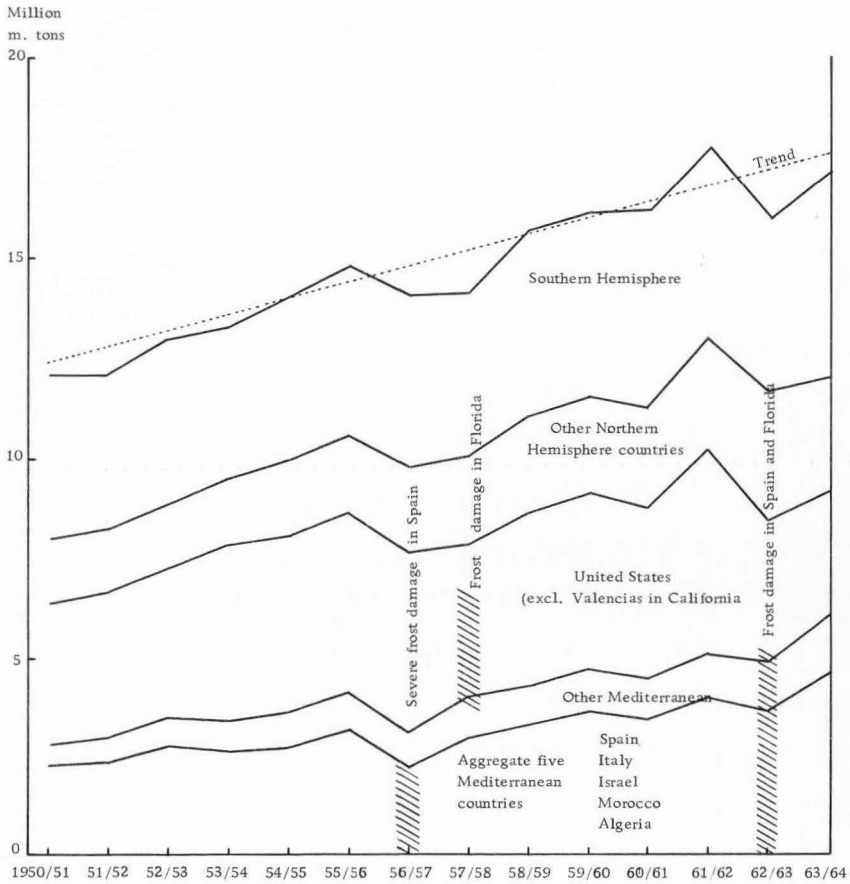

Figure 1. World production of oranges and tangerines, 1950/51 to 1963/64

Source: Monthly Bulletin of Agriculture and Statistics 14(9):5.

discontinuing production in established groves. Reliable records of world production and prices are not available for years prior to the end of World War II.

Orange prices on the international market were high during the period immediately following World War II and fell during the early fifties. Since 1956, the price level has generally been above those that prevailed in the previous decade. Nevertheless, some sharp declines in prices have been noted in recent years, due mostly to uncoordinated supplies.

Importation and Consumption of Oranges and Tangerines

As is the case with the exportation of oranges, importation of these fruits is heavily concentrated in a small number of countries (14, p. 4). Europe is the largest importing area at present and appears to have considerable growth potential, although it seems that the point has been reached where the short term balance between supply and demand can easily be disrupted in this area, as will be explained in the next section.

In terms of aggregate imports of oranges, 90 percent of the total fresh citrus imports are accounted for by the following areas shown here in order of importance: Germany, France, United Kingdom, U.S.S.R., Canada, the Netherlands, Belgium, Luxemburg, Sweden, Switzerland, Austria, and Eastern Europe. There are two main trading areas comprising the United States exporting to Canada, and the Mediterranean countries exporting to Europe.

The most important source of oranges for Europe, and the only one during the winter season, is the Mediterranean area. Although supplies

of oranges are available from South Africa, Brazil, and the United States during the summer months, the greatest consumption of these fruits is during the winter months.

Import Policies

By the early 1960's the world total imports of fresh oranges had almost doubled that of the pre-World War II period. An important factor in this increase was the relaxation of tariff and other barriers to orange trade during this period (15). At the beginning of the present decade, oranges were free from any quantitative control and at the present time, imports of oranges remain restricted by quota only in Eastern Europe and the U.S.S.R. However, present trends within the E.E.C. indicate that trade barriers will be strengthened in the future with the introduction of a common external tariff as well as other trade barriers against imports from third countries (countries which are neither members nor associates of the E.E.C.) (14).

DEVELOPMENT OF THE EUROPEAN ECONOMIC COMMUNITY AGRICULTURAL POLICIES AND THEIR APPLICATION TO ORANGES AND TANGERINES

During 1965 and early in 1966, a number of important developments took place concerning the E.E.C. common agricultural policy toward citrus fruit. Safeguard measures against imports from other countries were tightened and much higher reference prices for oranges came into force for the 1965-66 winter marketing period (14, p. 17-21).

At present, import duties vary from country to country within the E.E.C., and one of the aims of the agricultural policy is to have a common external tariff of 20 percent by January 1, 1970. Starting January 1966, the various member countries of the E.E.C. began the gradual adjustment of their import duties, so that by the year 1970, all will have reached the common external tariff of 20 percent. The Treaty of Rome states that, "The common custom tariff for the E.E.C. should be the arithmetical average of duties in the four customs territories comprising the Community," (Germany, France, Benelux, and Italy). However, the 1957 tariffs on oranges and tangerines imposed by the various countries were as follows: Germany, 10 percent; Benelux, 13 percent; France, 35 percent; Italy, 4 percent. The arithmetical average of these tariffs is 15.5 percent, which is 4.5 percent lower than the common external tariff of 20 percent, which will be in effect by 1970. Although the E.E.C.'s proposed tariff increase has been the subject of discussion with the General Agreement of Tariff and Trade (G.A.T.T.) members, no progress was achieved.

Another point, which is also of importance to those to whom the 20 percent external tariff will apply, is the fact that these countries must compete in the E.E.C. with orange producing countries, which by virtue of their special relationship with one of the member countries of the E.E.C., will enjoy special privileges regarding exports to the E.E.C. For instance, the Magrab countries (Morocco, Algeria, and Tunisia) have a special relationship to France which enables Morocco to export to France a duty free quota of 200,000 tons of citrus annually. Algeria, which was part of the French customs area until 1962, still enjoys duty free entry of oranges and tangerines to France. In addition to the Magrab countries, Turkey and Greece are able to export citrus to the E.E.C. without restrictions of tariffs or duty or quota, since they are associates of the E.E.C. and are considered in the same way as members in this regard.

The Common Agricultural Policy for the E.E.C.

The main objective of the common agricultural policy of the E.E.C. is to help member countries through the transition period and prepare them for full integration into a single market by the year 1970.

For the support of member countries, which are inefficient producers of certain commodities, the E.E.C. has implemented two procedures: subsidies and import levies. Should subsidies be applied to support only those commodities whose domestic output provides a relatively small part of total consumption in the E.E.C., the burden of subsidies could be kept within reasonable limits. However, on April 4, 1962, the E.E.C. Council of Ministers decided that proceeds from tariffs and levies on agricultural products would be used to finance improvements in the

production and marketing of E.E.C. agricultural products. In other words, by imposing import levies on agricultural products from third countries, the E.E.C. is actually placing these countries, most of which are themselves "developing" countries, in a position where they will be financing in part the development of E.E.C. agriculture and the marketing of agricultural surpluses from the E.E.C.

Possible Implications of the E.E.C. Regulations

As indicated earlier in this chapter, the common external tariff to be imposed by the E.E.C. by 1970 is 20 percent. It is apparent that this increase will represent a greater barrier to international trade of oranges than the previous tariffs. One problem which arises in this connection is the question of who is going to pay for this increase in tariff--the consumer in the importing country or the producer in the exporting country? Tariffs raise entry prices and so naturally affect price margins and retail prices. Prices also depend upon the state of the market and the elasticity of demand. In the long run, elasticity of supply is also very important, because oranges have to be sold in a buyer's market and pressure of supplies may force producers into a position where they have to pay these tariffs.

The external tariff will afford associate producers of oranges protection vis a vis third countries. So far, tariff preferences which favor Italy, Greece, and Algeria have not diverted trade flows. However, there is a good possibility that other orange-producing Mediterranean countries will become associates of the E.E.C.; whereas, Israel's chances of becoming an associate are slight, since she is not big enough to have political advantage in the E.E.C. As has been mentioned, the Magrab

countries are politically backed up by France and, therefore, stand a good chance of becoming associates of the E.E.C. Spain enjoys the support of both France and Germany and will probably become an associate. Greece and Turkey are already associates of the E.E.C. as a result of mutual interests between these countries and the E.E.C. Thus, the future looks quite hazardous for Israel in this regard. Furthermore, Israel is heavily penalized by the fact that her transportation costs on oranges to the E.E.C. countries are far higher than those of other citrus-producing countries in the Mediterranean area. In fact, economically speaking , transportation costs are as important as tariff charges when comparing Israel's position to that of other citrus producers in the Mediterranean area. For instance, tariff exemption for Algerian oranges approximately matches the advantage of lower transportation costs for Spanish oranges. Although Spanish producers must at present pay tariff costs, they are able to ship their produce by rail directly to consumption centers in the E.E.C. On the other hand, Algerian producers must pay higher costs to cover extra handling and shipping but do not have to pay tariff costs.

It is clear, therefore, that of all the Mediterranean countries, Israel is the most heavily penalized. Not only must she pay the highest transportation costs to get her produce to the E.E.C. countries but must also pay full tariffs and other import duties.

Reference Prices

The use by the E.E.C. of reference prices has the greatest potential impact on the imports of oranges, even more so than the tariff barriers (14, p. 12). The use of reference prices opens the possibilities of

direct intervention on the E.E.C. orange market by the member countries. The objectives of the system of reference prices are as follows: (a) to provide greater protection for E.E.C. producers in addition to the protection of the external tariffs, (b) to provide larger outlets for fruit produced within the E.E.C., and (c) to exert a favorable influence on returns to E.E.C. producers.

In the case of oranges, the particular purpose of this regulation is to aid Italy and orange-producing associates of the E.E.C. However, future high reference prices could have adverse effects on orange consumption in importing countries of the E.E.C. For example, third countries faced with the necessity of finding outlets for increasing export surpluses may try to stimulate consumption increases in the E.E.C. by lowering prices. But, due to the existence of reference prices, prices cannot be lowered beyond the fixed amount, and in fact, the producing country will pay higher duties for lower prices. For example, with a reference price in the E.E.C. of $160, if the market will bear the price of $177 the tariff cost will be $35. The net price after tariff will be $142, and the duty will be ($160 - $142) = $18. The net price after duty and tariff will be $124. The harmful effects of future reference prices might also be felt by the consumer within the E.E.C. These harmful effects may be much greater than the advantage gained by the orange producing member of the E.E.C. This could come about as a result of the fact that high reference prices for oranges in the E.E.C. will direct trade of oranges to other areas; for example, other Western European countries which are not members of the E.E.C. and countries in Eastern Europe. The result of this diversion of trade will be lower prices for this produce outside of the E.E.C. Since Italy exports

substantial quantities of oranges to non-E.E.C. member countries in Europe, the decrease in price in these markets will be felt by the Italian exporter.

In consideration of the foregoing discussion of the probable effects of the proposed increased regulations on trade of oranges and tangerines by the E.E.C., the conclusion may be reached that these regulations could have a detrimental effect upon international trade of these products.

THE CITRUS FRUIT INDUSTRY OF ISRAEL

The main development of the citrus industry, in what was to become the state of Israel, had its beginning early in the twentieth century and continued to expand until World War II. By 1920, production of citrus had reached 40,000 tons (20, p. 205) and in 1938-39 had increased to 474,000 tons. During World War II, the citrus industry was almost completely destroyed. Destruction of markets led to the abandonment of groves. During the years 1942-44, production in the area soon to become Israel had dropped to 180,000 tons. Rehabilitation of the citrus industry began at the end of the War, but many groves were later destroyed during the War for Israel's independence which took place in 1948.

As shown in Table 2, citrus fruit at present is the second most important export item of Israel.

As shown in Table 3, citrus fruit accounted for 16.2 percent of the total value of goods exported from Israel in 1965. As a result of the rapid expansion in the exportation of other goods from Israel, the role of citrus fruit has been reduced from 63.2 percent in 1949 to 16.2 percent of the total value of exports in the year 1965.

The export of citrus fruit is especially important to Israel's economy, because it represents the highest proportion of added value in foreign currency. Oranges constituted more than 81 percent of the total export of citrus fruit by Israel in the years 1964-65, as shown in Table 4.

Table 2. Changes in rank of commodity groups by value of export, 1961-65

	Rank				
	1961	1962	1963	1964	1965
Polished diamonds	1	1	1	1	1
Citrus fruit	2	2	2	2	2
Processed fruit	6	7	4	3	3
Yarn and fabrics	7	4	5	4	4
Fertilizers	10	9	10	6	5
Clothing	4	3	6	5	6
Metal products	8	5	3	9	7
Petroleum refined	17	11	8	7	8
Copper	12	12	13	8	9
Tires	5	6	7	10	10

Source: Israel Foreign Trade, General Summary Exports and Imports by Commodity, 1965. Published by Central Bureau of Statistics, Jerusalem, Israel, 1966.

Table 3. Citrus fruit exports, as part of total Israel exports, 1944, 1956-65

Year	Citrus fruit export $ million	Citrus fruit export as percentage of total export
1949	18.0	63.2
1956	40.2	37.5
1957	48.4	34.3
1958	48.4	34.6
1959	45.9	25.7
1960	46.6	21.5
1961	40.5	16.5
1962	49.2	17.6
1963	76.7	21.3
1964	52.8	14.2
1965	70.9	16.2

Source: Israel Foreign Trade, General Summary Exports and Imports by Commodity, 1965. Published by Central Bureau of Statistics, Jerusalem, Israel, 1966.

Table 4. Export of citrus fruit according to variety, 1963-64 - 1964-65

Variety	1963-64 quantity		1964-65 quantity	
	Ton	Percent	Ton	Percent
Oranges				
Shamouty	283,839	62	348,312	64
Late	75,253	16	90,666	17
Grapefruit	76,916	17	89,192	16
Lemons	10,928	3	11,394	2
Others	7,823	2	6,858	1
Total	454,759	100	576,422	100

Source: Citrus Marketing Board Bulletins, Tel Aviv, December 1965.

Since the establishment of the state of Israel, the area of land used for citrus groves has steadily increased and by 1965 had reached 452,000 dunams (1 acre equals 3.9 dunams). Land in citrus production is shown in Table 5.

Israel's citrus production is marketed in three outlets: fresh export, local consumption, the preserve and juice industry. The ratio of fruit suitable for export to that of second grade which is sold on local markets depends largely on technical factors. The standards for these factors depend upon the supply of oranges available on world markets.

Israel's citrus industry is generally operated within the framework of cooperatives. Cooperatives own most of the packing centers and also deal with all the technical aspects of marketing oranges abroad.

Table 5. Areas of citrus fruit in Israel by variety, 1965-66

	Dunams					
	Shamouty oranges	Late oranges	Grapefruit	Lemon	Tangerine	Others
Full bearing area	156,382	44,997	26,275	10,561	8,163	1,681
Partial bearing area	49,866	27,584	31,415	6,330	839	757
No bearing area	47,547	26,002	10,730	3,332	282	1,794
Total	253,795	98,583	66,420	20,223	9,264	6,032
Grand total						452,317

Source: Israel Board of Marketing Bulletin, Tel Aviv, Israel, January 1966.

Marketing of Oranges

Marketing of citrus in Israel as well as in foreign countries is concentrated by law in the hands of the "Citrus Marketing Board." Although the primary task of the Board is the marketing of citrus, it also carries out agrotechnical functions. The Board deals with advance sales of fruit as well as with consignment sales. It deals with marketing agencies only, and the receipts from sales are divided among the citrus growers through their marketing agencies (21, p. 2).

The Citrus Marketing Board has some monopolistic powers in international trade of oranges and decides on the allocation of quantities produced by Israeli growers each year. However, the Board does not decide on the size of the area planted to citrus groves. One of the achievements of the Board has been the standardization and improvement of marketing methods and market control.

For many years, the main market for Israel's oranges was the United Kingdom, and even today an important part of British orange imports come from Israel. After World War II, 80 percent of Palestine's exports of oranges went to the United Kingdom. Following the establishment of the state of Israel, orange exports to the United Kingdom fell from 40 percent to 50 percent of the total orange export. The decline of exports to the United Kingdom was accompanied by development of the West German market.

Israeli exports of oranges to West Germany have increased from zero in 1951-52 to 87,000 tons in 1964 (27, p. 3). The percentage of total export of oranges sold to Scandinavia and the Benelux countries has remained more or less steady (Table 6).

Table 6. Israeli export of citrus fruit by areas of destination, 1963-64 - 1964-65

Areas of destination	1963-64		1964-65	
	Percent	Quantity 1,000 tons	Percent	Quantity 1,000 tons
E.E.C.	35.3	1,016.7	41.1	1,410.2
E.F.T.A.	56.9	1,637.7	50.0	1,713.5
West Europe	4.2	120.2	4.8	166.2
Europe				
Asia and Africa	1.3	38.0	1.4	48.5
U.S.A. and Canada	.2	59.5	2.5	87.2
Total	100.0	287,925.0	100.0	343,200.0

Source: F.A.O. Citrus Fruit Steering Committee, CCP/SC 66/2, June 30, 1966.

Israel and International Economic Organizations

In the last 20 years, several international economic organizations have been formed. The most important of these are: (a) General Agreement of Tariff and Trade (G.A.T.T.) which now includes many countries, (b) European Free Trade Association (E.F.T.A.) which includes the United Kingdom, Denmark, Sweden, Austria, Switzerland, Portugal, and Finland, and (c) European Economic Community (E.E.C.) which includes Germany, France, and the Benelux countries. One of the main objectives of these organizations has been to decrease barriers to trade among member countries. G.A.T.T. is the only one of these organizations to which Israel belongs at present.

Israel and the E.E.C.

Since 1964, Israel has had a special trade agreement with the E.E.C., one part of which deals with some agricultural commodities and the other part with some industrial goods. Although Israel has been successful in getting substantial tariff reductions for grapefruit and avocado imports to the E.E.C., no agreement has been reached concerning the trade of oranges. The reason for the lack of success lies in the fact that both Israel and the E.E.C. are members of G.A.T.T., and according to the rules of G.A.T.T., any special concession which the E.E.C. grants to Israel must also apply to all other members of G.A.T.T. Therefore, the E.E.C. prefers not to negotiate with Israel concerning trade of oranges (22, p. 3).

Israel and the E.F.T.A.

Since E.F.T.A. countries do not consider that agricultural products require individual external rates, Israel shares with other countries the common external tariff of 8 percent which has been imposed on all imports to E.F.T.A. countries.

Since E.F.T.A.'s tariff structure is constant, any effects on Israel's orange market will be indirect, as a result of changes in the E.E.C.'s agricultural policy.

THE MARKET MODEL

Assumptions

For the analysis, a relatively simple model was built according to the following assumptions:

1. The only source for winter oranges and tangerines to the European markets is the Mediterranean basin.

2. Future demand for Eastern Europe will be excluded.

3. Europe is divided into two markets--E.E.C. and E.F.T.A.

4. These two markets will absorb all the Mediterranean export of oranges and tangerines in 1970.

5. The price elasticity of demand for the year 1970 in Europe will be .7 (15, p. 12).

6. The external tariff in the E.E.C. for 1970 will be 20 percent and for the E.F.T.A. 8 percent.

7. The analysis refers to the prices for Israeli oranges determined as a result of all oranges and tangerines imported to or produced in Europe.

Procedures

Source of data

Most of the basic data were taken from the F.A.O. predictions for 1970. The base years for the predictions are 1961-63.

The F.A.O. editors derived estimates of orange and tangerine exports according to planted groves in the different countries. The basic

assumptions for demand and supply for oranges in 1970 were derived on the basis of predicted increases in population, income, and elasticity of income in exporting countries (which are big consumers of citrus fruit) and importing countries.

The F.A.O. prediction indicates high and low estimates. For thesis analysis, the average between the high and low is used (15).

	1,000 tons
1. Total predicted Mediterranean orange export	3,795
Less predicted demand in Eastern Europe in 1970	200
Total export to E.E.C. and E.F.T.A.	3,595
2. Total annual demand of oranges for E.E.C. and E.F.T.A. in 1970	
Predicted demand of oranges in the E.E.C.	2,820
Predicted demand of oranges in the E.F.T.A.	1,550
Total E.E.C. and E.F.T.A.	4,370

3. Analysis of the orange consumption data in Europe up to 1963 shows that winter crop oranges are 83 percent of total import to Europe from the Mediterranean basin.

During the years 1961-63, winter imports of oranges to the E.E.C. from the Mediterranean were 86.1 percent of the total annual imports of oranges to the market and 76.3 percent of the total annual imports of oranges to the E.F.T.A. (28, p. 127).

According to these assumptions, the predicted demand for 1970 to Europe is going to be as follows (1,000 tons):

E.E.C. : 2,820 x 86.1 percent = 2,428

E.F.T.A. : 1,550 x 76.3 percent = 1,183

4,370 x 82.7 percent = 3,611

4. The prices used for Israel oranges were determined on the average gross price received for the years 1961-63 for Israeli oranges. (F.O.B. price plus $52 equals gross price.) The price was found to be $180 per ton (19).

5. The average annual Israeli export of oranges to the E.E.C. during the years 1960-63 was 138,000 tons, which was 8.9 percent of total winter oranges and tangerines imported by the E.E.C. (14, p. 6).

It is not clear yet what the future results of negotiation between the E.E.C., Spain, and the Magrab countries will be. The following general assumptions are each treated in the model.

1. E.E.C. will impose 20 percent external tariff, with no other restrictions.

2. In addition to tariffs, the E.E.C. will determine import quotas in order to maintain target prices in the market.

3. In addition to tariff, the E.E.C. will impose reference prices.

4. Assuming that future arrangements between unassociated suppliers of oranges to the E.E.C. will be based on past trade, the following possibilities may exist for Israel: (a) Israel maintains its relative share of the market, 8.9 percent for the years 1961-63, and (b) Israel maintains its absolute annual export to the E.E.C., 138,000 tons.

The following possible alternatives are also treated in the model:

1. Allowances in trade will be given only to countries which are members or associated with the E.E.C. at present.

2. Magrab countries become associated with the E.E.C.

3. Spain and the Magrab countries become associated with the E.E.C.

Methods of Analysis

The analysis and projecting of prices is carried out by a graphic demonstration. Two logarthmic demand curves were derived, one for the E.E.C. and the other for the E.F.T.A.

The demand curve for the E.E.C. [DE] reads from left to right, and for the E.F.T.A. [DA] reads from right to left. On the axis that indicates future supply, there is a double scale which reads from left to right [QE] and from right to left [QA]. The equilibrium that is derived when the two curves intersect indicates the division of future supply between the markets assuming that $Q^{s}_{70} = Q^{s}_{70}E + Q^{s}_{70}A$ and the future prices for these markets (Figure 2).

The demand curves were calculated from the following formulas (1, p. 36):

$$P_{E70} = \left(\frac{KE}{Q}\right)\frac{1}{\alpha}$$

$$P_{A70} = \left(\frac{KA}{Q}\right)\frac{1}{\alpha}$$

where:

P_{E70} = future price in 1970 in the E.E.C.

P_{A70} = future price in 1970 in the E.F.T.A.

K_E = constant ($K_E = P_f \times Q_{E70}$) in the E.E.C.

K_A = constant ($K_A = P_f \times Q_{A70}$) in the E.F.T.A.

$Q_{70}E$ = the quantity demanded in 1970 by the E.E.C.

$Q_{70}A$ = the quantity demanded in 1970 by the E.F.T.A.

P_f = the Israeli average price for oranges during the years 1961-63 in both markets.

α = the elasticity of price demand in 1970 in the E.E.C. and E.F.T.A.

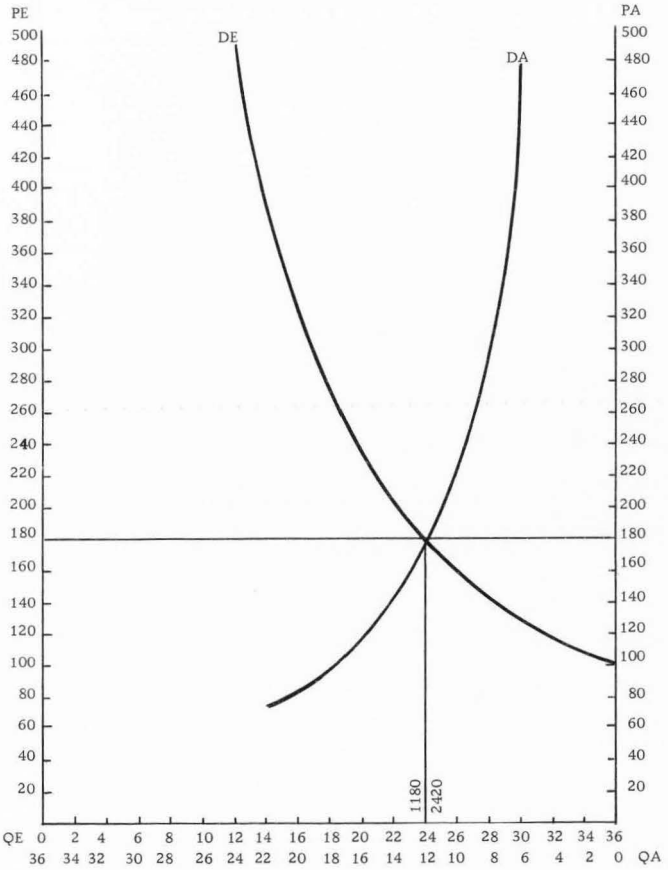

Figure 2. Equilibrium price in 1970. No tariff is imposed

DE = E.E.C. demand curve.

DA = E.F.T.A. demand curve.

From each demand curve a tariff demand curve was derived $\overline{DE}$ and $\overline{DA}$ which is lower by 20 percent or 8 percent according to the expected tariff (13, p. 345) (Figure 3).

For the reference price analysis, another curve was derived from the DE curve. This curve is lower than the original curve by the amount of tariff and duty. For each reference price, there is a different duty schedule, and the intersection of this curve with the tariff curve of E.F.T.A. $\left[\overline{DA}\right]$ indicates the division of quantities between the two markets and the common price in the combined market. For example, with a reference price in the E.E.C. of $160, if the market will bear the price of $177 the tariff cost will be $35. The net price after tariff will be $142, and the duty will be ($160 - $142) = $18. The net price after duty and tariff will be $124 (Figure 4).

Limitations

The arbitrary nature of the assumptions made for the purpose of this thesis should be noted. Deviations from the predicted conditions used for the market model could have a far-reaching influence on future developments. For example, a rapid economic development in Afro-Asian countries may open new markets for oranges and tangerines. Also, should Eastern Europe and particularly Soviet Russia open their markets for free trade in oranges and tangerines, a considerable change would take place in the international trade of these fruits. There is also the possibility that there will be a growth in the demand for orange juice resulting in the creation of a greater demand for oranges by the processing industry.

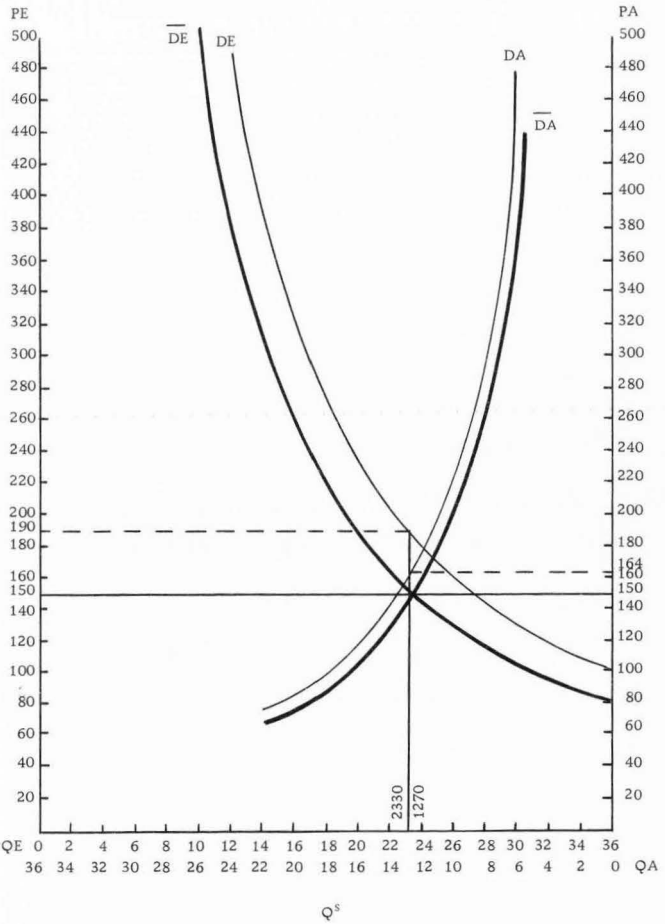

Figure 3. Equilibrium price in 1970 with tariff

E.E.C. tariff 20 percent
E.F.T.A. tariff 8 percent

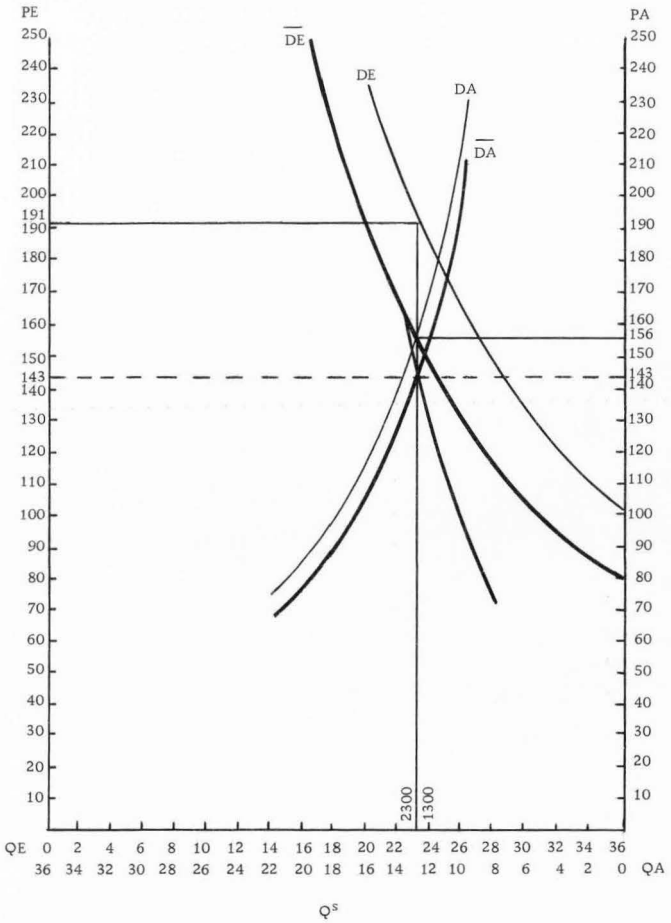

Figure 4. Equilibrium price in 1970 with reference price of $160 in the E.E.C.

ANALYSIS OF DATA AND PRESENTATION OF RESULTS

Equilibrium Price Without Tariff

The equilibrium price was found to be $180 (Figure 2). The distribution of quantities demanded are as follows (1,000 tons):

E.E.C. : 2,420 = 67.2 percent

E.F.T.A. : 1,180 = 32.8 percent

Total 3,600 100.0 percent

The new price actually retains base average for the years 1961-63 price calculated which was $180.

Equilibrium Price With Imposed Tariff by E.E.C. and E.F.T.A.

The equilibrium price was found to be $150 (Figure 3). The distribution of quantities demanded by each market are as follows (1,000 tons):

E.E.C. : 2,330 = 64.7 percent

E.F.T.A. : 1,270 = 35.3 percent

Total 3,600 100.0 percent

The internal price in E.E.C. will be $160, in E.F.T.A. it will be $164. The price for producers in both markets will be $150, which is also the average revenue.

The decrease in gross price, which is also the average revenue price, is 16.6 percent. The decrease in the F.O.B. prices is found to be 23.4 percent.

Marginal revenue

MR was calculated according to the following formula:

$$MR = P_{70} \left(1 + \frac{1}{\alpha}\right)$$

where:

MR = marginal revenue per ton.

P_{70} = the common price in both markets after tariff.

α = elasticity of price demand.

The MR was found to be $65.

Tariff and Quantity Restriction

The goal of every import quantitative restriction of the E.E.C. is to increase prices to a target price which is determined by the policy makers. This policy decreases the ability of exporters to compete on the market (Figure 5).

The calculation of MR follows the same formula as above but was calculated separately for each market according to the Israeli share in this market.

It was found that the effective quotas to the E.E.C. will start at 2,300,000 tons (Table 7). The internal price in the E.E.C. will be $151, in the E.F.T.A. $144. With the assumption that Israel's share of the E.E.C. orange market will be 8.9 percent, a decrease in quota import for the E.E.C. from 3,300,000 tons to 1,400,000 tons will decrease Israel's export to this market from 205,000 tons to 164,000 tons. This decrease amounts to 5.1 percent, from 29.3 percent of the total predicted Israeli export. At the same time, the internal price of oranges will increase in the E.E.C. from $151 to $202. The price in the E.F.T.A. will decrease from $144 to $98. The gross average revenue for Israeli oranges and

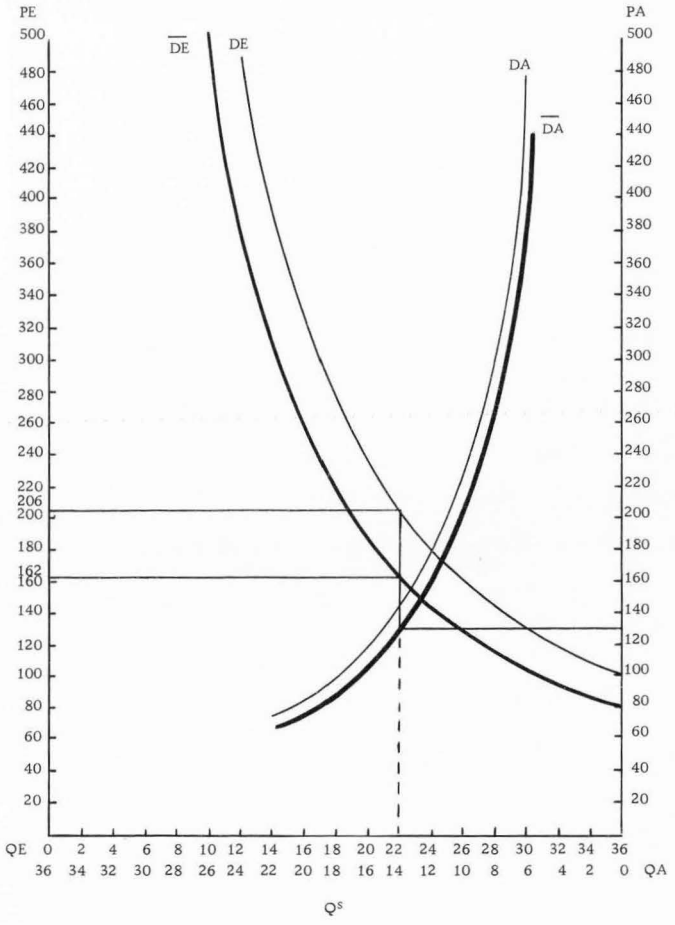

Figure 5. Equilibrium price with target price of $206 (QUOTA of 2200) in the E.E.C.

Table 7. Israel's AR and MR with different quotas to the E.E.C. in 1970; Israel's share of the E.E.C. market according to 8.9 percent or 138,000 tons; Israel's total export to the combined markets, 700,000 tons (based on Figure 4)

	1,000 tons				
	A	B	C	D	E
Total import quota to the E.E.C.	2,300	2,200	2,100	2,000	1,900
E.F.T.A. share of the market	1,300	1,400	1,500	1,600	1,700
E.E.C. price after tariff	$151	$162	$176	$188	$202
E.F.T.A. price after tariff	144	130	118	106	98
Israel's share in the E.E.C. according to 8.9 percent	205	196	187	178	169
Israel's share in the E.F.T.A. according to 8.9 percent	495	504	513	522	531
Percent of Israel's total export to E.F.T.A.	70.7	72.0	73.2	74.5	75.8
Percent of Israel's share in E.F.T.A. market	20.3	28.0	26.8	25.5	24.2
AR average revenue	146.0	139.0	128.0	127.0	123.0
AR average revenue F.O.B.	94.0	87.0	76.0	72.0	71.0
Marginal revenue	62.8	59.7	57.3	54.5	52.2
Marginal revenue F.O.B.	10.8	7.7	5.3	2.5	2.0
AR and MR with different quotas to the E.E.C. with 138,000 tons quota for Israel					
Israel's quota to the E.E.C.	138	138	138	138	138
Israel's export to E.F.T.A.	562	562	572	562	562
Percent of Israel's share in the E.E.C.	6.0	6.3	6.6	6.9	7.3
Percent of Israel's share in the E.F.T.A.	43.2	40.1	37.5	55.1	33.1
Percent of Israel's export to E.E.C. from its total export	19.7	19.7	19.7	19.7	19.7
Percent of Israel's export to E.F.T.A. from its total export	80.3	80.3	80.3	80.3	80.3
Average revenue	145.3	136.3	129.4	122.1	118.5
Average revenue F.O.B.	93.3	84.3	77.4	70.1	66.5
Marginal revenue	62.5	58.6	55.6	52.4	50.9
Marginal revenue F.O.B.	10.5	6.7	3.6	.4	.1

tangerines will decrease from $146 to $123. The gross marginal revenue will decrease from $62.8 to $52.2, which is a critical point. This high price in the E.E.C. decreases the ability of oranges to compete against apples and pears, which are grown in the E.E.C. These high prices also increase the income of member countries who are producing oranges.

For quantitative restrictions of imports to be effective, the total quota must be less than the equilibrium achieved by the free market. In this particular case, any quota restriction implemented by the E.E.C. on oranges and tangerines will drive more oranges to the E.F.T.A. market where quota restrictions are not imposed. The decrease in the E.E.C. import quota will drive more oranges to the E.F.T.A. market and will lead to a drastic decline in prices in the E.F.T.A. market.

In comparison to the previous assumption about implementing only tariff, the marginal revenue here is very significant for Israel. In the case of effective quotas implemented in the E.E.C., every additional export from Israel will find its way to the E.F.T.A. and will directly pressure every additional E.F.T.A. market. The $52 MR will cover transportation costs to the market and will not leave any money to cover other costs.

As was stated before, quota restrictions were analyzed on the basis of three different alternatives: (a) allowances are given only to countries which are members or associated with the E.E.C. at present (Italy, Turkey, and Greece), (b) the Magrab countries become associated with the E.E.C., and (c) Spain and the Magrab countries become associated or members of the E.E.C.

For this analysis, the assumptions were treated with a fixed capacity for the Mediterranean exporting countries--E.E.C. with internal

resources for the export of .5 million tons (Italy, Greece, and Turkey), Magrab countries 1 million tons, and Spain with 1.3 million tons, and an E.E.C. target price of $206 or (2,200 million tons quota to the E.E.C.) (Figure 6 and Table 8).

Alternative one

Total import into the E.E.C. will be 2,200,000 tons. Israel with a share of 8.9 percent will export 196,000 tons to the E.E.C. The price in the E.E.C. will be $206, in the E.F.T.A. $130. The gross average revenue for Israel will be $139 with a gross marginal revenue of $59.7.

With the assumption of a constant quota of 138,000 tons, the gross average revenue will be $136.3, and the gross marginal revenue will be $58.6 (Table 8).

Alternative two

Under this condition, internal resources of the E.E.C. for oranges will supply more than two-thirds of the demand, while less than one-third of the quantity demanded will come from third countries (Table 8).

The allocation of quantities between the market will not be different than in one above. The prices in the E.E.C. and E.F.T.A. will not change; the same can be said of marginal revenue and average revenue for Israeli oranges. In the long run, this situation can be more harmful to Israel than alternative one, since the association with the E.E.C. will increase the income from oranges to the Magrab countries' orange growers, which will in turn encourage the planting of more orange groves. New orange groves will increase the pressure of oranges and tangerines in the future on the European market, resulting in lower prices for oranges.

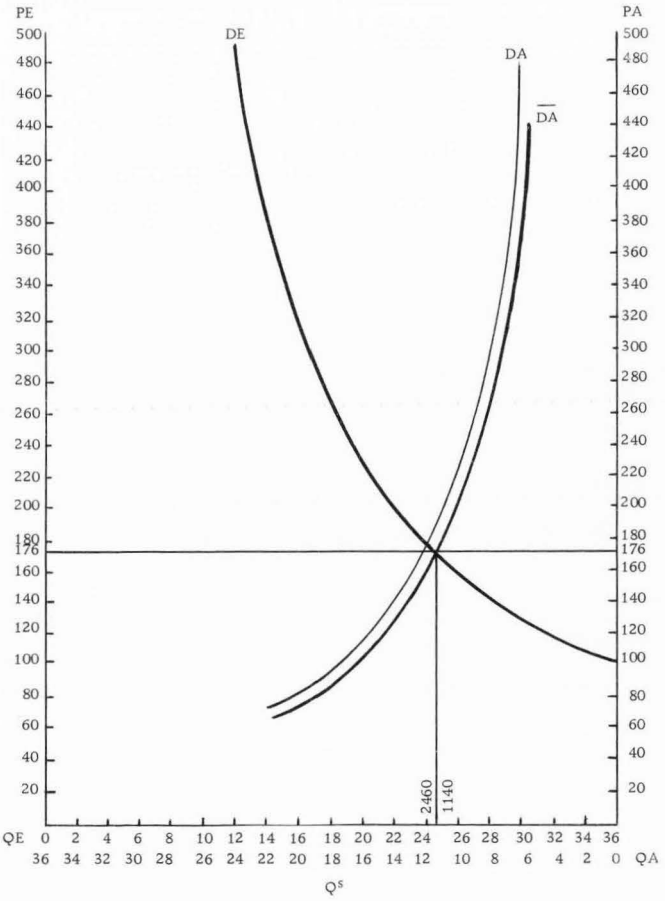

Figure 6. Equilibrium price in 1970 Spain and the Magrab are associated with the E.E.C.

Table 8. Average and marginal revenue with different alternatives for 1970 (based on Figures 2, 3, 4, 6)

	A		B		C		D	
Tariff in E.E.C.	20%		20%		20%		20%	
Tariff in E.F.T.A.	8%		8%		8%		8%	
Quotas to E.E.C.	--		2,200		2,200		2,200	
Allowances in E.E.C.					Magrab Assoc.		Magrab & Spain Assoc.	
Import to E.E.C.	2,330		2,200		2,200		2,460	
Total Israel export	700		700		700		700	
Israel export to E.E.C. according	8.9%	138	8.9%	138	8.9%	138	no export	
Israel export to E.E.C.	207	138	196	138	183	102	--	--
Israel export to E.F.T.A.	493	562	504	562	517	598		700
Price of E.E.C. after tariff	150	150	162	162	162	162		176
Price of E.F.T.A. after tariff	150	150	130	130	130	130		176
AR gross	150.0	150.0	139.0	136.3	139.0	136.3		176.0
AR F.O.B.	98.0	98.0	87.0	84.3	87.0	84.3		124.0
MR gross	65.0	65.0	59.7	58.6	59.7	58.6		76.0
MR net	13.0	13.0	7.7	6.7	7.7	6.7		24.0

Explanations

1. Equilibrium price only tariff is implemented (Figure 3).
2. Equilibrium price with quota to the E.E.C. of 2,200,000 tons (Figure 5).
3. Equilibrium price with quota to the E.E.C. of 2,200 tons and the Magrab countries are associated with the E.E.C.
4. Equilibrium price Spain and Magrab countries are associated with the E.E.C. (Figure 6).

Alternative three

Under this assumption, the E.E.C. will supply from its internal resources all the demand for oranges and tangerines and will become a net exporter. In this case, the internal resources will not be limited by quotas or tariffs in selling their oranges in the E.E.C. They will sell in the E.E.C. more than the quota designated, and prices in the E.E.C. for oranges will decrease accordingly.

The internal resources of the E.E.C. will be limited by the 8 percent tariff in the E.F.T.A. Therefore, they will continue to dump oranges in the E.E.C. up to the point where prices in the E.E.C. will be lower than in the E.F.T.A., and their marginal revenue in both markets will be the same.

At this point the new situation in the E.E.C. will be free trade of oranges and no import of oranges from third countries. E.F.T.A. will have a tariff of 8 percent on E.E.C. associates as well as on third countries. The allocation of quantities of oranges between E.F.T.A. and E.E.C. will be at the intersection point between the demand curve of the E.E.C. $\left[DE\right]$ and the tariff demand curve of the E.F.T.A. $\left[\overline{DA}\right]$ (Figure 6 and Table 8). The quantities will be distributed as follows:

E.E.C. : 2,460,000 tons

E.F.T.A. : 1,140,000 tons

Total 3,600,000 tons

The equilibrium price, which will also be the average revenue, will be $176 and gross marginal revenue will be $76. This condition is more favorable for Israel than the imposition only of tariff. Israel will get better prices and its marginal revenue is higher (Table 8).

Tariff and Reference Prices

The goal of reference prices is similar to quota restrictions. The only difference between quota restriction and reference pricing is that reference prices are less rigid, and the result of implementing a reference price is more determined by the market than by rigid quotas. To implement a reference price means to put a special duty in every case of oranges sold for less than the determined reference price in the wholesale market. This special duty is charged in addition to tariff. The duty increases in the case where the determined reference price increases or when market prices decrease.

Effective reference prices in the E.E.C. for oranges would mean a decrease of orange imports to the E.E.C. and would simultaneously drive the rest of exported oranges to the E.F.T.A.

The implementation of reference prices allows the exporter to allocate marginal quantities of oranges between the selected markets.

From the exporter's point of view with the implementation of reference prices, a very significant role is attributed to the marginal revenue.

Larger share in the market means for the exporter bigger influence and a lower margin revenue. Whenever an effective import quota is implemented in the E.E.C., the marginal revenue of Israel's oranges will be mostly determined in the E.F.T.A. market, since Israel's share in this market is roughly 40 percent. If a reference price is established, Israel's marginal revenue will be determined according to its share in the combined market which is only 19.6 percent.

It was found that reference prices start to be effective at $160. If the reference price is increased to $200, the average revenue will

decrease from $143 to $130 and marginal revenue will decrease from $61.4 to $56.0 (Figure 4 and Table 9).

Table 9. Marginal revenue and average revenue with different reference prices in the E.E.C. in 1970 (based on Figure 4)

Reference price $ per ton	160	170	180	190	200
Import to the E.E.C. 1,000 tons	2,300	2,300	2,230	2,210	2,200
Import to the E.F.T.A. 1,000 tons	1,360	1,300	1,370	3,190	1,400
Internal price in the E.E.C. $ per ton	191	191	195	201	205
Internal price in the E.F.T.A. $ per ton	156	156	150	144	141
E.E.C. price after duty and tariff	143	143	138	133	130
E.F.T.A. price after duty and tariff	143	143	138	133	130
Gross average revenue	143	143	138	133	130
F.O.B. average revenue	91	91	86	81	78
Gross marginal revenue	61.4	61.4	59.0	57.0	56.0
F.O.B. marginal revenue	9.4	9.4	7.0	5.0	4.0

This situation is similar to imposing only tariff on the markets. The price is equal in the two markets after duty and tariff is deducted. The average revenue is equal to price, and there is no significant difference in giving Israel either relative or absolute quotas in the market.

The results here were also checked in three alternative cases:

1. Allowances given only to those countries that are associated with the E.E.C. at present.

2. Magrab countries become associated with the E.E.C.

3. Magrab and Spain become associated with the E.E.C.

The assumption here is also a reference price of $160 and predicted export from different countries as above (Figure 4).

Alternative one

Imports to the E.E.C. will be 2,300,000 tons; the internal price in the E.E.C. will be $143. The average revenue will be $143 and marginal revenue will be $61.4.

Alternative two

The internal resources of the E.E.C. will supply two-thirds of the demand. Prices and average revenue will not be different from alternative one.

Alternative three

The discussion here is almost the same as under the third alternative with quotas and the results are the same. The reference price will not be effective within the E.E.C. itself. The equilibrium will be determined by the intersection of the E.E.C. demand curve $\left[DA\right]$ and the E.F.T.A. tariff demand curve $\left[\overline{DA}\right]$ (Figure 6).

Discussion

The future trade and planting of oranges in Israel will be affected by the future prices and distribution of quantities between the E.E.C. and the E.F.T.A. for 1970.

Imposing the tariff by E.E.C. and E.F.T.A. will decrease prices for oranges and tangerines by 16.6 percent and F.O.B. prices by 23.4 percent. If the E.E.C. imposes quotas or reference prices, this system will retain high prices within the E.E.C., and it will divert most Israeli exports to the E.F.T.A. Under these conditions, prices in the E.F.T.A. market will decrease accompanied by a decrease in the marginal revenue for Israeli oranges and tangerines. Reference price will start to be effective in determining Israel's AR and MR within the range of $143 market price and an imposed $160 reference price.

According to this assumption, Israel has to be very careful in expanding the area of orange groves, since any additional exports to Europe will decrease the prices in the E.F.T.A. market. Since Israel's share of this market is very significant, this will work against Israel's interest.

The basic problem in the future for marketing oranges in the E.E.C. as well as in the E.F.T.A. is how can the E.E.C. succeed in supporting prices in its market and control import levels. If the E.E.C. decides to give allowances to the Magrab countries or Spain only on part of their total export to the E.E.C., this may not influence prices in the E.E.C. or the E.F.T.A. Allowances on part of the export will only increase the exporter's income. Israeli's orange price, which according to this assumption will not benefit from any allowances to the E.E.C., will not change. However, the total demand for oranges in the E.E.C. will not expand and surpluses, if any, of Israel's competitors will be diverted to the E.F.T.A. market. In the long run, higher income for Israel's competitors will encourage them to expand their orange groves and, therefore, put higher pressure in the E.F.T.A. where Israel's share of the market is high.

If the Magrab countries and Spain do get allowances on the full quantity of oranges that they can export to the E.E.C., the E.E.C. will not eliminate a decrease in orange prices and an expansion of imports into the market. As long as associate countries get higher prices in the E.E.C. than in the E.F.T.A., they will export to this market as much as they can. This way the pressure on the E.F.T.A. market may decrease. The highest prices for Israeli oranges on the E.F.T.A. market will be realized in the case of no allowances for Israeli oranges into the E.E.C. market, while Spanish and Magrab oranges have no restrictions in the E.E.C.

The result of such a situation demonstrates that the E.E.C. will not follow such a policy. The E.E.C. will most likely establish limited quotas or otherwise its agriculture policy will become a fiction.

At the present time, it seems that the Magrab countries will be able to reach an agreement with the E.E.C. before Spain is able to do so. In this case, Israel should struggle to get the same allowances as the Magrab countries get, otherwise in the long run, it means destruction of the Israeli market in both the E.F.T.A. and the E.E.C.

At the same time, Israel should make an effort to reach an agreement with the rest of the Mediterranean countries to limit production of oranges in general or at least as fresh fruit for export. The basic idea is that processing industries may absorb surpluses of oranges and tangerines, and in this way, the market may not be flooded during the limited production season.

Another significant point is the elasticity of demand. Oranges and tangerines as fresh fruit have a less than unitary elasticity of demand. Limited export, therefore, can increase total revenue. Oranges

for juices and processing show unitary or higher elasticity of demand, therefore, increases in production may involve little risk of decreasing total revenue. This kind of agreement would be beneficial to all exporting countries, including E.E.C. associates. It would also be beneficial to all exporters if the E.E.C. associate countries were to sign a limiting agreement only on surplus exported to the E.F.T.A. market. This way the pressure on the E.F.T.A. market would decrease. For example, with an import quota of 2,200,000 tons to the E.E.C., a decrease in supply of 1 percent to the E.F.T.A. market of oranges would increase the price in the E.F.T.A. by $4 from $130 to $134. In this case, total revenue would increase by $4,936,000 (Figure 5).

Israel would benefit from such an agreement as would all other exporters, since pressure will be taken from this market which would remain Israel's main outlet for oranges and tangerines. Another thing that can be seen here is that reaching agreement with the E.E.C. about the division of the E.E.C. market will not determine the total market picture. Surpluses of oranges will still continue to press on the E.F.T.A. market and continue to control prices.

Future Planting of Orange Groves

This discussion of planting additional groves is based on an optimistic market picture, based on the assumption that the E.E.C. will not impose import quotas or reference prices (Table 10). However, this is not to say that the E.E.C. will follow this policy in the future.

According to these optimistic assumptions, the F.O.B. average revenue will be $98 and the F.O.B. marginal revenue will be $13. The

Table 10. Calculation of marginal output of oranges needed with projected prices for 1970

Assumptions

(1) a. E.E.C. will not implement a reference price.

b. The elasticity of demand for the future European market in 1970 is -.7.

c. External tariff for the E.E.C. will be 20 percent and 8 percent for the E.F.T.A.

d. There will be no allowances to exporters that are not associated with the E.E.C. at present.

Revenue for export

Gross AR = 150
F.O.B. AR = 98

(2) Gross income in 1970 for the orange grower.

Gross income according to different ratio of foreign currency.

Ratio of foreign currency	IL-$3	IL-$3.5	IL-$4	IL-$4.5	IL-$5
F.O.B. AR per ton in the port	L294	343	392	441	490
Less: export expenses	140	152	164	176	188
Gross export income	L154	191	228	265	302
Export 72 percent per ton	110.88	137.52	164.16	190.80	217.44
Industrial use 20 percent x 160 per ton	12	12	12	12	12
Domestic consumption 8 percent IL185	14	14	14	14	14
Gross income	IL136.88	IL163.52	IL190.00	IL216.80	IL243.44
(3) Balance point	$\frac{L626.70}{136.88} = 4580$	$\frac{626.70}{163.52} = 3823$	$\frac{626.70}{190} = 3298$	$\frac{626.70}{216.80} = 2890$	$\frac{626.70}{243.44} = 2574$
Minimum bearing of oranges required to cover long range costs					

significance of these prices is that Israel will get only $13 for any additional ton of oranges exported to the combined market.

In order to evaluate future planting of new groves, the farmers' future average revenue must be considered along with production costs. It was found that in order to cover the long range cost, the average yield of an orange grove should be 4.580 tons per dunam (Table 10). This yield is far from being the average yield for oranges in Israel. The average yield is at present between 3 and 3.5 tons per dunam. The high yield required is possible only with optimum conditions for the grove such as special soil and good sweet water.

From the national point of view, the marginal revenue is the basic criterion. The F.O.B. marginal revenue of $13 will not cover exporting expenses. Detailed calculations are given in Table 11.

From the national point of view, it may not be economical to expand orange production, and it may even pay to decrease the quantity of exported oranges. However, other factors must be considered, such as how much is the government interested in paying for a dollar produced by orange export and to the future alternatives for orange production in Israel. The national position may be that Israel is ready to sacrifice short range expenses for long range goals, such as a share in the European market for oranges; that is to say, up to a point of out of pocket expenses and disregarding depreciation and profit.

Since this analysis predicts only for the 1970 year, it should be mentioned that in the long run freezing is a big factor in the production of oranges. Israel does not suffer from frost in the winter season, while Spain and Italy do. This unpredictable factor may give Israel still higher prices in some particular years to cover losses in previous

years, and one should consider this factor whenever applying the results of this thesis.

Table 11. Production cost per 1 dunam orange grove, bearing fruit, 1964 (1 acre = 3.9 dunams)

	Unit	Quantity	Price per unit	Total expense
Labor	hours	88	2.15	IL189.20
Tractor	hours	8	4.50	36.00
Tools	hours	8	2.00	16.00
Water	m^3	720	.05	36.00
Organic fertilizer	m^3	1	10.00	10.00
Unorganic fertilizer	Kg	90		13.40
Insecticide	dunam	1		25.00
Total				IL325.60
General expenses				16.00
Interest on short term				19.30
Rent on land	dunam	1	25.00	25.00
Rent on water	m^3	720	.08	57.60
Grove depreciation and interest on capital	dunam	1	166.70	166.70
Depreciation on irrigation system	dunam	1	16.50	16.50
Total expenses in Israeli pounds				IL626.70
Total expenses in dollars			$\frac{626.70}{3}$ =	$208.90

Source: Report to Israeli Knerset (Parliament) by the Israeli Secretary of Agriculture for the Budget Year 1965-66. Israel Commerce Secretary Bulletin, Jerusalem, Israel, December 1966.

Explanation

This calculation is based on 1964 prices. There is a possibility that increases in efficiency may save some production costs for the year 1970. However, at the same time there is a possibility of increases in prices of labor and transportation. The assumption here is that efficiency and inflation will balance each other and these expenses will be real for 1970.

SUMMARY AND CONCLUSIONS

The result of this analysis can be divided into two main areas--the area of policy and future planting of orange groves.

1. The possibility that Israel is not able to get the same allowances as Spain and the Magrab countries in 1970 is not necessarily bad for Israel. If Spain and the Magrab countries are associated with the E.E.C., it may even be relatively good for Israel, since the E.F.T.A. market would yield better prices.

2. If Spain and the Magrab countries get unlimited allowances to the E.E.C. market, the agricultural policy of the E.E.C. becomes a fiction.

3. Conclusion number 2 leads to the next conclusion that the E.E.C. will not follow the policy of unlimited allowances to Spain and the Magrab countries. The E.E.C. will most likely follow the policy of limited allowances to Spain and the Magrabs. It is probable that the E.E.C. will determine its future policy toward oranges and tangerines on the basis of past trade.

4. E.E.C.'s agricultural policy toward oranges and tangerines will bring differentiation in prices between the E.E.C. and E.F.T.A. with higher prices in the E.E.C. than in the E.F.T.A. Israel will be better off by trying to increase its present share in the E.E.C. market. In considering future negotiations with the E.E.C., this policy may increase Israel's future average revenue by increasing her traditional share in the E.E.C. market.

5. The basic conclusion is that the E.E.C. will not give unlimited allowances to Spain and the Magrab countries, but will rather try to limit the import of oranges and tangerines, and future surpluses of orange exports will continue to press the E.F.T.A. market. Therefore, every action that is initiated by exporting countries to limit export of oranges especially to the E.F.T.A. market will improve prices in this market with a corresponding increase in total revenue from oranges and tangerines. The earlier an agreement can be reached, the better it will be for Israel. Israel's young plantations will start to bear fruit before her competitors get the benefit of being associated with the E.E.C. and start to plant additional orange groves.

6. The long range view for the future of the orange export industry indicates that in order to maintain a reasonable return on investment, the average farmer should not expand planting oranges and tangerines unless a yield of 4.8 tons of oranges per dunam is predicted.

On the national level, the Israeli government should re-evaluate the alternatives for growing oranges in the future. The predicted marginal revenue in an optimistic proposed market may not cover even export expenses. The Israeli national economy may be better off by decreasing the export of oranges and tangerines, disregarding the needs of the Israeli economy for income in foreign currency.

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