EC POLICY IN THE SOYBEAN AND OILSEED MARKETS AND IMPLICATIONS FOR THE U.S. SOYBEAN INDUSTRY

by

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0. INTRODUCTION

The Problem

In 1983 the European Community (EC) ran into serious financial problems. Available resources were barely sufficient to cover the Community's expenses. Some payments had to be deferred into January 1984. Changes in spending and revenue raising policies were necessary to ensure that the EC could meet its obligations in 1984 and the following years. Any reform of EC spending must concentrate on agricultural policy because it absorbs the largest part of the Community's budget. The Commission of the EC in 1983 proposed a number of expenditure reducing and revenue raising measures. Among these was a tax on all domestically consumed edible fats and oils except butter.[1] The impact of such a tax would be on European consumers and the producers of those fats and oils. About 60 percent of the edible fats and oils that would be affected are imported. European producers of the remaining 40 percent are protected against its impact by the EC's price support system. As a result, the tax would be borne by European consumers and foreign producers of edible fats and oils.[2]

A large share of the EC imports of fats and oils is made in form of oilseeds, particularly soybeans. The U.S. as the major supplier of soybeans to the EC has reason to be concerned about the tax scheme. Additionally, the Commission's reform proposal contained other provisions that would harm U.S. agricultural trade if they were implemented, namely quotas on corn gluten feed and citrus pulp imports. These proposals come at a time when the U.S. agricultural groups are already rather irritated by European agricultural trade policy. Several conflicts under the GATT are pending (subsidized exports of pasta, wheat and dairy products). For the U.S. the case of the fats and oils tax and the gluten feed quota become a matter of principle. As the EC is unwilling and/or unable to negotiate its behavior in other agricultual markets, U.S. officials want to make it clear that they are determined to prevent an expansion of European protectionism into new areas. Consequently, they have threatened to retaliate should these schemes be implemented.[3]

Due to strong opposition not only from U.S. groups, but also from European oilseed crushers, feed manufacturers, consumer representatives and the German, Dutch, Danish and British governments, the tax proposal has been shelved for the present. But the financial problems of the EC continue. The increase in resources from value added tax agreed upon by the member countries will not be available before 1986. In the meantime the Community will borrow the

amounts necessary to balance the 1984 and 1985 budgets. These loans are to be repayed in 1986 and the following years. Consequently, the EC will have very little financial leeway for years to come. With respect to the European oilseed policy this means that the pressures which led to the fats and oils tax proposal in 1983 persist.

Objectives and Structure of the Report

This report (1) provides the information that is needed to understand the factors that shape and limit the EC's policy in the oilseed market, particularly the soybean market. It (2) analyzes the impact of different EC fats and oils policies on the world market in a qualitative manner and (3) derives some tentative conclusions about their impact on the U.S. soybean industry.

Chapter I describes the major features of the Common Agricultural Policy (CAP). Factors that generated the budget crisis in 1983 and led to the reform proposal are noted, including the fats and oils tax scheme. In chapter II the EC market for oilseeds is described in detail. The role of soybeans and soybean products in this market are identified as well as the importance of the soybean trade between the U.S. and the EC. This chapter serves a double purpose: it points out the different interests that may shape future policy, and it provides a descriptive background for the analysis in chapter III. Partial equilibrium analysis is applied in chapter III to evaluate the effects

of a number of protectionist measures the EC could implement in the soybean market. Besides potential distributive effects, the analysis demonstrates how these measures conform with different interests demonstrated in chapter II. Chapter IV contains an overview of the marketing channels for U.S. soybeans and a brief appraisal of the pricing system for soybeans. Finally, the impact of reduced soybean prices on the farm level is analyzed within the structure of the U.S. market.

References

1 Agra Europe, July 29, 1983, P/3

2 Agra Europe, September 23, 1983, P/2

3 see Cargill Bulletin, October 1983, p. 1
and November 1983, p. 1

I. THE COMMON AGRICULTURAL POLICY OF THE EUROPEAN COMMUNITY

The Mechanism of CAP

According to the Treaty of Rome the CAP was designed to achieve the following goals:[1]

- "to increase agricultural productivity
- thus to insure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture
- to stabilize markets
- to assure reliable supplies
- to ensure reasonable consumer prices."

Measures towards these objectives have been adopted in three broadly oriented policy fields: (1) market and trade policy, (2) structural policy, and (3) social policy. Structural and social policies have largely remained in national hands. The core of the common agricultural policy is the market and trade policy.

The market and trade policy of the EC[2]

The central part of the EC market policy is the system of common prices for agricultural products. These prices are usually well above the world market level. They are reviewed and adjusted in annual negotiations of the Council of Ministers of Agriculture. Internally the price level is maintained by market intervention. This means that at a given minimum price the intervention authorities buy any

quantity that is offered to them and thus prevent the price from falling below a set level.

The "trade policy" of the EC has mainly the function to protect the system of common prices against cheaper imports. The main instrument employed is a variable levy which covers the difference between the world market price and a "threshold price" that is derived from the intervention price and assures that foreign producers cannot undersell EC producers. Consequently foreign producers can only capture the residual demand that could not be met by internal production. This system of intervention and variable levies applies in the markets for all major grains, dairy products, and beef. Notable and for this paper important is the exception of oilseeds.

The operation of this system has led to increases in production, so that the EC is more than self-sufficient in most of the agricultural products (see table I,1). The intervention authority accumulates large amounts of surpluses. One way to dispose of these goods is to export them. As they have been bought at the high internal price level, the EC pays a subsidy to the exporters that allows them to compete at world market prices. Attempts at a "prudent" price policy that would lower the prices of surplus commodities, or at least not increase them further have not been successful, which is largely due to the way in which the CAP redistributes income among the member countries.[3]

Table I,1: Classification of the main agricultural products in the Community according to degree of self-sufficiency[1]

Exceeding 100%	
Sugar	124
Poultrymeat	108
Concentrated milk	154
Butter	118
Whole-milk powder	337
Skimmed-milk powder	126
Barley	112
Wheat	118
Rye	107
Cheese	106
Around 100%	
Oats	98
Potatoes	101
Eggs	102[2]
Fresh milk products	101
Beef/veal	102
Pigmeat	101
Fresh vegetables	98
Wine	103
Below 100%	
Grain maize	62
Rice	83
Fresh fruit (other than citrus)	83
Citrus fruit	44
Sheepmeat and goatmeat	73
Vegetable oils and fats	--

[1] Crop products: average for 1979/80, 1980/81 and 1981/82. Livestock products: average for 1979, 1980 and 1981.

[2] 1982/83 marketing year.

Source: Commission of the European Communities, The agricultural situation in the Community, 1983 report. Brussels 1984, p. 110

Financial transactions in the European Community are carried out in European Currency Units (ECU). The ECU is a currency basket. In 1982 it consisted of:

0.828	West German marks
0.0885	Pounds sterling
1.15	French francs
109.0	Italian lire
0.286	Dutch florin
3.66	Belgian francs
0.14	Luxembourg francs
0.217	Danish kroner
0.00759	Irish punt

[4]

Precursor of the ECU was the unit of account (u.a.) which was equivalent to one U.S. dollar.[5] EC prices for agricultural products are insulated from exchange rate changes against the U.S. dollar by the system of variable levies. The value of the dollar influences world market prices. A strong dollar tends to increase world market prices for agricultural commodities, because the U.S. is a major exporter for many of these goods. A higher world market price means reduced budget expenditure on export refunds and reduced revenue from variable levies for the EC budget. Generally, it can be assumed that the savings on export refunds outweigh the reduction in revenue.

Financing CAP

The price support system is financed (1) by EC consumers who have to pay higher prices than otherwise and (2) from the EC budget which pays for market intervention, export subsidies, and similar expenditures. The budget in turn is financed from the so called "own resources" of the European Community.[6] These consist mainly of all cus-

toms duties, variable levies etc., collected at the EC border and up to 1 percent of the member countries' value added tax base (VAT).[7] In the past the 1 percent VAT has never been fully utilized by the EC, but the share utilized has steadily increased making VAT the most important financial resource (See table I,2).

The revenue from VAT grows approximately at the same rate as nominal GNP. Agricultural expenditures have been growing at a faster rate than revenues for a number of years and since 1979 economists have been warning that one day the Community will find itself unable to fulfill its financial commitments. Of course, the EC budget is not entirely spent on CAP issues. But CAP, and in particular the price support system, which is financed from the European Agricultural Guarantee and Guidance Fund (EAGGF), Section Guarantee, on the average accounts for about 2/3 of total expentitures (See table I,3). Price guarantee costs are only partly controllable by the decision makers. Once the guarantee prices are set, expenditures to support them are obligatory, and depend largely on world market prices and output produced.[8]

The decision making process

Legislative decisions in the EC are made by the Council of Ministers for the particular policy field, in the case of CAP by the Council of Ministers of Agriculture. The initiative for legislation rests formally with the Commission. Without a proposal from the Commission the Council cannot take action. Decisions on agricultural policy are

Table I,2: Share of EAGGF in the total EC budget (in percent)

	1979	1980	1981	1982	1983[1]	1984[2]
EAGGF	75.5	73.1	64.7	63.1	65.7	69.1
of which Guarantee Section	72.7	69.4	61.5	59.9	63.2	66.6

[1] On the basis of the amending and supplementary budget No 2/1983.

[2] On the basis of the draft budget adopted by the Council on 22 July 1983.

Source: Commission of the European Communities, The agricultural situation in the Community. 1983 report, Brussels 1984, p. 155

Table I,3: Community revenue from 1979 to 1984
(in million ECU)

	1979	1980	1981	1982	1983[1]	1984[2]
Customs duties	5189.1	5905.8	6392.3	6815.3	7234.6	7623.5
Ordinary levies and sugar levies	2143.5	2002.3	1747.5	2227.8	2433.9	2949.9
VAT	4737.7	7258.5	9187.8	12000.5	13691.0	14052.8
VAT rate (%)	0.79	0.73	0.79	0.92	0.99	0.96
Financial contributions	2302.1	--	151.4	197.0	217.0	--
Own resources[3]	14372.4	15166.6	17479.0	21240.6	23576.5	24626.2

[1] Amending and supplementary budget No 2/1983.

[2] Draft budget (including letter of amendment of 10 October 1983).

[3] Including financial contributions.

Source: Commission of the European Communities, The agricultural situation in the Community, 1983 report, Brussels 1984, p. 155

concerned with market regulation and the setting of support prices. Council decisions have to be unanimous. Any member country can veto them if it feels that vital national interests have been violated. For this reason negotiations, particularly the price review session, have developed into package deals that try to achieve consensus by making some concessions to every national farm constituency. As the burden of these concessions has not to be borne by the national exchequers, outcomes of price review sessions tend to be more expensive than they would be otherwise.[9]

Criticism and Reform

CAP has drawn harsh criticism from within as well as from without the EC. Its essence can be condensed into four main arguments:

Costs: The budget cost of CAP is too high. To spend 2/3 of the budget on a sector of the economy that produces 3.5 - 4.0 percent of GNP and employs 7 - 8 percent[10] of the labor force makes little sense. It prevents the EC from giving the proper emphasis to other fields of European policy like regional development, social policies, aid for developing countries and others. Other important political goals are thus constantly sacrificed to agricultural price guarantees. In addition, high costs to consumers are criticized, though without the necessary political pressure. After all, farm prices account for only a small percentage of consumer expenditures on food products.

Allocation of resources: European agriculture suffers from structural problems. Many farms are too small to produce efficiently. High EC price supports have slowed down the necessary adjustment process, keeping resources in agriculture that could be more profitably employed in the non-farm sector.

Distribution effects: The CAP changes the income distribution at several levels. First, it takes away money from consumers (high prices), tax payers (budget), and foreign producers (via variable levies, reduced sales) and transfers it to agricultural producers. Benefits are distributed by the price system from which large farmers who sell large quantities profit more than small farmers. This outcome is contrary to most accepted objectives of an income distribution policy. Second, CAP redistributes income among participating nations. Generally, net importers of agricultural commodities lose and net exporters gain. West-Germany and the United Kingdom are the two net contributors; Italy was a net contributor until 1978, but has in recent years profited from increasing subsidies for southern products. One may assume that these have not been exclusively motivated by agricultural policy considerations, but were taken to reverse Italy's net contributor position.[11]

This international system of transfers has evolved as a technical consequence of the system of own resources and the CAP. Critics argue that its results are unsatis-

factory. It benefits the economically weak partners only by chance, not systematically. Large positive transfers accrue to well developed countries with intensive agricultural production like Denmark, Netherlands and France. These tendencies seem to have somewhat abated in 1981 (see table I,4). Probably the distribution effects of price decisions have explicitly entered into the annual price review sessions.

A fourth line of criticism focuses on the effect of EC policy on world markets. The system of variable levies assures EC producers a preferrential position in the market: imports can only enter if demand cannot be met by internal production. As long as the world market price is below the EC price, the system of variable levies insulates EC prices and, consequently, EC supply and demand completely from the situation in the world market.

Imported quantities do not change when the world market price goes up, nor do they increase when it goes down. Imported quantities do change, however, in response to the internal supply situation; if domestic producers fail to supply the quantity demanded, the residual is imported, if they overproduce the surplus is either stored or exported with the help of subsidies. The system of variable levies stabilizes EC prices, but increases instability of world market prices.[12]

As a result of high support prices, the EC produces surpluses in commodity markets (most notable dairy products,

Table I,4: Net transfers to EC member countries through the EC budget 1978 - 1981 (in million u.a. or ECU)

Year	Belgium/ Luxemburg	Denmark	West Germany	France	Ireland	Italy	Nether-lands	United Kingdom
				Transfers through the EC budget (total)				
1978	337	381	-597	-371	326	-334	41	-228
1979	610	380	-1430	-78	545	534	288	-849
1980	439	327	-1526	431	650	737	454	-1512
1981	568	285	-1750	597	586	778	191	-1422
				Transfers through EAGGF				
1978	25,8	378,2	-97,9	-153,8	291,7	-64,1	201,7	-578,7
1979	61,6	390,7	-743,5	308,8	402,7	434,9	417,7	-1275,3
1980	-146,8	355,5	-956,4	653,4	483,3	464,9	609,1	-1475,1
1981	-131,3	283,3	-1031,6	952,4	402,2	558,9	370,8	-1249,0

Source: Kommission der EG, Finanzberichte ueber den EAGFL, various issues and own calculations

taken from V. Petersen, "Gemeinsame Agrarpolitik und der Haushalt der EG", Agrarwirtschaft, vol. 32, no. 8, August 1983

soft wheat, and beef). By exporting these surpluses with the help of export subsidies, the EC depresses prices for other exporters, a practice that draws harsh criticism mainly from the U.S. and other (grain) exporters.

Criticism of the CAP has been accompanied by a multitude of reform proposals. They come from economists, consumer organizations, political parties etc. Their diagnoses are rather similar: the root of the problem is the double function the CAP assigns to prices. On the one hand they are expected to balance demand and supply. On the other hand they are expected to provide an "adequate" income to farmers. But the income derived from market clearing prices is - this is a value judgment - too low. And prices that provide an "adequate" income invariably lead to surplus production. The general thrust of reform proposals is to liberalize the markets to a certain extent (i.e. reduce real prices) and to try to cope with the income problems that arise for the small farmers in a way that does not encourage surplus production. Among the means discussed are direct income transfers, a two price system with high prices on a basic quota of certain products, and stronger efforts to provide off-farm jobs. Particularly in 1981/82 a number of plans for a radical reform of CAP were discussed in the media, but none of these schemes ever reached a stage where it was seriously discussed in the decision making bodies.

The reason for this neglect becomes clear when we look

at the nature of the CAP and the decision making process. CAP represents a constantly revised system of compromises between ten nations that live under vastly different economic conditions. Part of the compromises are substantial income transfers among nations, regions, and social groups. Any attempt at a basic revision of the CAP would make those transfers subject to political discussion and conflict. And as eight out of the ten nations involved are net beneficiaries they tend to advocate the status quo.[13] Thus EC reform as far as it takes place at all, follows a path of slight modification of the existing regulations. Forced by the limitations of funds the EC has introduced a number of measures aimed at controlling surplus production and spending within the existing framework of the CAP.

A co-responsibility levy has existed for sugar since 1971 and for milk since 1977. The levy is deducted from the producer price and is used to finance surplus disposal and storage. In effect it works like a decrease in producer prices, but the rate is not high enough to discourage production of either sugar or milk.[14]

"Guarantee thresholds" are a more recent invention, and there is not yet a definite concept associated with the term.[15] They are meant to check the growth rates of support prices for a certain commodity. One potential concept would be the following: a maximum production quantity (the guarantee threshold) is set in advance for the whole Community. If actual production exceeds that limit,

price increases in the following year have to be substantially reduced compared to what they would be otherwise. This concept has several drawbacks; technically, it may not be sufficient to curb price increases in order to dicourage excess production. Politically, the effect of a guarantee threshold depends on the way the rules are set for the price lowering procedure in the Council of Agriculture. They should limit the possibility of compensating producers of the commodity under consideration for the price decline.

Production "quotas" are not, as the word suggests, strict limitations of the quantity the individual producer is allowed to produce or market. In the EC's terminology it denominates a two-price system in which quantities produced in excess of a quota are not given full price support.[16] This system already operates in the sugar market. A plan for its introduction in the dairy market was established in 1984.

Oilseed Trade and CAP

The oilseed market is the only major agricultural market in the EC in which imports are not severely restricted. Nevertheless, this market is affected by the CAP and vice versa. First, domestic production is supported by a deficiency payment system and competes with imported oilseeds. Second, oilseed meals serve as inputs for livestock and dairy production, which are regulated under the CAP. Changes in these regulations affect the use of oilseeds.

Third, oilseed products compete with commodities to which the CAP affords price protection.

These linkages affect policy decisions on the EC level primarily through their budgetary consequences. Competition between duty free imported oilseed products and surplus products (e.g. margarine and butter) makes surplus disposal more expensive. Encouragement of domestic oilseed production in order to achieve a higher level of self-sufficiency or divert resources from surplus commodities shifts support expenditures between crops in the budget and may or may not reduce total expenditures. Last, but not least the oilseed market can be and is perceived as a potential source of revenue for the EC.

References

1 Commission of the European Communities, The agricultural situation in the European Community; 1983 report. Brussels, 1984, p. 17

2 A more detailed description of EC market regulations can be found in Simon Harris, Alan Swinbank, and Guy Wilkinson, The food and farm policies of the European Community. John Wiley and Sons, New York, 1983

3 see p. 13 of this report

4 Timothy E. Josling and Scott R. Pearson, Developments in the Common Agricultural Policy of the European Community. USDA, ERS, Foreign Agricultural Report 172, Washington, 1982, p. 33

5 Stanley Andrews, Agriculture and the Common Market.

Iowa State University Press, Ames, 1973, p. 80

6 Before 1971 the EC budget was financed by direct contributions from the member states. The size of payments reflected the particular country's economic strength and its involvement in the different policy areas. The system of "own resources" by which the EC budget is financed now was established in 1979. Joan Pearce, The Common Agricultural Policy: prospects for change. Chatham House Papers 13, The Royal Institute for International Affairs, Routledge and Kegan Paul, Boston, 1981, p. 63

7 All EC countries levy a 13 percent tax on all final sales (value added tax). The price without the tax is the value added tax base. One percent of the VAT base can be used for the EC budget, i.e. one thirteenth of the total revenue from VAT. Contributions in this system come mainly from countries with large economies and from those with a relatively high proportion of imports to total sales. See Josling and Pearson, op. cit., p. 3

8 Stefan Tangermann, "What is different about European protectionism?" The World Economy, vol. 6, no. 1, March 1983, p. 48

9 These data are EC averages for agriculture, forestry, and fishery. They disguise considerable differences among member countries. The agricultural share of GNP in 1982 was 17.4 percent in Greece and 2.2 percent in West

Germany. Agriculture accounted for 30.7 percent of total employment in Greece and 2.7 percent in the United Kingdom. (Commission, op. cit., p. 187)

10 Tangermann, loc. cit., p. 45

11 V. Petersen, "Gemeinsame Agrarpolitik und der Haushalt der EG", Agrarwirtschaft, vol. 32, no. 8, August 1983, p. 242

12 Pearce, op. cit., pp. 59, 60

13 Tangermann, loc. cit., p. 46; Agra Europe, Nov. 25, 1983, P/3

14 Pearce, op. cit., p. 74; Agra Europe, August 5, 1983, P/3

15 Agra Europe, July 29, 1983, P/3

Other potential approaches for the application of a production threshold are: (a) limiting the aid paid to a global quantum, (b) application of a producer levy to finance surplus disposal, and (c) establishment of a quota system at the national or EC level.

16 Agra Europe, August 5, 1983, P/3

II. THE MARKET FOR SOYBEANS AND OTHER OILSEEDS IN THE EUROPEAN COMMUNITY

Determinants of Demand for Oilseeds

Demand for oilseeds arises from a variety of uses. In figure II,1 various products that are derived from soybeans are shown. The dominant sources of demand for oilseeds (including soybeans) are the demand for vegetable oils and the demand for oilseed meals.

Vegetable oils are used (1) for industrial purposes (production of soap, varnishes etc.) and (2) for food in form of margarine and table oils. As only a small fraction of soybean oil goes into non food uses this discussion concentrates on demand for human nutrition.

Four major factors contributed to the growth of demand for vegetable oils in the past:

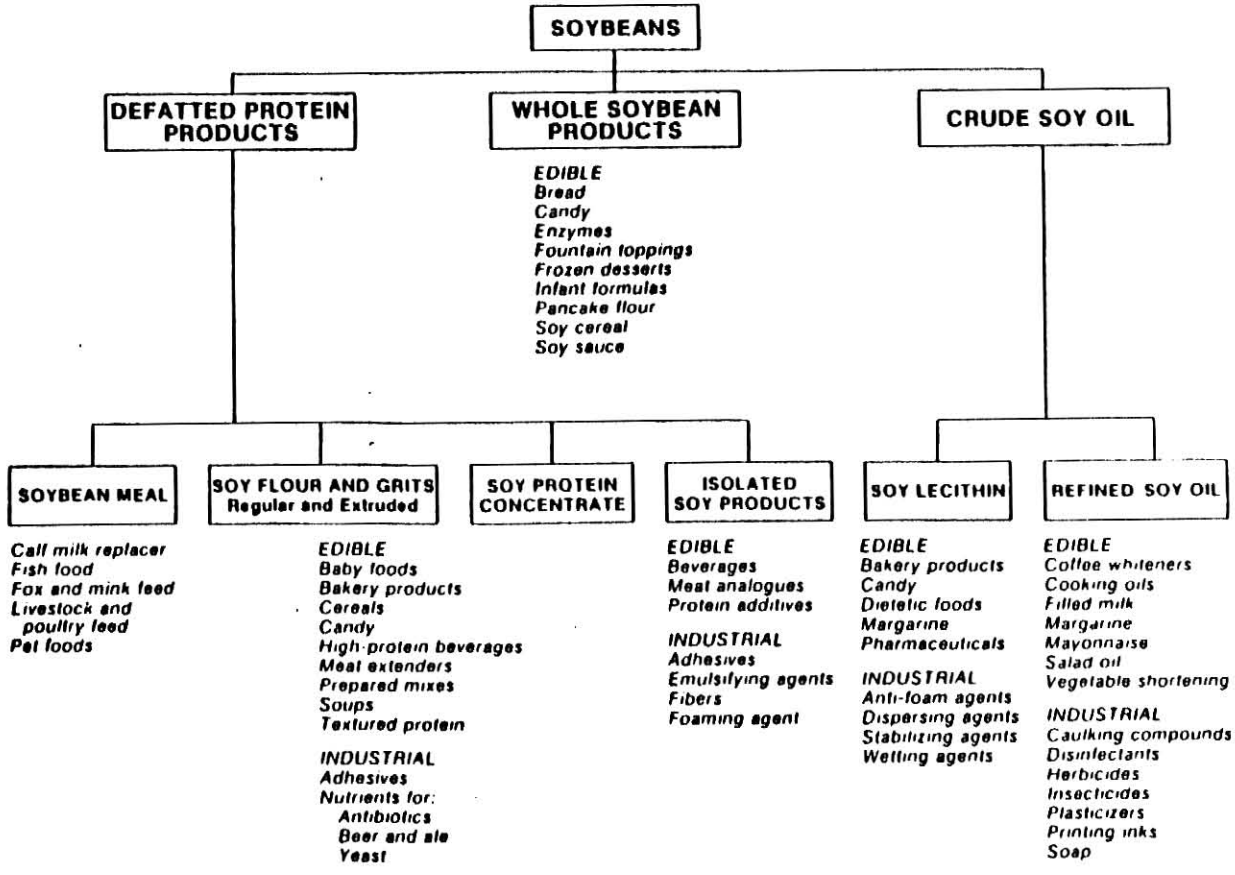
(1) Catering and food manufacturing industries prefer vegetable oils to animal and marine fats because of their technical characteristics; they are easy to handle, do not solidify at room temperature, and are neutral in taste.

(2) Competing animal fats, in particular butter, are relatively expensive, a fact that stimulated demand for margarine, which is manufactured from vegetable oils.

(3) Population growth, low but still positive for the EC as a whole, leads to corresponding growth in overall demand.

(4) The income elasticity for margarine is generally close to zero (see table II,1). It is fairly high, though, for vegetable oils, so that continuing growth of per capita income will increase the share of vegetable oils in overall

Figure II,1: Soybean Products



Source: John R. Dunn et al., Cooperative involvement and opportunities in oilseeds, USDA, ACS Research Report No. 13, Washington (undated)

Basic Cource: Federal Reserve Bank Of Chicago

Table II,1: Income and price elasticities for margarine and vegetable oils by country

	vegetable oils		margarine	
country	income	own price	income	own price
Denmark			-0.2	
France	0.60			
Italy	0.77	-0.51		
United Kingdom	0.58	-0.60	-0.08	-0.54
West Germany	0.69	-0.69	0.0	-0.17

Sources: Graser, S., "Die Butter und Margarine Nachfrage in der Bundesrepublik Deutschland", Agrarwirtschaft No. 27 (1978).

Mönning, B., (1975) Nachfrage nach Nahrungsmitteln in der EG (6) - Analyse und Projektion. Doctoral dissertation submitted 1975 to the Justus Liebig - Universität Giessen.

Household Food Consumption and Expenditure: 1976 H.M.S.O., London, 1976.

Tewes, T., Projection of production and consumption of agricultural products 1977, Internal Information on Agriculture No. 109, Commission of the European Communities, August 1973.

taken from: Supply and demand elasticities for farm products in the member countries of the European Community. IED Staff Report, USDA, ESCS, Washington, January 1980

fat consumption.

(5) A change in consumption patterns, partly due to heightened concern about the links between consumption of animal fats and heart diseases may have benefitted vegetable oils. This change is commonly assumed to have taken place, but is statistically difficult to separate from income effects.

Oilseed meals have a variety of uses, depending on their protein content and other technical characteristics. Some are used as fertilizer (olive oilcake), a small fraction is used for human consumption and in the production of pet foods. The bulk of oilseed meals, however, goes into livestock feeding, either directly or incorporated in compound feeds. The rapid growth of demand for oilseed meals is a result of several factors that are listed below:[2]

(1) Since the 1950s an intensive livestock and poultry industry has developed in the countries of the EC. These large scale enterprises require feeding stuffs that are easy to handle and of uniform quality. Their expansion has increased demand for compound feeds and, correspondingly, oilseed meals.

(2) Closely linked to this development is the rising demand for meat and poultry products, partly as a result of growing per capita income and partly as a consequence of decreasing relative prices for these products (due to the new production technology).

(3) Additional momentum for the expansion of the oilcake

market came/comes from the EC system of farm price supports:
(a) As EC grain prices are above world market prices feed compounders and farmers combine cheaper feedstuffs like tapioca and oilcake in order to substitute for grains in feeding rations.
(b) The high support price for milk stimulates intensive dairy production, which requires the use of high protein feeds.

Regional differences in oilseed meal use are very prominent in the EC. The northern part of the Community, which is close to ports where oilseeds are landed and processed, enjoys a comparative advantage due to lower transportation costs. Intensive livestock and dairy production in large units are characteristic for the Netherlands, Belgium-Luxemburg and Denmark. These countries depend on imports for a large share of the protein feed used (40 percent and more in 1979/80). France, Britain and Ireland are more self-sufficient; they imported less than 15 percent of all raw protein fed to livestock in 1979/80.[3] Germany and Italy are in an intermediate position with respect to dependency on protein imports, both countries imported approximately 30 percent of the raw protein used in feed in 1979/80. The livestock sector in both countries is characterized by structural dualism: northern Germany and northern Italy have an intensive livestock sector which uses imported protein concentrates to a similar extent as the countries of the "high import dependency group".

In southern parts of Germany and Italy livestock is held on a smaller scale, mainly because holdings are smaller and farmers use more farm produced inputs in feeding.[4]

The Position of Soybeans in the Oilseed Market

So far all oilseeds have been treated indiscriminately. They are similar enough to justify this in some respects. But if the markets for soybeans and their products are of particular interest there is a need to characterize their position in the market as distinct from the other oilseeds.

The importance of soybeans in the oilseed market has continuously increased since the 1950s for several reasons: (1) Demand for vegetable oils has grown less rapidly than demand for oilseed meals. This has induced crushers to shift their demand to seeds with a low oil/meal ratio. As shown in table II,2 soybeans have a lower oil/meal ratio than any other oilseed. (2) The amino acid composition of soybean meal meets the physiological requirements of livestock rather closely. This and the fact that it is free of toxic components have greatly encouraged its use in compound feeds.[5] (3) The United States and Brazil as major suppliers of soybeans and soybean meal have been able to meet the rapidly increasing demand at a constant quality.[6]

Demand functions for soybean meal have been estimated by several authors. Houck, Ryan and Subotnik identified changing feeding practices, the price of soybeans, and the price ratio of soybean meal to linseed meal as important variables that influence the EC's demand for U.S. soybean meal.[7]

Table II,2: Potential yields of oilseeds and oilcakes (percentage rates)

Parent material	Crude oil yield		Oilcake yield		Protein content of oilcake	
	Range		Range		Range	
Soyabeans	15	18	79	82	42	50
Rapeseed	35	40	57	62	36	
Sunflowerseed	31	44	37	68	37	43
Linseed	32	35	62	64	32	39
Olives	8	20	-	-	-	-
Hempseed	30	35	-	-	-	-
Groundnuts	28	45	40	60	45	56
Cottonseed	16	23	44	69	36	43
Sesameseed	45	47	52		40	
Copra	62	64	35	38	22	
Palm kernels	45	47	52	53	18	23
Castorseed	35	55	-	-	-	-
Tung nuts	50	60	-	-	-	-

Sources: USDA, 1979.
Godin, and Spensley, 1971.
International Trade Centre, 1972.
Commonwealth Secretariat, 1973.

Source: Kevin Parris and Christopher Ritson, EEC oilseed products sector and the Common Agricultural Policy, Centre for European Agricultural Studies, Occasional Paper No. 4 (Wye College, Ashford, Kent, England 1978)

The price of soybeans entered the model, because the EC has a choice between supplies from domestic crushings and imports of soybean meal. A high soybean price favors the import of meal instead of beans, and vice versa. Regarding the elasticity of demand for soybean meal, Vandenborre comes to the conclusion that "exports of soybean meal in whatever form to Europe are price elastic (..-1.21)."[8] A more recent study by Knipscheer and Hill estimates total EC demand of soybean meal as a function of the ratio between the price of soybean meal and EC cereals price, a profitability index for EC livestock production and an index that reflects the size and composition of livestock production with regard to protein requirements. Knipscheer and Hill's estimate of the elasticity of total EC demand for soybean meal is -0.23,[9] which is considerably lower than Vandenborre's. The difference may be due to structural changes in the market for soybean meal: Vandenborre's study covers mainly the pre-EC and transition period (1955/57 to 1966/67), whereas Knipscheer and Hill studied a period when the EC was fully established (1961 to 1976).

As demonstrated in table II,3 the share of soybean meal in total meal use has declined from 71.3 percent in 1981/82 to 66.7 percent in 1983/84. Over the same period the shares of rape and sunflower seed meal have increased. This is partly due to the expansion of EC rape and sunflower seed production, and partly to higher soybean and soybean meal prices which resulted from a stronger dollar and a poor U.S.

Table II,3: Market shares of selected high protein meals in the EC

	73/74	77/78	81/82	83/84
Soybean	67.3	68.5	71.3	66.7
Rapeseed	4.9	4.4	6.2	8.7
Olive	-	-	-	-
Sunflower	3.0	4.8	4.9	6.6
Palm	-	-	-	-
Fish	5.9	4.2	3.8	3.9
Coconut	4.4	4.8	4.4	4.2
Peanut	4.4	3.7	1.6	1.4
Palm kernel	2.7	2.0	2.3	2.7
Linseed	3.0	4.1	2.4	2.8
Cottonseed	4.4	3.6	2.9	3.0
Total	100	100	100	100

Source: "Country feature: EC oilseeds and products situation", Foreign agriculture circular, USDA, FAS, October, 1983, pp. 21 - 27

soybean crop in 1983/84.

Edible vegetable fats fall into two categories. Substitution relations are stronger within groups than among groups. Soybean oil is usually referred to as a "soft oil". "Soft oils" are liquid at room temperature and contain a high proportion of unsaturated fatty acids.[10] Other important oils in this group are olive, sesame, groundnut, cottonseed, sunflowerseed, maize germ and rapeseed oil.[11] Substitution among these oils is mainly limited by consumer preferences.

The second group of fats, the so called "lauric oils", is characterized by a high content of lauric acid, a short-chain saturated fatty acid. The major oils in this group are coconut, palm and palm kernel oil. They are used to manufacture soaps, margarine, shortening, and confectionary.[12] As soft oils can be converted into more saturated oils (hardened) they can be substituted for lauric oils. The reverse process - conversion of lauric oils into soft oils - is not commonly used, so that substitution of lauric oils for soft oils is more limited than vice versa.

Consumption patterns for fats vary considerably among the EC-countries. In Italy, France and Greece the major part is consumed in form of table oils, whereas in the northern countries margarine predominates. Preferences for particular oils seem to be stronger in the consumption of table oils than in margarine. French consumers are said to prefer groundnut oil as a salad oil[13] and

Germans favor cottonseed oil.[14] Sunflowerseed oil is generally well accepted, whereas rapeseed oil encounters difficulties when sold unmixed. Soybean oil seems to be a non-descript or slightly disfavored oil. Models of soybean oil demand were estimated by Houck, Ryan, and Subotnik and Vandenborre. Houck, Ryan, and Subotnik estimated demand for soybean oil in Western Europe, using 1947/48 to 1966/67 data. Their model includes the price ratio of soybean oil to groundnut oil (as the major competing import oil), the regional supply of alternative fats and oils, and a trend variable. The estimated price elasticity at the mean for commercial soybean oil imports from the U.S. is -2.61.[15] Vandenborre estimated the price elasticity of soybean oil exports to Europe (in form of beans and oil) at -1.21.[16]

Competition between different fats and oils is stiff although some studies seemingly indicate that some oils are complementary (Labys finds negative crossprice elasticities for soybean and groundnut oil).[17] Probably these results are attributable to deficiencies of the model employed.[18] Despite the non-favorable consumer preferences the consumption of soybean oil has grown until 1977/78. Soybean oil's major advantage is its comparatively low price, which follows partly from the situation in the soybean meal market, where a strong demand encourages further growth in crushings, irrespective of the effects on oil prices. As shown in table II,4 the share of soybean oil in total EC oil use declined from 27.4 percent in

Table II,4: Market shares of different oils in the EC market

Commodity	Percent of oil use 73/74	77/78	81/82	83/84
Soybean	27.0	27.4	25.1	21.5
Rapeseed	5.9	3.1	10.6	13.4
Olive	17.5	16.7	13.5	11.9
Sunflower	7.3	7.5	10.0	12.5
Palm	11.8	11.7	9.7	11.0
Fish	8.9	9.8	11.1	9.5
Coconut	5.3	9.4	8.8	7.9
Peanut	8.1	6.1	5.1	5.3
Palm kernel	4.6	3.7	4.2	4.9
Linseed	2.2	3.8	1.2	1.3
Cottonseed	1.6	0.9	0.7	0.7
Total	100	100	100	100

Data may not add due to rounding.

Source: "Country feature: EC oilseeds and products situation", Foreign agriculture circular: oilseeds and products, October 1983, pp. 21-27

1977/78 to 21.5 percent in 1983/84. The decline of share of soybean oil in total usage is largely due to an expansion of the shares of rapeseed and sunflower oil. Both are oilseeds that are produced within the EC and receive price supports.

The Supply of Soybeans and Other Oilseeds

The most important oilseeds grown in the Common Market are olives, rape and sunflowerseed. For practical purposes, olives do not compete with soybeans; their oil is considered a premium oil commanding prices several times as high as those for soybean oil, and their cake is mainly used as fertilizer. Therefore we exclude olives from further consideration. Rape and sunflowerseed, however, yield products that can be substituted for soybean oil and meal, and that enter the market at a competitive price. Usage of rapeseed oil and meal used to be limited because of its erucic acid content, but the development of low and "double low" varieties makes these limitations unnecessary. Meal from these rapeseed varieties is a strong competitor for other oilseed meals, particularly soybean meal.[19] The largest rapeseed producer in the EC is France, followed by West Germany, the United Kingdom and Denmark. Sunflowerseed is produced only in Italy and France.[20] Although the EC production of these oilseeds increased considerably in recent years, rapeseed production expanded by 35 percent and sunflowerseed production more than doubled from 1980 to 1982, the EC remains

largely dependent on imported supplies of oilseeds and oilseed products. The shares of EC oilseeds as percentage of total oilseed crushings for the period from 1977/78 to 1983/84 are presented in table II,5. Soybean production of the EC has increased from 5,000 metric tons in 1973/74 to 27,000 metric tons in 1981/82. The 1983/84 harvest is estimated at 86,000 metric tons. Yet, when compared with the quantities imported, EC soybean production is negligible.[21] Soybeans can be grown in southern France and Italy.[22] Acreage planted was rather constant at 12,000 hectares until 1982/83 and rose suddenly to 36,000 hectares in 1983/84 (due to an eightfold increase in Italy). Yields were rather poor at the outset, but have steadily improved and are now approaching American standards. (Table II,6) Total oilseed imports averaged 15.1 billion metric tons per year over the period from 1978/79 to 1981/82, making the EC the world's largest single market for these products. More than three fourths of this were accounted for by soybean imports. (Table II,7)

Oilseed meals from domestic crushings provide more than 50 percent of total use of high protein meals (including fish meal). Approximately 70 percent out of this are derived from soybean crushings (Table II,8, Appendix table 2). Rapeseed meal accounts for 10 - 13 percent with a rising tendency in recent years. Total domestic production of oilseed meals grew until 1979/80, and since then has oscillated between 12.2 million metric tons and 11.4 million

Table II,5: EC production as a share of total EC crush of selected oilseeds (cotton, flax, rape, soybeans, peanuts, sunflower)

Crop year	Rapeseed	Sunflowerseed	All oilseeds
1977/78	84.3	14.2	10.0
1978/79	75.8	10.8	10.2
1979/80	65.6	14.3	10.6
1980/81	89.8	20.8	17.6
1981/82	94.1	43.9	17.5
1982/83[1]	99.6	52.5	24.2
1983/84[2]	90.4	62.8	26.0

[1] Preliminary

[2] Forecast

Source: Calculated from "Country feature: EC oilseeds and products situation", Foreign agriculture circular: oilseeds and products, USDA, FAS, October 1983, (Appendix table 1)

Table II,6: Soybean production in France and Italy

Crop year	Area harvested (1,000 ha)	Yield (metric tons/ha)	Production (1,000 metric tons)
	France		
1979/80	17	0.941	16
1980/81	8	1.750	14
1981/82	9	2.000	18
1982/83	9	1.778	16
1983/84	12	2.083	25
	Italy		
1981/82	3	3.000	9
1982/83	3	3.000	9
1983/84	24	2.542	61

Source: Foreign agriculture circular: oilseeds and products, USDA, FAS, June 1984, pp. 87, 103

Table II,7: EC oilseed and soybean imports, 1973/74 - 1982/83 (1,000 metric tons)

Year	Oilseed imports[1]	Soybean imports
1973/74	11,243	9,118
1974/75	10,570	8,254
1975/76	12,029	9,267
1976/77	11,711	9,198
1977/78	13,974	11,199
1978/79	15,187	12,169
1979/80	16,085	12,277
1980/81	14,055	10,703
1981/82	15,078	12,257
1982/83[2]	14,199	10,819

[1] Copra, Cottonseed, Flaxseed, Palm Kernel, Peanuts, Rapeseed, Soybeans, Sunflowerseed

[2] Preliminary

Source: "Country feature: EC oilseeds and products situation", Foreign agriculture circular: oilseeds and products, October 1983, p. 25

Table II,8: Supply and use of high protein meals[1] and soybean meal in the EC, 1973/74 - 1982/83 (1,000 metric tons)

	Production		Imports	
Year	High protein meal	Soybean meal	High protein meal	Soybean meal
1973/74	9,039	7,136	8,633	4,840
1974/75	8,346	6,468	8,897	4,832
1975/76	9,221	7,172	10,616	5,649
1976/77	9,169	7,119	10,457	5,682
1977/78	10,940	8,685	12,784	7,875
1978/79	11,845	9,366	14,058	8,462
1979/80	12,135	9,307	14,746	9,421
1980/81	11,221	8,219	15,205	10,563
1981/82	12,210	9,400	16,462	11,460
1982/83[2]	11,440	8,168	16,205	11,370
	Domestic use		Exports	
1973/74	14,362	9,659	3,194	2,265
1974/75	14,711	9,590	2,570	1,739
1975/76	16,990	10,900	2,885	1,909
1976/77	16,820	10,846	2,767	1,963
1977/78	19,685	13,493	3,726	2,790
1978/79	21,744	14,702	4,176	3,114
1979/80	22,326	15,296	4,691	3,570
1980/81	21,217	14,819	5,106	3,906
1981/82	22,996	16,407	5,701	4,454
1982/83[2]	21,870	15,000	5,812	4,570

[1] Copra meal, cottonseed meal, fish meal, linseed meal, palm kernel meal, peanut meal, rapeseed meal, soybean meal, sunflowerseed meal

[2] Preliminary

Source: "Country feature: EC oilseeds and products situation", Foreign agriculture circular: oilseeds and products, October 1983, p. 26

metric tons.

Imports of high protein meals kept growing until 1981/82 when they reached a record height of 16.4 million metric tons. Approximately 70 percent of the imports were accounted for by soybean meal. The EC exported five to six million metric tons of high protein meals per annum over the last five years. 75 - 80 percent of the exports were soybean meal.

The EC produces approximately two thirds of its domestic usage of oils. Soybean oil is the most important, followed by rapeseed and olive oil. Production of soybean oil has declined in 1982/83 and the decline is expected to continue in 1983/84. This is the result of a fall in soybean oil consumption and of the reduced demand for soybean meal. The EC is a net exporter of soybean oil. Its share of total exports declined during the 1970s from 40 percent to about 25 percent in 1980 - 82 (table II,9).

The U.S. Shares in the EC Markets for Soybeans and Soybean Meal

The physical volume share of the U.S. in the soybean market for the 1977-79 period averaged 80.6 percent. This represents a considerable decline compared to the period from 1967-69 when the U.S. provided more than 90 percent of the EC's soybean imports.[23] But as demonstrated in table II,10 this implies by no means a decline in absolute volume. On the contrary, U.S. soybean exports to the EC grew by 152 percent from 1969 to 1979. The

Table II,9: EC exports of soybean oil as a share of world soybean oil trade

Year	EC soybean oil exports (1,000 metric tons)	World trade (1,000 metric tons)	EC share of world trade (%)
1973	436	1093	39.89
1974	672	1584	42.42
1975	695	1395	49.82
1976	690	1913	36.07
1977	671	2155	31.14
1978	839	2649	31.67
1979	918	3048	30.12
1980	876	3300	26.55
1981	855	3576	23.92
1982	930	3588	25.92

Source: Calculated from Oil World: the past 25 years and the prospects for the next 25, ed. by Siegfried Mielke (ISTA Mielke GmbH.) Hamburg 1983

Table II,10: Soybean imports by volume and supplier share, EC

Destination	1967	1973	1979
	1,000 metric tons		
Total[1]	3,672	6,665	11,713
United States	3,275	5,448	9,092
Brazil	223	1,107	368
Argentina	3	0	1,978
Paraguay	2	26	229
Other[2]	169	84	46
	Percent		
Total[1]	100.0	100.0	100.0
United States	89.2	81.7	77.6
Brazil	6.0	16.6	3.1
Argentina	.1	0	16.9
Paraguay	.1	.4	2.0
Other[2]	4.6	1.3	.4

[1] Adjusted for transshipment through EC ports.

[2] Principally Canada, some of which may represent transshipments of U.S. soybeans through Canadian ports.

Source: Harold A. McNitt, The EC market for U.S. agricultural exports: a share analysis, USDA, ERS, Foreign Agricultural Economic Report 179, Washington, 1983, p. 18

decline in market share reflects the growing importance of Brazil and Argentina as exporters of soybeans, and the fact that they have been able to capture most of the expansion of the EC's demand over the period mentioned above. Soybean meal imports into the Common Market almost doubled from 1974 to 1979. Imports from the U.S., however, remained more or less constant, and consequently, the U.S. market share declined from 55.9 percent to 31,0 percent.[24] Here, too, the expanding demand was met by Brazilian and Argentinian exporters.

The European Crushing Industry

The technological process[25]

Oilseeds must be cracked in preparation for the extraction process. This is done by heating until the outer hull breaks. Seeds are then rolled into flakes. Soybean flakes can immediately enter the solvent extraction process. Oilseeds with a higher oil content, such as rapeseed, sunflowerseed, palm kernel, etc. must first be pressed with a hydraulic press to achieve maximum oil yield. Most European crushers are technically equipped to handle a variety of oilseeds and can react quickly to changes in relative prices among different seeds.

In the solvent extraction process oilseed flakes are treated with hexane or benzine. This yields a liquid fraction that consists of oil and solvent and a solid fraction that consists of meal and solvent. The liquid part is distilled afterwards to separate the crude oil from the

solvent, and the solid fraction is toasted to remove the extraction fluid. For soybean meal toasting has the additional effect of improving digestibility and nutritive value. As soon as the meal is dried and cooled it is ready for consumption. Crude oil has to be treated further by removing the lecithin, by bleaching and acid splitting. Soybean oil has to be deodorized, additionally, to make it acceptable for the consumers. Finally, different fractions of the crude oil are separated according to their final use in the production of soaps, glycerine, solid fats or refined oils.

The economic structure of the European crushing industry

Crushing capacity in the European Community has expanded rapidly in the past as is indicated by the growth of soybean imports (table II,7). Facilities are located primarily in the northern part of the Community near ports and waterways (Hamburg, Rotterdam, along the Rhine, and British ports). In 1980 soybean crushings were distributed among the member countries as indicated in table II,11.

Crushers in West Germany are frequently integrated with the margarine and oil processing industries.[26] The same applies for Netherlands, Belgium[27] and the United Kingdom.[28] The margarine industry is fairly concentrated. In West Germany the largest 9 firms accounted for 84 percent of the sales in 1971 and for 73 percent in 1973.[29] According to Parris and Ritson (1977) the largest French producer was Lesieur, accounting for almost half the market for edible oils, while three other firms shared a large part of the remainder.[30] In 1983 the Comptoir National Technique

Table II,11: Distribution of soybean crush among EC member countries, 1980

Country	Percent
West Germany	33.8
Netherlands	26.6
Italy	12.2
United Kingdom	10.2
France	7.5
Belgium	7.1
Denmark	2.8

Source: Harold A. McNitt, The EC market for U.S. agricultural exports: a share analysis. USDA, ERS, Foreign Agricultural Report 179, Washington, 1983

Table II,12: Estimated crushing capacity in the EEC (in metric tons)

France	1,600,000
Belgium	1,900,000
Ireland	-
Italy	1,800,000
Denmark	400,000
United Kingdom	1,100,000
West Germany	4,000,000
Netherlands	2,600,000
Greece	500,000
Total	13,900,000

Source: American Soybean Association

Agricole - then largest oilseed crusher in France - filed for bankruptcy. Part of its capacity will probably be taken up by Lesieur.[31] Recent data on the structure of the crushing industry are not available, but it is unlikely that a reversion of the concentration process has taken place. For the EC market as a whole concentration may even be stronger than it appears in the aggregation over national markets, because of the activity of multinational firms that operate in several national markets and are counted several times. Unfortunately no data were available on the EC level.[32]

Soybeans and the Common Agricultural Policy

The objective of this section is to explain the political aspects of the European soybean and oilseed market. It gives a brief history of EC market policies and regulations towards oilseeds in general and soybeans in particular are presented. Earlier EC - U.S. clashes over oilseed policy are discussed.

The common agricultural policy for oilseeds, its development and implications for the soybean market

The producer price for oilseeds in the EC is supported by a system of deficiency payments. This feature distinguishes the market regulation for oilseeds from almost all other market orders for agricultural products. It implies that the market price for oilseeds in the EC is closely aligned with the world market price. Oilseeds and oilmeal are imported duty free, whereas oils attract an ad valorem

tariff. It also means that the European Community pays its producers the difference between the market price and a 'target price' on the entire quantity of production. The rationale behind this policy is obvious when we look at the degree of self-sufficiency the EC has achieved in these markets; oilseeds are perceived more as a raw material and an input for livestock production than as a product of domestic agriculture.

Tariffs on oilseeds and oilseed meals were bound at the zero level under the GATT in the 1962 "Dillon Round" in order to compensate the United States for losses in other agricultural markets that occurred with the establishment of the common external tariff system for those products. (The negotiations did not lead to a full compensation for U.S. losses, a fact that was agreed upon by both sides.)

The CAP for oilseeds was introduced under these limitations. The first proposal that outlined a common market regime for oilseeds was a memorandum by the EC Commission in 1963: "Broad Lines of a Common Policy on Oils and Fats". It suggested that domestic production of oilseeds should be encouraged through farm income supports and domestic crushing through higher tariffs on imported oils. Farm support, according to this first proposal should at least in part be financed by a tax imposed on edible fats and oils of vegetable and marine origin. Additionally, it contained provisions to abolish internal barriers to trade and to provide certain preferences for a group of LDCs to which

the EC was committed under the Yaounde-Convention.[33]

The market order that was actually adopted in 1966 differed from the original outline in one important respect: the tax on fats and oils had been deleted due to strong pressure from the crushing and oil processing industry, which feared that it might impair the markets for margarine and other vegetable fats. The original oilseed CAP applied to rapeseed, sunflowerseed and olives. It was extended between 1966 - 76 to include four new oilseeds, namely linseed, hempseed, cottonseed and soybeans.[34]

The regulations for soybeans were adopted in 1974[35] and were completely remodelled in 1979. The support system is similar to the one that applies to other oilseeds. A subsidy is paid to the first buyers of EC grown soybeans provided that they pay a minimum price to producers. This minimum price is set in the annual price review sessions of the Council of Agricultural Ministers.[36] According to Parris/ Ritson the inclusion of soybeans under the CAP was "probably the collective result of a French lobby representing farmers who had been growing the crop since the early 1970s, and concern over the European Community's high degree of dependence on imported protein supplies, which was heightened by the brief U.S. soybean embargo to the EEC of June-July, 1973."[37] The regulation failed to induce a significant expansion of soybean acreage. Even the 50,000 ha the Commission had hoped for by 1977/78 would not have been sufficient to diminish the dependence on imported supplies.

The acreage actually planted remained far below this target.

EC policy dilemmas and the oilseed market

The zero tariff on oilseeds and oilseed meals, bound under GATT, imposes serious limitations on the feasible level of protection in other agricultural markets. These limits were not felt in the early stages of the Common Market when the overall level of self-sufficiency was low, but have become increasingly severe as the Community faces surplus production in almost all major commodities. The conflict is most obvious in the case of dairy and oilseed policy: oilseed meal enters the market duty free and provides a cheap protein source for dairy rations. It thus contributes to a more intensive production and larger output.[38] The dairy market order is the most expensive policy within the CAP price support system. In recent years it used up about 30 percent of total guarantee expenditure.[39] While oil meals contribute to production of dairy surpluses, mainly in form of butter, vegetable oils, in form of margarine, compete with butter in the consumer market. The availability of a cheap substitute reduces the consumption of butter, and severely limits the possibility to increase the butter price and shift the burden of dairy support away from the EC budget to the consumer.

As a result of this dilemna the EC Commission exhibits a tendency to view the zero tariff binding on oilseeds and cake as a hole in the system of CAP price supports that

prevents a satisfactory regulation of the dairy market. Several attempts have been made to circumvent the GATT binding by imposing a tax on fats and oils. Proposals to that effect were made in 1968 as a part of the Mansholt-Plan and in 1976 by Commissioner Lardinois, both explicitly with the intention to achieve better control over the dairy surpluses. In 1976 the tax scheme was rejected due to protests from oilseed crushers and feed compounders who contended that it would not only increase the prices for vegetable oils and fats, but would harm the livestock industries by raising their feed costs. The tax would mainly be levied at the crushing stage, and crushers would not be able to pass on the complete incidence of the tax to the highly concentrated margarine and oil manufacturers, but would - so the argument went - raise their meal prices to avert a decline in crushing margins. (This is apparently only possible insofar as meal from domestic crushing is offered at prices that are lower than those for imported meal.) The British, Danish, Dutch and German governments criticized the scheme for its impact on food prices, and argued that it would further strain the already rather sensitive EC - U.S. trade relations. Finally, strong protest came from the U.S. where the tax was perceived as a breach of the GATT agreement on oilseeds and a threat to the soybean trade with the Community.[40]

In 1983 the Commission proposed the fats and oils tax scheme anew, this time as a revenue raising device that

would help ease the Community's financial plight. Besides the direct revenue from the tax (600 million ECU) the Commission hoped for savings on olive oil and butter consumption aid. An increase in butter consumption, however, was not expected. The Commission claimed the tax would be non-discriminatory and compatible with the EC's obligations under GATT, because it would be levied on imported and domestically produced fats and oils alike. But 60 percent of the products concerned are imports, and those 40 percent that are domestically produced are sheltered from the effects of the tax by EC producer price supports.[41] Opposition to this proposal came essentially from the same groups as in 1976. Crushers contended it would depress their margins, consumer groups protested the price increase for fats and oils. The governments of Britain, West Germany, the Netherlands and Denmark rejected the scheme for three principal reasons: (1) the potential distortion of the fats market, (2) the damage the tax would cause to the crushing industry in those countries, and (3) because they viewed the tax as an infringement of an outside agency on national food policy. Additionally, legal problems arose from the revenue raising aspect of the fats and oils tax. It would be a tax levied by the EC in its member countries, a concept that violates the idea of national tax sovereignty.[42] The U.S. protested as before and threatened to retaliate by restricting its imports from the EC, should the tax be implemented. Concern on the U.S. side arises mainly from principle considerations.

U.S. groups fear that the establishment of the tax at a relatively low level would be followed by increases that would seriously damage the U.S. export market for soybeans. They argue that the EC's ultimate goal in the agricultural sector is self-sufficiency, and that the tax scheme is "the first step in a long march" towards that goal,[43] meaning that, if the EC would get away with it, other steps towards complete protectionism in the agricultural sector were soon to follow. This fear is not entirely unwarranted; deliberation by EC officials about designing an 'active' export policy or the necessity for the EC to become "an agricultural power"[44] indicate that some groups inside the Community would indeed support such a development.

It has been noted that high European grain support prices have induced feed compounders to substitute a combination of soybean meal and so called "grain substitutes" for feed grains. At the same time the EC is stockpiling surplus grains or subsidizing their export. The Commission has tried to limit the imports of "grain substitutes" by negotiating "voluntary" export restraints with the producing countries. It has succeeded to some extent and reached agreements with Thailand, India, and Brazil on Tapioca exports. A large fraction of these substitute products, though, is imported from the United States (gluten feed, citrus pulp). The U.S. is unwilling to make trade concessions on these agricultural products. Reduced availability of

these commodities would force feed compounders to include more grains in their rations, and at the same time reduce the quantity of soybean meal used. (Grains have a higher protein content than most of their "substitutes".) Until now the agreements with Thailand and Brazil have not had any discernible impact on the amount of grain substitutes used. Apparently, any reduction in supply from those two countries has been compensated by increased imports from other producers.

In the early 1970s the EC accumulated large stocks of Skim Milk Powder (SMP) . To dispose of these surpluses feed incorporation schemes and export subsidies were employed. The 'normal' way of encouraging feed incorporation of SMP was to sell it at a subsidized price to feed compounders. This practice, however, is rather expensive in terms of budget expenditure and did not increase usage of SMP sufficiently to relieve the EC of a sizable amount of stocks. In 1976 a different program was implemented. It tried to force feed compounders into using a certain amount of SMP in all animal feeds. The Commission originally planned to continue the program until 600,000 metric tons had been disposed of. The core of the scheme was a deposit of 30 - 35 u.a. (units of account) that had to be paid by the feed compounder on any oilcake purchased (adjusted for protein content). This deposit could be reclaimed after 50 - 60 kg of (subsidized) SMP had been purchased from the EC intervention stocks.[45]

The effects of this scheme were comparable to a tariff on oilcake: the deposit was lost for the feed compounder who chose not to purchase the required amount of SMP. Thus it raised the price for oilcake as an input. For those who bought SMP to regain the deposit the blended price for the protein component was higher than it would have been otherwise. From the perspective of the EC Commission the advantage of this special incorporation scheme was that its budget costs were estimated to be 180 mio. u.a. lower than those of a pure subsidy scheme.[46] Feed compounders were opposed to the scheme because they felt that it was too complicated, raised their costs and affected the efficiency of rations. The U.S. protested that it constituted an infringement on the zero tariff binding under the GATT, and with support from other feed exporters initiated an investigation of the scheme under the GATT. The EC Commission made some concessions to pacify the United States; it reduced the target for SMP sales from 600,000 Mt to 400,000 Mt, and finally, terminated the program before this target had been reached. Additionally, the EC paid a storage aid on 250,000 Mt of protein (soybean meal equivalent), a measure that prevented a sudden disruption of soybean meal imports.[47]

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acids. Differences among fats result from differences in the fatty acids. These consist of a chain of hydrogenated carbon atoms with a COOH group at one end. They differ in chain length (number of carbon atoms) and saturation with hydrogen atoms. Unsaturated fatty acids can potentially bind additional hydrogen. Fats with a high proportion of saturated fatty acids are solid at room temperature, whereas fats with a high percentage of unsaturated acids are liquid. (Vandenborre, op.cit., p. 1)

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36 Harris, Swinbank and Wilkinson, op.cit., p. 140

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38 op.cit., p. 46

39 Commission, op.cit., p. 263

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41 Agra Europe, September 23, 1983, P/2

42 Agra Europe, October 7, 1983, P/3

43 Information from the American Soybean Association

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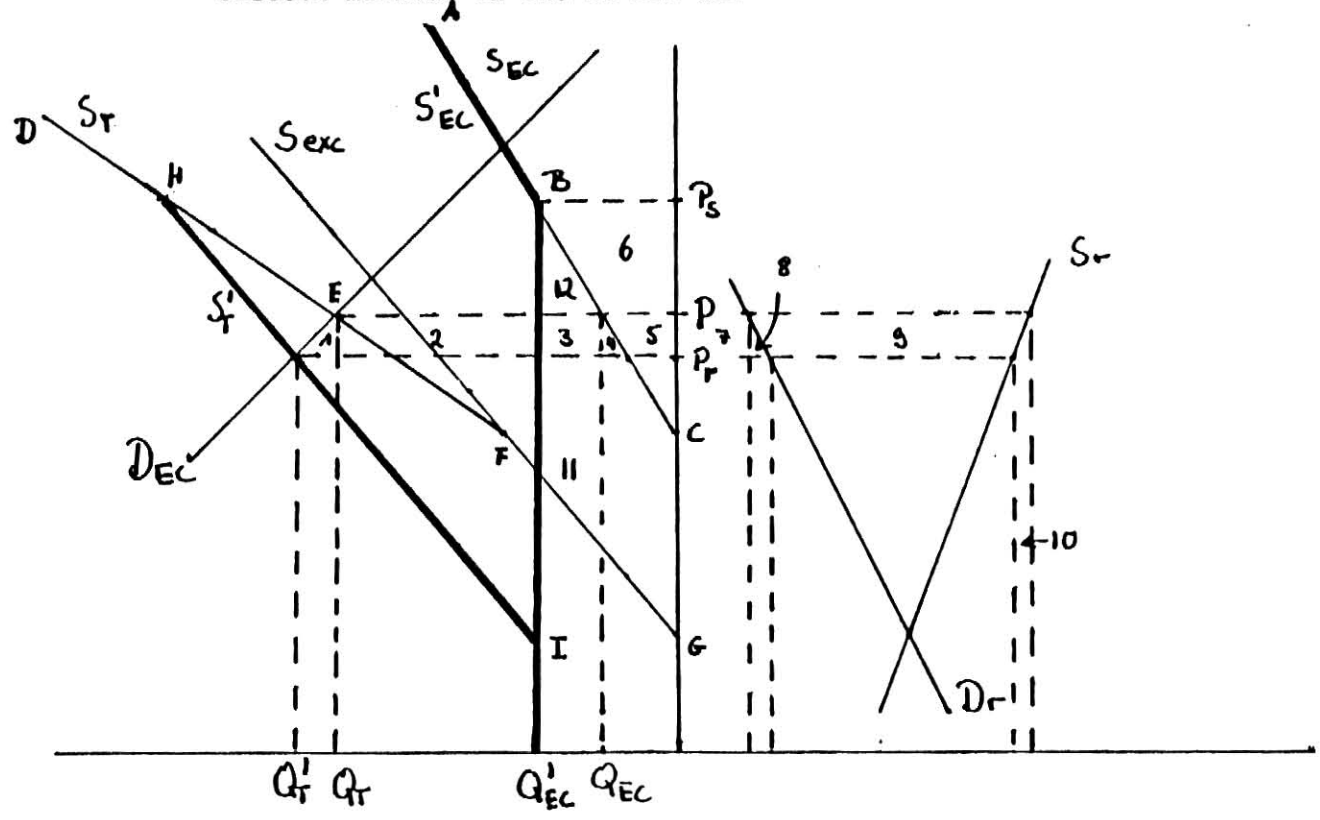
III. ANALYSIS OF FUTURE POLICY OPTIONS

Current Policy: Deficiency Payment

A principal feature of the price support system for the EC production of oilseeds is its deficiency payment program. Under a deficiency payment program (world) market prices balance demand and supply for all oilseeds. Domestic producers receive a compensation that makes up the difference between the market price and a target price. Deficiency payments have the advantage over other systems of price support in that they interfere only with domestic production, and not with demand. They reduce, however, the volume of imports. Politically they are sometimes hard to maintain because all the costs of price support are visible in the budget.

Figure III,1 illustrates the effects of such a policy on the EC and world oilseed market. For simplicity of analysis, demand and supply functions for all oilseeds are aggregated, and all markets except the EC, appear summarily as the rest-of-the-world (ROW). Transportation costs are ignored. S_r and D_r are the supply and demand schedule for ROW, respectively. S_{exc} is the excess supply schedule of ROW to the EC, S_{EC} is the domestic supply of oilseeds. Adding S_{exc} to S_{EC} gives us S_T, the total supply of oilseeds in the EC market. Without deficiency payment the price P

Figure III,1: Impact of a deficiency payment on EC oilseed production in the oilseed markets in the EC and ROW



EC (Importer) ROW (Exporter)

Adapted from Timothy E. Josling, "Domestic agricultural price policies and their interaction through trade", Alex F. McCalla and Timothy E. Josling (eds.) Imperfect markets in agricultural trade. Allanheld, Osmun and Co., Montclair, New Jersey, 1981

(world market and EC price) is determined by the intersection of S_T with the EC demand for oilseeds, D_{EC}. This results in Q_T consumption in the EC.

A deficiency payment program that sets the support price for domestic production at P_s changes the domestic supply schedule to S'_{EC} (i.e. ABQ'_{EC}). In the price range below P_s, EC producers become completely unresponsive to the situation in the world market because any difference between the prices is made up for by the deficiency payment. Their new supply schedule is totally inelastic in that price range (i.e. BQ'_{EC}). Aggregate supply now becomes S'_T (i.e. $DHIQ'_{EC}$). The total quantity consumed in the EC increases under the deficiency payment from Q_T to Q'_T, but as domestic supply expands from Q_{EC} to Q'_{EC} the imported quantity is reduced. Consequently, the world market price falls from P to P_r.

The cost of the deficiency payment is borne by taxpayers, and there is a loss of revenue to foreign producers. In figure III,1 areas 3+4+5+6 correspond to the budget cost, and losses to foreign producers are equivalent to 7+8+9+10. Foreign consumers benefit from reduced prices and larger availability of oilseeds, their expenditure is reduced by area 7+8. EC consumers save expenditure equivalent to 1+2+3+4+5. Revenue to EC producers increases by area 3+6+11+12.

To identify the impact of the deficiency payment in the soybean market, one must differentiate between various

oilseeds and conjecture about their substitutability by the oilseeds that are produced in the EC. Olives, rape and sunflowerseed make up the bulk of EC oilseed production. As olive oil prices are several times as high as the prices of other oils it seems unlikely that olives will displace any imported oilseeds (except other olives). Sunflowerseed and rapeseed, however, are available at competitive prices. Both are medium oil rich. Sunflower oil is well accepted by consumers and would easily substitute for other oils. Rapeseed oil poses more of a problem as it is not very well accepted by consumers. Higher quantities of rapeseed oil would most likely have to be exported. Stronger competition in the oil market from EC oilseed production would hurt other oil rich seeds (like peanuts) more than soybeans which are crushed largely for meal. Rape and sunflowerseed meal find their way into the production of compound feed where they replace other oilseed meals, above all soybean meal.

Budget considerations, however, forbid further encouragement of EC oilseed production. The cost of price support in the oilseed market already takes up 5 to 6 percent of the EAGGF, Guarantee expenditure, although oilseeds only account for 0.5 - 1.0 percent of the value of total agricultural production. The EC commission already imposed a "guarantee threshold" on rapeseed production, so it can be expected that growth rates of domestic production will be curbed in the near future.[2]

Future Policy Options

Policy in the EC is shaped by the conflicting efforts of special interest groups and national governments within a framework of legal, budgetary and foreign policy constraints. As described in chapter II, internal developments and budgetary consideration strongly favor a protectionist solution in the oilseed markets in form of restrictions on vegetable oil imports, protein imports or both. These measures could reduce the cost of dairy and grain market policies in the short run and facilitate a solution of the problems in the olive oil market which are expected as a result of the accession of Spain and Portugal. However, the imposition of direct import restrictions like tariffs or quotas on oilseeds and oilseed meals requires renegotiation of the tariff binding agreements under GATT. Nations of the GATT whose export markets would suffer from these restrictions could demand compensations. Those compensations could be made in other markets and would not necessarily benefit oilseed producers. The Commission has already reached agreements with some principal suppliers of so-called "grain substitutes" on voluntary export restraints and is trying to get negotiations on U.S. gluten feed exports under way - unsuccessfully so far. The requirement of compensations makes it unlikely that the EC would impose restrictions on soybean and soybean meal imports because it does not have any adequate compensations to offer.[3] As the Commission does not view measures like the fats and oils tax as requiring GATT

clearance the implementation of such a scheme cannot be ruled out.

Interest groups that are concerned with the oilseed policy include the crushing industry, feed compounders, grain and feed traders, consumer groups and farm organizations. Representatives of the crushing industry opposed the fats and oils tax scheme. Its representatives do not advocate protectionist measures. The industry profits from the tariff arrangements in the vegetable oil sector which are explicitly set up to protect it, but is likely to suffer from any scheme the EC might implement to deal with surplus problems in the dairy or grain market. Feed compounders can be expected to object to any measure that raises the price of finished rations and does not provide the possibility for livestock producers to pass the increase on to consumers. Consumers are opposed to any policy change that tries to shift the burden of farm support away from the EC budget onto their backs and, consequently, object to any trade barriers in the oilseed market. Farmer's interests in oilseed policy are not homogenous. Oilseed producers favor the imposition of a threshold price and variable levy in the oilseed market.[4] Grain producers interested in maintaining the level of protection for their products would probably support this position. Livestock producers and dairy farmers, on the other hand, would accept an increase of input prices (feed) only if support prices for their products were increased accordingly, so that higher costs

be passed on to consumers and taxpayers. The different farm interests can be reconciled, but only at the expense of the consumer.[5]

The position of the national governments on these issues reflect the weight the different groups carry on the national level, modified by general concerns like foreign policy and budgetary consequences. The oilseed industry is mainly located in the northern part of the Community, as is the highly intensive livestock production which is based on imported feed stuffs. Backing these interests the governments of Britain, Denmark, the Netherlands, and West Germany opposed the fats and oils tax scheme. They accepted, however, protectionist measures in the markets for "grain substitutes", which points to the fact that their opposition to trade restrictions is contingent on the particulars of a certain scheme. Great Britain and West Germany as net contributors to the Community's budget might eventually be swayed by a design that offers substantial savings and/or revenues for the Community. All four governments, however, appear very reluctant at this point in time to subject U.S. - EC trade relations to the additional strain protectionist measures on part of the EC would create. France as a major producer of grains and oilseeds in the EC supported the fats and oils tax plan, and can be expected to be at least open to suggestions of import restraints in the oilseed markets. For Greece and Italy the decisive issue within the complex of an oilseed policy is its

impact on the olive oil market. The accession of Spain and Portugal will bring further increases of production in this market already plagued by overproduction. Growing costs of surplus disposal could in the long run compell the EC to revise the olive market order and thereby jeopardize the benefits these countries receive through the CAP. Italy and Greece would have supported the fats and oils tax, if olive oil had been exempt. The remaining countries (Ireland, Belgium, Luxemburg) do not take such a strong interest in oilseed policy as those mentioned above. However, they would have supported a fats and oils tax scheme.[6]

This overview of political interests in the oilseed market indicates clearly that the issue of raising trade barriers against oilseed imports into the EC is by no means resolved. The internal pressures toward protectionism persist. Limitations, above all the tariff binding agreement under GATT, make the imposition of import restrictions seem highly unlikely for the near future. The measure that faces the least political resistance is still the fats and oils tax. Policy changes in other markets, like a lowering of grain prices or a restriction of milk production, may well have a profound impact on EC oilseed meal consumption and U.S. soybean trade[7], but cannot be dealt with here.

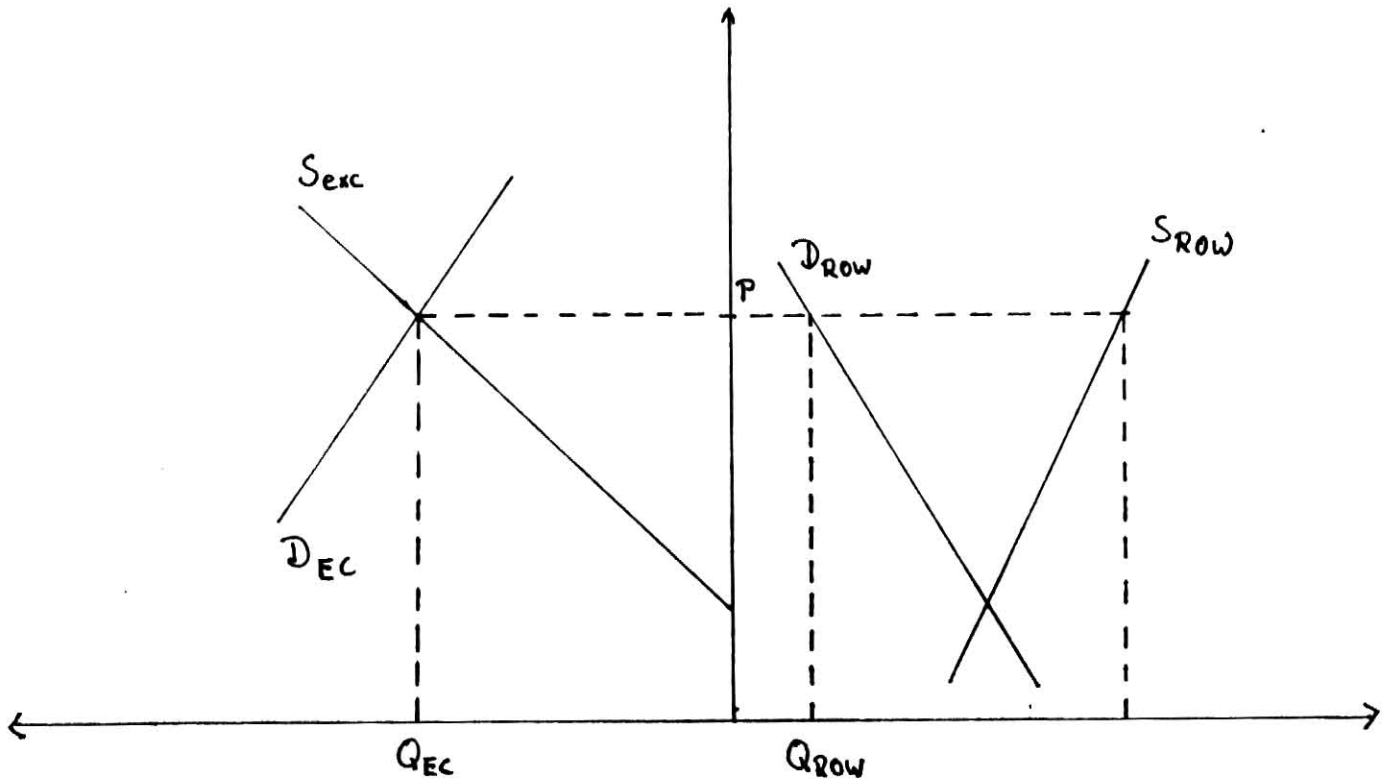
A Model for Appraising Future Policy Options

The description of the EC markets for soybeans, soybean oil and meal in chapter II provides the background for the graphical analysis of different policy options. The model

does not take into account the deficiency payment policy described above. This can be done without compromising the validity of the analysis because soybean production even with price support is still less than one percent of total EC usage. Different from the analysis of deficiency payments, the following analyses are limited to the markets for soybeans and soybean products. It must be noted that this procedure limits the validity of the results, because soybean meal as well as soybean oil have a number of close substitutes whose markets interact with those for the soybean products.

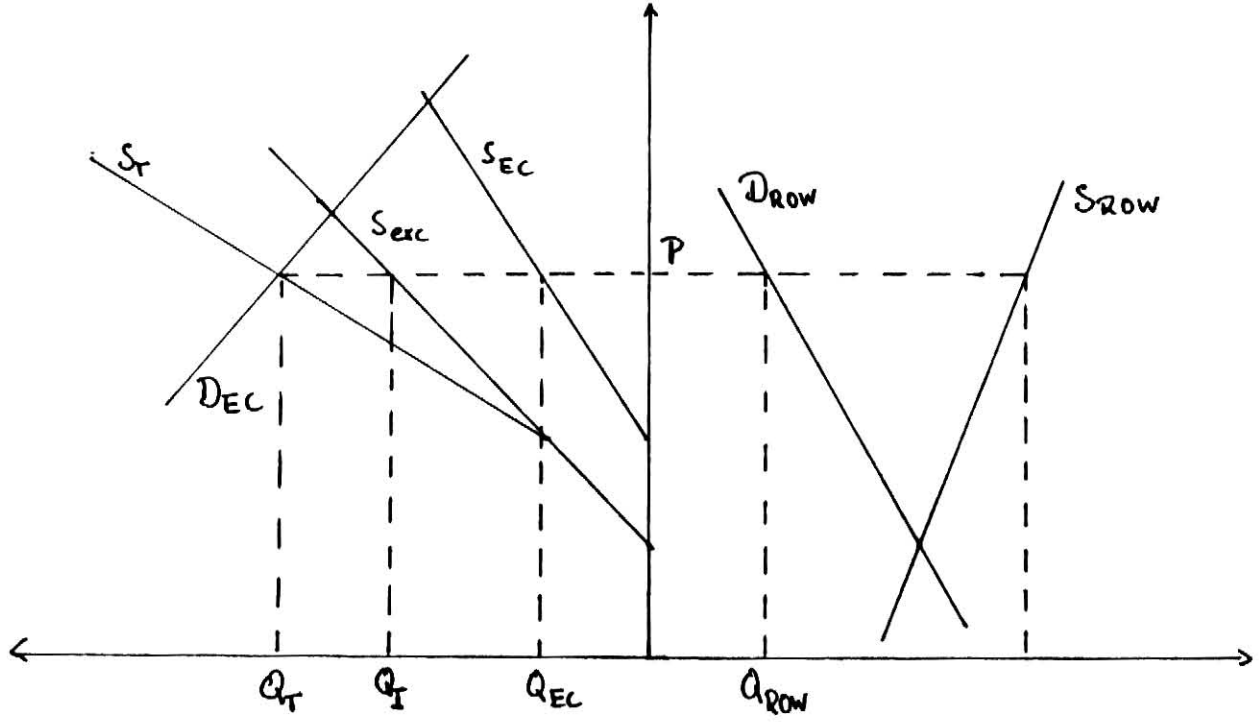
The graphical analysis is carried out in a two region model, the regions being the EC and the rest of the world (ROW). Transportation costs are ignored. The basic model of the soybean market consists of an excess supply schedule of the rest of the world to the EC and the EC crushing demand schedule (Figure III,2). In the market for soybean meal the total supply to the EC is the sum of supply from domestic crushings and excess meal supply from ROW (Figure III,3). In the market for soybean oil the EC is a net exporter, so the price is determined by the excess supply schedule of the EC to the rest of the world and the excess oil demand of ROW (Figure III,4)[8]. In all three markets the EC accounts for a large share of volume traded. Consequently, prices in all three markets can be affected by EC buying or selling behavior. The three markets are linked to each other through the technical relation between beans, meal and oil[9] and through the crushing margin, i.e. the difference between the

Figure III,2: Basic Model for the soybean markets in the EC and ROW



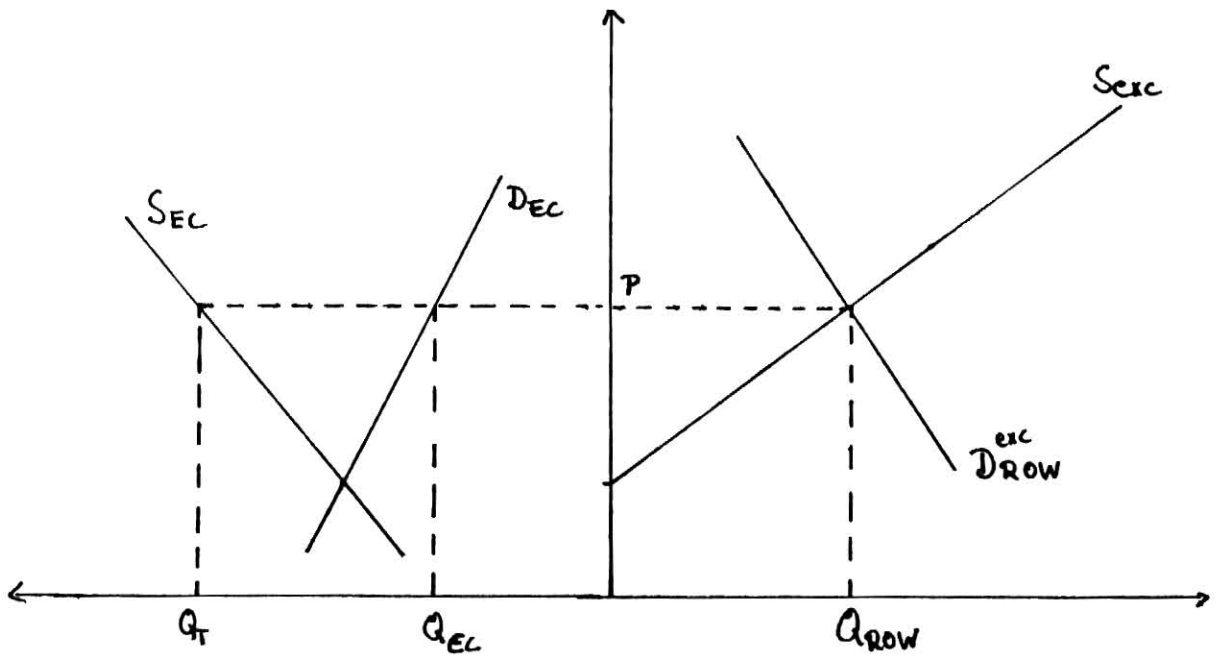
Adapted from Philip L. Paarlberg, The demand for soybeans and soybean products in West Germany, MS Thesis (unpublished), Purdue University, August 1977

Figure III,3: Basic model for the soybean meal markets in the EC and ROW



Adapted from Philip L. Paarlberg, The demand for soybeans and soybean products in West Germany, MS Thesis (unpublished), Purdue University, August 1977

Figure III,4: Basic model for the soybean oil markets in the EC and ROW



Adapted from Philip L. Paarlberg, The demand for soybeans and soybean products in West Germany, MS Thesis (unpublished), Purdue University, August 1977

value of the products (meal and oil) and the raw material (beans). If the price for one or both of the products rises, the crushing margin increases. The higher margin acts as an incentive for crushers to expand their demand for soybeans.[10] If the prices for one or both products fall the process is reversed. Due to the joint product character of soybean meal and oil a decline in meal price may cause an increase in oil price. A fall of the meal price diminishes the crushing margin. In response crushers reduce the amount of soybeans processed, thereby reducing meal and oil supplies. Consequently, the oil price rises. This example outlines the basic procedure employed in the following analyses. Starting with the changes in the market affected by a particular policy change, the impact on the soybean market is evaluated, then the effects on the remaining product market are assessed. This is as far as graphical analysis can go. In reality however, this first round of changes is followed by further adjustments, which finally lead to equilibrium among the interrelated markets. Ignoring these second round adjustments, as graphical analysis does, would be justified, if it could be assumed that they do not reverse the direction of the initial changes. Unfortunately, there are indications that this may not always be the case. Paarlberg's simulation of a tariff on soybean meal imports to West Germany provides an example of "perverse" reaction: a 20 percent tariff on soybean meal imports did not result in a higher domestic price as graphical analysis would indicate, but in a decrease of the German soybean meal price.[11]

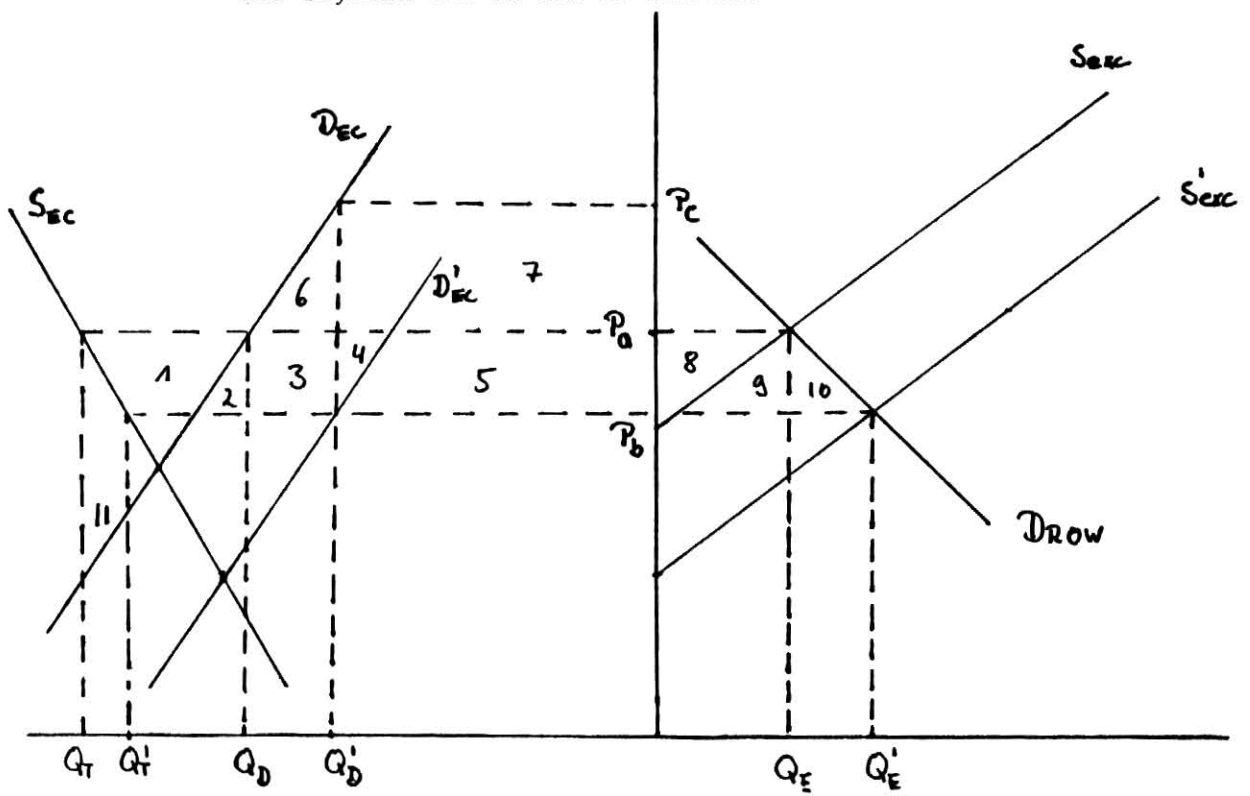
Anomalies of this kind, however, do only affect the analysis of measures that are aimed at imports of a commodity and do not affect domestic production, e.g. a tariff on soybean meal or soybean oil. Measures that try to limit total domestic consumption of a product, like the fats and oils tax, are not subject to the problems outlined above.

A Tax on All Fats and Oils Except Butter

A tax on all fats and oils except butter is the most favoured measure to curtail oilseed imports into the EC. It does not from a legalistic point of view require renegotiations and compensations under the GATT. It does not imply additional expenditure from the EC budget. On the contrary, it may even create revenue for the EC, but will reduce the consumption of imported vegetable oils and eventually of vegetable protein.[12] A fats and oils tax can affect the soybean market in two ways: (1) It will most certainly reduce the consumption of all taxed fats and oils, including soybean oils, and it may (2) alter the composition of fat consumption and thus affect the market share of soybean oil. Since the direction of the second effect is not a priori determined, the total impact on the soybean oil market is indeterminate.

If one assumes, however, that the tax does not alter market shares among different oils, changes in total oil consumption translate into proportional changes of soybean oil usage and can be analyzed in a partial equilibrium model (Figure III,5). The EC is a net exporter of soybean oil; its share of the world market was 25 percent in 1982.[13]

Figure III,5: Impact of an EC tax on domesticly consumed fats and oils on the markets for soybean oil in the EC and ROW

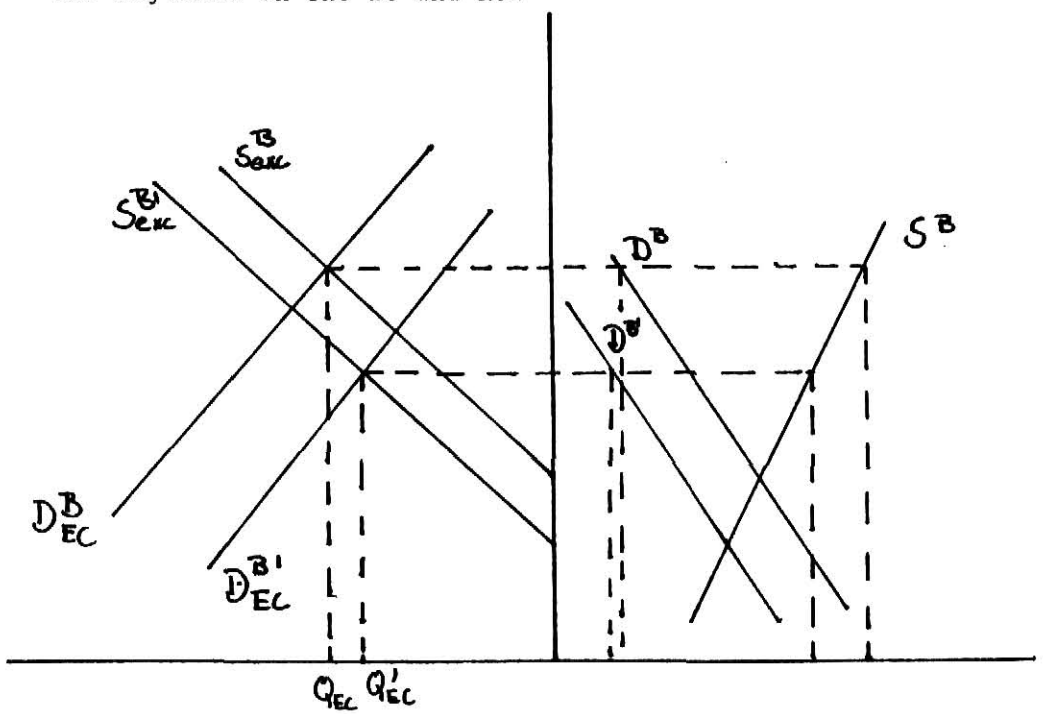


This implies that EC sales are able to influence the world market price.

Figure III,5 shows the effects of an EC fats and oils tax on the soybean oil market in the EC and ROW. Without the tax, demand and supply in the EC market are D_{EC} and S_{EC} respectively. S_{exc} is the excess supply schedule for EC soybean oil to the world market. Its intersection with the excess demand of the rest-of-the-world (D_{ROW}) determines the world market price for soybean oil (P_a). An EC tax on domestic consumption of fats and oils shifts the demand schedule for soybean oil from D_{EC} to D'_{EC}. Consequently, domestic consumption is reduced to Q'_D and total production of soybean oil in the EC falls from Q_T to Q'_T. The quantity exported goes up to Q'_E which leads to a decrease in world market prices from P_a to P_b. The price EC consumers have to pay goes up to P_c due to the tax incidence. The tax is equal to the difference between P_c and P_a. The EC revenue from the fats and oils tax (in the soybean oil market) corresponds to areas 4+5+7 in figure III,5. The losses of revenue to EC crushers due to lower price and quantity are equivalent to area 1+2+3+4+5+11. Foreign consumers gain consumption expenditure area 8+9+10, and domestic consumers lose area 6+7.

The consequences of these changes for the soybean market are shown in figure III,6. The depressed oil price affects crushing margins negatively, which in turn leads to a reduction in crushing demand in the EC (from D^B_{EC} to D^{B1}_{EC}) and worldwide (from D^B to D^{B1}) and reduces the price for soybeans

Figure III,6· Impact of an EC tax on domesticly consumed fats and oils in the markets for soybeans in the EC and ROW



from P_a to P_b. The losses that occur to crushers are ultimately passed on to soybean farmers. Smaller crushings entail a reduced availability of soybean meal and, ceteris paribus, a rise in meal prices.

In 1983 the fats and oils tax was proposed as a flat rate tax of 70-75 ECU per metric ton on all domestically consumed edible fats and oils except butter. At current exchange rates[14] this translates into 63 dollars per metric ton or about 8 percent of current soybean oil price in Rotterdam. With 1981/82 prices and exchange rates, however, the tax would be 73.5 dollars per metric ton or 16 percent of the Rotterdam soybean oil price.[15] Quantitative assessments of its potential impact specify the short term effects as follows: The revenue for the EC budget would be approximately 600 million ECU. Consumer prices for margarine and table oils would increase by 3-8 percent, depending on the type and quality of the product.[16] EC consumption of vegetable oils would drop by about 100,000 metric tons. Of this 77,000 metric tons are supposed to come from soybean oil. Soybean oil would suffer more from the tax than most other oils, because it is a relatively inexpensive oil and a flat rate tax would mean a higher proportionate price increase. The EC price for soybean oil (in Rotterdam) would decline by about nine dollars per metric ton (five cents per pound). Soybean prices would decline by about 1.70 dollars per metric ton, i.e. 5 cents per bushel. The effect on the world market price for soybean oil is estimated at minus 3-6 percent (one or two cents per pound).[17] If this translates into a soybean

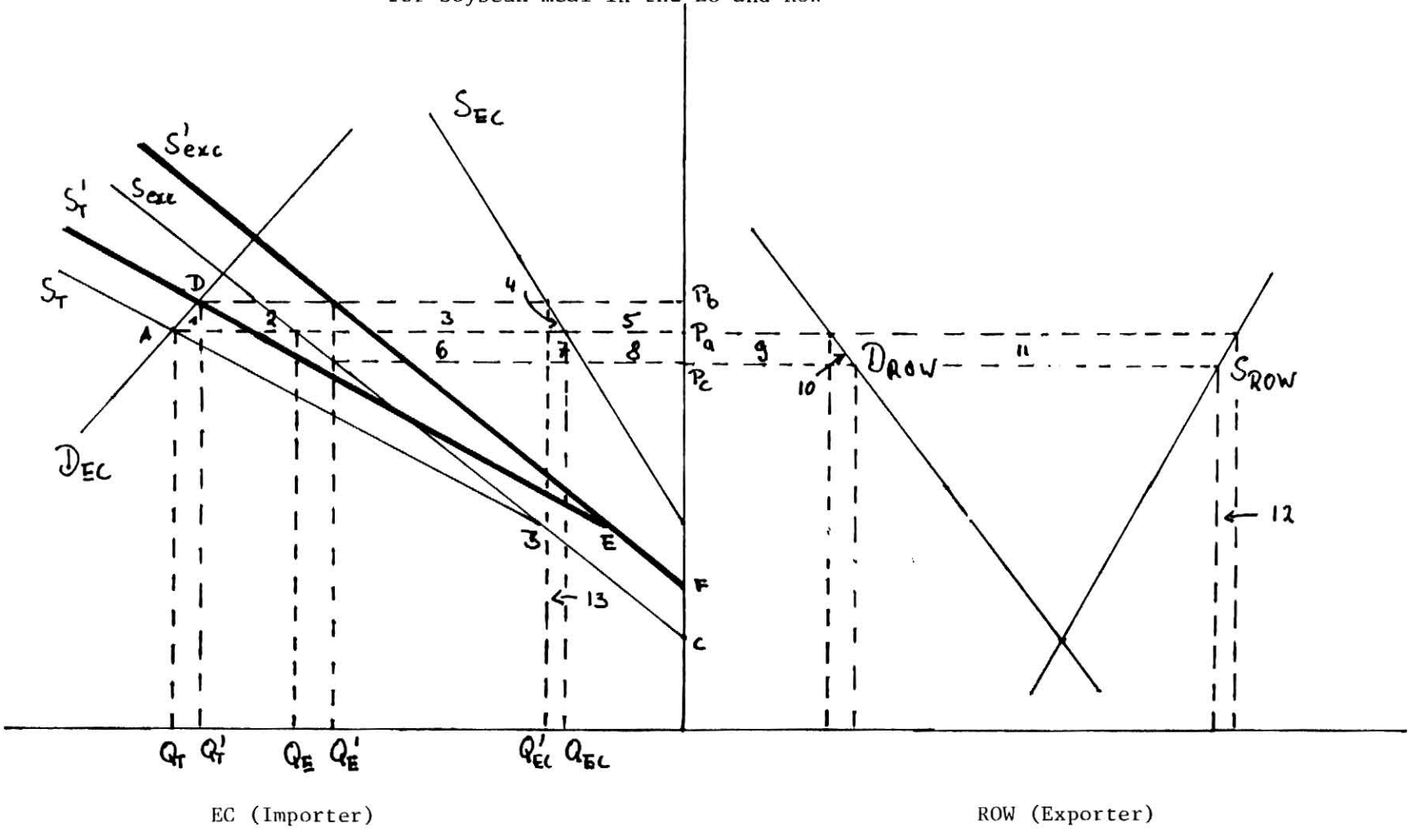
price effect in the same proportion as the EC price effect, the world market price of soybeans would decline by about 20 cents per bushel. U.S. soybean exports would be reduced by approximately 100,000 metric tons, i.e. about 0.1 percent of current volume.

A Tariff on Soybean Meal Imports into the EC

The effects of a tariff on soybean meal are evaluated in two steps. Figure III,7 analyzes the impact on the soybean meal market. Under a free trade regime the world market price P_a is determined by the intersection of the EC demand schedule (D_{EC}) with total supply S_T (i.e. ABC) which is the sum of supply from domestic crushings (S_{EC}) and excess supply from the world market (S_{exc}). The tariff raises the price for imported meal. It shifts the excess supply schedule from S_{exc} to S'_{exc}, and the total supply schedule from S_T to S'_T (i.e. DEF). The EC price for soybean meal rises from P_a to P_b and the EC consumption declines from Q_T to Q'_T. Domestic crushers expand their crushings in response to higher prices (from Q_{EC} to Q'_{EC}). Meal imports from ROW fall from $Q_T - Q_{EC}$ to $Q'_T - Q'_{EC}$ and the world market price falls to P_c.

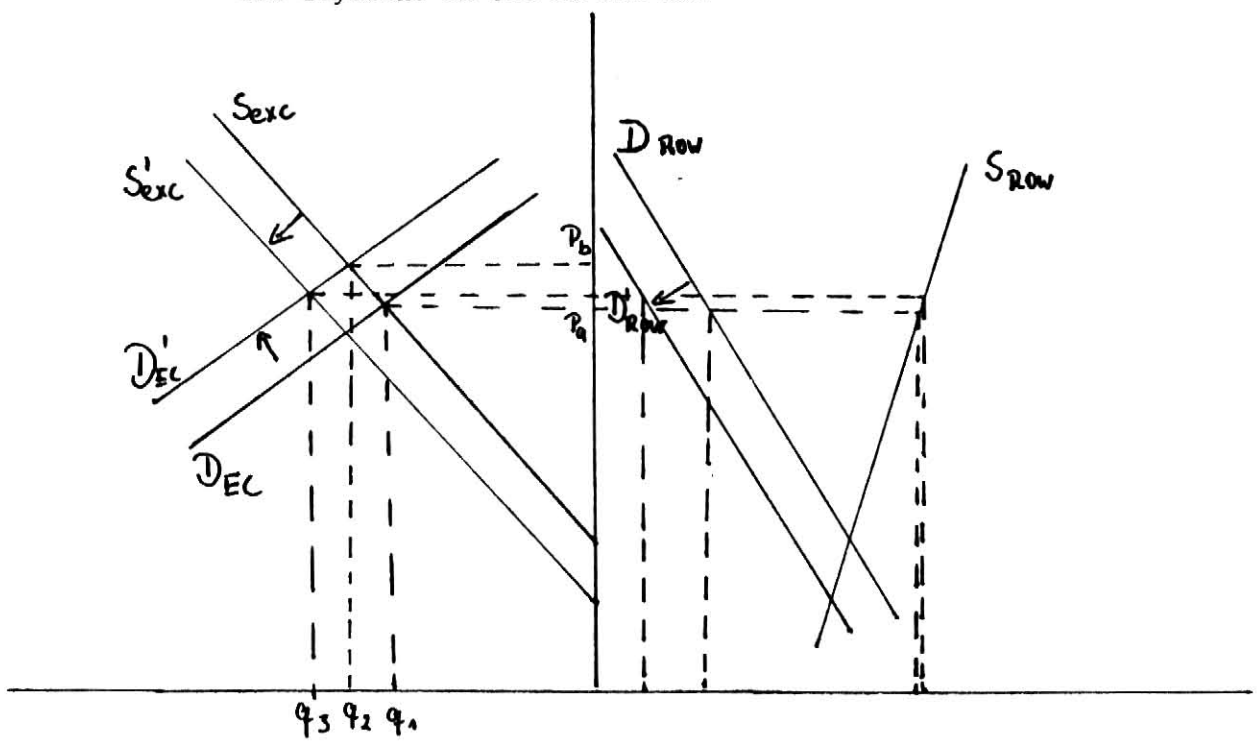
These changes in the market for soybean meal trigger corresponding changes in the soybean market (figure III,8). As the EC production of soybeans is negligible, we have only the excess supply schedule from the rest of the world to consider (S_{exc}). The increased price for soybean meal that results from the import tariff in the EC market sets an incentive for EC crushers to expand their production. They

Figure III,7: Impact of a tariff on soybean meal imports into the EC on the markets for soybean meal in the EC and ROW



Adapted from Timothy E. Josling, "Domestic agricultural price policies and their interaction through trade", Alex F. McCalla and Timothy E. Josling (eds.) Imperfect markets in agricultural trade. Allanheld, Osmun and Co., Montclair, New Jersey, 1981

Figure III,8: Impact of a tariff on soybean meal imports into the EC on the markets for soybeans in the EC and ROW



demand more soybeans from the world market, the demand schedule shifts from D_{EC} to D'_{EC} which would, ceteris paribus, drive up the price of soybeans from P_a to P_b. But simultaneously, crushers in the ROW experience a depression in the price of soybean meal and thus reduce their demand for soybeans. Their demand schedule shifts from D_{ROW} to D'_{ROW}. As the relative magnitude of these offsetting shifts can not be determined in this analysis, the effect of a tariff on soybean meal on the market for soybeans remains indeterminate. One effect of such a tariff is clear: in the long run it would cause a shift of soybean crushing capacity from ROW into the EC.

If we neglect the indeterminate effect on the soybean market we are able to identify some distributive results of a tariff on soybean meal in figure III,7. The EC budget (and the taxpayers) gain from the tariff; the revenue corresponds to area 3+4+5+6+7+8. EC crushers gain additional revenue due to higher prices and increased output (area 5+8+13). EC consumers lose due to higher prices and reduced availability of soybean meal. Their losses are represented by area 1+2+3+4+5. Revenue to foreign producers is reduced equivalent to area 9+10+11+12.

Paarlberg simulated the effects of a 20 percent ad valorem tariff on soybean meal for West Germany in a simultaneous equation model. Prices and quantities for the three markets (beans, meal and oil) were determined endogenously. This type of model does quantify the shifts of demand that occur in the soybean market as response to the tariff and

thus can determine results that can be fed back into the meal market. In Paarlberg's simulation the world market price for soybeans declines due to a decrease of crushing demand in ROW and a rather inelastic supply schedule. This decline provides an additional incentive for crushers in Germany to expand their production. It shifts the domestic supply schedule for meal and leads to a further reduction of meal imports and a decrease in domestic price. The final outcome of Paarlberg's simulation is somewhat anomalous; the tariff on soybean meal does not lead to an increase, but to a decrease in West German prices. This results from the fact that the expansion of internal production overcompensates for any reduction in imports.[18]

An Import Tariff on Soybeans and Soybean Meal in the EC

We have shown that a tariff on soybean meal alone will only afford protection to the EC crushing industry. Its impact on the quantity of soybean meal consumed is likely to be small or maybe even positive (see the previous section). A major goal of protectionist policies in the EC market is, however, to curtail total consumption of protein meals in the EC. One means to achieve this would be the imposition of tariffs on both meal and soybean imports. These tariffs would have to be interrelated in order to prevent changes in the competitive position of the European processors.

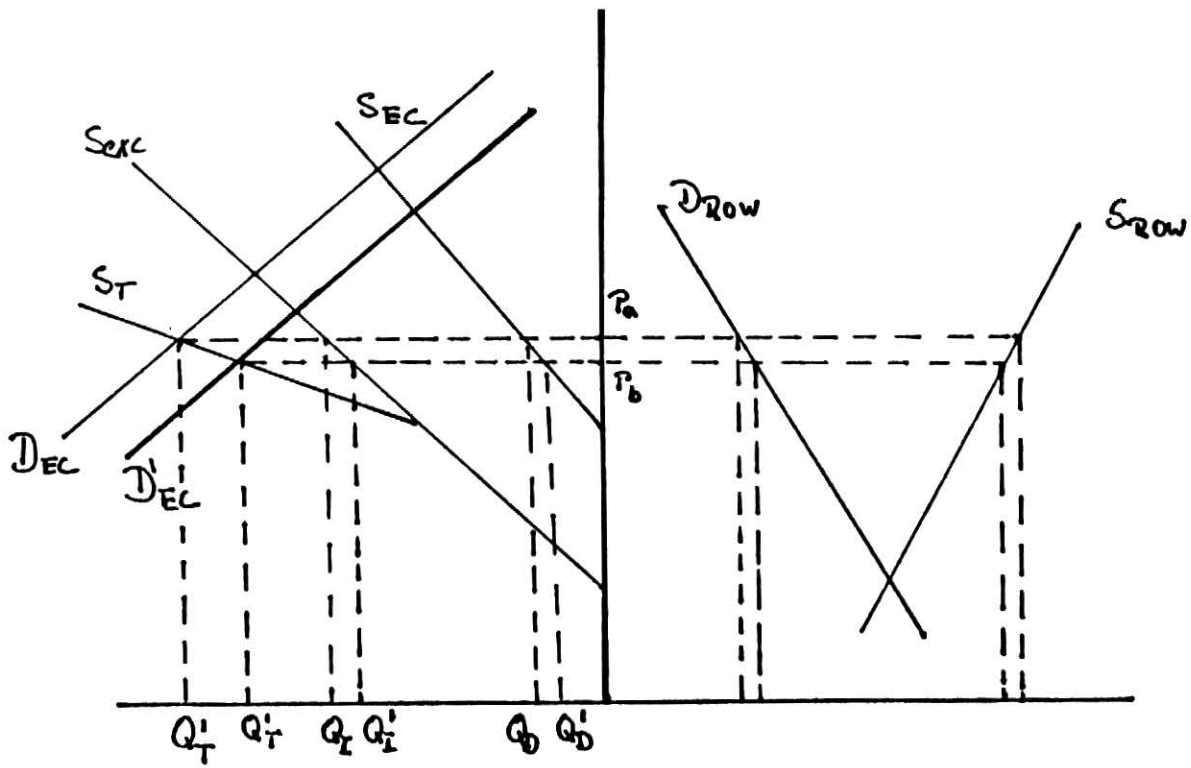
Since soybean meal is a value added product an ad valorem tariff would not only apply to the raw material (soybean) component but also to the value added (processing cost)

component of the price. A tariff on soybeans would only affect the raw material cost of the European processors. In order not to put foreign processors of soybeans at a disadvantage, soybeans would have to be taxed at a higher rate than soybean meal. This system has one major drawback: the relation between the two tariffs depends on the cost of processing and on the technology employed. It would need periodic re-evaluation and adjustment to changes in technology in order to maintain the intended neutrality.

Easier to handle is a flat rate tariff that is levied on the protein content of meal and soybeans.[19] It would simply raise the cost of soybean protein, no matter how it was produced or under which form it is imported. The effects are shown in figure III,9. Suppliers to the EC market (crushers and importers) perceive the reaction to the two tariffs as a shift of the soybean meal demand schedule from D_{EC} to D'_{EC}. The quantity consumed in the EC falls to Q'_T, and imports and domestic production are reduced to Q'_I and Q'_D, respectively. Market shares of the import sources (beans and meal) remain unchanged.

Using Knipscheer and Hill's estimate of price elasticity of total EC demand for soybean meal (-0.23)[20] one can give a rough and ready estimate for the impact of an interrelated tariff on soybeans and soybean meal. Unfortunately, no estimates of supply response are available. Under the assumption that supply is completely inelastic a tariff that would lead to a price increase of 10 percent would reduce soybean

Figure III,9: Impact of joint EC import tariffs on soybean meal and soybeans in the markets for soybean meal in the EC and ROW



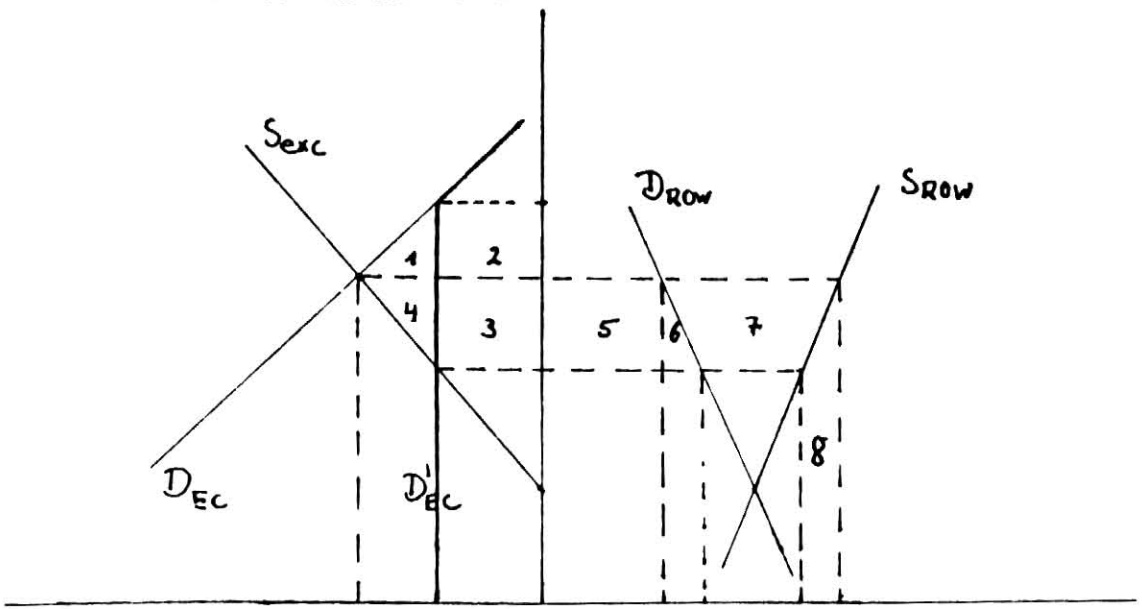
meal usage by 2.3 percent or 345,000 metric tons (total usage in 1982/83 was 15 million metric tons. Table II,8). As the demand for U.S. soybean meal appears to be more elastic than total demand the reduction of meal imports from the U.S. would probably be more than 2.3 percent (total in 1979 was 2.6 million metric tons.)

A Variable Levy or Quota on Soybeans and Soybean Meal Imports into the EC

The variable levy is the most prevalent trade policy instrument of the EC for agricultural products. We analyze its effects and those of a quota jointly because they are equivalent in graphical analysis. Whether an import price is fixed at P_i and any difference between the world market price P_a and P_i is taxed away or whether the import quantity is set such as to maintain an internal price of P_i does not make a difference in a static setting.[21] Figure III,10 demonstrates the effects of a quota or variable levy on the soybean market. Under a free trade regime the world market price is determined by the intersecting demand and excess supply curves D_{EC} and S_{exc} at P_a. A variable levy that raises the import price to P_i (or a quota Q'_c) reduces the imports to Q'_c and depresses the world market price to P_b. The revenue from the variable levy (or quota rent) corresponds to areas 2+3. Consumers in the EC pay higher prices for a smaller quantity and thus lose areas 1+2. Consumers in the rest of the world gain areas 5+6 and producers of soybeans in ROW lose revenue equivalent to areas 5+6+7+8 (7=4+3).

A variable levy or quota on soybeans alone would limit

Figure III,10: Impact of an EC variable levy or quota on soybean imports on the soybean markets in the EC and ROW



EC (Importer) ROW (Exporter)

soybean meal and oil supply from domestic crushings, and to the extent that it increases their raw material costs, put domestic processors at a disadvantage. It would favor imports of soybean meal and have little effect on total meal consumption. A policy that tries to reduce total meal consumption would have to operate with a combination of variable levies and/or quotas on soybeans and soybean meal and eventually levy refunds on soybean oil exports. The impact of these measures depends on the level at which the relevant parameters are set (quota, import price, etc.).

References

1 Commission, op.cit., pp. 192, 262. Data exclude olives.

2 Harris, Swinbank and Wilkinson, op.cit., p. 139

3 see Agra Europe, April 19, 1984, M/8

4 Agra Europe, August 5, 1983, N/1

5 According to Zeddies and Doluschitz the German farmers union and the European headorganization of farmers unions view restrictions of feed imports as "inevitable", but ask for a solution that contains cost effects for livestock and dairy producers. (loc.cit., p. 205)

6 Agra Europe, October 14, 1983, P/4

7 Knipscheer, Hill and Dixon simulated the effects of a decline in cereal prices, an increase of meat prices, and an increase of production of skim milk powder. See Hendrik C. Knipscheer, Lowell D. Hill and Bruce L. Dixon, "Demand elasticities for soybean meal in the European Community", American Journal for Agricultural Economics, vol. 64,

no. 2, May 1982, pp. 249 - 253

8 This basic model is adapted from the one Paarlberg developed for the West German soybean market. The only difference concerns the excess demand function of ROW for soybean oil. Paarlberg argued that West Germany's share of world soybean oil trade was small and consequently the excess demand of ROW could be assumed to be perfectly elastic. This assumption cannot be maintained with respect to the EC, because its share of world soybean oil trade is large (see table II,9).

9 Soybean crushing yields about 80 - 81 percent meal and 17 - 18 percent oil. Foreign agriculture circular: oilseeds and products, June 1984, p. 89

10 Paarlberg, op.cit., p. 74

11 op.cit., pp. 123 - 127

12 see chapter II, p. 51

13 see table II,9

14 The average exchange rate in 1983 was 1.18 ECU per dollar, compared to 0.72 ECU per dollar in 1980. (Foreign agricultural trade of the United States, USDA, ERS, November/December 1983, p. 63)

15 Information from the American Soybean Association, undated

16 Agra Europe, September 23, 1983, P/2

17 Information from the American Soybean Association, undated

18 Paarlberg, op.cit., pp. 123 - 127

19 Knipscheer and Hill, op.cit., p. 28

20 But even so it would be difficult to calculate as margins vary not only in response to meal and bean prices, but also respond to changes in oil prices. (Dr. Kelley)

21 If there are shifts in the excess demand of the country that imposes the measure, a variable levy holds the price at P_i and changes the volume of imports, whereas a quota results in a constant import quantity and price variations.

IV. THE IMPACT OF REDUCED SOYBEAN PRICES ON THE U.S. SOYBEAN INDUSTRY

It has been demonstrated in chapter III that every measure that effectively reduces the consumption of soybean products in the European Community will cause a decline of the world market prices for soybeans and their products. While we are not able to quantify the effect within the framework of graphical analysis, we can assess the impact of a price decline on the American soybean sector in a general way.

A decrease in soybean prices affects the U.S. economy on several levels:

(1) It reduces export earnings since soybeans are a major U.S. export.

(2) Passed on to farmers it reduces the profitability of soybeans relative to other crops. This may induce farmers to cut back soybean plantings and increase acreage assigned to other crops.

(3) The increased supply of these other crops will ceteris paribus cause their prices to fall. Insofar as producer prices of these commodities are supported by government programs (deficiency payment) a price decline in the market will cause increased government outlays.

(4) The impact of a price decline in the soybean market on farm incomes will be mitigated by the change to alternative crops.

Discussion in this chapter focuses on point (2) of the above list. First, the marketing channels for soybeans are described, and second, a general appraisal of the mechanism of

price determination within this system is given in order to determine how a price decrease in the export market will be transmitted back to the farm level. Finally, the impact on the farm sector is evaluated.

Marketing Channels for U.S. Soybeans

The bulk of farm soybean sales passes through country and/or subterminal elevators. Direct sales from the farm to processing plants play a minor role. Country and subterminal elevators deliver to terminal elevators and processors. Bean exports are channeled through port facilities on the Gulf of Mexico (approximately 80 percent), the Atlantic coast or the Great Lakes (10 percent each).[1] Another part of the soybean crop is exported in form of oil and meal. The relative importance of domestic and export outlets is shown in table IV,1. Since the 1970s more than half the soybean crop is exported each year.

In figure IV,1 a detailed picture of the marketing channels is given. The following functional elements can be distinguished:

(1) soybean producers

(2) elevators, providing storage and concentrating the physical product

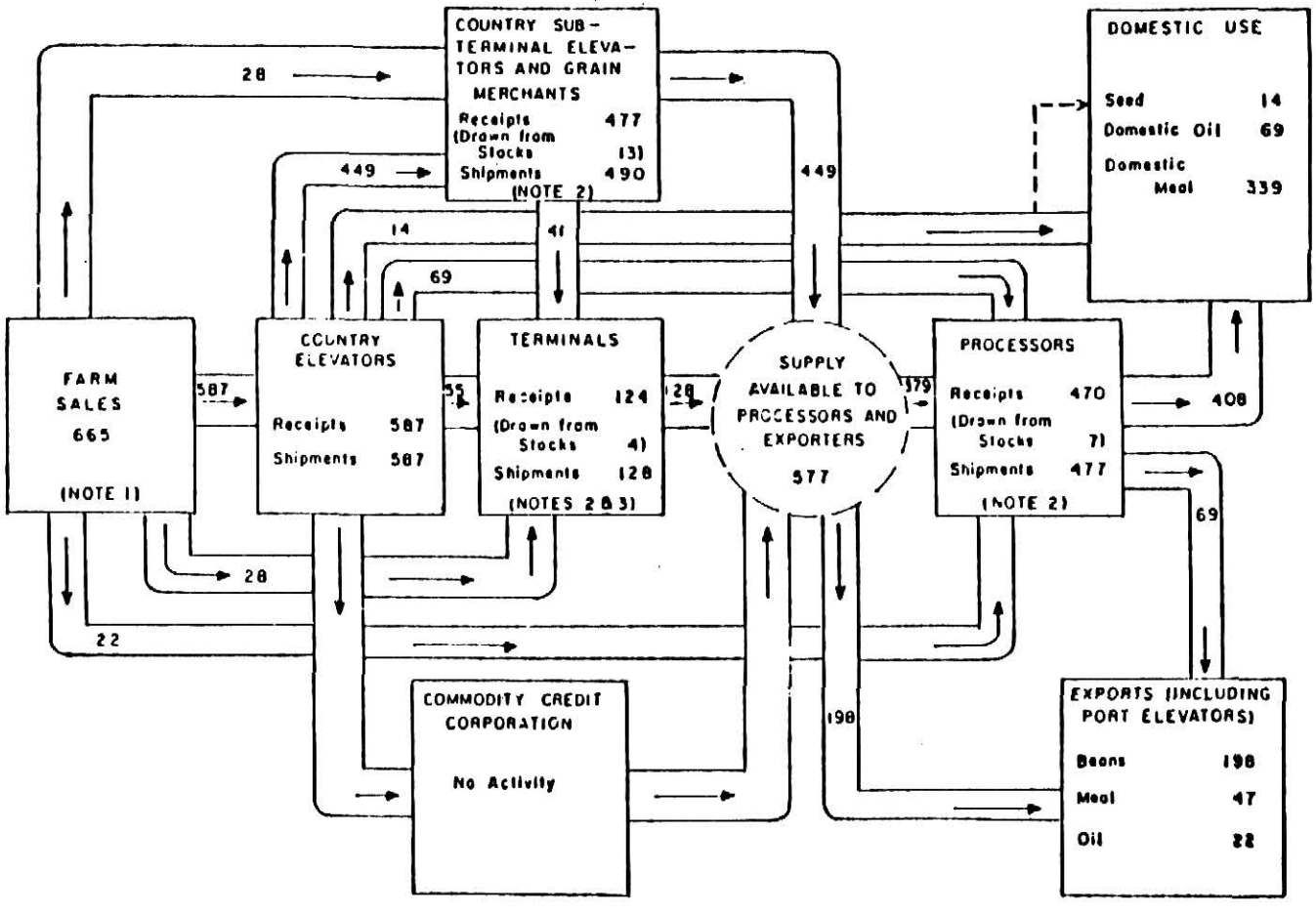
(3) commission firms and brokers

(4) soybean processing plants

(5) manufacturers of final products, mainly feed and margarine, and

(6) export firms.

Figure IV,1: Marketing Channels for U.S. soybeans: Crop Year 1963
(In millions of bushels)



Source: Ray A. Goldberg, Agribusiness coordination: a systems approach to the wheat, soybean and Florida orange economies. Harvard University, Boston, 1968, p. 112

Table IV,1: U.S. soybean production, bean, meal and oil exports, 1950-83

crop year	soybean production (mil. bu.)	Exports soybeans (mil. bu.)	meal (1000 short tons)	oil (mil. lbs.)	% of crop exported as beans	as beans, oil, meal
1950	299	28	181		9.4	11.4
1960	555	135	589	700	24.3	28.7
1970	1127	434	4559	1742	38.5	48.9
1979	2261	875	7932	2690	38.7	56.8
1980	1798	724	6778	1629	40.3	53.4
1981	1989	929	6908	2077	46.7	58.2
1982	2190	905	7109	2025	41.3	55.7
1983	1567	760	5450	1650	48.5	53.9

Source: American Soybean Association, Soybean fact sheet, 1984

Entities on these different functional levels are interconnected (1) horizontally through concentration and (2) vertically through integration.

Concentration:

In 1963 there were, according to Goldberg's study, 9,813 country and subterminal elevators, which were "concentrated in 100 cooperative and other business-type enterprises."[2] Due to improvements in short distance transportation elevators today are fewer and larger.

The 119 soybean processing plants that existed in 1963 were owned by approximately 60 firms.[3] The number of plants decreased and in 1979 94 plants were operating out of which the largest 20 firms owned 74, thereby controlling 94.4 percent of the soybean crushing capacity in the United States. (Tables IV,2 and 3) In 1963, 2000 feed manufacturing plants were in the hands of approximately 100 cooperatives and other firms.[4]

According to Goldberg 20 export firms were trading soybeans in 1963.[5] In 1973/74, 61 firms reported export sales of soybeans or soybean products to USDA. Out of these 27 were multicommodity exporters and 34 dealt primarily in soybeans. The four largest firms controlled 42 percent, the eight largest 63 percent, and the twenty largest 87 percent of the oilseed exports.[6]

Table IV,2: Number of soybean crushing mills; U.S. total, cooperative and noncooperative. Average mill capacity; U.S. cooperative and noncooperative, 1971-1979 crop years

Marketing year	Soybean crushing mills			Average annual crushing capacity		
	U.S. total[1]	Co-op[2]	Nonco-op	U.S. total	Co-op	Nonco-op
	Number			Million bushels		
1971	123	15	108	7.3	10.7	6.8
1972	117	15	102	7.9	11.9	7.3
1973	113	15	98	8.8	11.9	8.4
1974	108	15	93	9.7	11.8	9.4
1975	103	17	86	10.7	13.9	10.1
1976	103	17	86	11.6	14.2	11.1
1977	99	18	81	12.6	14.5	12.2
1978	95	18	76	13.8	14.6	13.5
1979	94	19	75	14.4	14.7	14.3

[1] U.S. Department of Agriculture, Fats and Oils Situation, October 1980, FOS-297. Economics, Statistics, and Cooperative Service.

[2] U.S. Department of Agriculture, Operational Data on Soybean Processing Cooperatives 1971/72 through 1979/80. Agricultural Cooperative Service.

Source: John R. Dunn et al, Cooperative involvement and opportunities in oilseeds, USDA, ACS Research Report No. 13, p. 9, Washington, undated (1982)

Table IV,3: Structural characteristics of the U.S. soybean processing industry in terms of plant numbers and capacities, 1979

Firm grouping	Total plants	Average number of plants	Total capacity	Average plant size	Share of capacity
	Number		Tons per day		Percent
Top 4 firms	37	9.25	60,950	1,647	54.5
Firms 5-8	18	4.50	23,100	1,283	20.6
Top 8 firms	55	6.87	84,050	1,528	75.1
Firms 9-12	9	2.25	12,545	1,394	11.2
Top 12 firms	64	5.33	96,595	1,509	86.3
Firms 13-16	5	1.25	7,300	1,460	6.5
Top 16 firms	69	4.31	103,895	1,506	92.8
Firms 17-20	5	1.25	4,000	800	3.5
Top 20 firms	74	3.70	107,895	1,458	96.4

Source: John R. Dunn et al., Cooperative involvement and opportunities in oilseeds, USDA, ACS Research Report No. 13., Washington, undated (1982), p. 12

Vertical integration:

The only study that provides some information on the relative importance of vertical integration in the soybean marketing chain is Goldberg's.[7] Integration through ownership is established along three major lines. (1) Approximately 35 percent of the crop in 1963 was produced by members of farmer's cooperatives and handled by elevators that were owned by cooperatives. Cooperatives handled 20 percent of the crop at the terminal elevators. They controlled 15 percent of the soybean crush and 20 percent of the feed manufacturing. Their share of the export business was only 5 percent.

(2) Exporter owned firms played a relatively small role at the country elevator and commission merchant level, where 5 and 10 percent of the 1963 crop passed through their hands, respectively. At the terminal elevator level, however, these firms handled 25 percent of the total volume. Additionally, exporter owned firms crushed 15 percent of the 1963 harvest and handled 10 percent of the volume that went into feed manufacturing.

(3) A third cluster of integrated firms is grouped around soybean processing plants. One half of the soybean crush was done by firms that had interests in other parts of the soybean economy. The most important links tied those firms to feed manufacturing and margarine production. Integration with elevators was substantial, but less important.

In addition to integration by ownership, firms in the

soybean complex are linked by a network of contractual arrangements that can perform essentially the same functions as integration by ownership.[8]

Price Determination in the Marketing Chain[9]

As U.S. soybeans move through marketing channels they undergo transformations and changes in ownership. The prices that correspond to these transactions differ by the margin various handlers add on for the services they provided (storage, transportation, crushing etc.). These margins may be determined competitively or not. Each marketing chain has at least one crucial price determining channel. Other prices along the chain are established by adding or subtracting the appropriate margins from that particular price. For instance, the price for soybeans in a surplus region is usually determined by subtracting handling margins and freight rate from the Chicago near futures price. The futures markets for soybeans, soybean oil and meal are generally considered to be the price determining channels in the U.S. soybean economy.[10] Most researchers assume that futures market are competitive per se, because there are practically no barriers to entry.[11] Sarris and Schmitz, however, point out that there has been no systematic research on the competitiveness of futures markets.[12] The four largest trader concentration ratios for the last crop year future, which they use as a rough indicator of competition, does not appear to be unduly high for the soybean market.[13] Vertical inte-

gration in the later stages of processing implies a potential for establishing margins in a non-competitive way, but there is practically no evidence to prove or disprove this hypothesis.[14]

Concentration in the export business has been a source of concern. According to a study from the General Accounting Office the degree of concentration used to be overestimated and has in fact declined in the early 1970s.[15] Generally, price changes are transmitted through the export marketing chain in an orderly step-ladder fashion. Rotterdam c.i.f. prices and U.S. spot prices move parallel. Occasional distortions like those in 1972/73 can be explained by factors that are not endogenous to the soybean market.[16] Yet, even in 1972/73 farm prices for soybeans kept up with increases in U.S. export unit values, and "farms fared better than other segments of the farmer-exporter-importing country chain".[17]

As a general appraisal of the efficiency of the pricing mechanism can therefore be stated: there may be some non-competitive pricing in domestic outlets for soybean products, particularly soybean oil, but price changes in the export market are transmitted efficiently back to the farm level. A secular price decline for soybeans caused by EC policy changes would, therefore, have its main impact on the farm level.

The Impact of Reduced Soybean Prices on U.S. Soybean Farming

The importance of soybean farming varies regionally.

Generally, five or six production regions are distinguished, each an aggregate of states with similar climatic and economic conditions. In table IV,4 the regional importance of soybean farming is illustrated. In 1980-82 the Western Corn Belt originated 30 - 40 percent of the total farm value of U.S. soybeans. The Eastern Corn Belt takes the second place in absolute terms; about one-third of the U.S. soybean crop is marketed here. Third place is taken by the Delta region with slightly less than one-fifth of the farm value of soybeans.

The share of cash receipts from soybeans in total farm cash receipts is an indicator of their relative importance within a region as compared to other farming activities. Considerable differences exist among regions: soybeans account for 20 - 25 percent of total cash receipts in the Eastern Corn Belt, 17 - 23 percent in the Delta region, 10 - 15 percent in the Western Corn Belt[19], roughly 10 percent in the Southeast and only 6 percent in the Atlantic Coast region. Their relative importance declined from 1980 to 1981, most notably in those regions where they make up a large share of farm marketing. These data give us some indication as to where farm incomes will be affected by a price decline. Of course, long term losses to farmers would not be proportional to the price change, as a decline of profitability of soybean farming would induce farmers to switch to other crops.

The results of a study by Fryar and Hoskins[20] help to

Table IV,4: Farm cash receipts from marketing, total value and value of soybeans by region, 1980-1982

Region[1]	1980	1981	1982
	Total value (million dollars)		
Western Corn Belt	38,756.1	38,546.0	38,883.0
Eastern Corn Belt	19,652.8	17,902.0	18,257.2
South Central (Delta)	11,594.6	12,178.3	12,717.4
Southeast	9,357.5	10,791.2	10,749.5
Atlantic Coast	2,710.3	3,088.8	3,138.8
Other States	26,740.2	28,233.4	28,402.8
U.S.[2]	140,501.2	142,272.7	144,551.3
	Value of soybeans		
Western Corn Belt	6050.8	4673.4	4544.8
Eastern Corn Belt	5054.5	4011.1	3995.8
South Central	2643.3	2144.0	2209.9
Southeast	987.4	929.6	1143.2
Atlantic C ast	164.6	190.9	200.5
Other States	200.6	232.0	235.5
U.S.	14,245.6	12,256.4	12,434.3
	Value of soybeans as percent of total		
Western Corn Belt	15.6	12.1	11.7
Eastern Corn Belt	25.7	22.4	21.9
South Central	22.8	17.6	17.4
Southeast	10.6	8.6	10.6
Atlnatic Cosst	6.1	6.2[3]	6.4[3]
Other States	0.8	0.9[3]	0.9[3]

[1] For specification of regions and data by state see appendix, table 3

[2] Totals may not add up due to rounding.

[3] excluding New York

Source: Computed from Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1982 USDA, ERS,ECIF 2-4, Washington, D.C. 1984, table 9, see Appendix, table 4

assess the magnitude of these changes. Fryar and Hoskins estimated the acreage planted to soybeans as a function of lagged acreage and expected net returns per acre to soybeans and major competing crops (corn, cotton, oats and rice). Expected net returns were computed from an expected yield (based on a 1950 - 80 trend), the last years average farm price, variable cost and a GNP price deflator. Six regional regression functions were specified.[21] In table IV,5 the competing crops that enter the regional regressions are listed. With the exception of the Delta region corn enters all functions. A change in soybean acreage usually implies a change in corn acreage.

From these regression functions the authors derive a set of multipliers which determine the impact of a one-unit-change of different variables on the acreage planted with soybeans. In table IV,6 the regional multipliers for changes of the soybean price are listed. As the variables that enter the computation of these multipliers change over time, the figures in table IV,6 are, strictly spoken only valid for 1981. But even so, they allow us to assess the magnitude of changes that can be expected to follow a price change. A price decline of one dollar per bushel would reduce the acreage planted to soybeans by approximately 6-7 percent. The reaction would be strongest in the Western Corn Belt, relative as well as absolute. The smallest reaction is to be expected in the Delta region (3-4 percent), (table IV,6). Most of the acreage would be used to expand corn production.

The effects of the EC Commission's 1983 fats and oils tax

Table IV,5: Soybeans: major competing crops by region

Region	Competing crops
Western Corn Belt	corn, oats
Eastern Corn Belt	corn
Delta	cotton, rice
Southeast	corn, cotton
Atlantic Coast	corn

Source: Ed Fryar and Roger Hoskins, "1981 Regional soybean acreage response", Fats and oils: outlook and situation, FOS-302, February 1981, p. 23

Table IV,6: Soybean acreage and acreage response to price changes, 1981

Region	Acreage change in response to a price change of $1/bu. (1000 acres) (1)	Soybean acreage (1000 acres) (2)	(1) as % of (2)
Western Corn Belt	1989.5	22585	8.8
Eastern Corn Belt	1114.4	18580	6.0
Delta	551.1	15500	3.6
Southeast	542.0	7920	6.8
Atlantic Coast	67.6		
Other States	200.0		
United States	4464.7	68000	6.6

Sources: (1) Ed Fryar and Roger Hoskins, "1981 Regional soybean acreage response", Fats and oils: outlook and situation, USDA, FOS-302, February 1981, p.23

(2) Computed from Fats and oils: outlook and situation, USDA, FOS-308, July 1982, p.5

proposal were estimated to cause a price decline in the magnitude of 5-20 cents per bushel. Using the multipliers in table IV,6 this translates into a reduction of U.S. soybean acreage between 223,000 - 900,000 acres (less than 1.5 percent). Farmer's incomes would be hurt even less, as they would switch to other crops. About the impact of other policy options nothing can be said, as there are no specifications of price effects available.

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2 Ray A. Goldberg, Agribusiness coordination: a systems approach to the wheat, soybean, and Florida orange economies. Harvard University, Boston 1968, p. 114

3 ibid.

4 ibid.

5 General Accounting Office, Market structure and pricing efficiency of U.S. grain export system, Washington, June 1982, p. 15

6 loc.cit., p. 16

7 Goldberg, op.cit., pp. 116-120

8 op.cit., p. 129

9 The general concept of pricing in the marketing chain is developed in Alexander H. Sarris and Andrew Schmitz, "Price formation in international agricultural trade", in Timothy Josling and Alex F. McCalla (eds.) Imperfect

markets in international agricultural trade, Allanheld, Osmun, Montclair, New Jersey, 1981, pp. 29-38

10 see for instance Goldberg, op.cit., p. 134; also John R. Dunn et al. Cooperative involvement and opportunities in oilseeds. USDA, ACS Research Report No. 13, Washington, undated (1982) p. 19. The combination of futures markets for raw material and products implies that not only the prices for these commodities but also the processing margin is determined in these markets.

11 ibid.

12 Sarris and Schmitz, loc.cit., p. 36

13 The four trader concentration ratios in Chicago last crop year futures contract varied from 17.5 percent (August futures, short, reporting date: 7-31-78) to 53.2 percent (August futures, short, 7-31-76). loc.cit., p. 37

14 Dunn et al., p. 19; see also Goldberg, op.cit., p. 129

15 General Accounting Office, op.cit., p.

16 Collins attributes the distortions to export licensing, exchange rate changes, and congestion of transport facilities. (H. Christine Collins, "Price spreads between farm and foreign markets for wheat, corn, and soybeans - evaluated from price quotations and unit values", Foreign agricultural trade of the United States, USDA, ERS, June 1974, p. 39)

17 ibid.

18 Western Corn Belt includes Missour
braska, Kansas, South Dakota, and North Dakota; Eastern Corn

Belt includes Illinois, Ohio, Indiana, and Michigan; includes Arkansas, Louisiana, Mississippi, Tennessee, and Kentucky; Southeast includes Alabama, Georgia, North Carolina, and South Carolina; Atlantic Coast includes Virginia, Maryland, and Delaware; Other States includes Florida, New Jersey, New York, Oklahoma, Pennsylvania, Texas, and Wisconsin.

19 Western Corn Belt is a rather heterogeneous group of states; besides Iowa, Missouri, and Minnesota, where the share of soybeans is between 15 and 26 percent, it includes Plain States (Kansas, Nebraska, North and South Dakota with a soybean share between 4 and 6 percent. (see Appendix, table 4)

20 Ed Fryar and Roger Hoskins, "1981 Regional soybean acreage response", Fats and oils: outlook and situation, FOS-302, Feburary 1981, pp. 21 - 23

21 see footnote 18 for the regional divisions; the regression functions can be found in the appendix, table 6.

V. SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

Summary

In chapter I a brief outline of the Common Agricultural policy of the EC was given. Price support at a high level has led to overproduction in most agricultural markets. Surplus commodities need to be stored or subsidized for export. Expenditures for the price support system have been growing faster than revenues for a number of years, which finally led to the budget crisis in 1983. The measures that were taken to balance the budget for the future offer only a temporary solution, and leave the Community with a general shortage of funds. The institutional set up of the EC makes radical changes in the agricultural policy impossible, so that the basic tendency to high price support and protection for agriculture will continue. A characteristic of EC agricultural policy is that it puts as much of the cost of price support on consumers and foreign producers as possible. In this framework the oilseed market with its high share of imports is a natural target for efforts to shift costs to foreign producers.

In chapter II the oilseed market and in particular the soybean market are described. The European Community is the largest single market for these commodities. The market grew until 1981/82, since then the volumes have declined slightly. Domestic production of oilseeds (mainly rape and sunflowerseed) expanded rapidly in the early 80s, which led to a decrease of the share of soybean products. EC crushings are substantial; the EC produces about half of its total

usage of soybean meal from imported beans and imports the other half. It is a net exporter of soybean oil. The largest supplier of soybeans is the United States. Supplies of soybean meal come primarily from Brazil, Argentina and the U.S. EC oilseed production is supported by a deficiency payment program. Oilseed and oilseed meal tariffs are bound at zero level under GATT, so that the system of variable levy and threshold price cannot be applied in this market. The unrestricted trade in oilseeds and oilseed products aggravates surplus problems the EC has in certain other markets. Vegetable oils and margarine compete with butter, oilseed meal with skim milk powder for feed incorporation, and soybean meal combined with "grain substitutes" replaces EC grains in manufactured feeds. The EC Commission has tried several times to solve the surplus problems in these markets at the expense of oilseed producers, but determined opposition from the northern member countries (Denmark, Netherlands, United Kingdom, and West Germany) and the United States has so far succeeded in averting or terminating these attempts. The most recent effort in this direction was the 1983 fats and oils tax scheme.

In chapter III the impact of the current policy of deficiency payment and of a number of potential policy options (fats and oils tax, tariff, variable levy and quota on soybeans and soybean meal) are analyzed. Graphical analysis allows only for qualitative solutions, but in the case of the fats and oils tax estimates from other studies are reported. All policy options under consideration depress the world

market price for soybeans.

In chapter IV the marketing channels for U.S. soybeans are described and a brief assessment of the pricing efficiency in the marketing system is given. Despite some concentration and a considerable degree of vertical integration changes in the world market prices are transmitted clearly down to the farm level. Farmers respond to price changes by revising the allocation of land between different crops. Multipliers (taken from a study on soybean acreage response) are used to estimate regional responses to a certain price change. A one dollar price change would cause a change of 6-7 percent in total U.S. soybean acreage. Evaluation of the effects of the fats and oils tax as proposed in 1983 led to the conclusion, that at this level the tax would not do much harm to U.S. soybean producers.

Suggestions for Further Research

The fourth chapter evaluates only the impacts on the farm level, but besides that any decline in soybean prices has (1) effects on U.S. export earnings and (2) affects the cost of the agricultural policy in the U.S. budget. To determine these effects a more sophisticated analysis of the competition between soybeans and crops that are supported by commodity programs is needed.

Another direction of further research would have to deal with the central shortcoming of this research: its lack of quantitative estimates. Simulation of different policies in

a model of EC and U.S. soybean markets would at the same time be able to take into account the interrelations between the soybean and other oilseed markets.

Our discussion of the political situation with respect to the future policy options of the EC, leads to the conclusion that the introduction of tariffs or other import restrictions is highly unlikely, as they require the consent of other GATT members. So a quantitative analysis of these options may be of little practical value. Other policy changes in the EC, however, may have a profound impact on the market for soybeans and their products. If the newly introduced quota system in the EC dairy market leads to a substantial reduction of milk production, it may have a stronger impact on the U.S. soybean economy than a moderate tariff or levy. The same would be true for a reduction in EC grain prices.

APPENDIX

Sources:

Table 1:

EC: Supply/Use of Selected Oilseeds, 1973/74 - 1983/84

Foreign agriculture circular: oilseeds and products, October 1983, p. 25

Table 2:

EC: Supply/Use of Selected High Protein Meals, 1973/74 - 1983/84

Foreign agriculture circular: oilseeds and products, October 1983, p. 26

Table 3:

EC: Supply/Use of Selected Oils, 1973/74 - 1983/84

Foreign agriculture circular: oilseeds and products, October 1983, p. 27

Table 4:

Cash Receipts from Farm Marketings: Total Value and Value of Soybeans by State, 1980 - 1982

Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1982, USDA, ERS, ECIFS 2-4, Washington 1984, Table 9

Table 5:

Acreage Planted to Soybeans By Region and State, 1981

Fats and oils: outlook and situation, July 1982, p. 5

Table 6:

Regional Soybean Acreage Response Equations

Ed Fryar and Roger Hoskins, "1981 Regional soybean acreage response",

Fats and oils: outlook and situation, February 1981, p. 23

Table 1: EC: SUPPLY/USE OF SELECTED OILSEEDS, 1973/74 - 1983/84 (IN 1,000 METRIC TONS)

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83 Prelim	83/84 Forecast
Production											
Cottonseed	218	257	263	239	310	221	175	196	201	211	264
Flaxseed	29	25	45	53	62	46	56	48	30	40	37
Peanut	2	1	2	2	2	2	2	2	2	1	2
Rapeseed	1,052	1,175	909	986	921	1,173	1,202	2,039	2,009	2,642	2,468
Soybean	5	4	2	2	4	4	17	14	18	25	54
Sunflowerseed	99	95	147	114	122	120	216	289	488	742	976
TOTAL	1,405	1,557	1,368	1,396	1,421	1,566	1,668	2,588	2,748	3,663	3,801
Imports											
Copra	284	726	839	573	420	233	198	146	180	126	126
Cottonseed	25	26	46	32	4	11	31	16	24	25	20
Flaxseed	197	180	108	210	438	358	301	319	239	246	244
Palm Kernel	302	258	313	254	140	134	136	116	103	115	120
Peanut	711	659	806	581	612	576	499	450	481	432	422
Rapeseed	397	322	392	584	361	661	1,195	1,005	861	1,155	1,102
Soybean	9,118	8,254	9,267	9,198	11,199	12,169	12,277	10,703	12,257	10,819	9,800
Sunflowerseed	209	145	258	279	800	1,045	1,448	1,300	933	1,201	1,193
TOTAL	11,243	10,570	12,029	11,711	13,974	15,187	16,085	14,055	15,078	14,119	13,027
Crush											
Copra	277	687	869	574	418	235	196	144	180	126	126
Cottonseed	183	212	236	204	227	192	116	166	193	201	216
Flaxseed	182	152	91	198	345	289	269	310	192	213	204
Palm Kernel	271	234	269	234	136	114	121	99	90	102	102
Peanut	432	397	456	270	303	234	162	118	151	119	114
Rapeseed	1,158	1,032	998	1,283	1,093	1,548	1,832	2,271	2,136	2,653	2,731
Soybean	8,924	8,037	8,950	8,907	10,821	11,707	11,521	10,205	11,676	10,279	9,569
Sunflowerseed	271	187	340	334	859	1,109	1,509	1,389	1,112	1,413	1,555
TOTAL	11,698	10,938	12,209	12,004	14,202	15,428	15,726	14,702	15,730	15,106	14,617

Table 1, continued

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83[1]	83/84[2]
Exports											
Copra	0	0	7	2	4	1	0	0	0	0	0
Flaxseed	33	35	43	38	47	45	49	36	32	33	31
Palm Kernel	6	0	2	1	1	2	3	2	2	2	2
Peanut	24	17	31	30	39	41	46	54	52	51	46
Rapeseed	239	406	243	246	123	209	193	733	670	999	732
Soybean	16	110	189	120	237	352	302	191	200	176	131
Sunflowerseed	40	10	39	14	16	39	74	132	246	438	642
TOTAL	358	578	554	451	467	689	667	1,148	1,202	1,699	1,584
Ending stocks											
Copra	43	74	31	28	12	8	6	0	5	5	5
Cottonseed	0	0	0	0	0	0	71	72	61	61	80
Flaxseed	2	2	1	1	2	1	1	1	1	1	1
Palm Kernel	12	4	9	6	2	2	0	0	0	1	0
Peanut	0	0	0	0	4	18	20	7	3	3	3
Rapeseed	23	23	28	19	19	31	68	52	26	50	30
Soybean	121	153	100	90	388	292	421	364	311	288	239
Sunflowerseed	0	29	22	22	44	10	43	61	63	85	75
TOTAL	201	285	191	166	471	362	630	562	470	494	433

[1] Preliminary

[2] Forecast

Table 2: EC: SUPPLY/USE OF SELECTED HIGH PROTEIN MEALS, 1973/74-1983/84 (IN 1,000 METRIC TONS)

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83[1]*	83/84[2]
Production											
Copra meal	99	244	311	203	147	82	67	51	59	45	42
Cottonseed meal	85	98	109	94	105	88	53	77	89	93	100
Fish meal	483	479	509	489	478	455	521	486	508	496	496
Linseed meal	117	98	57	124	221	183	166	192	124	135	130
Palm Kernel meal	144	124	142	120	72	60	61	49	45	50	50
Peanut meal	166	146	164	98	109	87	59	58	78	59	56
Rapeseed meal	656	584	563	726	624	870	1,051	1,301	1,284	1,596	1,640
Soybean meal	7,136	6,468	7,172	7,119	8,685	9,366	9,307	8,219	9,400	8,168	7,382
Sunflowerseed meal	153	105	194	196	499	654	850	788	623	798	879
TOTAL	9,039	8,346	9,221	9,169	10,940	11,845	12,135	11,221	12,210	11,440	10,775
Imports											
Copra meal	559	600	911	730	840	872	918	969	992	946	856
Cottonseed meal	655	749	677	596	687	846	634	579	601	576	565
Fish meal	775	869	862	768	722	817	775	627	829	792	792
Linseed meal	341	396	498	562	630	573	652	546	507	507	501
Palm Kernel meal	296	333	353	309	336	432	432	421	490	511	525
Peanut meal	505	589	1,044	985	642	926	703	323	317	265	259
Rapeseed meal	334	259	321	450	477	520	522	522	530	487	504
Soybean meal	4,840	4,832	5,649	5,682	7,875	8,462	9,421	10,563	11,460	11,370	11,070
Sunflowerseed meal	328	270	301	375	575	610	689	655	736	751	738
TOTAL	8,633	8,897	10,616	10,457	12,784	14,058	14,746	15,205	16,462	16,205	15,810

* Footnotes at the end of the table

Table 2, continued

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83[1]*	83/84[2]
Total Dom. Use											
Copra meal	633	809	1,150	899	947	896	939	989	1,020	957	878
Cottonseed meal	634	723	714	596	702	877	630	601	677	606	620
Fish meal	853	1,005	988	879	835	906	854	700	864	809	814
Linseed meal	426	460	517	660	799	722	769	691	562	585	578
Palm Kernel meal	392	406	435	401	385	476	482	453	528	552	563
Peanut meal	631	705	1,173	1,054	720	972	741	362	379	304	295
Rapeseed meal	707	652	662	934	866	1,103	1,269	1,406	1,422	1,733	1,814
Soybean meal	9,659	9,580	10,900	10,846	13,493	14,702	15,296	14,819	16,407	15,000	13,949
Sunflowerseed meal	427	361	451	551	938	1,090	1,346	1,196	1,137	1,324	1,389
TOTAL	14,362	14,711	16,990	16,820	19,685	21,744	22,326	21,217	22,996	21,870	20,900
Exports											
Copra meal	21	34	71	34	39	58	45	34	31	34	24
Cottonseed meal	91	92	135	81	69	60	64	26	25	68	39
Fish meal	381	362	378	371	351	381	444	408	475	479	474
Linseed meal	31	34	38	27	49	38	48	48	70	55	55
Palm Kernel meal	50	53	60	28	23	16	11	17	7	9	12
Peanut meal	40	30	35	29	28	34	31	16	18	20	20
Rapeseed meal	264	209	212	212	247	301	289	408	399	359	336
Soybean meal	2,265	1,739	1,909	1,963	2,790	3,114	3,570	3,906	4,454	4,570	4,503
Sunflowerseed meal	51	17	47	22	130	174	189	243	222	218	243
TOTAL	3,194	2,570	2,885	2,767	3,726	4,176	4,691	5,106	5,701	5,812	5,706

* Footnotes at the end of the table

Table 2, continued

Ending Stocks	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83[1]	83/84[2]
Copra meal	3	4	5	5	6	6	7	4	4	4	0
Cottonseed meal	55	87	24	37	58	55	48	77	65	60	66
Fish meal	32	13	18	25	39	24	22	27	25	25	25
Linseed meal	4	4	4	3	6	2	3	2	1	3	1
Palm Kernel meal	2	0	0	0	0	0	0	0	0	0	0
Peanut meal	0	0	0	0	3	10	0	3	1	1	1
Rapeseed meal	24	6	16	46	34	20	35	44	37	28	22
Soybean meal	81	52	64	56	333	345	207	264	263	231	231
Sunflowerseed meal	8	5	2	0	6	6	10	14	14	21	6
TOTAL	209	171	133	172	485	468	332	435	410	373	352

[1] Preliminary

[2] Forecast

Table 3: EC: SUPPLY/USE OF SELECTED OILS, 1973/74-1983/84
(1,000 METRIC TONS)

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83 Prelim	83/84 Forecast
Production											
Coconut oil	173	431	546	355	260	146	123	93	114	79	75
Cottonseed oil	29	33	38	32	36	30	18	26	31	32	35
Fish oil	123	130	118	114	111	109	156	144	149	144	145
Linseed oil	66	54	34	77	133	110	98	114	64	73	69
Olive oil	738	650	873	527	924	660	831	838	701	826	674
Palm Kernel oil	123	110	128	111	65	55	58	47	42	45	45
Peanut oil	142	129	147	86	93	70	48	35	46	40	38
Soybean oil	1,573	1,424	1,599	1,604	1,903	2,078	2,042	1,811	2,016	1,793	1,638
Sunflowerseed oil	107	74	135	130	336	428	586	543	445	563	622
Rapeseed oil	457	424	408	522	443	623	743	908	861	1,068	1,096
TOTAL	3,531	3,459	4,026	3,558	4,304	4,309	4,703	4,559	4,469	4,663	4,437
Imports											
Coconut oil	167	250	395	297	360	353	378	515	486	454	464
Cottonseed oil	51	22	14	20	10	9	10	8	13	9	9
Fish oil	415	475	467	464	524	589	597	580	657	600	595
Linseed oil	94	71	100	109	141	105	99	74	53	76	76
Olive oil	203	130	112	157	101	173	133	130	126	120	115
Palm oil	652	746	802	769	718	777	785	695	671	702	782
Palm Kernel oil	156	156	152	146	163	189	211	176	239	256	286
Peanut oil	303	300	336	338	304	375	423	283	324	362	372
Soybean oil	411	360	342	366	438	449	492	476	521	429	408
Sunflowerseed oil	340	276	243	252	238	271	241	259	431	409	455
Rapeseed oil	73	73	84	96	93	172	175	236	305	273	255
TOTAL	2,865	2,859	3,047	3,014	3,090	3,462	3,544	3,432	3,826	3,690	3,817

Table 3, continued

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83 Prelim	83/84 Forecast
Total Dom. Use											
Coconut oil	259	471	675	493	502	443	443	537	524	457	474
Cottonseed oil	78	54	52	50	46	39	22	33	39	40	43
Fish oil	435	504	459	467	525	635	574	605	666	575	571
Linseed oil	107	72	93	113	203	142	117	117	70	86	81
Olive oil	853	720	844	716	893	819	894	815	807	788	714
Palm oil	575	646	697	665	625	666	669	583	581	589	662
Palm Kernel oil	222	224	231	214	198	216	224	202	252	265	295
Peanut oil	394	356	438	382	329	372	392	276	308	324	321
Soybean oil	1,315	1,120	1,300	1,299	1,465	1,518	1,571	1,467	1,500	1,369	1,291
Sunflowerseed oil	354	299	303	307	403	499	524	520	601	660	753
Rapeseed oil	287	249	265	319	167	433	489	628	533	745	806
TOTAL	4,879	4,715	5,357	5,025	5,356	5,782	5,919	5,783	5,981	5,898	6,011
Exports											
Coconut oil	75	196	266	57	121	55	56	67	86	73	55
Cottonseed oil	2	1	0	2	0	0	2	2	3	2	2
Fish oil	99	95	118	105	96	89	127	157	152	174	178
Linseed oil	56	52	42	72	70	75	80	71	46	64	64
Olive oil	30	26	45	30	74	73	72	87	85	93	90
Palm oil	67	83	108	109	95	89	128	117	87	117	121
Palm Kernel oil	55	41	47	45	29	26	39	32	31	32	33
Peanut oil	51	72	46	43	42	60	80	62	71	73	75
Soybean oil	659	680	629	667	842	929	897	886	960	903	792
Sunflowerseed oil	84	61	75	74	156	200	273	290	287	330	335
Rapeseed oil	242	255	235	299	359	349	400	534	551	557	544
TOTAL	1,420	1,562	1,611	1,603	1,884	1,945	2,154	2,305	2,359	2,418	2,289

Table 3, continued

	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83 Prelim	83/84 Forecast
Ending Stocks											
Coconut oil	6	20	20	22	19	20	22	26	16	16	26
Cottonseed oil	0	0	0	0	0	0	4	3	5	4	3
Fish oil	32	38	46	52	66	40	92	64	72	67	58
Linseed oil	0	1	0	1	2	0	0	0	1	0	0
Olive oil	293	327	423	361	419	360	358	424	359	424	409
Palm oil	20	37	34	29	27	49	37	32	35	31	30
Palm Kernel oil	11	12	14	12	13	15	21	10	8	12	15
Peanut oil	1	2	1	0	26	39	38	18	9	14	28
Soybean oil	38	22	34	38	72	152	218	152	229	179	142
Sunflowerseed oil	23	13	13	14	36	36	66	58	46	28	17
Rapeseed oil	35	28	20	20	30	43	72	54	36	55	56
TOTAL	459	500	605	549	710	754	928	841	816	830	784

Table 4: Cash Receipts from Farm Marketings: Total Value and Value of Soybeans, by State, 1980 - 1982

State	Year	Total Value	Value of Soybeans (2)	(2) as percent of (1)
U.S.	1980	140,501,236	14,245,610	10.1
	1981	142,272,722	12,256,420	8.6
	1982	144,551,309	12,434,347	8.6
Alabama	1980	1,929,518	262,376	13.6
	1981	2,246,692	259,582	11.6
	1982	2,271,607	323,144	14.2
Arkansas	1980	3,075,826	710,610	23.1
	1981	3,407,893	598,629	17.6
	1982	3,416,535	588,330	17.6
Delaware	1980	339,158	33,715	9.9
	1981	391,499	41,066	10.5
	1982	404,575	36,089	8.9
Florida	1980	4,061,933	66,955	1.6
	1981	4,263,363	68,914	1.6
	1982	4,250,247	76,764	1.8
Georgia	1980	2,728,990	227,829	8.3
	1981	3,267,400	232,632	7.1
	1982	3,209,703	303,945	9.5
Illinois	1980	7,973,461	2,446,905	30.7
	1981	7,512,431	2,254,688	30.0
	1982	7,434,407	1,926,638	25.9
Indiana	1980	4,715,633	1,264,035	26,8
	1981	4,238,620	939,022	22.2
	1982	4,586,379	1,029,435	22.4
Iowa	1980	10,488,188	2,172,444	20.7
	1981	10,566,554	2,051,793	19.4
	1982	10,343,345	1,845,543	17.9

Table 4, continued

State	Year	Total Value	Value of Soybeans (2)	(2) as percent of (1)
Kansas	1980	5,724,375	218,910	3.8
	1981	5,571,843	222,938	4.0
	1982	5,809,323	245,590	4.2
Kentucky	1980	2,750,964	383,679	13.9
	1981	2,820,245	272,112	9.6
	1982	2,903,425	311,412	10.7
Louisiana	1980	1,630,102	535,115	32.8
	1981	1,727,626	427,744	24.8
	1982	1,843,728	447,296	24.3
Maryland	1980	927,887	59,177	6.4
	1981	1,059,496	65,739	6.2
	1982	1,054,591	63,056	6.0
Michigan	1980	2,748,638	227,372	8.3
	1981	2,787,926	166,402	6.0
	1982	2,862,620	232,759	8.1
Minnesota	1980	6,597,495	1,119,533	17.0
	1981	6,508,532	900,264	13.8
	1982	6,672,200	930,893	14.0
Mississippi	1980	2,236,227	623,890	27.9
	1981	2,210,581	466,450	21.1
	1982	2,431,295	463,510	19.1
Missouri	1980	4,149,796	1,104,901	26.6
	1981	4,179,519	911,736	21.8
	1982	3,673,475	848,990	23.1
Nebraska	1980	6,464,955	336,470	5.2
	1981	6,440,302	424,421	6.6
	1982	7,086,850	490,214	6.9

Table 4, continued

State	Year	Total Value	Value of Soybeans (2)	(2) as percent of (1)
New Jersey	1980	438,449	26,382	6.0
	1981	499,700	30,351	6.1
	1982	515,987	25,412	6.9
New York	1980	2,488,442	3,180	0.1
	1981	2,671,602	NA	
	1982	2,587,752	NA	
North Carolina	1980	3,592,612	242,131	6.7
	1981	4,151,364	274,888	6.6
	1982	4,112,303	320,480	7.8
North Dakota	1980	2,608,805	29,693	1.1
	1981	2,560,888	30,163	1.2
	1982	2,710,391	43,269	1.6
Ohio	1980	4,215,141	1,116,156	26.5
	1981	3,363,126	651,018	19.4
	1982	3,673,806	806,966	22.0
Oklahoma	1980	3,187,368	30,211	0.9
	1981	2,868,621	31,818	1.1
	1982	3,131,026	32,817	1.0
Pennsylvania	1980	2,639,203	16,030	0.6
	1981	2,908,490	18,441	0.6
	1982	2,990,954	17,591	0.6
South Carolina	1980	1,106,426	255,058	23.1
	1981	1,125,716	162,468	14.4
	1982	1,155,944	195,660	16.9
South Dakota	1980	2,722,441	113,869	4.2
	1981	2,718,424	132,143	4.9
	1982	2,587,400	140,290	5.4
Tennessee	1980	1,901,495	390,062	20.5
	1981	2,011,983	379,052	18.8
	1982	2,122,507	399,447	18.9

Table 4, continued

State	Year	Total Value	Value of Soybeans (2)	(2) as percent of (1)
Texas	1980	9,110,159	99,453	1.1
	1981	9,776,731	85,352	0.9
	1982	9,679,665	95,605	1.0
Virginia	1980	1,443,218	71,704	5.0
	1981	1,637,819	84,116	5.1
	1982	1,679,615	101,319	6.0
Wisconsin	1980	4,715,116	57,825	1.2
	1981	5,244,909	72,478	1.4
	1982	5,247,163	82,874	1.6

Table 5: Acreage Planted to Soybeans by Region and State, 1981

Region	Soybean acreage (1,000 acres)
Western Corn Belt	22585
Missouri	5180
Iowa	8200
Minnesota	4500
Nebraska	2150
Kansas	1540
South Dakota	780
North Dakota	235
Eastern Corn Belt	18580
Illinois	9400
Indiana	4650
Ohio	3550
Michigan	980
South East	7920
Alabama	2100
Georgia	2300
North Carolina	1920
South Carolina	1600
South Central	15660
Arkansas	4550
Louisiana	3210
Mississippi	3700
Tennessee	2450
Kentucky	1750
Atlantic Coast and Other States	5060
Florida	475
Virginia	2450
Wisconsin	380
Maryland, Delaware, New Jersey, New York, Oklahoma, Pennsylvania, Texas	1755

Table 6: Regional soybean acreage response equations

Dependent variable	Explanatory variables and coefficients*	R2
SOYAPAC =	69.245 + 0.766SOYAPAC1 + 4.767ENRSOYAC - 1.883ENRCOR (1.00) (6.32) (3.65) (2.57)	.90
SOYAPSE =	-832.777 + 1.101SOYAPSE1 + 47.735ENRSOYSE - 3.645ENRCOTSE - 19.100ENRCOR (2.00) (15.10) (4.13) (1.04) (3.77)	.97
SOYAPSC =	514.612 + 0.935SOYAPSC1 + 44.031ENRSOYSC - 6.128ENRCOTSC - 7.517ENRRICSC (0.74) (19.04) (4.06) (1.19) (3.73)	.99
SOYAPEC =	-602.779 + 0.972SOYAPEC1 + 60.202ENRSOYEC - 55.560ENRCOR (1.10) (13.90) (5.28) (6.37)	.97
SOYAPWC =	2657.006 + 0.717SOYAPWC1 + 110.556ENRSOYWC - 36.180ENRCOR - 141.654ENROAT (2.49) (7.64) (5.89) (2.22) (3.29)	.96
SOYAPOS =	-433.642 + 1.081SOYAPOS1 + 18.002ENRSOYOS - 6.383ENRCOR (3.53) (15.62) (4.40) (3.63)	.95

*Numbers in parentheses are t" ratios

SOYAPj = planted soybean acreage for region j , 1,000 acres
SOYAPj1 = lagged soybean acreage
ENRij = expected net returns for commodity i in region j, constant 1972 dollars
i = commodity, soy=soybeans, cor=corn, oat=oats, cot=cotton, ric=rice
j = region, AC=Atlantic Coast, SE=Southeast, SC=South Central, EC=Eastern Corn Belt, WC=Western Corn Belt, OS=Other States

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EC POLICY IN THE SOYBEAN AND OILSEED MARKETS AND IMPLICATIONS FOR THE U.S. SOYBEAN INDUSTRY

by

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AN ABSTRACT OF A MASTER'S REPORT

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A description of the European Community's Common Agricultural Policy is given. Its internal problems and linkages to the oilseed market are discussed. Based on this, and a description of the EC market for soybeans and other oilseeds, conflicts between the EC's oilseed market policy and the regulations in other EC agricultural markets are pointed out. Future policy options of the EC in the soybean market are then discussed. Policy changes in this particular market are highly important for the U.S. as a major supplier soybeans. The separate effects of an EC tax on domesticly consumed fats and oils, a tariff on soybean meal imports, joint tariffs on soybeans and soybean meal, and a variable levy on soybeans are analyzed within the framework of graphical partial equilibrium analysis. All these measures are found to depress the world market price for soybeans. Impacts of reduced soybean prices on the U.S. soybean industry are evaluated. An assessment of the U.S. pricing system indicates that a decline of world market prices for soybeans would be passed on to U.S. farmers. U.S. aggregate and regional acreage response to price changes are evaluated.