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An evaluation of the cost of the Common Agricultural Policy: the case of the French wheat sector

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An evaluation of the cost of the Common Agricultural Policy:

The Case of the French wheat sector

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by

Marta Patricia Godoy

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of the
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MASTER OF SCIENCE

Major: Economics

Signatures have been redacted for privacy

Iowa State University
Ames, Iowa
1987

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LIST OF ACRONYMS

ACP	=	African, Caribbean and the Pacific States
BAE	=	Bureau of Agricultural Economics
CAP	=	Common Agricultural Policy
DM	=	Dutch Mark <i>- does not exist</i>
DKr	=	Danish Krone
Dr	=	Greek Drachma
EAGGF	=	European Agricultural Guidance and Guarantee Fund
ECU	=	European Currency Unit
EEC	=	European Economic Community
EIB	=	European Investment Bank
ERDF	=	European Regional Development Bank
EUA	=	European Unit of Account
FAO	=	Food and Agriculture Organization of The United Nations
FAS	=	Foreign Agricultural Service
FFr	=	French Francs
GR	=	Green Rate of Exchange
HA	=	Hectares
Ir	=	Irish Pound
LIT	=	Italian Liras
MCA	=	Monetary Compensatory Amount

M.MT = Million Metric Tons

M.T = Metric Ton

ONIC = Office National Interprofessional des Cereals

CHAPTER I. INTRODUCTION

In the past decade, the European Economic Community (EEC) has experienced a massive turnaround in its agricultural trading position. It has moved from being one of the world's largest importers of temperate agricultural products to one of the world's largest exporters.

A main inducement for this extensive change has been the numerous support programs implemented by the Common Agricultural Policy (CAP). Nevertheless, such programs have implied large costs not only to the Community's consumers and taxpayers but also to other major agricultural exporting nations.

This study will focus on the French wheat sector to evaluate the historical costs of the CAP policies and to what extent these costs have influenced the level of supports and how these policies have affected French trade.

This chapter presents a general description of the principles behind the creation of the CAP, its functions and objectives, a problem statement and a brief introduction of material contained in the remaining chapters.

The Common Agricultural Policy

The EEC came into existence on the 25th of March, 1957, when The Rome Treaty received a unanimous approval from the six member states (France, West Germany, Italy, Nether-

lands, Belgium and Luxembourg) whose intentions were to move toward economic unification. The EEC expanded to a total of 12 members with the incorporation of the United Kingdom, Ireland and Denmark in 1973, Greece in 1981 and of Spain and Portugal in January 1986. During the 1950s, agriculture was a problem sector in most European countries, had many trade impediments and agricultural protection strongly relied on direct limitations to the movement of goods. The weakness of the sector during this period was reflected in the fact that it employed about 20% of the Community's workforce and only accounted for 9% of gross domestic product. Farm income was well below levels of other sectors, and the six original members were largely dependent on imports for their food requirements. Security of food supply acquired a high value politically, due to the shortages suffered as a result of World War II.

The prevailing mood of these days gave rise to the foundations for The Rome Treaty. The principal objectives of The Treaty were:

- (1) To establish a customs union with free movement of goods between the members states
- (2) To eliminate quotas and barriers to intra-community trade of all kinds
- (3) The free movement within the Community of people, capital and services
- (4) The approximation of laws in EEC members to achieve a common market

From this Treaty emerged Article 39 which specified objectives to be pursued by the Common Agricultural Policy:

- (1) To increase agricultural productivity
- (2) To ensure a fair standard of living for the agricultural community
- (3) To stabilize markets
- (4) To assure availability of supplies reach consumers at a reasonable price

Although the birth of the CAP took place with the signing of the Treaty, the actual instruments or methods to implement it were not specified or agreed upon until 1959 during the Stresa Conference. This conference emphasized the aspects of economic and social life that the delegates considered important and generated a set of general resolutions, which were the first steps of forming CAP's specific instruments and goals.

One of the major points of the final resolution was that agriculture should be considered as an integral part of the economy and as an essential factor in social life.

The central characteristics of the system adopted by CAP to set in motion its agricultural policies are price supports and managed markets. Although operational details have changed throughout the years, the basic principles have altered little and still are free internal trade, preference for member countries, and joint financial responsibility.

Price support and market management systems are based on

variable levies on imports, internal intervention purchasing arrangements, variable export refunds or restitutions, assistance with storage costs of surpluses, and consumer subsidies to encourage domestic consumption of selected products.

Cereal prices in the EEC are set at an annual review of the Council of Ministers. These apply for the marketing year from August 1st through July 31st of the following year and are determined using four different prices:

- (1) INTERVENTION PRICE: The delivered price at which the Community authorities must buy grain of a given standard offered by farmers or traders. It is to be the market of last resort, and so it sets a floor under Community grain prices.
- (2) REFERENCE PRICE: A special reference price is fixed for wheat of bread-making quality, which sets a floor price and can be applied as an intervention price for part of the year.
- (3) TARGET PRICE: The indicative market price set for Community producers. Since market prices are intended to be above the intervention level they are set and announced on such basis.
- (4) THRESHOLD PRICE: The price barrier which grain from third countries must cross in order to enter the Community market. Grain imported into the community has a variable levy applied to it that reflects the

difference between world price and the threshold price.

Variable import levies are a source of income to the EEC and are structured to prevent third countries from undercutting the Community's price support system.

A large portion of agricultural support is financed through the EEC budget with the mechanisms provided by the European Agricultural Guidance and Guarantee Fund (EAGGF) which normally accounts for about two-thirds of the total budget.

The Guaranteed Section of the EAGGF finances:

- refunds on exports to non-member countries and
- intervention to stabilize agricultural markets, including monetary compensatory amounts.

The role of the Guidance Section is to participate in financing the Community agricultural structures policy. The Section's financial resources are used:

- to finance common measures decided by the Council aimed at the objectives laid down by the CAP and
- for capital subsidies for projects designed to improve agricultural structures.

In allocating the appropriations, priority is given to common and special measures while the financing of individual projects is carried out as long as the total amount allocated to common measures in a given year does not exceed the Guid-

ance Section annual budget.

One of CAP operations has been to limit the effects of variations in national exchange rates on agricultural support levels. With the elimination of the Bretton Woods Agreement and the adoption of flexible exchange rates during the late '60s and early '70s, some Community members introduced border charges or subsidies for agricultural goods to offset variations in national exchange rates. These border taxes and subsidies became known as "Monetary Compensatory Amounts" (MCAs) and the rates at which the products were paid as green rates.

The MCA system was introduced to insulate agriculture in the EEC countries from the effects of national currency fluctuations however, its introduction has caused discrepancies between effective exchange rates applied to agricultural products and the one applied to other goods and services.

The past few years the Commission of the European Community has supported its elimination since it has become administratively costly, it is open to abuse, it has institutionalized price differentials between member states which are not consistent with a unified market and are inefficient from a resource allocation point of view, and because price differentials can lead to frictions between member countries.

Throughout the '70s and early '80s, MCAs have been largely positive in the case of strong currencies and

largely negative for weaker currencies.

The manipulation of MCAs is equivalent to manipulation of agricultural prices, the reduction of negative MCAs has been relatively easier to achieve than the reduction of positive MCAs; but the complete elimination of the system is extremely difficult to achieve.

The MCAs applied up to April 1984 represented the difference between "green rates" and the national market exchange rate. After that, they represent the difference between the "green rates" and the "green central rate".

Because changes in currency parities between member countries when there was appreciation or depreciation of any one currency created problems of accounting at the Community level, a common accounting unit was established and since 1979 has been the European Currency Unit (ECU) which is a basket unit made up of weighted proportion of the member countries currencies.

The ECU is part of the European Monetary System which specifies that market rates of the currencies of all EEC members, except the U.K. and Greece, are permitted to fluctuate in ECU terms within a specific range from the established central rates. The principle behind this system is to induce greater stability among the Community currencies.

At the end of March 1984, MCA rates were as follows:

FIXED MCAs		VARIABLE MCAs	
GERMANY F.R.	-cereals +10.3%	ITALY	-1.8%
NETHERLANDS	-cereals + 6.2%	U.K.	+3.7%
BELGIUM	0.0%	GREECE	-11.9%
FRANCE	-dairy - 3.4%		
	-other - 4.4%		
DENMARK	+ 1.1%		
IRELAND	0.0%		

The 1984 MCA plan, which introduced the green central rate, emphasizes the elimination of positive MCAs by ensuring negative MCAs through linking green central rates to the most rapidly appreciating currency of the Community. If negative MCAs are counter-balanced by depreciating own green rates, which will be necessary to prevent large negative MCAs, their agricultural prices will rise by more than prices set in ECU terms.

The new plan was designed to eliminate the fixed positive MCAs applying to Germany and the Netherlands by the 1st of April 1987. The plan is to be carried out in three stages.

FIRST STAGE: Introduced in April 1984. The first stage consisted of a redefinition of MCAs by introducing green central rates equivalent to 103% of national central rate per ECU. The new MCA = GREEN RATE - GREEN CENTRAL RATE. This reduced positive MCAs by 3% and increased negative MCAs by

3%. The countries that faced negative MCAs were permitted to depreciate their green rate to eliminate some of their negative MCAs.

SECOND STAGE: Going into effect the 1st of January 1985. The second stage consisted of a reduction for Germany's positive MCAs by 5% and for the Netherlands by 0.6-0.8% of which 0.7% was specific for cereals. This was carried out by appreciating German and Dutch green rates. German farmers are to be compensated by reducing their VAT payments equivalent to 5% of their returns. The Community is to pay the German government 120m ECU in 1985 and 100m ECU in 1986.

THIRD STAGE: To be introduced on the 1st of April 1987, the third stage intends to eliminate the remaining positive MCAs for Germany and the Netherlands. Although the methodology is not yet precise, it has been implied that these countries will experience an increase in ECU prices at that time.

Problem Statement

The central objective of the Common Agricultural Policy is to protect and help the development of the Community's agricultural sector. Since its institution, the CAP has been largely successful in achieving its objectives through its various support programs.

During the '70s and early '80s, the Community has rapid-

ly increased its exports of cereals to third countries, while imports have declined in the same manner. This has resulted in increasing export subsidy expenditures and decreasing import revenues. Overall, budgetary pressures caused by the change in trading position have become increasingly difficult to handle in the past decade. These pressures have the potential to exceed the financial sources of the EEC, if correctional measures to change the course of the present situation are not implemented.

The Community has arrived at such a state partly by ignoring the long-run effects of policies implemented in the past as well as the influence of world market factors.

Objectives

The objectives of this research will be:

- (1) To develop an econometric model of France's wheat sector that measures and analyzes the effects of policy changes during 1975-1985 period applying to the soft-wheat sector
- (2) To analyze and measure the cost of CAP programs to consumers, taxpayers and producers in France
- (3) To examine and analyze results due to policy shocks given alternative policies and how they would have affected French trade and production

Chapter II gives detailed information on the changes that the EEC has experienced during the 1975-1985 decade. It includes trends on prices, imports, exports, farm income and program expenditures.

Chapter III provides a literature review of previous work and a presentation of the conceptual model and model specification to be used in the analysis, including a full specification of variables and data involved in the model together with any special information concerning data used.

Chapter IV will report the empirical estimates of model parameters and the validation methods used. Chapter V will discuss the results of the policy analysis and Chapter VI will present the final conclusions.

CHAPTER II. AN OVERVIEW OF THE PAST DECADE

Since its institution, the Common Agricultural Policy has been very successful in helping to the development and growth of the Community's agricultural sector.

The pricing support system established has been a strong incentive to substantial increases in production of agricultural goods.

Wheat is one of the important cereal grains in Western Europe. During the 1977-1984 period, the agricultural land committed to the production of wheat increased from 40 percent of total area for all grains to 50 percent. Yields increased at a faster rate during the same period.

France is the major wheat producer in Europe accounting for 40 to 45 percent of total production for the Community.

TABLE 2.1. Wheat area, production and yield EEC and U.S.A. (1981-1983)^a

COUNTRY	AREA (HA)	YIELD/HA.	PRODUCTION
FRANCE	4717,000	5.18 MT.	24.43 M.MT
U.K.	1695,000	6.42 MT.	10.88 M.MT
GERMANY F.R	1655,000	5.44 MT.	8.99 M.MT
ITALY	1579,000	3.55 MT.	5.61 M.MT
GREECE	713,000	2.05 MT.	4.02 M.MT
OTHER 5	653,000	6.19 MT.	4.04 M.MT
EEC10 1983	11012,000	5.03 MT.	55.43 M.MT
EEC10 1982	10888,000	5.13 MT.	55.85 M.MT
EEC10 1981	10624,000	4.70 MT.	49.98 M.MT
U.S.A 1983	24858,000	2.64 MT.	65.86 M.MT
U.S.A 1982	31538,000	2.38 MT.	75.25 M.MT
U.S.A 1981	32632,000	2.31 MT.	75.79 M.MT

^aB. F. Stanton (1986).

The relatively large differences between EEC and U.S.A yields per acre can be partly explained by the increasing substitution of capital and new technology for land and labor. In the EEC, a major contributor to yield increases has been the development of new short-stemmed, disease resistant varieties of cereals. Furthermore, Europe in general has more stable weather conditions than the U.S.A. The evolution of wheat yields in the Community can also be seen in Figure 2.1.

One of the broad objectives of the CAP is to ensure availability of food supplies. In recent years, this objective has been overachieved and a situation of self-sufficiency has turned into one of surplus. In the case of wheat, the degree of self-sufficiency in the EEC has increased from 94% in 1968/1969 to 105% in 1977/1978 and to 127% in 1981/1982. France's degree of self-sufficiency for soft-wheat has varied from 148% in 1966/1970 to 211% in 1974/1975, 203% in 1979/1980, 210% in 1981/1982 and to 209% in 1983/84 and for hard wheat from 52% in 1966/1970 to 103% in 1974/1975, 64% in 1979/1980, 66% in 1981/1982 and 61% in 1983/84.

Before the unification of the European market, most member states had already strong protectionist measures for their agricultural sector. Thus, when first CAP price levels were formulated they had a substantial inbuilt system of protection. In fact, protectionism could only increase since

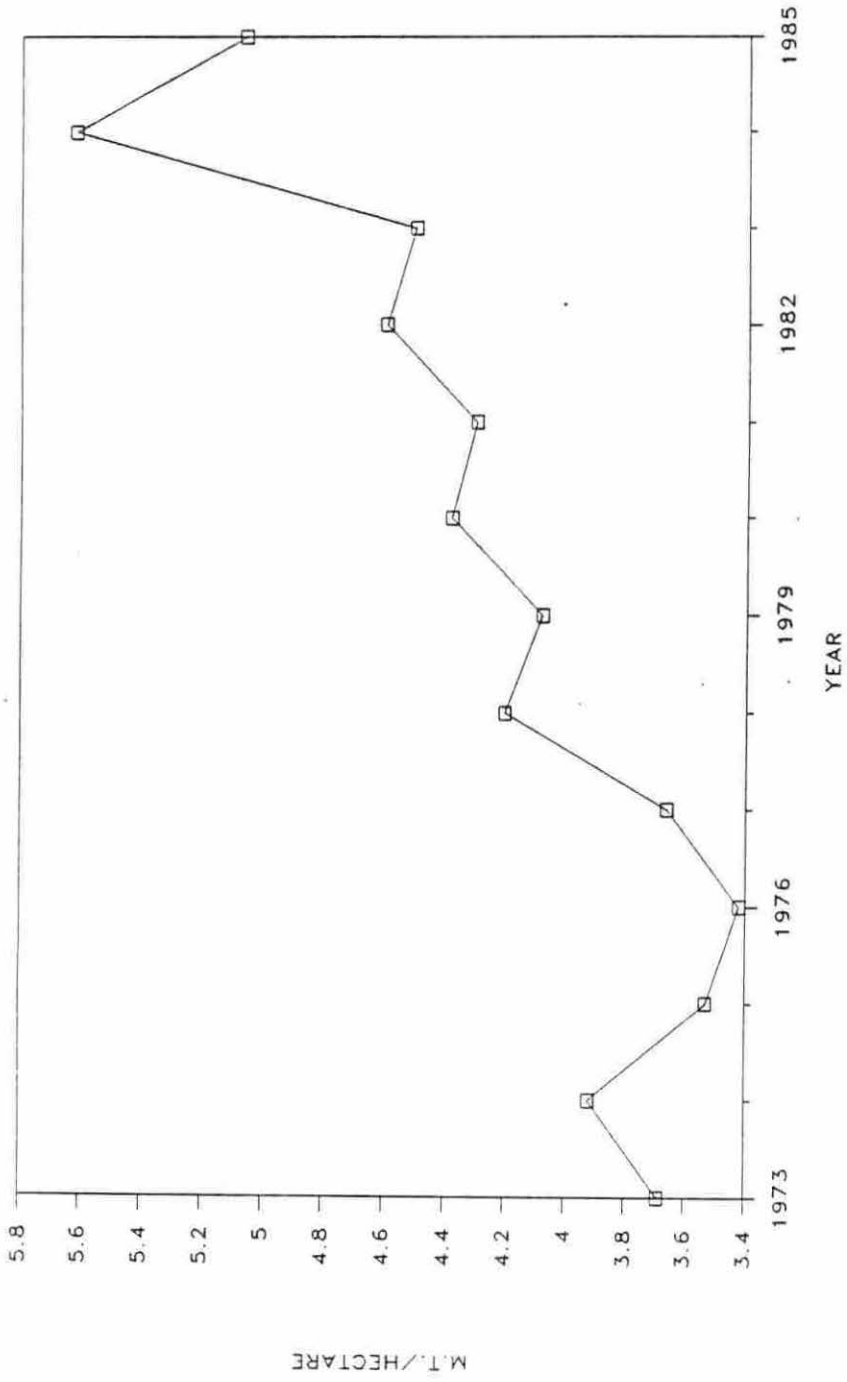


FIGURE 2.1. EEC wheat yields

high price countries tried to maintain their level of prices in order to avoid problems of farm incomes. The range of products covered was increased in some countries and supply control methods were eliminated given the widening of the market to all members. However, it should not be overlooked that although there was a further introduction of protective measures they have not prevented the European Community from participating in world trade. The EEC is nowadays the second largest exporter of agricultural products behind the U.S.A., but it has remained a net importer in overall agricultural trade.

Before the introduction of flexible exchange rates support prices were relatively well harmonized across the Community, but once national exchange rates started fluctuating intervention prices became heterogeneous among the member states. For example, as of March 1983, intervention prices for common wheat in U.S dollars were as shown in Table 2.2.

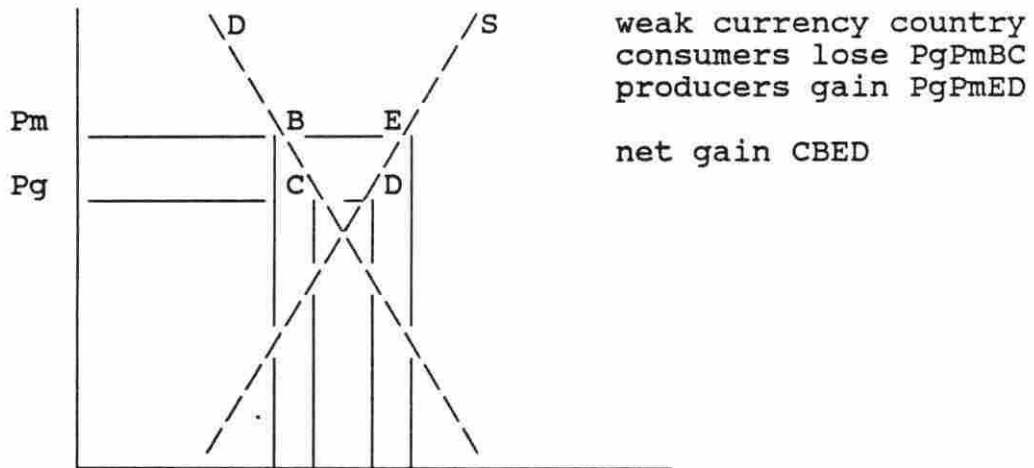
To offset the effects of variable exchange rate, green rates were applied at the border of the trading country to compensate for an appreciating or depreciating national currency.

Because the impacts of MCAs are different in every country, welfare effects should also be looked at on a country basis. The previous illustration shows that welfare impact of price differentials depends on whether the country is an

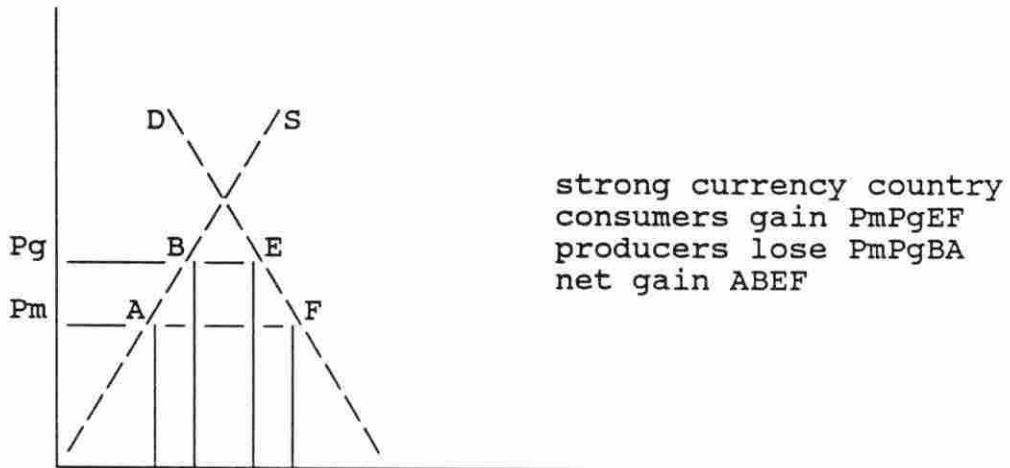
importer or an exporter and whether its currency is appreciating or depreciating.

WELFARE EFFECTS OF MCAs FOR A WEAK CURRENCY EXPORTING¹
COUNTRY AND A STRONG CURRENCY IMPORTING COUNTRY

EXPORTING COUNTRY - GREEN RATE LESS THAN MARKET RATE



IMPORTING COUNTRY - GREEN RATE GREATER THAN MARKET RATE



¹Meilke and de Gorter, 1986.

TABLE 2.2 EEC single intervention prices for common wheat
in March of 1983^a

COUNTRY	NATIONAL CURRENCY/TONNE	US\$/TONNE
EEC10	196.35 ECU	184.5
FRANCE	1216.50 F	173.5
ITALY	253,100.00 LIT	177.5
GERMANY F.R.	505.60 DM	210.0
UNITED KINGDOM	121.50	181.1
NETHERLANDS	541.10 f.	201.7
DENMARK	1616.70 DKr	187.6
GREECE	14051.20 Dr	167.6
BELGIUM	8439.00 \$Ir	183.1

^aBAE, 1985a.

Intervention prices for common wheat set at the Community level have been increasing during the 1975-1985 period (see Figure 2.2) real farm income has trended in the opposite direction with the exception of 1981-1982 (see Figure 2.3). Prices in the years 82/83 and 83/84 remained relatively stable because they were set just above the inflation rate.

One of the factors contributing to the deterioration of real farm income has been the rising value of agricultural inputs relative to agricultural output (Figure 2.4).

The evolution of some input prices in the past decade can be appreciated in the Table 2.3.

Another factor that has been strongly affected by the CAP's supporting programs toward production increases has been inventories held by the Community. From 1978 to 1984, public storage of common wheat and durum wheat have increased by 423% and 564.9% per cent, respectively.

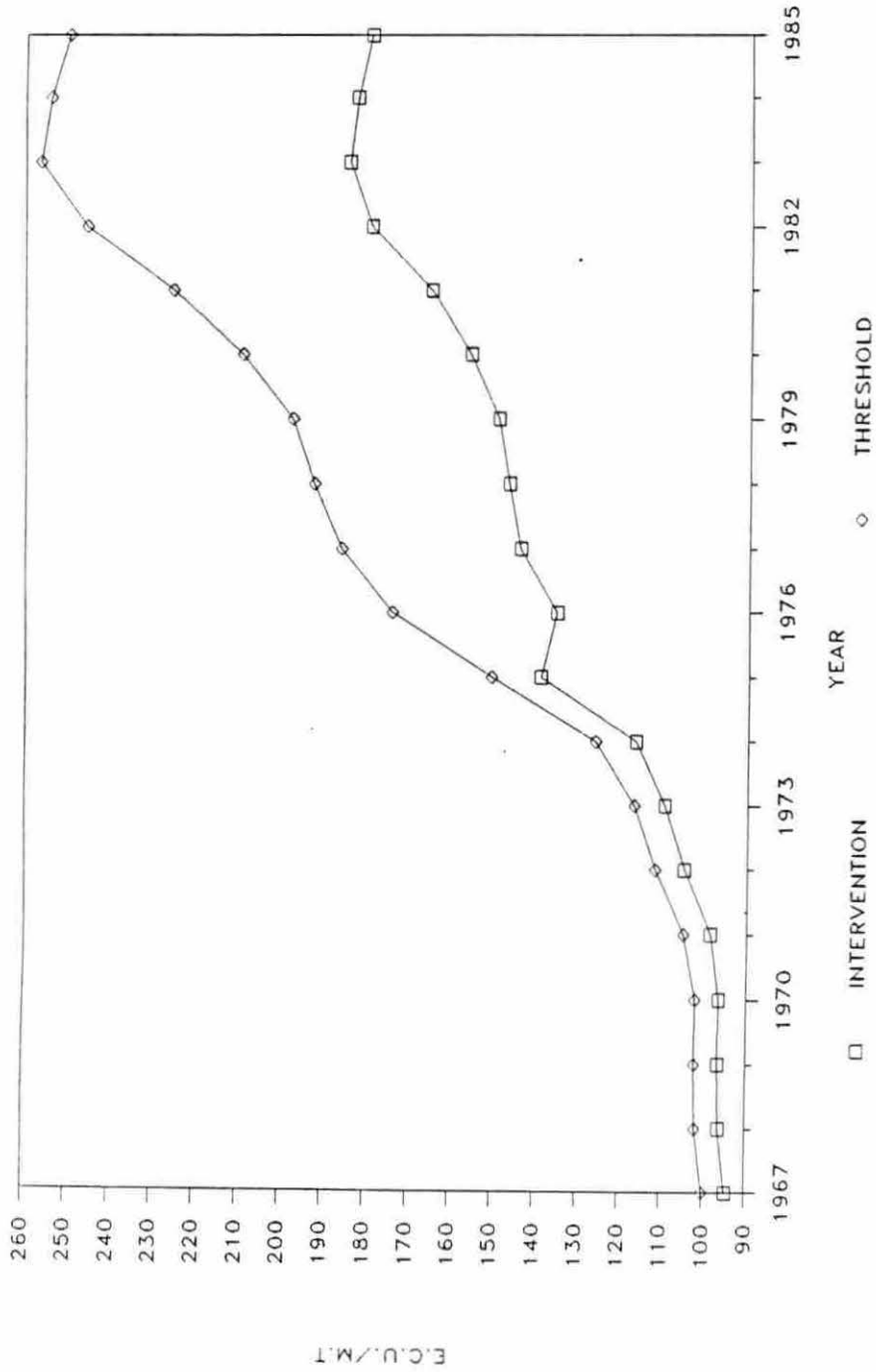


FIGURE 2.2. EEC common wheat prices

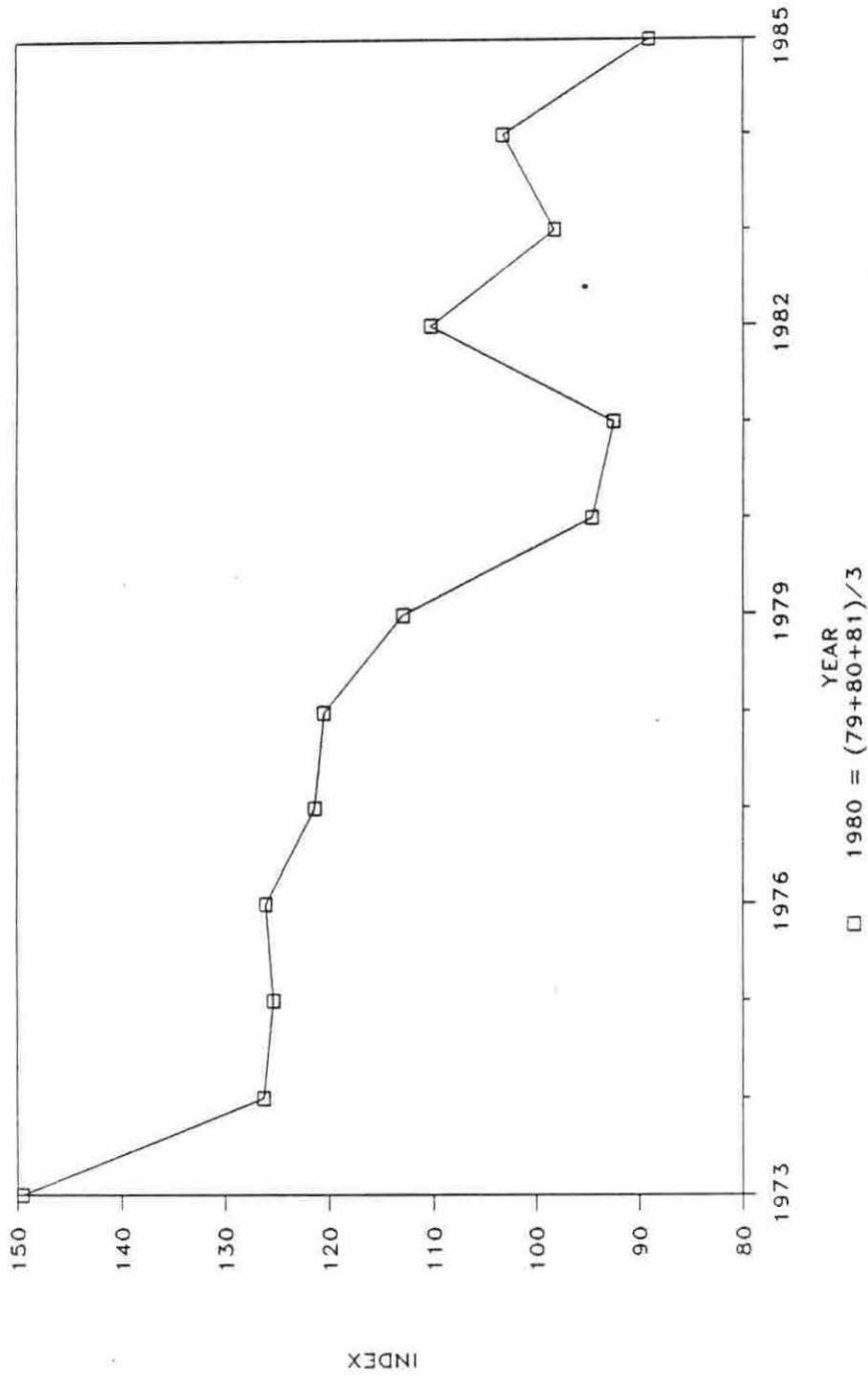


FIGURE 2.3a. Real farm income, EEC 8 1980 = 100

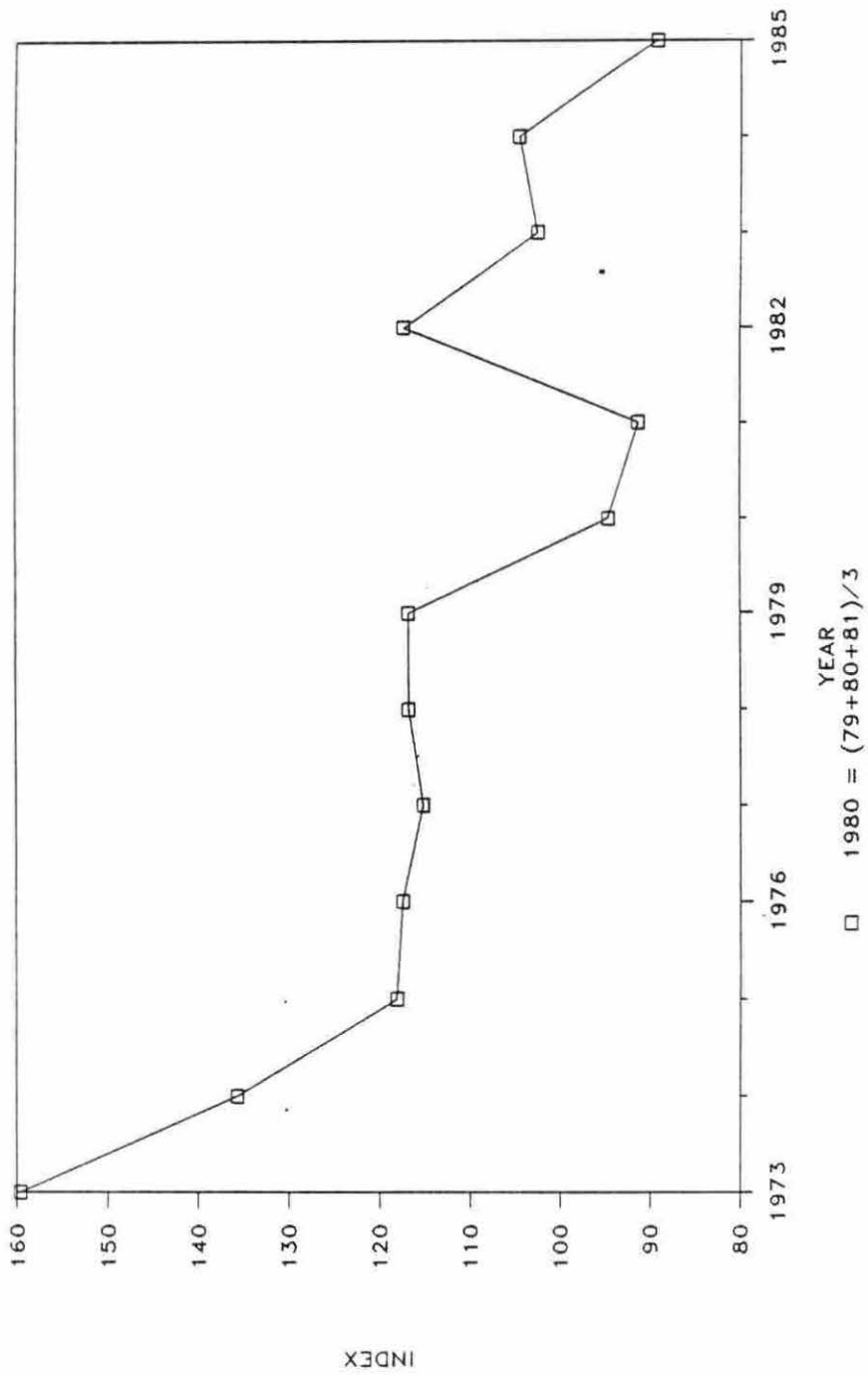


FIGURE 2.3b. Real farm income, FRANCE 1980 = 100

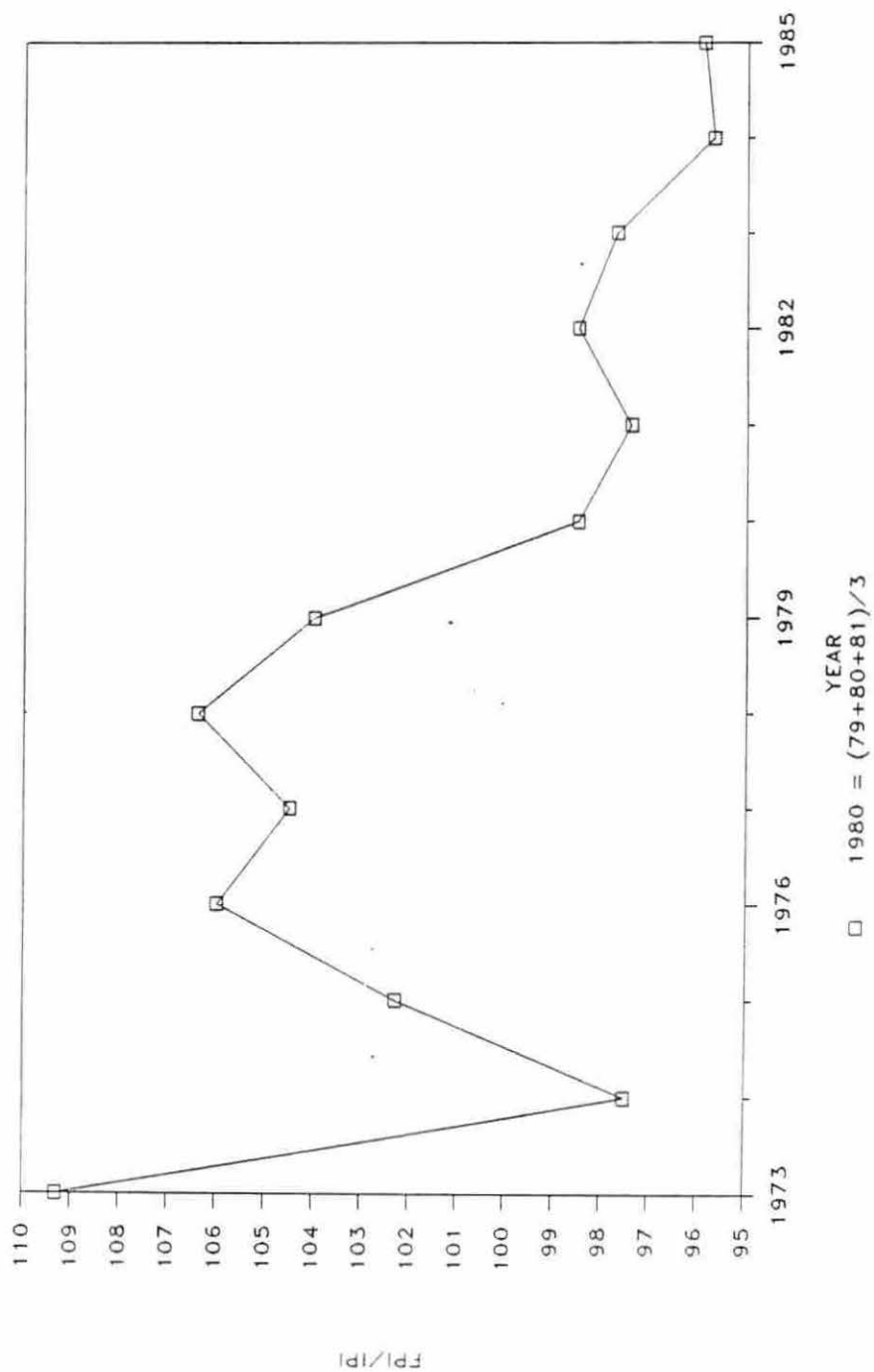


FIGURE 2.4a. Agricultural output/input value, EEC 10

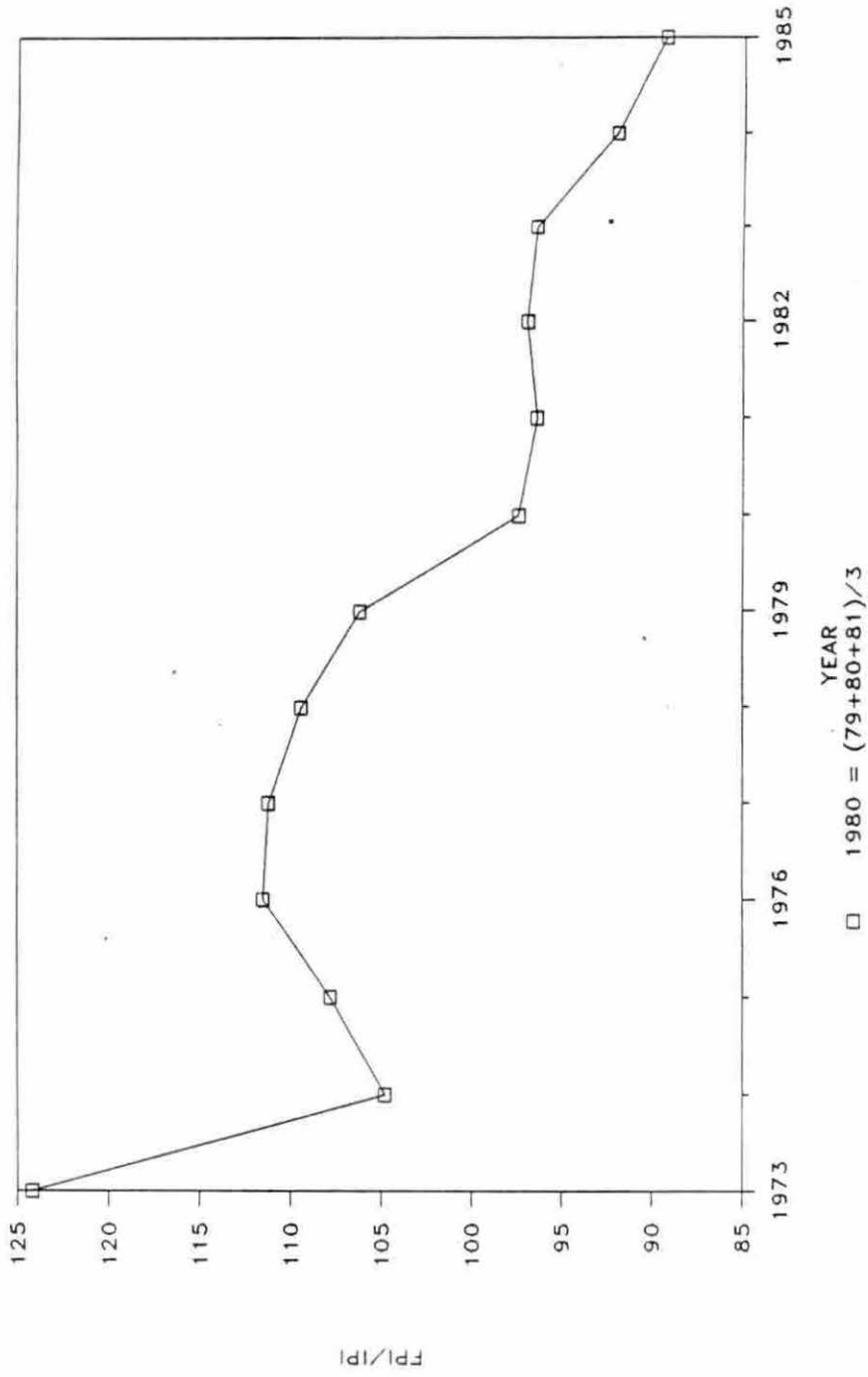


FIGURE 2.4b. Agricultural output/input value, FRANCE

TABLE 2.3. Price indices, EEC 10^{a,b}

YEAR	FERTILIZER & SOIL IMPROVEMENT		INVESTMENT IN MACHINERY		PRODUCER (CROP PRODUCTS)	
	EEC10	FRANCE	EEC10	FRANCE	EEC10	FRANCE
1975	100	100	100	100	100	100
1976	102.4	99.0	110.8	110.1	124.3	122.1
1977	106.1	102.5	122.2	118.5	133.5	133.1
1978	113.6	112.6	131.7	128.2	137.9	132.7
1979	122.6	124.2	143.4	140.9	150.3	142.7
1980	146.4	154.1	158.9	157.2	165.0	151.0
1981	164.9	170.3	175.5	178.4	183.3	167.3
1982	182.7	186.1	194.4	203.1	203.8	184.3
1983	191.2	198.8	212.1	223.0	227.0	206.4
1984	198.6	214.1	232.1	240.6	243.0	218.9
1985	211.7	232.7	246.6	252.7	248.9	213.1

^aAgricultural report, 1976-1986.^bExcludes VAT.TABLE 2.4. EEC public storage^{a,b}

YEAR	COMMON WHEAT		DURUM WHEAT	
	QUANTITY (1000 T)	VALUE (MILL.ECU)	QUANTITY (1000 T)	VALUE (MILL.ECU)
1978	1051	184.3	151	29.8
1979	1878	322.7	143	27.8
1980	4930	830.1	157	29.8
1981	2965	515.6	309.2	59.2
1982	6864.4	1273.6	800.7	199.2
1983	6806.4	1278.7	736.8	186.6
1984	4448.3	872.4	853.0	226.8

^aAgricultural report, 1980-1986.^bSituation as of 31st of December.

Before 1973, the European Economic Community had been a net importer of wheat, but as a result of the CAP's elimination of production control an export push system was developed by the mid-'70s, the Community for first time in history

became a net exporter of wheat (see Figure 2.5).

Since 1975, the gap between imports and exports of wheat has steadily widened. This implies that the Community has gained a proportion of the world market that has probably belonged to other major exporting countries like Australia, Canada and the U.S.A.

TABLE 2.5. EEC share of world wheat trade^{a,b}
(per cent)

YEAR	IMPORT	EXPORT
1976	8.1	8.1
1977	7.0	7.1
1978	6.9	3.9
1979	6.4	6.3
1980	5.2	13.4
1981	4.6	14.2
1982	4.2	15.2

^aAgricultural report, (1978-1984)

^aExcludes intra-EEC trade.

TABLE 2.6. Wheat trade by class^{a,b}

YEAR	SOFT-WHEAT				HARD-WHEAT			
	IMPORTS		EXPORTS		IMPORTS		EXPORTS	
	(1000 T)		(1000 T)		(1000 T)		(1000 T)	
	FRANCE	EEC	FRANCE	EEC	FRANCE	EEC	FRANCE	EEC
1975/76	124	5914	8715	8968	341	1210	229	513
1976/77	57	3233	6593	4441	154	665	303	383
1977/78	258	3900	7827	5014	172	1601	256	524
1978/79	283	3910	9596	8125	340	1142	122	865
1979/80	293 ^c	10424	329	155	...
1980/81	443	3397	13327	14177	307	1133	170	959
1981/82	647	3659	13321	14393	443	1390	182	1378
1982/83	828	2667	13156	13952	441	1210	264	1490
1983/84	417	2740	14277	15276	406	790	180	1243

^aEurostat.

^b(75-79)EEC9, (80-86)EEC10.

^cNot available.

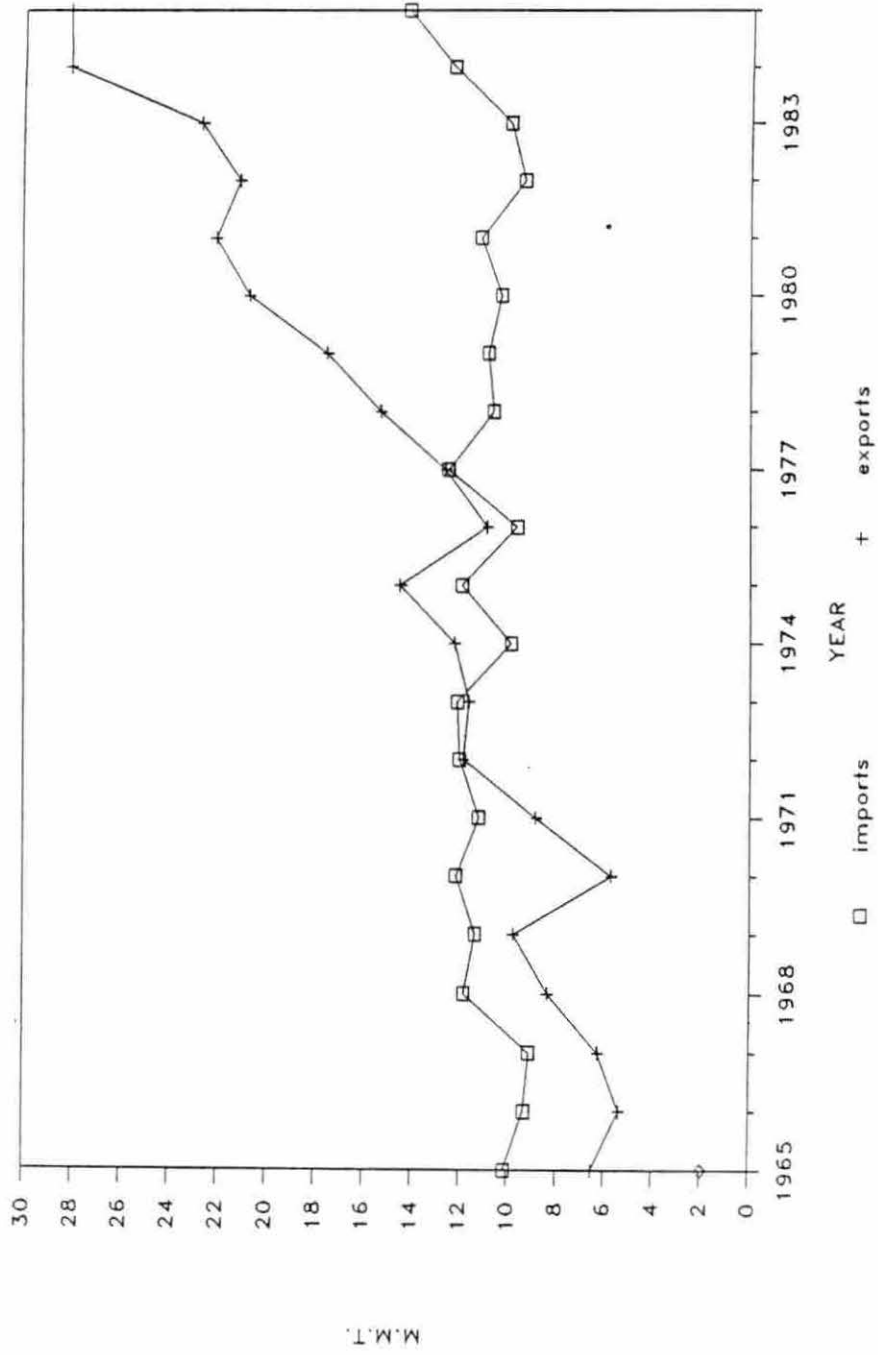


FIGURE 2.5 EEC wheat trade

Since the mid-'70s the European Community has experienced a variation in its agricultural trading partners. The Community has established "general preferences" when trading with the Third World. The "Lome Convention" (signed in 1975) which now covers 60 countries in Africa, the Caribbean and the Pacific (ACP states) specifies that these countries can export almost all their products to the community duty free. Also the Community agreed to buy 1.3 million tons of sugar per year at a price equivalent to the Community's internal market price. Because of these special concessions the EEC increased its imports from developing countries by 87.4% in the 1973-80 period while imports from industrialized countries increased by 68.9%.

In 1975, the general situation of the Community and the CAP was of economic recession facing high inflation, high unemployment and distortions in the balance of payments. The French economy entered the recession in the second half of 1974 and became more evident in the first half of 1975.

Monetary instability around the world and within the Community continued to affect the internal agricultural market and the MCAs. The lack of monetary stability largely affected the CAP since daily and weekly variation of currencies became an additional complication (e.g., effect on import levies and export refunds).

Because of the recession, on the 18th of March 1975, the European Regional Development Fund (ERDF) was set up. The Regional Fund was created upon the idea that the CAP needed additional help in order to successfully implement its policies during this period of world wide economic hardship. The Fund got underway in October of the same year with 160 million u.a. as a first installment of aid for 655 schemes amounting to more than 1.2 million u.a. About 91 of these schemes were set for mountain and hill farming and farming in the less favored areas, mainly in the south of Italy and all over France.

In addition to this Regional Fund, several regulations were introduced throughout the year under the CAP supervision in order to improve agricultural production as well as new regulations for the enhancement of the conditions under which agricultural products were marketed and processed.

The following year, the general economic recovery which started in the Summer of 1975 continued but an extraordinary drought in the Summer of '76 was to decrease agricultural output. Over a large part of France rainfall was less than 40% of the average.

The general recovery differed among the states due to differences in trends and due to the fact that some states had appreciating currencies while others had depreciating currencies.

The Regional Fund continued its aid to farmers and by July of 1976, this aid had amounted to 568 million u.a. On March of that year the Council announced a general increase in agricultural prices of 7.7%.

During 1975, France's principal aims of economic policy were: to continue the fight against inflation, economic re-activation and minimization of the social effects caused by the recession. Policy implementation for the different aims did not take place simultaneously. At the beginning of the year, anti-inflationary policies limited the implementation of policy for economic expansion while in the second half of the year the opposite was the case.

Prices of food and services increased more rapidly than prices of manufactures. The rise in the prices of food products was partly as a result of the EEC policy of raising farm incomes.

France's volume of exports of food and agricultural products declined sharply between the first half of 1974 and the first half of 1975 which was influenced by trends of supply and demand. Cereal harvest was very poor and left only a small surplus for exports. Imports of all goods declined with the exception of food and agricultural products which increased by 12.85% in 1975 and by 51% between April and October of 1976.

In 1975, heavy rain and frost contributed to a fall in

agricultural output while a drought in 1976 added to a decrease in production for two consecutive periods. Grain output fell considerably since 1975 and so livestock farmers had to make up by increasing the use of cereals for feed.

Agricultural incomes in 1976 were highly affected by the exceptional drought. In France, the regions of farms specializing in cereals were the ones to suffer the greatest drop in income. The deterioration of the French economy in 1976, due to effects of the drought on trade in agricultural and food products and oil imports, accelerated the emergence of a large external deficit. This situation caused pressure on the franc and forced its exit from the European monetary "snake" on March of that year and to depreciate against other currencies.

In September of the same year, because of increasing inflationary pressures and the widening of current deficit, a policy of price freeze was introduced followed by a more restrictive monetary and fiscal policy which were carried into 1977.

World markets in agricultural products in 1977 continued to react very strongly to short-term fluctuations in supply and demand.

A better balance between supply and demand for cereal in the world market was experienced in 1975/76. Supply remained abundant until the end of the 1976/77 period due to record

harvest of wheat and secondary cereals. World prices for wheat in 1976/77 fell by 25% for common wheat and 40% for durum wheat. Intervention stocks of common wheat in the Community were reduced by 629,000 tons while stocks of durum wheat increased by 69,000 tons.

Because farming is subject to the variations on the weather, which can drastically change from one year to the next, farm income should be looked at over a longer period of time, e.g., several years.

Looking at agricultural income in the EEC during the 1973-1985 period (see Table 2.7), it can be noticed that agricultural income of all persons employed in farming remained relatively stationary for the Community as a whole and it deteriorated in the case of France which was down 12.6% from 1973/75 to 1982/85.

TABLE 2.7. Net value added at factor cost per person employed, (1973-75 average = 100)^a

PERIOD	FRANCE	EEC
1973-75	100	100
1976-78	90.2	100.1
1979-81	83.2	94.8
1982-85	87.4	100.7
1984	88.8	103.2
1985	80.8	96.6

^aEuropean Community (1986).

If one looks at net farm income the deterioration is more noticeable. As can be seen in Table 2.8, net income of the farmer and his family in the EEC and France fell on average, in real terms between 1973/75 and 1982/85 around 25%.

There are several factors and aspects of factors affecting agricultural income in the Community. During the 1973-85

TABLE 2.8. Net agricultural income of the farmer and his family per work unit^a
(1973-75 average = 100)

PERIOD	FRANCE	EEC
1973-75	100	100
1976-78	84.5	91.7
1979-81	73.2	74.8
1982-85	75.0	74.9
1984	75.9	77.2
1985	64.7	66.6

^aEuropean Community (1986).

period, three factors seemed to have had the largest impact on farmers income. They are: net value added per work unit, final production in volume, and terms of trade.

Figures 2.6 and 2.7 depict some trends during this period. Net farm income is in real terms, net value added is at factor cost and the terms of trade also known as "cost/price squeeze" is the index of farmgate prices divided by the index for prices of inputs.

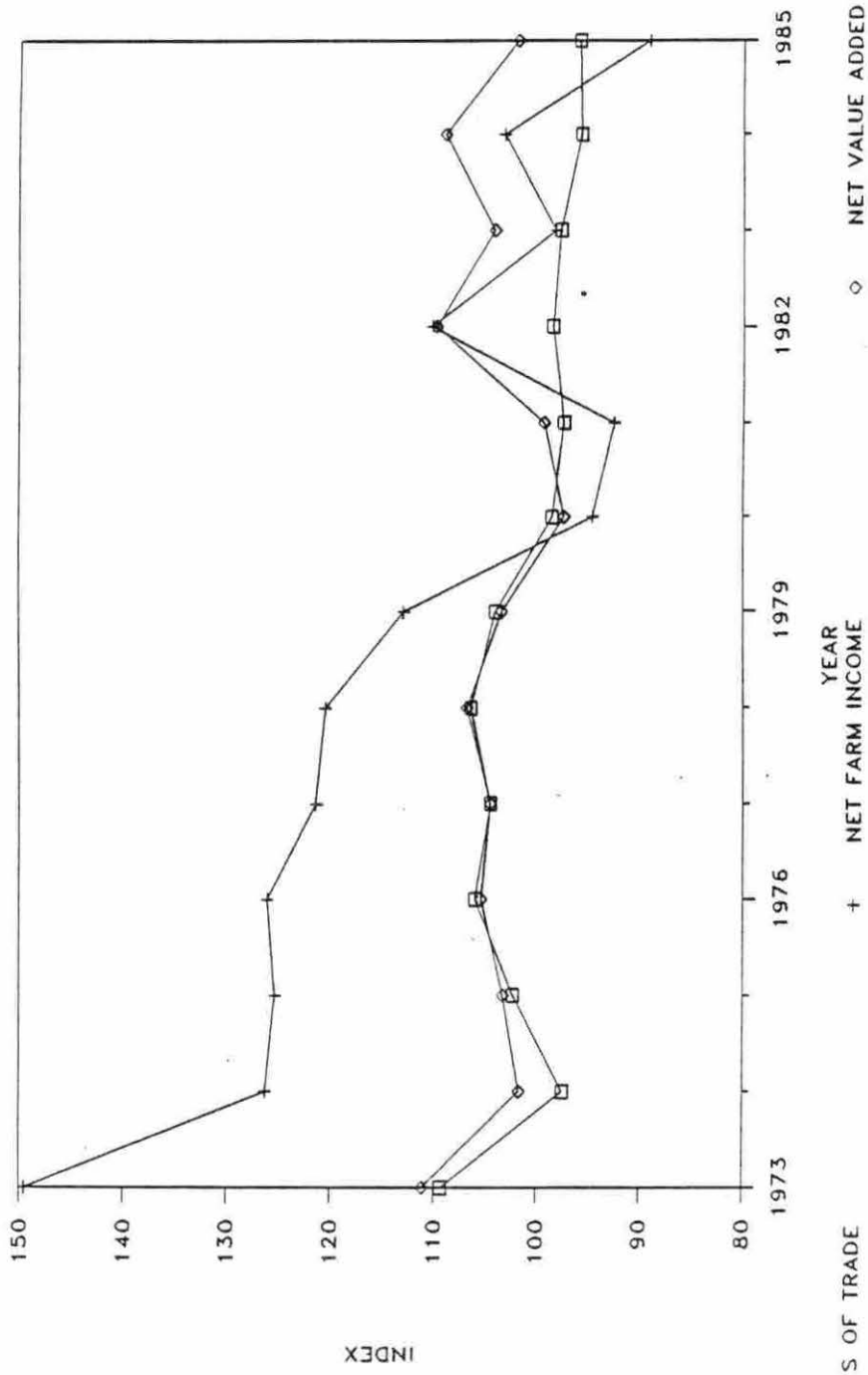


FIGURE 2.6 France agriculture indices, $(79+80+81)/3 = 100$

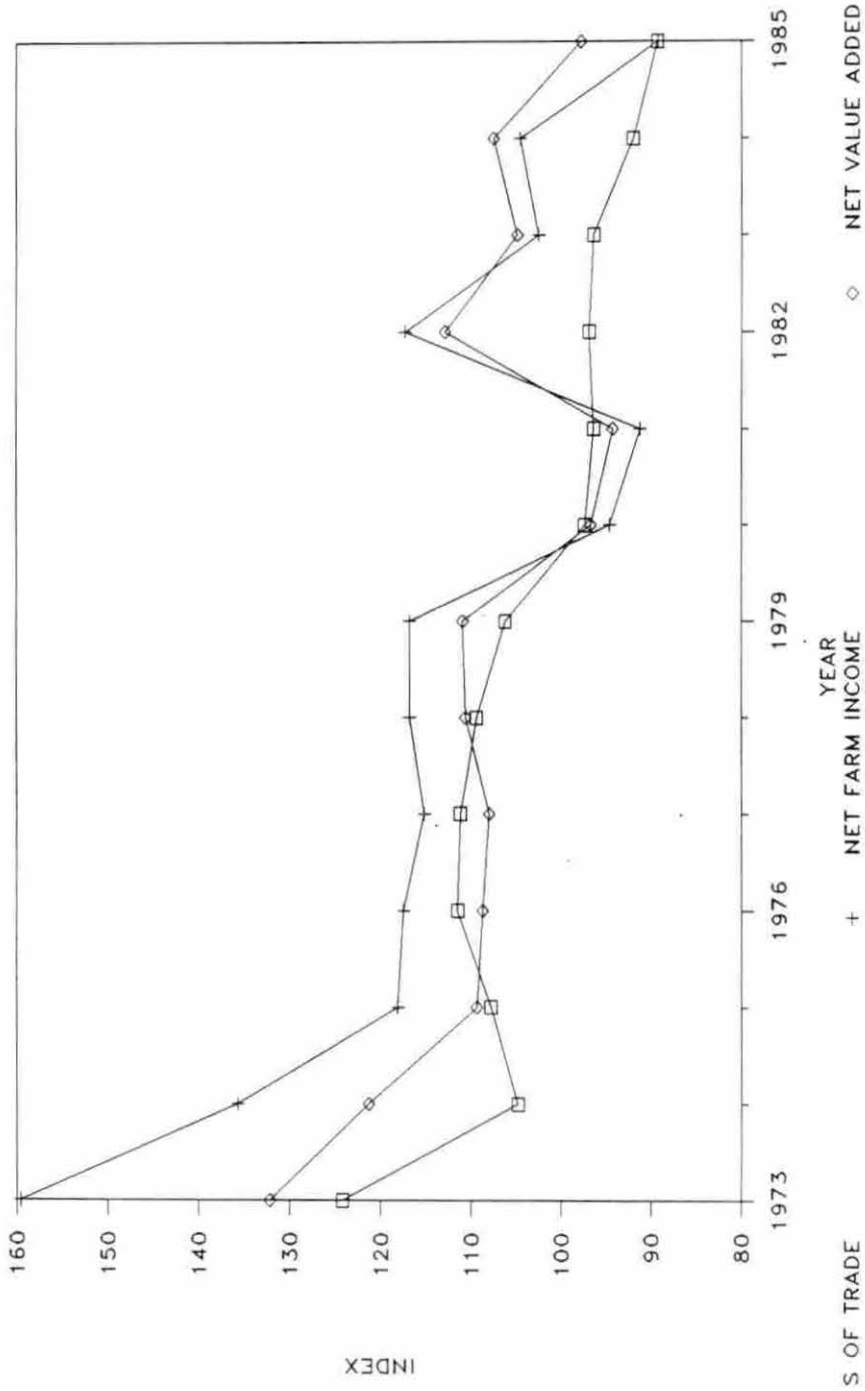


FIGURE 2.7 EEC agriculture indices, $(79+80+81)/3 = 100$

Agricultural terms of trade have followed a steady decline during the 1973-85 period except for a relatively stable situation between 1974 and 1978.

In contrast with a general unsatisfactory economic condition, disposable income continued to increase in 1977 but at a slower pace than in previous years. Per capita wage increases averaged 10.8% in 1976-77 compared with a 12.8% increase in 1975-76. However, this EEC average hides the fact that there were large discrepancies among the member states (e.g., 6.9% in Germany, 23% in Italy). In real terms, private consumption rose by about 3.4% in 1976 and 2% in 1977.

In the 1977/78 marketing year, the average level of common agricultural prices in u.a. rose by 3.9% compared to a 7.7% increase in '76/77 and 9.6% in '75/76. Levies in '76/77 for main cereals increased considerably and in the Summer of 77 they were higher than world prices.

During 1977, several measures to improve product quality were introduced. As of June of that year, the quality level of common wheat of bread-making quality was raised. This was one of the policies for consumer protectionism.

The numerous programs implemented by the CAP have always been constrained by the availability of funds at the Community level. However, the problem of financial allocation has become of greater concern because surpluses of pro-

duction which have lowered world prices have resulted in a continuously increasing subsidization for trade in order to reduce inventories and maintain EEC's farm prices at a higher level than the clearing market would indicate.

The budgetary costs of the CAP represent only a part of the cost of intervention in the Community's agricultural sector. The remaining part is acquired through consumer transfers and expenditures by national governments.

The Community's own resources are now constituted as follows.

TABLE 2.9. Composition of community resources (%)^a

CLASSIFICATION	1980	1984 ^b	1985 ^c
CUSTOMS DUTIES	37.0	31.0	31.5
AGRICULTURAL LEVIES	9.3	7.6	5.4
SUGAR LEVIES	3.1	4.8	3.9
VALUE-ADDED-TAX	44.7	56.5	58.2
OTHER	5.9	0.1	1.0
TOTAL	100.0	100.0	100.0

^aEuropean documentation.

^bIncludes supplementary and amending budget.

^cSituation after council meeting April 85.

The Constitution upon which the EEC was funded forbids budgetary deficits. However, mandatory expenditures have been increasing at a greater rate than financial resources. This situation has caused tensions both within the EEC and among the major trading partners. The resolution of this fun-

damental problem is central to all attempts to reform the CAP.

During the past decade, support expenditures for cereals has steadily increased and at a faster rate than receipts from the CAP. The following tables illustrate the increases in the level of support destined to cereals relative to the rest of the agricultural sector.

TABLE 2.10. Expenditures of EAGGF for cereals^{a,b,c}

YEAR	TOTAL AGRICULTURE	TOTAL CEREAL	EXPORT REFUND	STORAGE	PRICE SUBSIDY
1975	4727.4	620.9	343.6	56.2	221.0
1976	5587.1	609.8	380.9	53.7	175.2
1977	6830.4	586.7	325.7	21.1	239.9
1978	8672.7	1112.5	831.9	59.4	221.2
1979	10440.7	1563.7	1184.7	88.9	290.1
1980	11314.9	1669.3	1174.7	201.7	292.9
1981	11141.2	1921.4	1206.3	341.7	373.4
1982	12405.6	1824.5	1064.9	380.1	379.5
1983	15919.7	2441.2	1125.0	476.7	439.5
1984	18400.9	1650.0	918.0	314.3	417.4
1985	18024.1	2325.0	1034.0	884.0	407.0

^aAgricultural report (1975-1986).

^b('75-'77)mill. u.a.; ('78-'79)mill. e.u.a.

^c('80-'86)mill. e.c.u.

Budgetary conflicts have emerged by placing limits on the Community expenditures by member countries.

In principle, the sources of the EEC finances are import levies on agricultural products, including levies on production and storage of sugar and (since '77) isoglucose, customs

duties, and value-added-tax up to the statutory maximum of 1.0 % of the VAT base. This maximum is to be raised to 1.4% as of 1st of January 1986. The value-added-tax provides the largest single source of revenue to the Community budget.

Because of the major turnaround on the Community's trading position neither agricultural levies nor import duties can be taken too much into consideration for revenue purposes. Thus, the burden has fallen more towards VAT contributions.

TABLE 2.11. Receipts from the CAP^{a,b}

YEAR	TOTAL	LEVIES	SUGAR CONTRIBUTIONS
1975	590.0	510.0	80.0
1976	1173.2	1040.1	133.0
1977	2137.7	1816.9	320.8
1978	2283.3	1872.7	410.6
1979	2143.4	1678.6	467.0
1980	2002.3	1535.4	466.9
1981	1747.5	1264.9	482.6
1982	2227.8	1522.0	705.8
1983	2295.1	1347.1	948.0
1984	2436.3	1259.9	1176.4
1985	2106.5	1081.5	1025.0

^aAgricultural report.

^b('75 mill. u.a.); ('76-'85 mill. e.c.u.)

The EEC has also used several financing instruments outside the budget. Euratom, a borrowing and lending operation, was established in 1957 but its funds were not activated until 1977.

In 1975, after first oil price shocks another borrowing

and lending facility: the "Community loan instrument" was created. It was specifically set to help member states cope with balance of payment problems created by the oil crisis. After the first two years of function its operations had involved 1600 mill. ECU. In 1983, France alone withdrew 4000 mill. ECUs. After this, the Council increased the volume of funds to 8000 mill. ECUs and specified that proportion of withdrawals by any one member could only amount to 50% of available resources.

The year 1978 saw the creation of yet another financial instrument: "New Community Instrument" also known as "Ortoli facility". The main function of this instrument was to help finance investments that made greater convergence and integration in member states's economic policies.

The European Investment Bank (EIB) another outside source of finance is in size and scope the largest non-budgetary instrument. Besides providing finances to the Community it extends grants and loans to ACP countries.

Another problem affecting the ability to introduce budgetary discipline has been the fact that decisions determining most expenditures are made outside the budgetary process (i.e., by the council, agriculture ministers). However, the effectiveness of expenditures control are doubtful due to the high variability of factors influencing agricultural expenditures and the interest of members with substantial agricul-

tural support.

Because the contributions to individual countries in the Community to their agricultural sectors vary across the continent, the measurement of such contributions are to be estimated by country for policy analysis purpose.

CHAPTER III. METHODOLOGY

Literature Review

In this section, there is a brief reference of selected previous studies which are to be used as guidance and basis for the model to be implemented in this study.

Tyers and Anderson (1986) analyzed the extent of price distortions in world food markets and estimated their effects on the levels of stability of food prices, quantities produced, plus consumer and national economic welfare in several countries. The study includes 7 commodities including wheat and 3 groups of countries EEC included.

The model used is a dynamic, stochastic multi-commodity simulation model of the world market focusing on major traded food staples: grains, livestock products and sugar (GLS).

It is not a general equilibrium model, since other goods and markets are ignored and currency exchange rates are exogenous. To compensate for this exclusion, changes in the trend level of food prices faced by domestic producers and consumers are included if international prices were reflected in domestic markets each year.

It endogenizes stock-holding behavior and the effects of domestic and international policy or structural changes in the short-run (one year) and in each following year.

The model includes cross-sectional effects in production and consumption between complementary commodities. It assumes constant income and price elasticities of demand over time.

The production side is shown through a partial adjustment model linear in the logs of production and producer prices.

Trade policies are included by country and commodity in price transmission equations that include protection and market insulation components. Short-run elasticities of price transmission are estimated, while long-run elasticities are set to unity. The implication of this is that governments desire constant average domestic-to-border price ratios over-time but allow short-term variations when facing volatile international markets, i.e., the smaller the short-run elasticity, the greater the market is insulated and the slower the transmission of any changes in international prices.

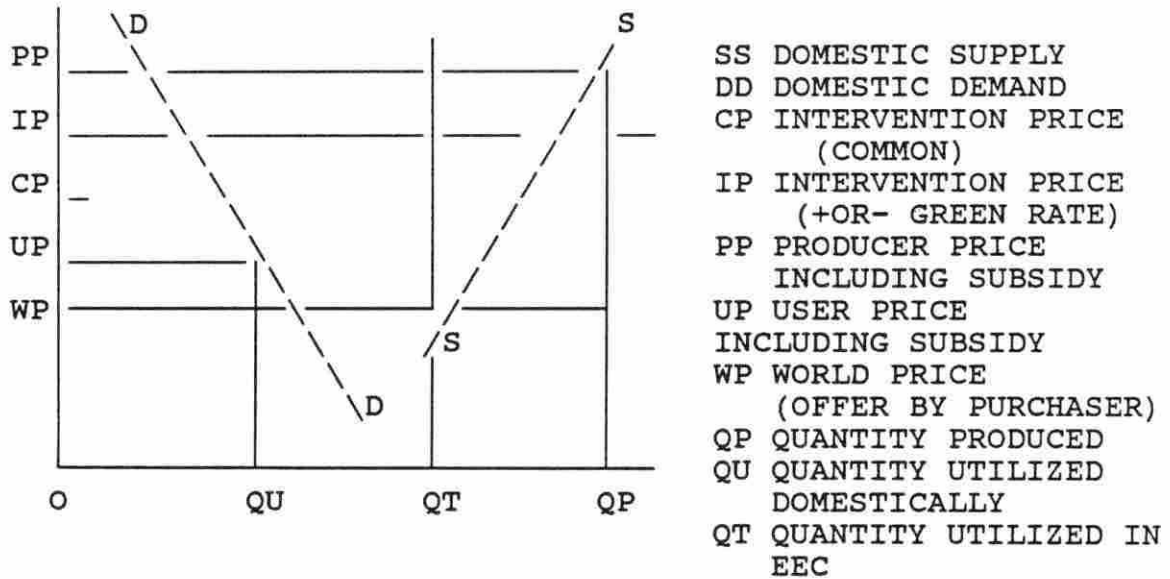
Henning (1987) built an econometric model of the world wheat market by class. His study contains a separate supply model for France given that it is, at present, the largest producer of wheat in the EEC. He argues that the present structure of the Community market raises the price of imported wheat and distorts it relative to the world market prices. Some of the consequences of this distortion are

unstable trade flows and unstable world price formation.

He constructs the model such that it generates a net export supply to the rest of the world based on supply-demand interactions within France and the demand for French wheat by the rest of the Community. The model is only applied to soft-wheat since it is the largest relative to durum-wheat. Prices are dependent on reference/intervention price which is considered determined by past inventories and production cost making it exogenous to world market conditions in the present period.

Meilke and de Gorter (1986) developed an econometric model of the EEC's wheat sector by country and aggregate. Their study was aimed to analyze and understand the impact of Community trade and production policies in the world market, U.S.A., and mainly Canada. They use a recursive model that endogenizes policy variables and is estimated by OLS. Inventories are exogenous to the system. It contains five blocks of equations: a supply block, a demand block, a policy block, a price block, identities and the linkage to the rest of the world.

Thomson (1987) developed a model to evaluate the effectiveness of the Common Agricultural Policy. Analysis of the effects of CAP's changes are undertaken with the use of direct and cross price elasticities of supply and demand for sixteen different commodities using base levels of produc-



$(QT - QU)$	QUANTITY TRADED WITHIN EEC
$(QP - QT)$	QUANTITY TRADED OUTSIDE EEC
$PP * QP$	PRODUCER REVENUE
$UP * QU$	USER EXPENDITURE
$(QT - QU) * (IP - WP)$	PREFERENTIAL TRADE EFFECT
$QP * (PP - IP) +$	
$QU * (IP - UP)$	INTERVENTION EXPENDITURES
$(QP - QT) * (IP - WP)$	EXPORT REFUNDS EXPENDITURES

Figure 3.1. Thomson's conceptual model of CAP revenues and expenditures

tion, consumption and gross trade flows in each member country. The structure of the model is a series of arithmetic calculations using given parameters instead of a system of econometrically estimated equations or simulation models.

Supply is assumed in surplus at all levels of prices and the application of green exchange rates results in a higher or lower effective intervention price depending on whether the green rate is relatively undervalued or overvalued. The existence of direct production subsidies are added where applicable, since they imply a different farmgate price. Also, consumer subsidy are included as they may lower the user price corresponding to quantity domestically demanded which implies further Community expenditures see Figure 3.1.

Model Specification

The model is to be applied to the French soft-wheat sector since France is the largest producer of wheat in the Community and the soft-wheat sector is the one that has been rapidly increasing in production and trade. The analysis will be conducted over a recent historical period and will compare results when alternative policies are assumed.

Wheat producers in France, just like in the rest of the member states, are subject to pricing policies. However, because of the differences in economic trends and inflation rates, producer prices for soft-wheat in France have remained just below the intervention price throughout the period (Figure 3.2).

The result of lower farm prices has been that farmers make their planting decisions given that price expectations are based upon prices received in the past and in more than one period. It is assumed, in this case, that producers make their decisions depending on the weighted average of prices received in the three previous years. Also, production decisions will depend on the prices received by producers of alternative crops in the previous year.

The supply side includes two equations and one identity. Area harvested and yield are endogenized, and total production is the product of the two. That is:

$$\text{AHSOWH} = f \left(\underset{(+)}{\text{PPRAVE}/\text{CSTINDX}}, \underset{(-)}{\text{PPRCOR}(-1)/\text{FRCSTIN}(-1)}, \right. \quad (1)$$

$$\left. \underset{(-)}{\text{PPRBAR}(-1)/\text{FRCSTIN}(-1)}, \underset{(+)}{\text{AHSOWH}(-1)} \right)$$

$$\text{WHYD} = f \left(\underset{(+)}{\text{AHSOWH}}, \underset{(+)}{\text{YEAR}}, \underset{(+)}{\text{PPRSOWH}/\text{FRCSTIN}}, \underset{(-)}{\text{DUM176}} \right) \quad (2)$$

$$\text{TPSOWH} = \text{AHSOWH} * \text{WHYD} \quad (3)$$

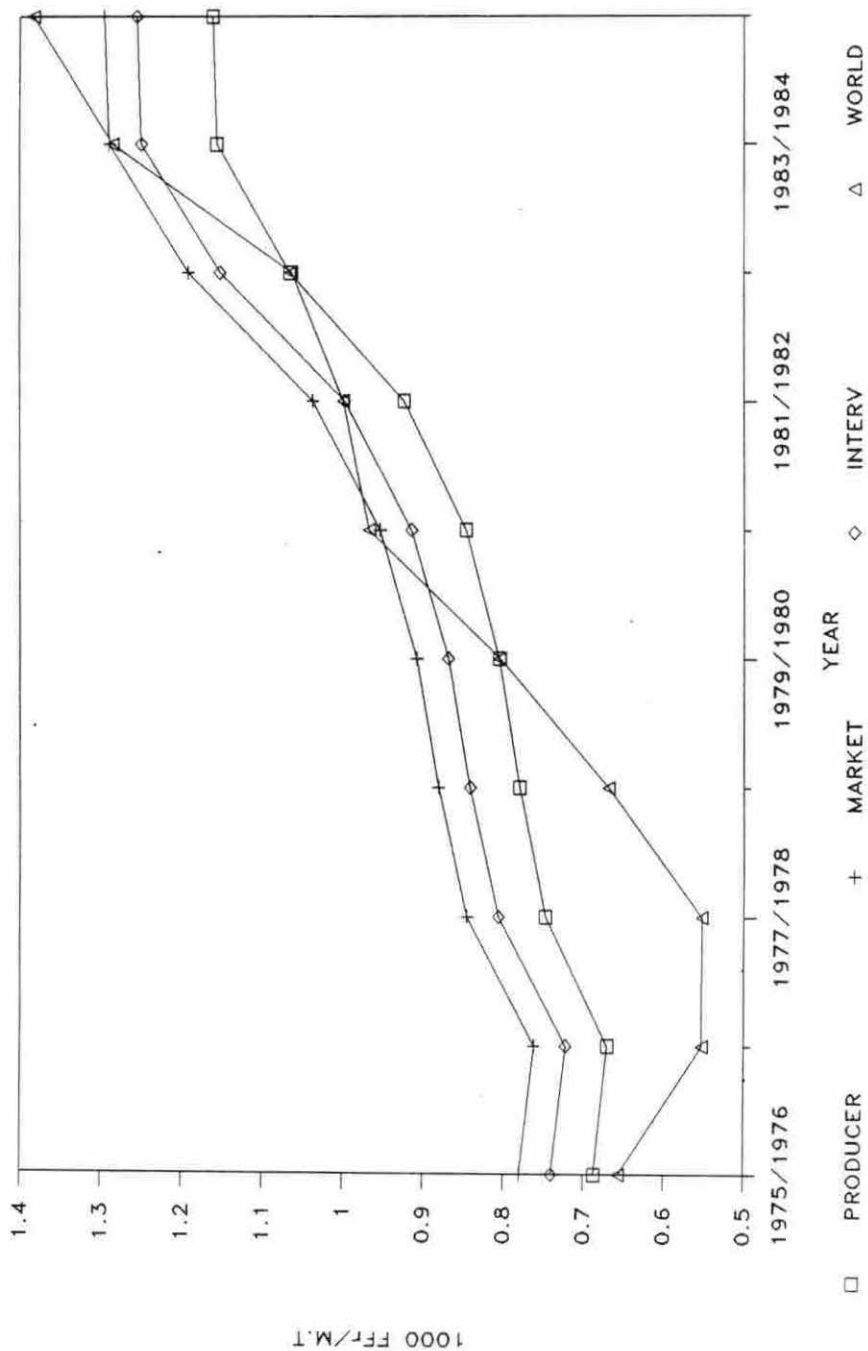


FIGURE 3.2. French soft-wheat prices

where:

AHSOWH = Soft-wheat area harvested, M.HA

CSTINDX = $3 \cdot \text{FRCSTIN}(-1) + 2 \cdot \text{FRCSTIN}(-2) + \text{FRCSTIN}(-3) / 6$

DUM176 = Weather dummy variable

FRCSTIN = Index of prices paid by farmers for production requirements

PPRAVE = $3 \cdot \text{PPRSOWH}(-1) + 2 \cdot \text{PPRSOWH}(-2) + \text{PPRSOWH}(-3) / 6$

PPRBAR = Barley producer price, FFr/M.T

PPRCOR = Corn producer price

PPRSOWH = Soft-wheat producer price, FFr/M.T

TPSOWH = Soft-wheat total production, 1000 M.T

WHYD = Soft-wheat yield, M.T/HA

YEAR = Time trend

The area harvested equation has as explanatory variables: real soft-wheat producer prices (expected to be positively related, real barley and corn producer prices (expected to be negatively related as they can be used as substitutes), a one period lag dependent variable under the assumption of partial adjustment (expected to be positively related).

The yield equation has as explanatory variables: area harvested (expected to be positively related), a time trend to account for changes in technology (expected to be positive), the real producer price for soft-wheat (expected to be positive), and a dummy variable for 1976 since it was a

year of extreme drought.

The feed demand equation is a derived demand, since it depends on the demand for meat which will determine livestock production which in turn determines the demand for feedstuffs. Therefore, the demand for soft-wheat is determined by wholesale prices of wheat, barley, corn, and soymeal; livestock production and the lagged dependent variable under the assumption of partial adjustment.

That is:

$$\begin{aligned} \text{FEUSOWH} = f(& \text{WHPRSOWH}/\text{FECSTIN}, \text{WHPRCOR}/\text{FECSTIN}, \\ & \quad \quad \quad (-) \quad \quad \quad (+) \\ & \text{LVPDNUM}, \text{WHPRBAR}/\text{FECSTIN}, \\ & \quad \quad \quad (+) \quad \quad \quad (+) \\ & \text{SOYMEPR}/\text{FECSTIN}) \cdot \\ & \quad \quad \quad (+) \end{aligned}$$

where:

- EXCHFUS = Exchange rate , FFr/USD
 FECSTIN = Price index for feedstuff
 FEUSOWH = Soft-wheat feed utilization, 1000 M.T
 LVPDNUM = Number of high protein animal units
 produced, 1000 M.T
 SOMUSPR = Soymeal price, FFr/M.T
 SOYMEPR = SOMUSPR * EXCHFUS
 WHPRBAR = Barley wholesale price
 WHPRCOR = Corn wholesale price, FFr/M.T
 WHPRSOWH = Soft-wheat wholesale price, FFr/M.T

The European Economic Community has a highly insulated market which makes it, in some cases, preferable to sell their products among the members rather than to a third country. In the past decade, this factor has contributed to the build up of inventories. To alleviate this build up, subsidies for exports to third countries have been offered. Here, it is assumed that ending stocks are determined by production, subsidy offered per unit, exports to the EEC members and exports to third countries.

That is:

$$\text{WHENDST} = f \left(\begin{array}{cccc} \text{SUBSIDY,} & \text{TPSOWH,} & \text{DUMMSH,} & \text{EXFREEC,} \\ (-) & (+) & (-) & (-) \end{array} \right) \quad (5)$$

$$\text{EXSOWH } (-)$$

where:

DUMMSH = Dummy shift variable

(1964-1972= 0, 1973-1984= 1)

EXFREEC = Soft-wheat exports to the EEC, 1000 M.T

EXSOWH = Soft-wheat exports to third countries,
1000 M.T

SUBSIDY = Amount of refund, FFr/M.T

TPSOWH = Soft-wheat total production, 1000 M.T

Exports to third countries are the residual after production, feed use, non-feed use, exports to the EEC and ending stocks.

That is:

$$\begin{aligned} \text{EXSOWHH} &= \text{TPSOWH} - \text{FEUSOWH} - \text{NOFEED} - \text{EXFREEC} & (6) \\ &\quad - \text{WHENDST} + \text{WHBIST} \end{aligned}$$

where:

EXSOWH = Soft-wheat exports to third countries, 1000 M.T

EXFREEC = Soft-wheat exports to the EEC, 1000 M.T

TPSOWH = Soft-wheat total production, 1000 M.T

NOFEED = Soft-wheat non-feed consumption, 1000 M.T

WHBIST = Soft-wheat beginning stocks, 1000 M.T

WHENDST = Soft-wheat ending stocks, 1000 M.T

After the previous equations and identities have been estimated, a supply and demand functions are traced out and CAP expenditures are accounted for with the use of Thomson's method specified in the literature review.

Since imports of soft-wheat in France are insignificant, they are ignored in the model.

To analyze the relationship between intervention price and French prices, two price transmission equations are estimated. Producer and wholesale prices of soft-wheat are endogenized depending on intervention price. That is:

$$\text{PPRSOWH} = f(\text{SOWHPRINT}) \quad (7)$$

$$\text{WHPRSOWH} = f(\text{SOWHPRINT}) \quad (8)$$

where:

EXCHFECU = Exchange rate, FFr/ECU

PWHEECIN = Common wheat intervention price, ECU/M.T

SOWHPRIN = Common wheat intervention price, FFr/M.T

SOWHPRINT= PWHEECIN * EXCHFECU

Data Sources

The data used in this analysis originate from various sources. Producer and wholesale prices are data published by O.N.I.C. Consumer price index, disposable income and the exchange rates originate from International Financial Statistics, I.M.F. Livestock numbers, beginning stocks and wheat feed utilization are published by F.A.S of the USDA. Price indexes of production requirements and of feedstuff are from F.A.O. production yearbooks. EEC prices and subsidy data come from publications of the EEC Commission.

CHAPTER IV. EMPIRICAL RESULTS

This chapter presents the results of the estimated equations and validation statistics. They are linear in the coefficients and estimated by OLS with the exception of the price linkage equations, which are corrected for auto-correlated disturbances. Each equation is presented in a table with its corresponding t-statistics, r-square, Durbin Watson test (DW) and elasticities. T-statistics are shown in parenthesis and the elasticities in brackets under the relevant coefficient.

Equations (1) and (2) and identity (3) in Table 4.1 explain the supply of soft-wheat in France. Equation (1) presents the relationship between area harvested for soft-wheat and the producer prices of soft-wheat, corn and barley. As expected, a significant relationship was found between these prices and farmers planting decisions. Every year area harvested is also dependent on the previous year decision. That is, adjustments are made partially. Although area harvested has followed an upward trend in the past decade, the marginal change has been small from one crop year to the next. The large increases in production have been the result of yield improvements. From 1960/61 to 1974/75 wheat yields have increased 83% and from 1975/76 to 1985/1986 by 41.3 %.

Equation (2) shows the relationship between wheat yield

and area harvested, technological change, and real producer prices. DUM176 is a weather variable introduced because of an unusually severe drought experienced in Europe during the Summer of 1976. As expected, all variables were found to be significant with the exception of real prices in the current year. Its positive sign and insignificance can be explained by the existence of the intervention price which is the guaranteed minimum price paid to producers when the grain cannot be sold in the market.

Identity (3) is the product of the estimated area harvested and yield.

Table 4.2 presents the estimated domestic feed demand. Equation (4) explains the relationship between feed demand real wholesale prices of wheat, barley, corn and soymeal, livestock numbers and last period consumption under the assumption of partial adjustment. Wholesale prices of corn, barley and soymeal are included because they are substitutes for feed. A significant relationship between prices and soft-wheat feed demand was found with the exception of barley. The result was expected, because the use of barley relative to wheat is very small. Livestock numbers include pork and poultry only, since cattle in Europe is mostly grass fed.

Inventories in the EEC are only held by the Community. This is the result of common policies set by the Council

which specifies that if producers can not sell their produce in the domestic market the community will buy them at the intervention price set at the beginning of the crop year. By the mid-'70s when supply far exceeded demand, wheat inventories were building up at a very fast rate. Because of this, export refunds offered were also increasing very rapidly. The increases in refund were necessary. Otherwise there was no incentive for exporters to trade outside the EEC, since it implied selling at lower prices than the ones in the Community markets.

Table 4.3. shows the estimated ending stocks of soft-wheat in France. Equation (5) explains the relationship between ending stocks and subsidy, total production, exports to EEC members and exports to third countries. As expected, most variables were found to be significant except for subsidies. This can be explained by the fact that refunds are determined through a bidding process which indirectly sets a limit on quantity exported. Although it is true that refunds per unit are announced in Brussels every week they are set low enough to encourage exporters to go through the bidding process and not on their own. The DUMMSH variable was introduced because before a certain year the refund system was not in effect and/or lack of data.

Identity (6) determines the amount of wheat exported to third countries.

Table 4.4. presents two price linkage equations. Producer prices and wholesale prices are linked to the common intervention price by a constant. As expected both prices were found to have a strong relationship with the policy price. The price linkage equations were estimated and corrected for autocorrelated disturbances.

TABLE 4.1. Estimated supply of soft-wheat in France^{a,b}

	EQUATION	R2	DW
(1)	$\text{AHSOWH} = 4.998 + 0.387 (\text{PPRAVE}/\text{CSTINDX})$ <p style="margin-left: 100px;">(3.86) (1.53) [0.67]</p> $-0.319 (\text{PPRCOR}(-1)/\text{FRCSTIN}(-1))$ <p style="margin-left: 100px;">(-1.39) [-0.53]</p> $-0.360 (\text{PPRBAR}(-1)/\text{FRCSTIN}(-1))$ <p style="margin-left: 100px;">(-2.89) [-0.56]</p> $+0.345 \text{AHSOWH}(-1)$ <p style="margin-left: 100px;">(1.59)</p>	0.73	2.1
(2)	$\text{WHYD} = -299.50 + 0.499 \text{AHSOWH}$ <p style="margin-left: 100px;">(3.44) (1.49)</p> $+0.209 (\text{PPRSOWH}/\text{FRCSTIN})$ <p style="margin-left: 100px;">(0.82) [0.38]</p> $+0.152 \text{YEAR}$ <p style="margin-left: 100px;">(3.53)</p> -0.774DUM176 <p style="margin-left: 100px;">(-2.00)</p>	0.86	1.7
(3)	$\text{TPSOWH} = \text{AHSOWH} * \text{WHYD}$		

^a() T-statistics.

^b[] Elasticities.

TABLE 4.2. Estimated feed demand of soft-wheat in France^{a,b}

	EQUATION	R2	DW
(4)	FEUSOWH = -7650 - 331.85 (WHPRSOWH/FECSTIN)	0.87	1.6
	(-1.86) (-1.23)		
	[-0.66]		
	+990.64 (WHPRCOR/FECSTIN)		
	(3.53)		
	[1.85]		
	+253.38 (WHPRBAR/FECSTIN)		
	(0.73)		
	[0.44]		
	+101.54 (SOYMEPR/FECSTIN)		
	(1.78)		
	[0.18]		
	+3.00 LVPDNUM		
	(2.70)		
	+0.58 FEUSOWH(-1)		
	(3.55)		

^a() T-statistics.

^b[] Elasticities.

TABLE 4.3. Estimated inventories of soft-wheat in France^{a,b}

	EQUATION	R2	DW
(5)	$\text{WHENDST} = -172.94 - 0.214 \text{ SUBSIDY}$ $(-0.19) \quad (-0.29)$ $+281.45 \text{ TPSOWH} - 405.43 \text{ DUMMSH}$ $(3.33) \quad (-0.94)$ $-0.54 \text{ EXFREEC} - 0.246 \text{ EXSOWH}$ $(-3.94) \quad (-1.86)$	0.64	1.9
(6)	$\text{EXSOWH} = \text{TPSOWH} + \text{WHENDST}(-1) - \text{WHENDST} - \text{FEUSOWH} -$ $\text{EXFREEC} - \text{NOFEED}$		

TABLE 4.4. Estimated price linkages^{a,b}

	EQUATION	R2	DW
(7)	$\text{PPRSOWH} = 4.968 + 0.92 \text{ SOWHPRIN}$ $(0.16) \quad (23.1)$ $[1.02]$	0.96	2.0
(8)	$\text{WHPRSOWH} = 39.51 + 1.00 \text{ SOWHPRIN}$ $(0.87) \quad (16.6)$ $[0.97]$	0.93	1.9

^a() T-statistics.

^b[] Elasticities.

Model Validation

The validation of the model was carried out through a dynamic, simultaneous estimation procedure (OLS).

All endogenous variables are estimated and simulated for the 1964-1984 period. The period was long enough to provide for sufficient observations.

The following tables show the statistical results from the dynamic simulation. Table 4.5 contains the Root Mean Squared percentage error which indicates the relative error when simulating the dependent variables. A percentage error below fifteen is acceptable. In this model five out of six endogenous variables met this criteria. Only WHENDST has a relatively high percentage error which can be explained by the structure of the European marketing system. Inventory levels are not determined by past inventories but mostly by production surpluses and exports.

Table 4.6 presents Theil's forecast error statistics that contains the relative change mean square error. For all endogenous variables is close to zero. Theil's coefficient of inequality is decomposed in three parts: the bias proportion (UM) that indicates systematic error when simulation takes place; the variance proportion (US) which indicates the model's ability to duplicate the variability of actual values and the proportion of covariance (UC) that measures the error remaining once deviations from average

value and variability have been measured. It is desirable to have UM and US values close to zero.

The value of accuracy (U) is another indicative of how similar simulated and actual values are. If U is equal to or close to zero simulated values are equal or very close to the actual values. A U=1 is an undesired result since it implies that simulated values are significantly different from the actual values.

TABLE 4.5. Statistics of fit

VARIABLE	N	RMS error	RMS % error
PRODUCER PRICE	21	28.261	4.69
WHOLESALE PRICE	21	51.666	6.07
AREA HARVESTED	21	0.189	4.43
WHEAT YIELD	21	0.419	9.10
FEED USE	21	511.170	12.98
INVENTORIES	21	598.420	36.47

TABLE 4.6. Theil forecast error statistics

VARIABLE	N	RELATIVE CHANGE MSE	DECOMPOSITION			COEFF (U)
			BIAS (UM)	VAR (US)	COVAR (UC)	
PRODUCER PRICE	21	0.002	0.012	0.290	0.698	0.0196
WHOLESALE PRICE	21	0.004	0.000	0.068	0.932	0.0317
AREA HARVESTED	21	0.002	0.002	0.019	0.978	0.0222
WHEAT YIELD	21	0.009	0.154	0.009	0.836	0.0491
FEED USE	21	0.016	0.022	0.000	0.978	0.0588
INVENTORIES	21	0.167	0.004	0.072	0.924	0.1465

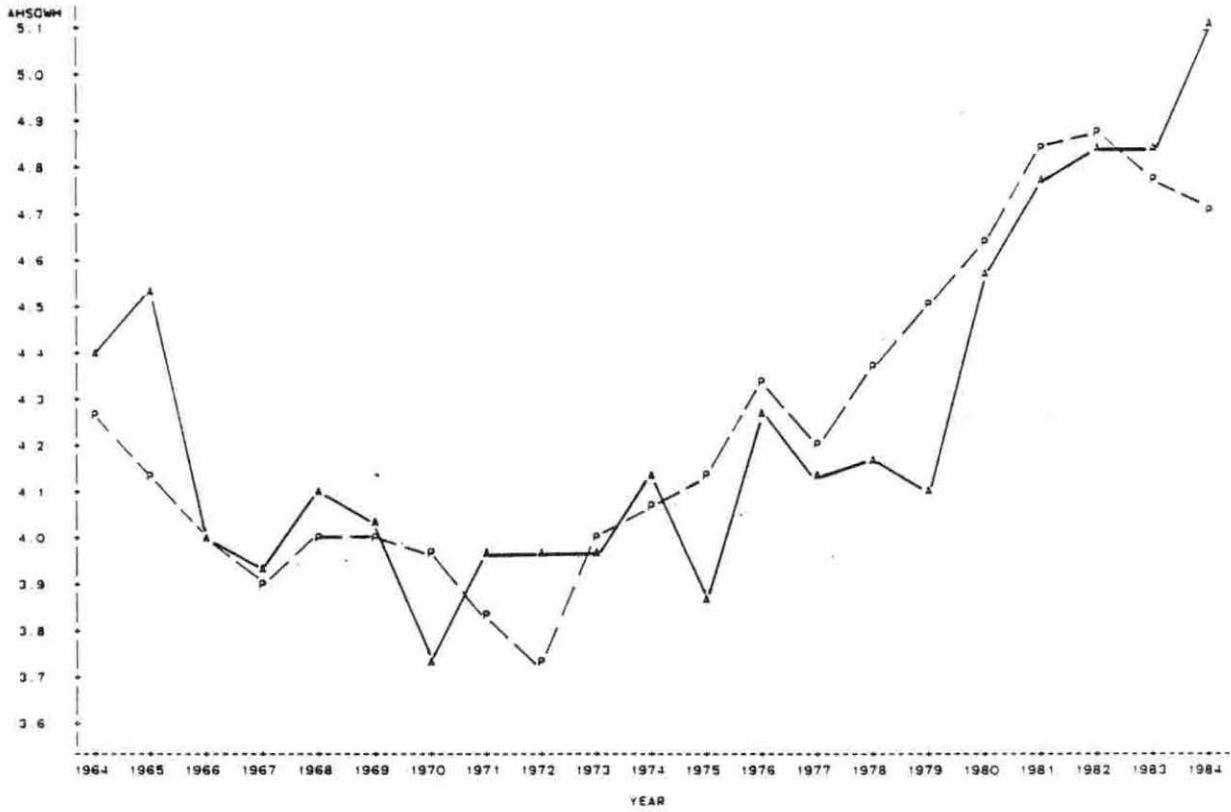


FIGURE 4.1. Plot of actual and simulated area harvested
(AHSOWH)

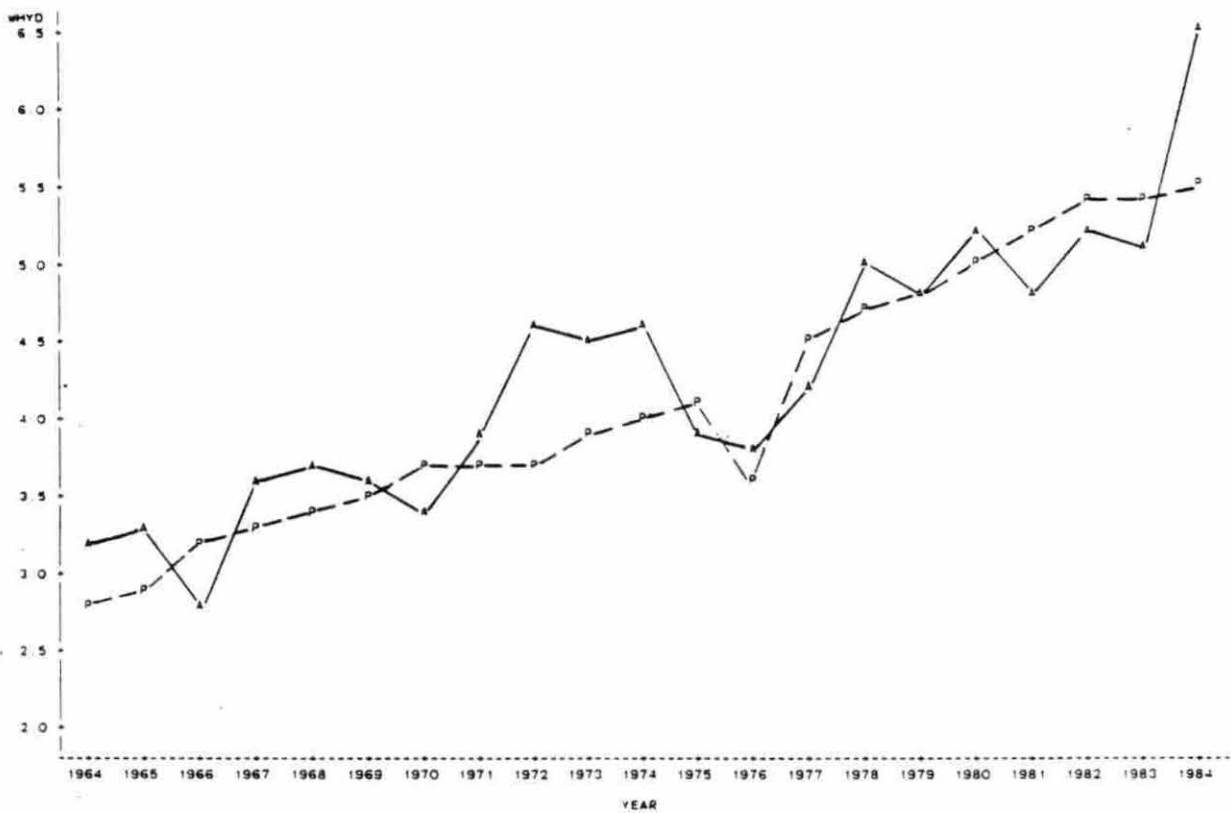


FIGURE 4.2. Plot of actual and simulated yield (WHYD)

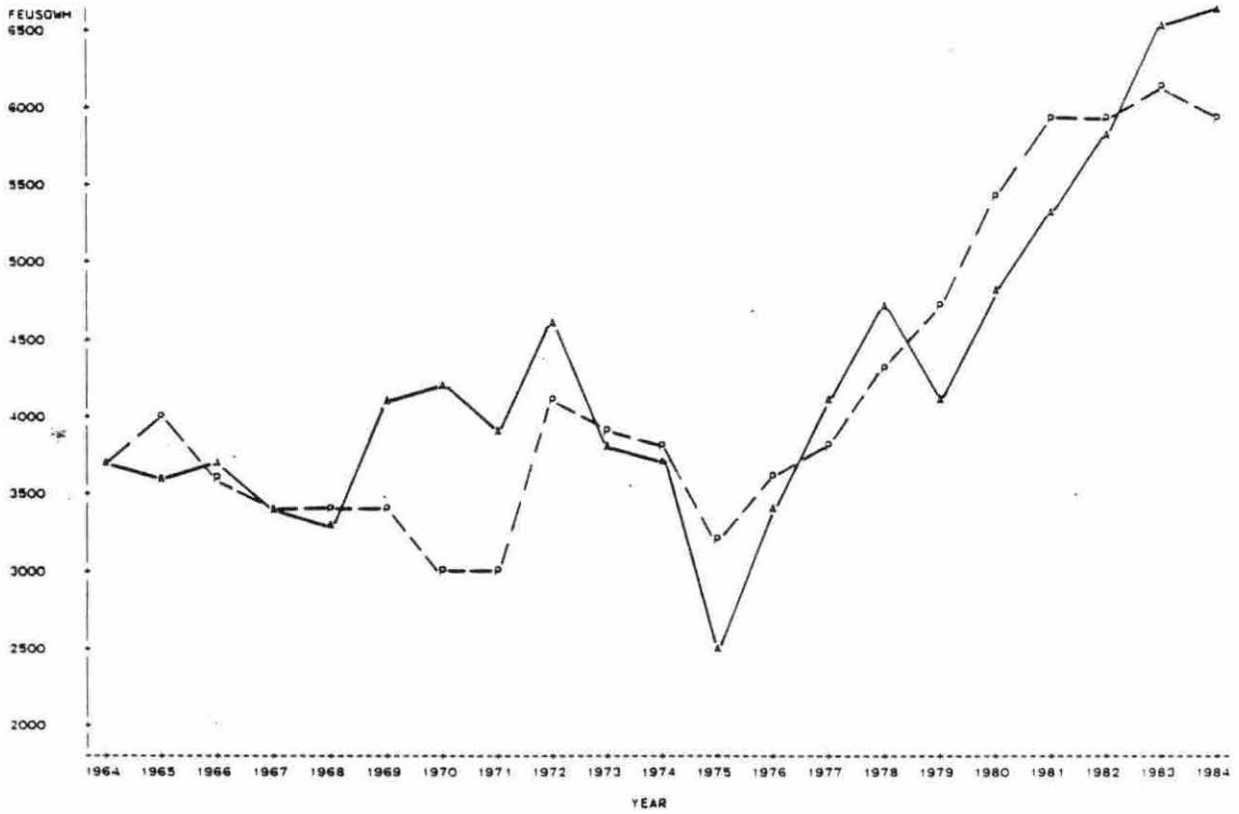


FIGURE 4.3. Plot of actual and simulated feed use
(FEUSOWH)

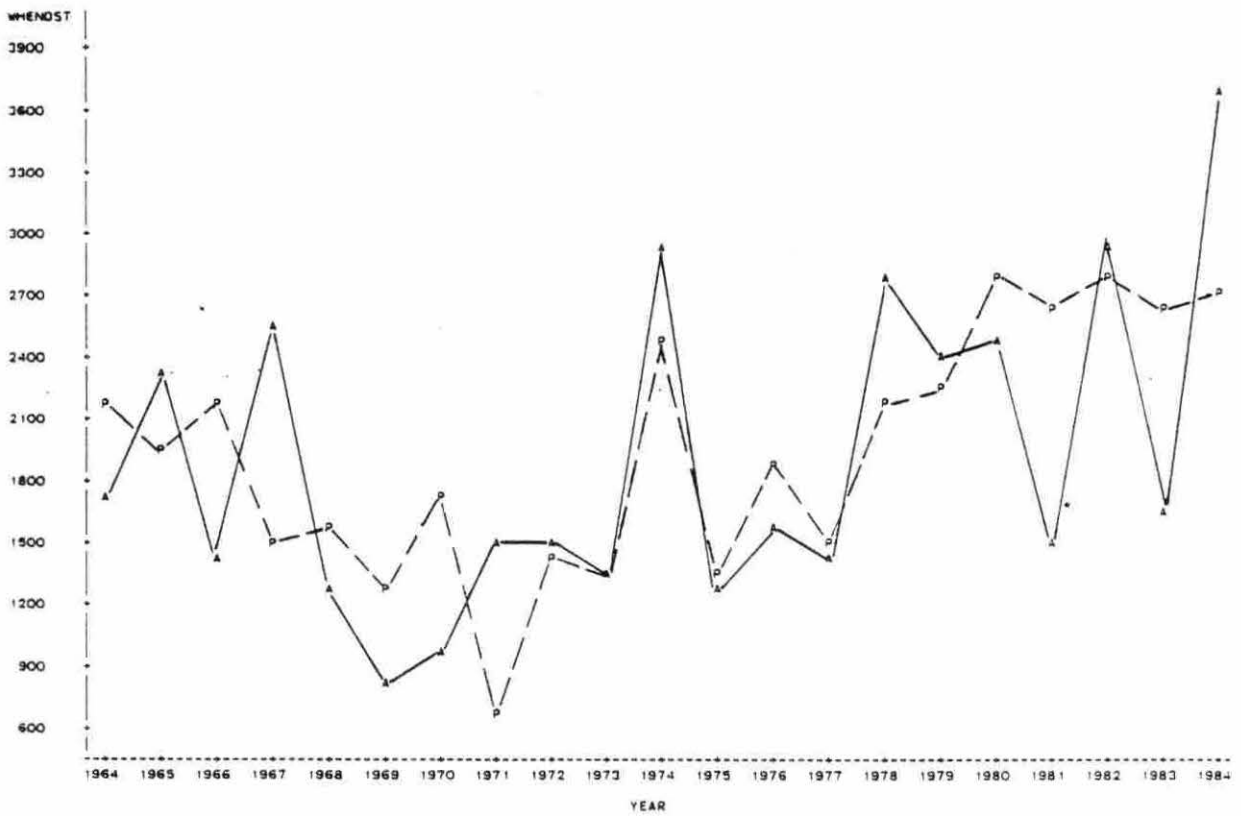


FIGURE 4.4. Plot of actual and simulated ending stocks
(WHENDST)

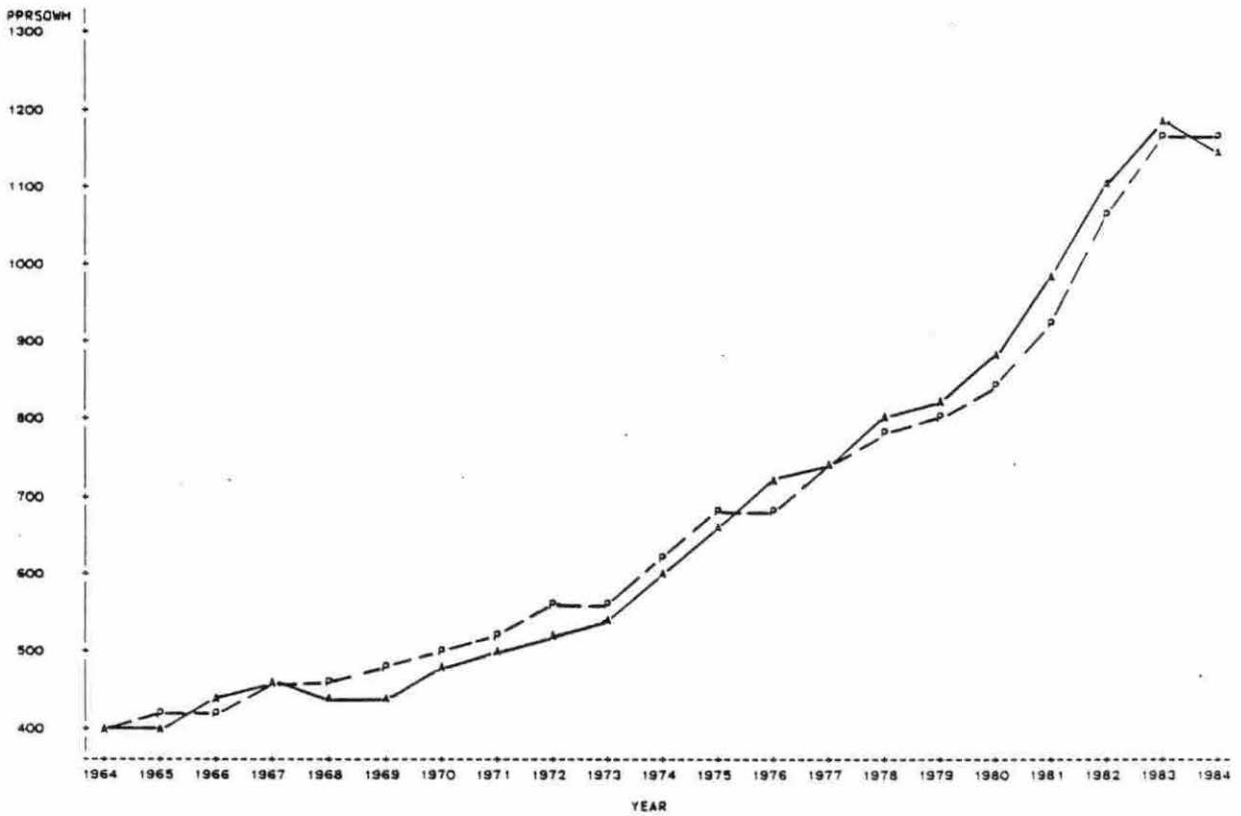


FIGURE 4.5. Plot of actual and simulated producer price
(PPRSOWH)

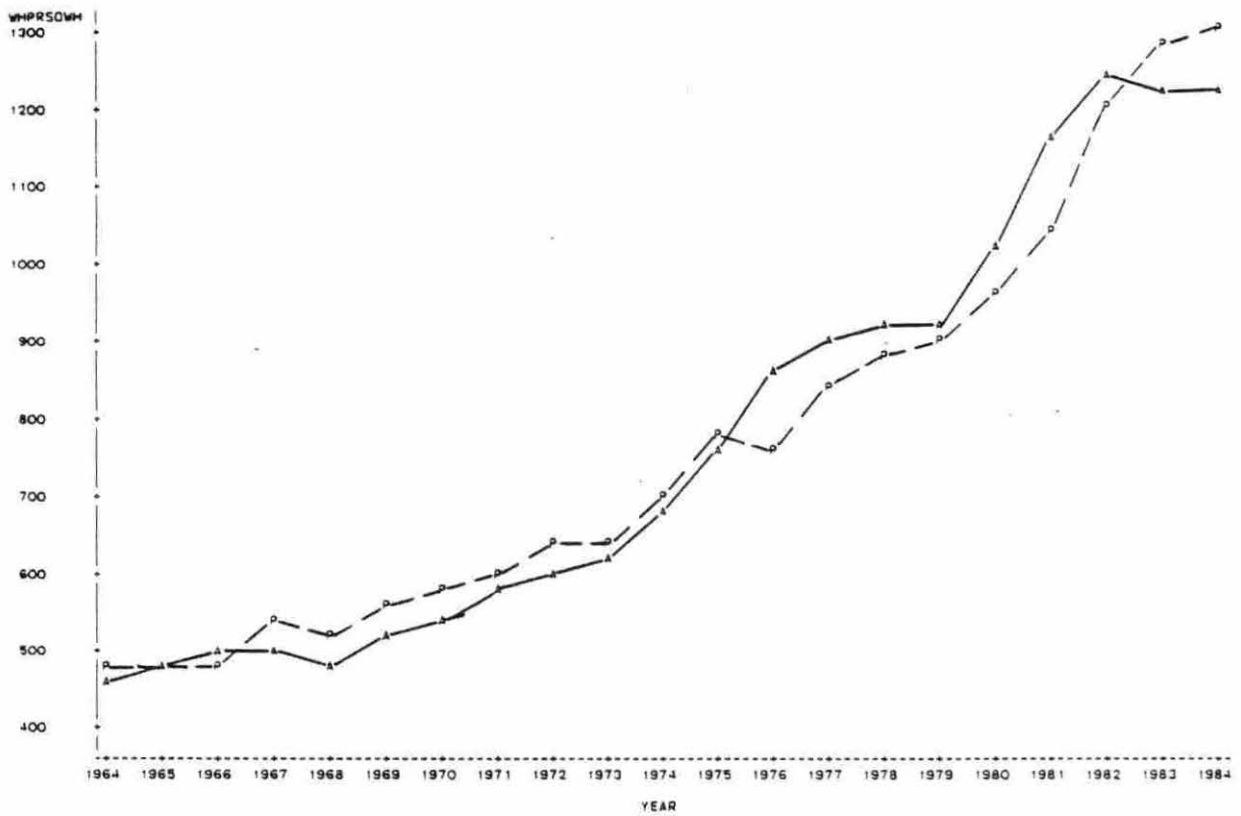


FIGURE 4.6. Plot of actual and simulated market price
(WHPRSOWH)

CHAPTER V. ANALYSIS

This chapter presents an evaluation of the effects of exogenous shocks on the endogenous variables. The model developed in this study is used to analyze impacts of policy alternatives in the 1975/76-1984/85 decade.

Three alternative scenarios were looked at by changing the intervention price. The scenarios were as follows:

Scenario 1. Intervention price 10% lower

Scenario 2. Intervention price 20% lower

Scenario 3. Intervention price at par with world price

Prices

French soft-wheat prices in the past ten years have followed a different pattern from the one followed by the world price. From 1975 to 1978 world wide economic recession kept low soft-wheat world prices. The situation was only made worse by a weak U.S. dollar.

During the same period France was also suffering from unstable market conditions, high inflation and unemployment rates as well as an often depreciating currency. Attempts were made by the French government to control inflation by introducing a price freeze in 76/77 which offset some of the effects of inflationary pressures.

In the past ten years crop producer prices in France have increased at a slower rate than prices for food and services and for inputs, e.g., fertilizer, machinery. Thus,

producers real income has continuously decreased, despite Community policies to raise farm income.

A strong contributor to French prices higher than world prices early in the period was a decrease in domestic supply caused by a severe drought in the summer of 76. The effects of this drought extended at least into the next two periods. At the same time, outside of the EEC supply of wheat was abundant as a result of record harvest in several areas. World price for common wheat fell by 25% in 76/77.

In 1981 the Council agreed on an increase of 11% on average, for all agricultural prices. In the case of France, crop producer prices rose by 16% while prices for fertilizers increased by 24% and for machinery by 21%.

From 1981/82 until 84/85 world price for soft-wheat fluctuated from being equal to the French market price, to the intervention and producer price and becoming higher than all of them by the end of the period.

The fast appreciation of the U.S. dollar at the end of period was certainly one of the factors contributing to a rapidly rising world price in francs. A weak French franc together with production surpluses kept French producer prices from rising at a similar rate.

Nominal French prices continued to increase, due to policies set by the Council to fight inflation and improve farmers income. Common prices were increased by 10.4% in

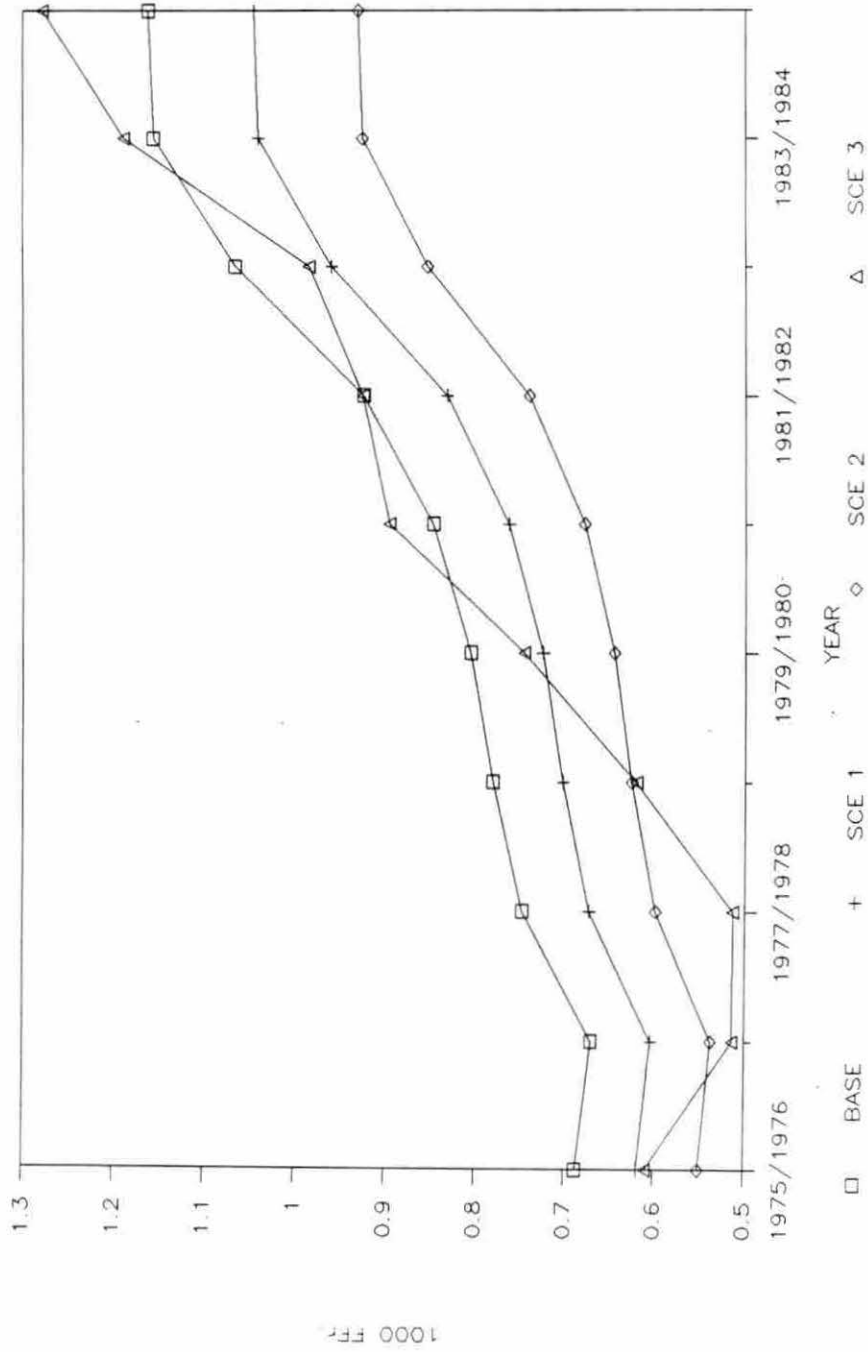


FIGURE 5.1. Soft-wheat prices under alternative policies

1982/83 and by 5.5% in 1983/84. From 1975 to 1982 average changes of prices in France +9% for farm products, +10.1% for farm inputs with an average inflation of +10.7%.

Under the alternatives of Scenario 1 and Scenario 2 french producer and market prices would have been 9.9% and 9.5% lower in the former and, -19.8% and -18.9% in the latter. Under Scenario 3 the path followed by french prices would have been quite different. In 1975/76 producer and market prices would have been 11.3% and 10.8% lower. In 1980/81 they would have been 5.7% and 5.5% higher while in 1984/85 the change would have been +10% and +9.8% respectively.

Supply

In the past twenty years, there have been large changes in wheat production all over the EEC, especially in France. From 1963 to 1983 the change in area allocated to wheat production in France was +38% while the yield increase was +91%. From 1975/76 to 1984/85 the increase was 31.57% in area and 68.6% in yield.

Large yield increases are partly the result of shifting areas of production in response to the available new technology and new cropping methods as well as better quality land being brought into production. The northern and central regions of France are the ones that have experienced the

largest increases in yield and area.

New technology has come about with the support of the CAP and additional organisms created to assist on the implementation and financing of CAP policies and programs. One of this organisms is the ERDF which has concentrated its functions in the south of Italy and all over France for the improvement of mountain and hill farming. The expenditures for modernization of farm and production improvements in France during the 1978-80 period was of 89.489 mill. ECU. By 1984 the amount increased to 233.097 mill. ECU.

With a 10% decrease in intervention price, area harvested and yield would have decreased by 6.6% in 1975/76. In 1980/1981 the change in yield would have been -6.1% and by the end of the period -4.9%. Changes in area would have been -8.0% in 80/81 and -6.9% in 84/85.

A similar pattern would have been followed by decreasing the intervention price by 20%. The fall in prices would have had effects at the beginning of the period, but with technological improvements, total production would have risen at a faster rate during the last part of the decade. Thus, under Scenario 2, the decrease in area would have been 13.2% in 75/76, 16.17% in 80/81 and 13.84% by 84/85. Yields would have changed by -13.2% in 75/76, -12.2% in 80/81 and -9.8% in 1984/85.

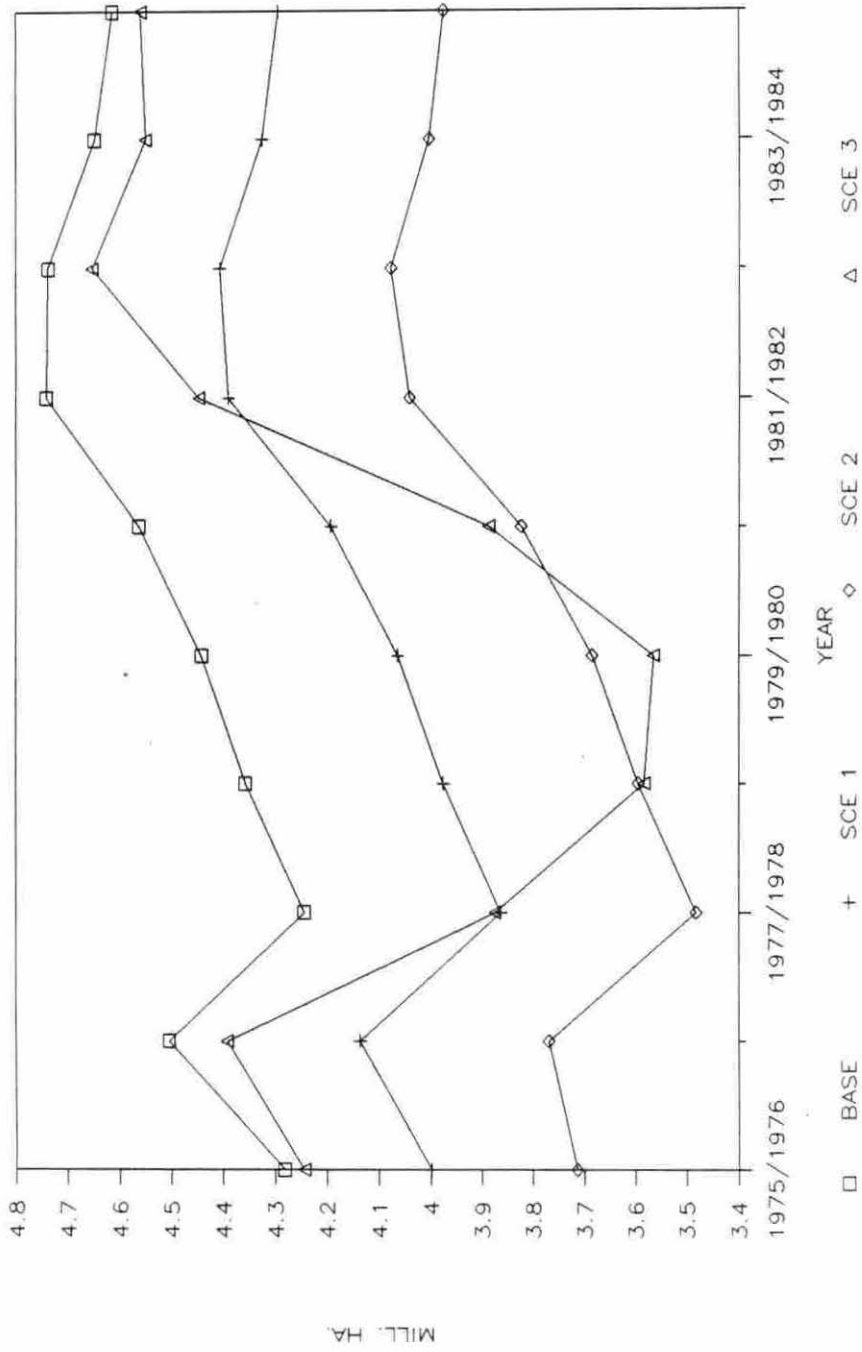


FIGURE 5.2. Soft-wheat area harvested under alternative policies

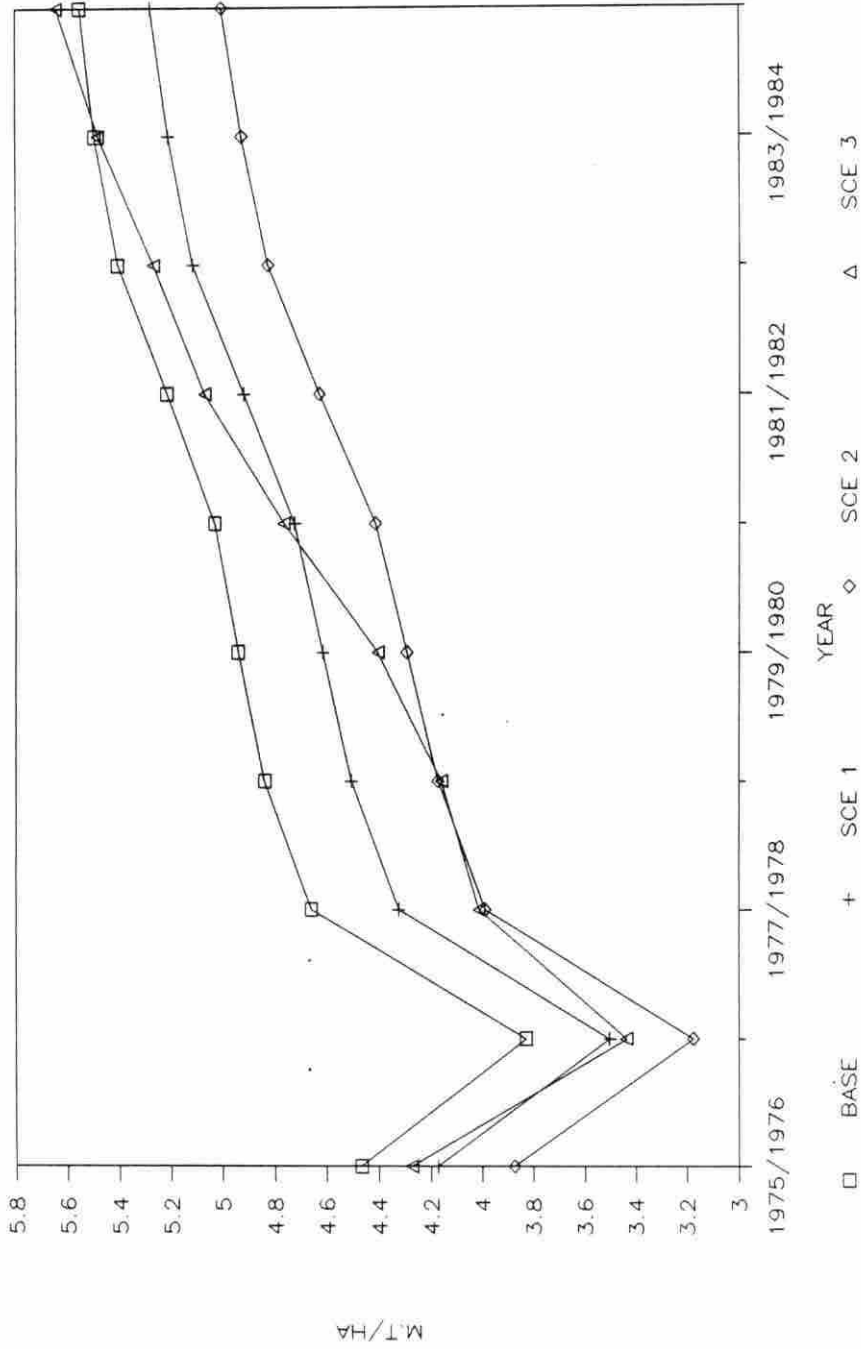


FIGURE 5.3. Soft-wheat yield under alternative policies

Scenario 3 would have caused area and yield to follow a different pattern. Area would have decreased by 0.8% in 75/76, 8.69% in 77/78, 14.7% in 80/81 and would have only been 1.1% lower than baseline by the end of the decade. Changes in yield would have been -4.3% in 75/76, -13.8% in 77/78, -5.2% in 80/81 and +1.6% by 1984/85.

Demand

The demand for feedstuff is a derived demand. As inflation grew at an increasing rate in France, the demand for beef decrease relative to the demand for cheaper substitutes like pork and poultry. This caused a rise in the demand for animal food specially wheat since it is domestically produced in abundance and cheaper than its imported substitutes like soymeal, corn, and barley.

In the past ten years there was a steady increase in the use of wheat as animal food, mainly as a result of an increase in the production of pork and poultry by 25% from 1975/76 to 1980/81 and by 10.9% from 80/81 to 84/85.

Imports of feedstuff substitutes became relatively more expensive due to a depreciating French franc against European currencies and against the U.S. dollar.

Under Scenario 1, which implies a 9.5% lower market price, domestic feed demand would have increased by 9.2% in 75/76, 12.2% in 1980/81 and 10.9% in 1984/85.

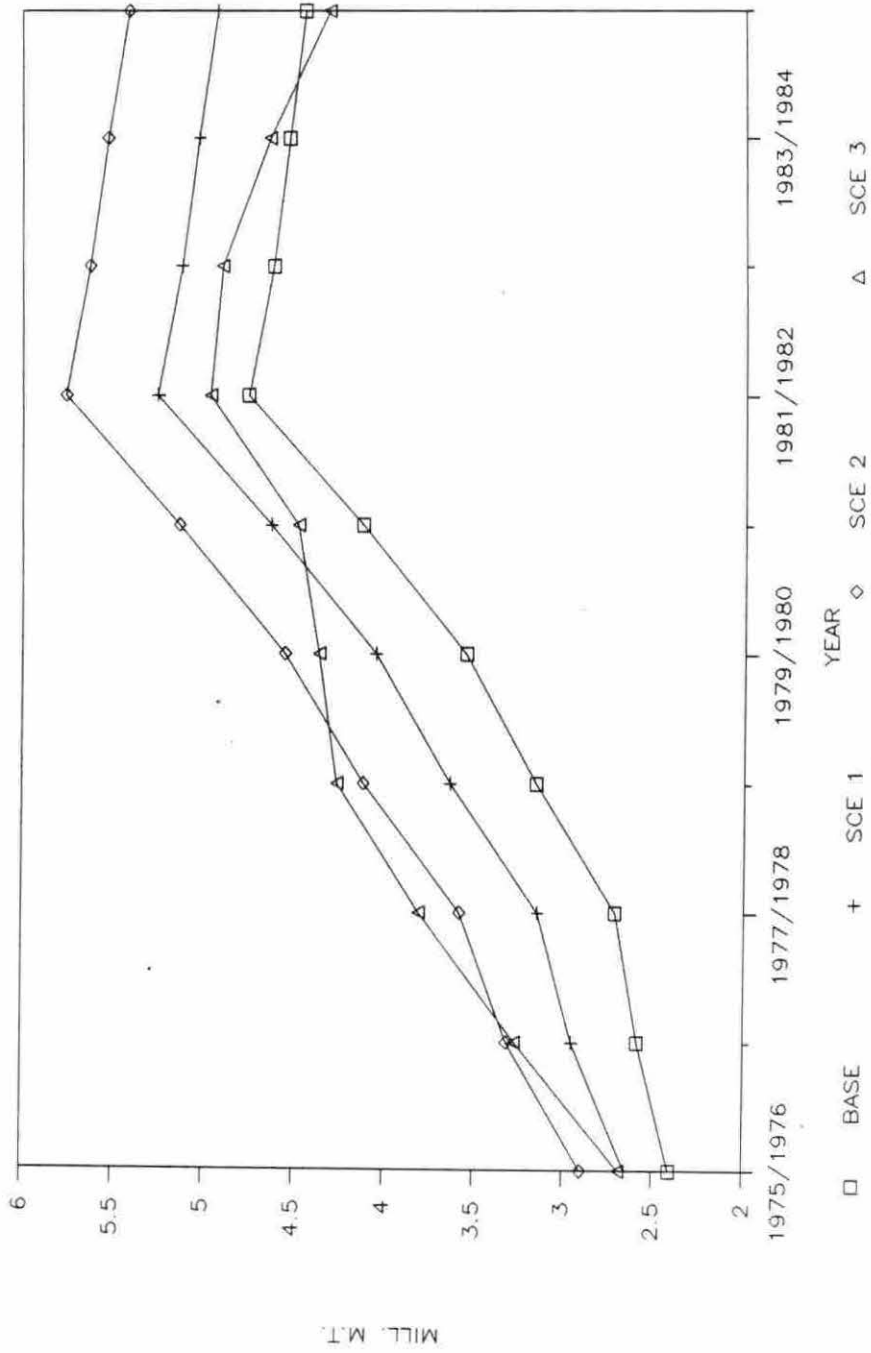


FIGURE 5.4. Soft-wheat feed use under alternative policies

With a 20% decrease in intervention price as suggested in Scenario 2, market prices for soft-wheat would have fallen by 18.9% which would have caused an increase in domestic demand for wheat of 20.4% in 1975/76, 24.5% in 80/81 and 21.9% in 1984/85.

Setting the intervention price equal to the world price would have forced domestic feed demand to trace a different path. Soft-wheat domestic demand for feed use would have been changed by +11.6% in 1975/76, +8.6% in 80/81, +6.11% in 1982/83 and -2.9% in 1984/85.

Ending Stocks

Inventories in the EEC are only held by the Community. This is the result of the marketing policies that have always existed. Producers that can not sell their grain in their markets, can sell it to the Community at the intervention level. This eliminates the existence of private inventories. As the supply of wheat increased beyond its domestic accompanied by increases in production outside the EEC, a problem of rapidly accumulating stocks emerged.

Community expenditures for inventories increased at a very fast rate, taking a sizeable share from an already tight EEC budget. The volume of inventories of common-wheat in the Community grew by 323% from 1978 to 1984.

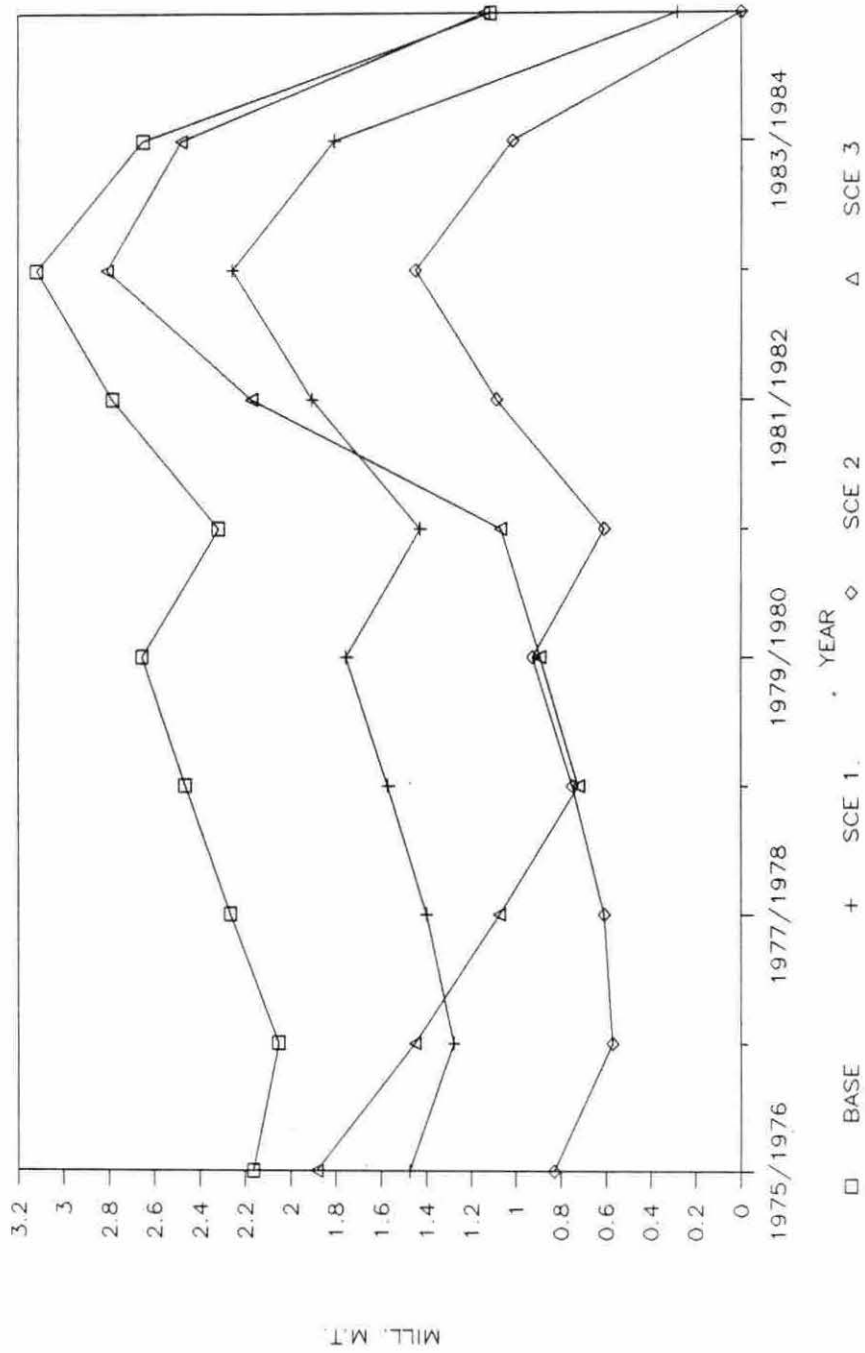


FIGURE 5.5. Soft-wheat ending stocks under alternative policies

Inventories from France increased at an average rate of 11.6% from 76/77 to 79/80 and by 13.38% from 1980/81 to 83/84.

If intervention prices would have been as suggested in Scenario 1 domestic feed demand would have risen and caused a fall in inventories by 31.9% in 1975/76, 38.29% in 80/81 and 74.4% in 83/84.

Under Scenario 2, ending stocks would have followed a similar pattern than the one under scenario 1. By the end of the period stocks would have been completely eliminated but at a very high cost since it would resulted in even lower real income for farmers, same high rates of inflation and probably higher rates of unemployment since more people would have left the agricultural sector and moved to the urban areas.

Scenario 3 shows a slightly different pattern. Stocks would not have built up as fast during the first half of the period. However, from 81/82 onward the growth of inventories would have been much faster than in Scenarios 1 and 2 and the baseline. By 1984/85 inventories would have been 2.69% higher than in the baseline.

Exports

French exports of soft-wheat have existed for a longer period of time than the one used here for this analysis.

The difference lies on the relative change in volume of soft-wheat traded before the mid-'70s, and from then to the end of the decade. Also, there has been a change in the direction of trade.

As production surpluses began to appear, it became necessary to find new market for European soft-wheat. In the past ten years, exports of soft-wheat to third countries have steadily increased due to, among other things, the establishment of bilateral and multilateral trade agreements.

The beginning of these agreements came about with the signing of the Lome Convention in 1975. One of the results has been increases in exports to developing countries at a faster rate than increases to industrialized countries.

The value of exports of cereals from the Community to ACP countries increased from 298 million e.u.a. in 1978 to 355 million e.u.a. in 1980. Value of exports of cereals to mediterranean countries increased from 455 million e.u.a. in 1978 to 986 million e.u.a. in 1980.

French exports of soft-wheat to third countries experienced a decline in 76/77 and in the first half of 78 mainly as result of the drought in the summer of 1976. They increased from 1977 through 1981 at a decreasing rate, however from then on they rose sharply with the exception of 83/84 when there was a small decline.

The rapidly increases in exports by the end of the

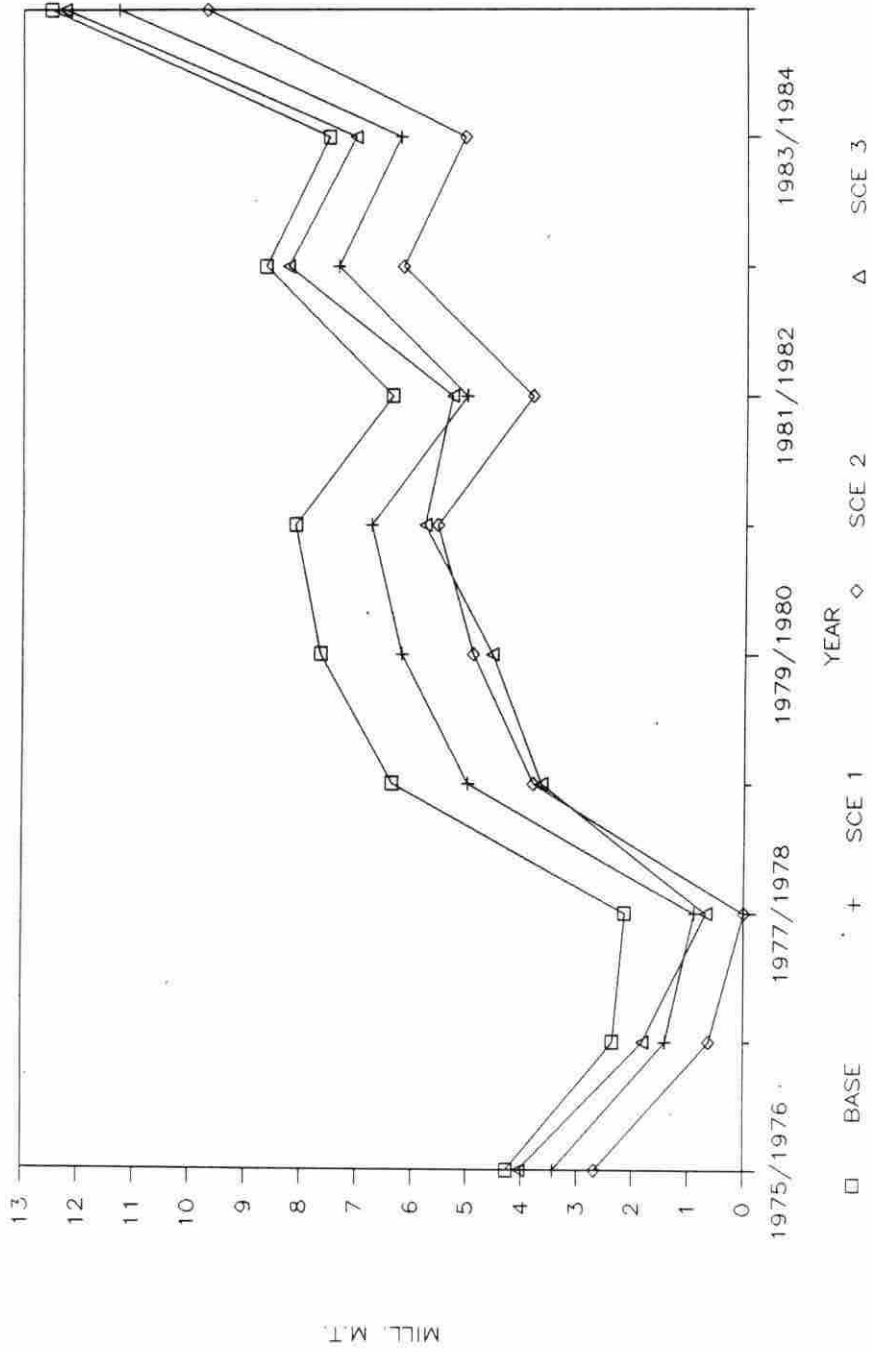


FIGURE 5.6. Soft-wheat exports under alternative policies

period can be attributed to the increasing number of trade agreements, a weak French franc and a rapid appreciation of the U.S. dollar.

If intervention prices would have been set 10 percent lower, exports would have been lower at the beginning of the period but, they would have grown faster by the end of the decade. The same pattern would have been followed with a twenty percent decrease in intervention price and when setting intervention price at par with the world price. One of the factors that can be picked out of the trend is the appreciation of the U.S. dollar in 84/85 when the French franc depreciated and exports of soft-wheat increased.

Under Scenario 1, exports would have fallen by 20 % in 75/76, 16.7% in 80/81 and 9.6% in 84/85. In the case of Scenario 2, the change would have been -37.3 % in 75/76, -31.4 % in 80/81 and -22.3% in 84/85. Under Scenario 3, exports would have fallen by 5.5 % in 75/76, 28.6 % in 80/81 and 1.9% % in 84/85.

Export Subsidy Expenditures

In France, net cost of export refunds to the CAP in the case of soft-wheat has not been as large as increases in exports to third countries would indicate.

In general, the Community applies import levies and export refunds when trade within the EEC takes place. However, the case of France is the opposite. That is, imports

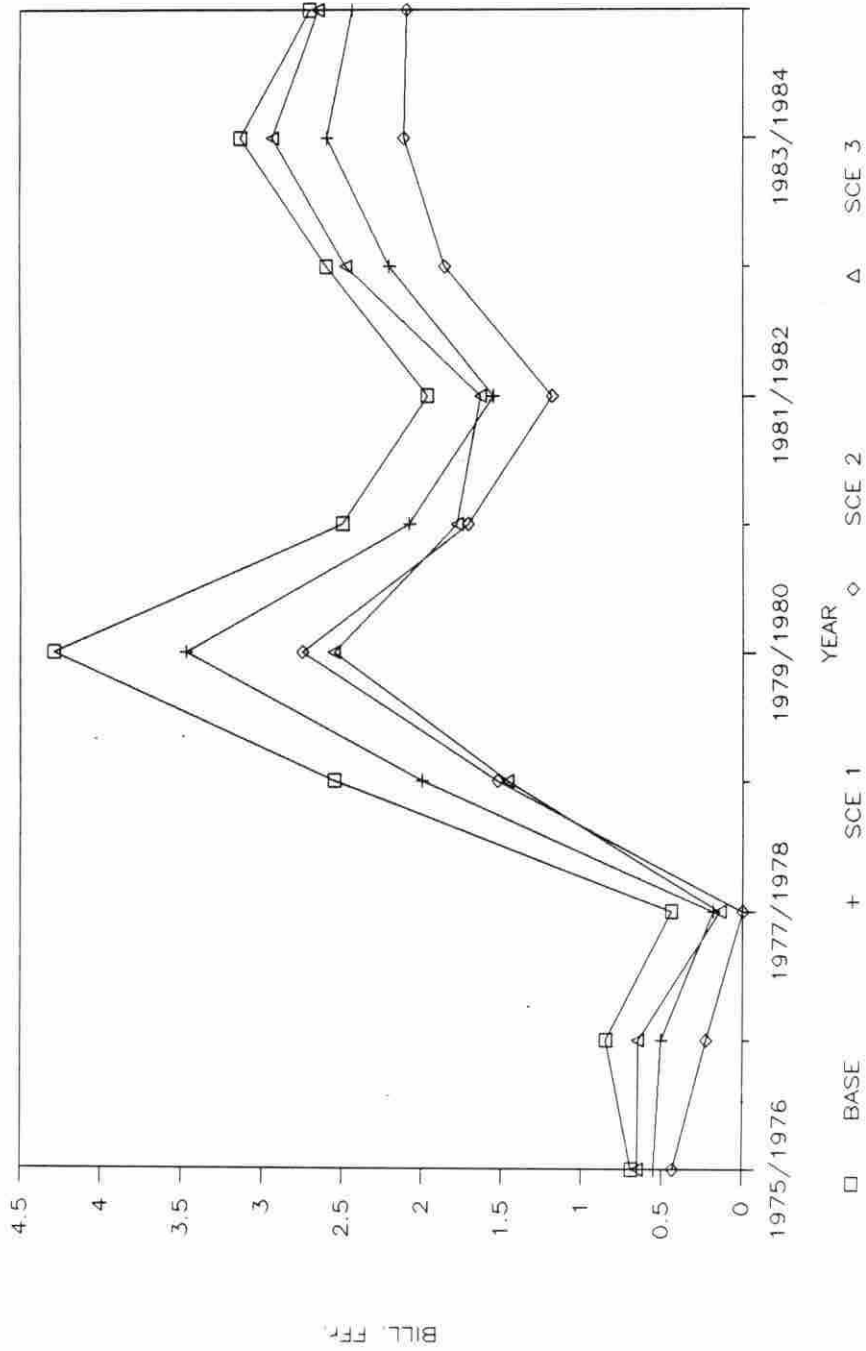


FIGURE 5.7. Soft-wheat export refunds under alternative policies

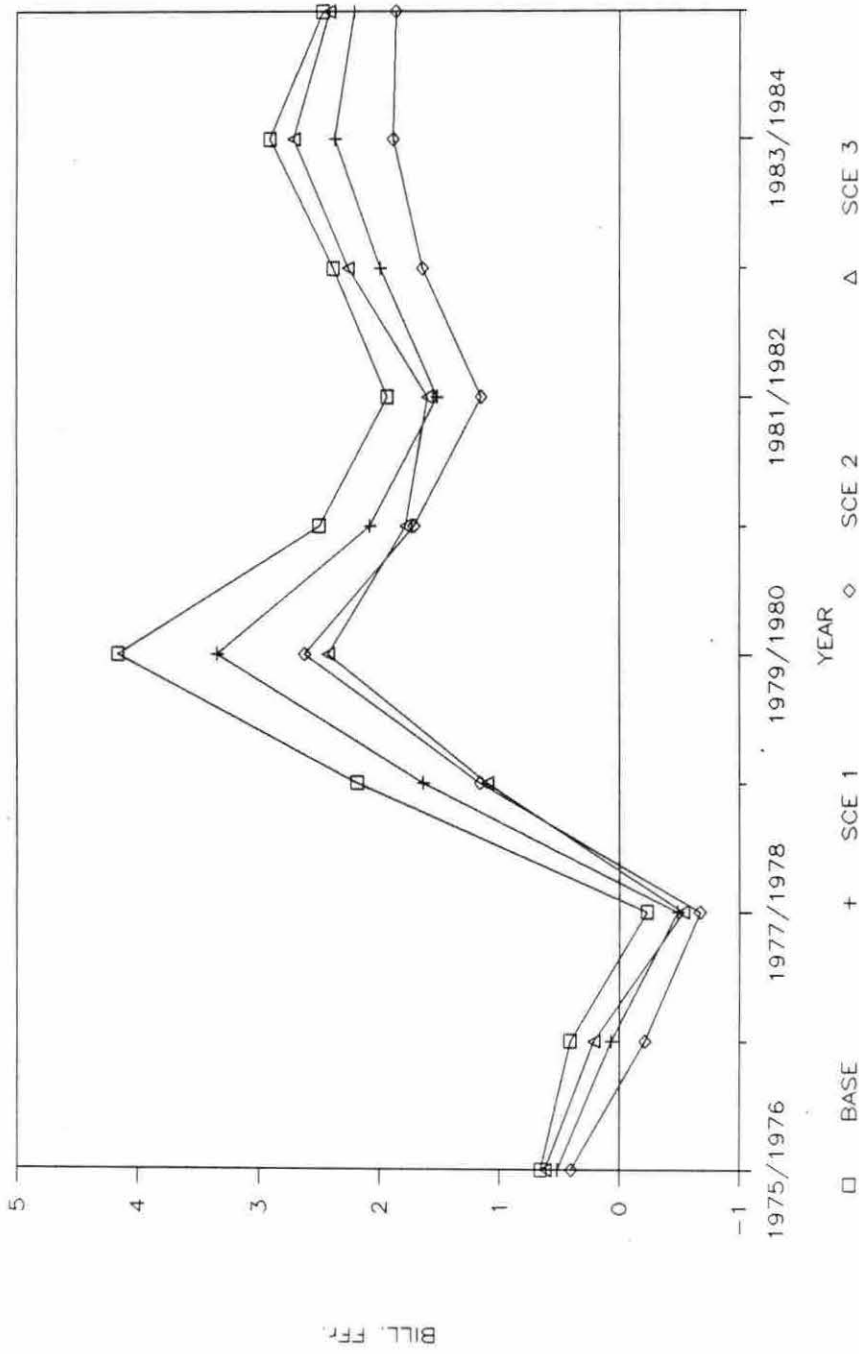


FIGURE 5.8. Soft-wheat net export refunds under alternative policies

are subsidized while exports are taxed. This is the result of a depreciating French franc against the rest of the members currency and against the ECU which implies a green rate lower than a central rate.

A lower green rate indicates negative MCAs. Thus, the Community obtains revenues from France's exports to EEC members. Revenues from EEC exports have largely fluctuated from one year to the next due to large variations on MCAs. From 75/76 to the next year MCAs were fourteen times larger. From 77/78 to 78/79 the change was on the opposite direction decreasing by 33.8 %. The decline continued for two more years until 80/81 when they were set to zero but began to increase thereafter. In 1984/85 a decrease in MCAs was experienced because of the implementation of the first stage of the new plan which was to eventually eliminate all MCAs.

Export refunds also fluctuated during the period as trade with developing countries expanded and trade with developed countries continued. In 1975/76 export refunds amounted to 688.038 million FFr. while revenues from exports to EEC members were 30.432 million FFr. Two years later the situation was reversed. Revenues from exports to the EEC were up to 672.53 million FFr. while refunds declined to 441.280 million FFr. From 1978 until the end of the period refunds remained in the billions every year. In 79/80 refunds saw an increase of 68.1 % over the year before rising

to 4.293 billion FFr. The 1979/80 crop year was the period with the highest expenditures of export refunds. Thereafter, refunds varied between 1.9 and 3.1 billion FFr.

Net cost from exports of soft-wheat in France are lower because of the revenues obtained from exports to EEC members. In 1977/78, net cost became negative, i.e., revenues, because MCAs were very high and exports to the EEC were 58.7% larger than the amount exported to third countries.

In this analysis it was assumed that exports to the EEC would have remained unchanged under the different scenarios because there is not a mechanism in the model that allows estimation of lower prices on supply and demand in the rest of the community members.

Under Scenario 1, domestic consumption would have increased, lowering inventories and exports outside the EEC.

In 1975/76 net export refunds would have been 21% lower, 16.7% lower in 1980/81 and 10.5% lower in 84/85.

Under Scenario 2, net cost would have followed a similar pattern with a 39% decline in 1975/76, 31.4% in 1980/81 and 24.4% by the end of the period. Under Scenario 3, the trend followed is not very different from the ones in the first two scenarios. The change in net expenditures would have been -5.8% in 1975/76, -28.6% in 1980/81 and similar to the baseline by the end of the period with an increase of 2.1% in 1984/85.

TABLE 5.1. Result of a 10 % decrease in intervention price. Scenario 1

VARIABLE	1975/76	1980/81	1984/85
Sowhprin, FFr/MT	666.792	823.374	1130.049
Pprsowh, FFr/MT	619.083	763.295	1045.743
Whprsowh, FFr/MT	706.303	862.885	1169.560
Ahsowh, MILL.HA	3.998	4.193	4.294
Whyd, M.T/HA	4.171	4.723	5.278
Feusowh, 1000 MT	2652.362	4631.068	4926.335
Whendst, 1000 MT	1473.870	1429.847	284.718
Exfreec, 1000 MT	4045.420	3833.230	6041.000
Exsowh, 1000 MT	3421.865	6762.329	11292.809
Producers revenue million FFr.	10322.446	15117.158	2370.262
User expenditures million FFr.	1873.371	3996.078	5761.644
EEC export revenues million FFr.	30.431	0.000	231.823
Third countries export expenditures million FFr.	549.808	3472.987	2442.770
Net export refund expenditures million FFr.	519.376	2082.040	2210.946

TABLE 5.2. Result of a 20 % decrease in intervention price. Scenario 2

VARIABLE	1975/76	1980/81	1984/85
Sowhprin, FFr/MT	592.704	731.888	1004.488
Pprsowh, FFr/MT	550.848	679.037	930.101
Whprsowh, FFr/MT	632.215	771.399	1043.999
Ahsowh, MILL.HA	3.713	3.824	3.975
Whyd, M.T/HA	3.874	4.415	5.004
Feusowh, 1000 MT	2898.223	5138.039	5413.266
Whendst, 1000 MT	830.302	606.759	0.000
Exfreec, 1000 MT	4045.420	3833.230	6041.000
Exsowh, 1000 MT	2682.679	5567.528	9712.892
Producers revenue million FFr.	7925.131	11462.593	18500.435
User expenditures million FFr.	1832.299	3963.478	5651.444
EEC export revenues million FFr.	30.431	0.000	231.823
Third countries export expenditures million FFr.	431.039	1714.175	2101.015
Net export refund expenditures million FFr.	400.607	1714.175	1869.191

TABLE 5.3. Result of setting intervention price at par with Rotterdam price. Scenario 3.

VARIABLE	1975/76	1980/81	1984/85
Sowhprin, FFr/MT	656.350	967.520	1382.800
Pprsowh, FFr/MT	609.466	896.054	1278.527
Whprsowh, FFr/MT	695.861	1007.031	1422.311
Ahsowh, MILL.HA	4.245	3.887	4.560
Whyd, M.T/HA	4.273	4.766	5.641
Feusowh, 1000 MT	2687.014	4480.840	4307.705
Whendst, 1000 MT	1885.697	1070.160	1145.125
Exfreec, 1000 MT	4045.420	3833.230	6041.000
Exsowh, 1000 MT	4044.728	5797.380	12256.035
Producers revenue million FFr.	11053.883	16601.316	32887.375
User expenditures million FFr.	1869.788	4512.344	6126.896
EEC export revenues million FFr.	30.431	0.000	231.823
Third countries export expenditures million FFr.	649.886	1784.943	2651.127
Net export refund expenditures million FFr.	619.454	1784.943	2419.303

CHAPTER VI. SUMMARY

This study was carried out to measure and analyze, the effects of rapidly increasing exports of soft-wheat to third countries to the CAP, French producers and consumers. Also, the model here developed was set up such that impacts of assumed alternative policies could be estimated and evaluated.

The model is developed for the French soft-wheat sector because it is the cereal that has increased more rapidly in production and trade, and France is the largest producer among the Community members.

Supply, demand, inventories producer prices and wholesale prices were endogenized. This allowed for the incorporation of different pricing policies which transmitted to the rest of the endogenous variables and eventually to exports and export refund expenditures.

The general result of the estimation were as follows:

- a) French market prices remained above the world price (in francs) from 1975 through the first half of 1980. Thereafter, they vary from below to above and vice versa. Producer prices remained below the intervention price at a constant rate while wholesale prices remained above the intervention price, also at a constant rate.
- b) Soft-wheat production has increased mostly as a

result of yield increases which have been the product of technological improvements.

- c) Domestic demand for feed use increased steadily as a result of increasing livestock production as well as a weak French franc which made the use of imported cereals relatively more expensive.
- d) Inventories increased/decreased mostly as production of soft-wheat increased/decreased and as exports to the EEC and to third countries decreased/increased.
- e) Exports to non-members increased steadily during the period as production increased, as the French franc depreciated against the U.S dollar, and as the volume of bilateral and multilateral trade agreements between the Community and third countries increased.
- f) As expected, refund expenditures were found to be rising throughout the period as trade with third countries expanded. However, net refunds were lower due to the fact that revenues are obtained from exports of French products to EEC members.

The analysis in Chapter 5, covers 3 different scenarios.

The first two, evaluate the impacts of a 10% and 20% decrease in the common intervention prices for soft-wheat. Scenario 3, examines the case of setting the common intervention price at par with the Rotterdam price simulating a free trade situation.

The effects of lower intervention prices by 10% or 20% percent were varied throughout the period. In most cases were found to be more significant at the beginning of the period but having smaller effects on exports to third countries and on refund expenditures by the end of the period.

The effects of the policies assumed under Scenarios 1 and 2 remained constant only in the case of producer and market prices. Under Scenario 3, the case was also similar, larger effects were encountered at the beginning of the ten year period but dwindled by the end of it.

One of the results of this study that should be noted, is the further deterioration of farmers income if common intervention prices would have been set 10% or 20% lower, considering a depreciating French franc and the high rates of inflation experienced in France during the period. Thus, the problem of production surplus and inventories could not have been solved by lowering intervention prices alone.

It should also be kept in mind that this study was only carried out for the French soft-wheat sector. France, is only one of twelve members in the Community and thus, a similar study for the rest of the countries is necessary to obtain a broader picture on the causes and effects of the Community budget.

APPENDIX

TABLE A.1. ENDOGENOUS VARIABLES

YEAR	AHSOWH MILL. HA.	WHENDST 1000 M.T.	FEUSOWH 1000 M.T.	WHYD M.T HA
1964	4.388	1690	3732	3.153
1965	4.520	2350	3619	3.265
1966	3.992	1396	3663	2.829
1967	3.929	2555	3350	3.636
1968	4.090	1291	3323	3.663
1969	4.034	793	4140	3.584
1970	3.746	1010	4163	3.449
1971	3.977	1487	3852	3.892
1972	3.958	1487	4550	4.578
1973	3.958	1380	3827	4.495
1974	4.143	2958	3717	4.620
1975	3.876	1307	2454	3.873
1976	4.274	1558	3433	3.772
1977	4.125	1450	4100	4.230
1978	4.166	2786	4666	5.030
1979	4.087	2380	4086	4.780
1980	4.582	2466	4811	5.170
1981	4.753	1537	5265	4.810
1982	4.845	2915	5813	5.240
1983	4.826	1678	6456	5.140
1984	5.100	3690	6567	6.530

TABLE A.2. EXOGENOUS VARIABLES

YEAR	EXCHFECU FFr. ECU	EXFREEC 1000 M.T	FECSTIN	FRCSTIN
1964	5.2817	811.90	53.014	48.761
1965	5.2817	1139.60	54.108	49.279
1966	5.2817	579.70	55.251	49.913
1967	5.2570	1297.65	55.393	50.259
1968	5.0797	3112.08	58.154	51.931
1969	5.2903	2693.40	59.248	54.294
1970	5.6777	1844.86	64.102	57.637
1971	5.7721	3605.75	69.487	61.729
1972	5.6572	4882.45	72.243	64.726
1973	5.4678	5115.22	83.782	71.816
1974	5.7339	3074.08	94.807	89.107
1975	5.3292	4045.42	100.000	100.000
1976	5.3449	4168.12	109.000	106.000
1977	5.6061	5197.72	122.000	115.000
1978	5.7398	4261.49	124.000	122.000
1979	5.8280	3786.31	132.000	134.000
1980	5.8690	3833.23	143.000	154.000
1981	6.0400	3980.06	163.000	175.000
1982	6.4250	3345.46	182.000	195.000
1983	6.7689	4436.00	204.000	214.000
1984	6.8714	6041.00	216.000	229.000

TABLE A.2. (Continued)

YEAR	LVPDNUM 1000 M.T.	PPRBA FFr. M.T.	PPRCOR FFr. M.T.	PPRSOWH FFr. M.T.
1964	519	328.9	408.96	392.6
1965	534	346.9	395.77	400.0
1966	535	380.0	391.27	435.5
1967	553	387.1	394.94	460.4
1968	566	392.0	410.04	432.4
1969	574	403.8	416.29	437.3
1970	574	462.0	425.04	482.2
1971	603	503.8	443.32	490.4
1972	643	464.0	462.52	510.2
1973	697	472.6	542.23	531.1
1974	701	595.1	588.82	595.9
1975	711	613.5	619.94	654.2
1976	727	686.9	674.60	713.7
1977	756	673.2	726.70	745.7
1978	800	699.2	758.30	795.9
1979	843	753.3	776.70	824.0
1980	895	777.3	847.80	881.8
1981	993	853.2	961.00	976.4
1982	1083	978.7	1083.90	1095.1
1983	1029	1080.1	1183.00	1179.4
1984	993	1099.0	1190.60	1143.1

TABLE A.2. (Continued)

YEAR	PWHEECIN ECU M.T.	EXSOWH 1000 M.T.	WHBIST 1000 M.T	NOFEED 1000 M.T
1964	81.874	3351.40	1942	6194.70
1965	83.239	3592.30	1690	5749.10
1966	84.846	1628.00	2350	6380.26
1967	94.608	3290.40	1396	5189.97
1968	96.347	3351.40	1230	5668.30
1969	96.607	2563.70	1291	5559.88
1970	96.540	480.60	793	6216.55
1971	98.476	2359.00	1010	5188.20
1972	104.804	2228.50	1487	6462.10
1973	109.443	2092.00	1487	6864.78
1974	116.399	3886.20	1380	6886.71
1975	139.023	3280.00	2958	6884.55
1976	135.254	1132.60	1307	7140.22
1977	143.933	1019.80	1558	7240.48
1978	146.757	3617.90	1450	7088.57
1979	149.170	4755.20	2786	7322.52
1980	155.880	7383.60	2380	7569.10
1981	165.230	7194.10	2466	7346.83
1982	179.270	8256.80	1537	6594.59
1983	184.580	7552.30	2915	7598.31
1984	182.730	10500.00	1678	8183.00

TABLE A.2. (Continued)

YEAR	ROTTWH \$U.S. M.T.	WHPRBA FFr. M.T.	WHPRCOR FFr. M.T.	WHPRSOWH FFr. M.T.
1964	64.64	386.47	461.07	468.82
1965	63.58	394.20	448.21	479.15
1966	69.02	403.95	435.60	496.83
1967	62.99	417.23	429.00	498.87
1968	63.66	421.15	448.37	489.87
1969	60.12	436.47	457.87	510.59
1970	66.47	438.33	473.42	539.57
1971	63.32	553.40	501.67	570.94
1972	96.00	534.00	540.00	600.05
1973	103.00	565.52	593.90	628.52
1974	167.00	660.29	681.19	683.88
1975	144.00	701.25	661.27	761.68
1976	117.00	799.38	781.88	852.02
1977	120.00	789.17	891.26	898.72
1978	155.00	854.45	929.46	928.56
1979	191.00	909.57	980.03	928.29
1980	203.00	955.55	1085.87	1021.12
1981	169.00	1043.99	1233.00	1159.72
1982	151.00	1151.70	1247.63	1239.24
1983	159.00	1389.60	1389.60	1219.34
1984	156.00	1283.30	1511.24	1276.89

TABLE A.2. (CONTINUED)

YEAR	SOYMEPR FFr/M.T	SOWHPRIN FFr/M.T	SUBSIDY ECU/M.T
1964	346.58	432.43	0.00
1965	402.37	439.64	0.00
1966	390.10	448.13	0.00
1967	387.26	497.36	0.00
1968	367.23	489.42	0.00
1969	405.75	511.08	0.00
1970	429.76	548.13	0.00
1971	477.26	568.41	0.00
1972	1092.42	592.90	0.00
1973	661.65	598.41	171.70
1974	614.87	667.42	48.94
1975	673.67	740.88	30.15
1976	943.80	722.92	67.22
1977	752.32	806.90	36.71
1978	819.92	842.36	69.81
1979	766.41	869.36	96.03
1980	1039.87	914.86	52.46
1981	1079.15	997.99	50.99
1982	1318.59	1151.81	46.99
1983	1520.92	1249.40	61.53
1984	1108.46	1255.61	31.48

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