

# **Modelling the EC Agricultural Sector: Problem Assessment, Policy Scenarios and Model Outline**

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MODELLING THE EC AGRICULTURAL SECTOR:  
PROBLEM ASSESSMENT, POLICY SCENARIOS  
AND MODEL OUTLINE

BY

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May, 1978

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## PREFACE

The central objectives of the research in IIASA's Food and Agriculture Program are to:

- evaluate the nature and dimensions of the world food situation;
- identify the underlying factors;
- investigate alternative courses of policy action at the national, regional and global level that may alleviate existing and emerging food problem in years ahead.

The problems of production, distribution and consumption of agricultural products vary according to the particular country, as does the nature and effectiveness of the specific policy action adopted. Therefore, the starting point in our research program is the modelling of a national Food and Agriculture system. The national models are to be descriptive policy models which are also helpful in the exploration of international interactions.

This research memorandum describes the outline for a model for the European Community. It also contains an assessment of the current economic situation and relevant policy issues.



## ABSTRACT

This paper is composed of three parts: the first section describes the economic situation and past development within the nine member countries of the European Community (EC). Particular emphasis is given to resource and production structure in agriculture as well as agricultural commodity markets. The second part contains a description of the Common Agricultural Policy (CAP) which is evaluated w.r.t. its effects on member and non-member countries. This section contains also a discussion of alternative policy scenarios conceivable for later model applications.

The third part of this paper gives a brief overview over the structure of the Agricultural Sector Model. This includes a presentation of the macro model with intersectoral linkages between agriculture and the rest of the economy as well as a mathematical formulation of the farm resource and allocation model.

Basically, the model consists of a policy component and a real world component. While the policy component treats the EC as one policy decision unit, the real world models are applied to the individual member countries separately. The policy component describes policy decisions at the level of the community which relate to market regulations (prices, tariffs, quotas), some structural and social policies (e.g. investment subsidies, labour mobility subsidies, income transfers to agriculture etc.) as well as policies oriented towards international cooperation (e.g. food aid, commodity specific preferences). The real world model covers the whole economy, disaggregated into the nonagricultural sector and the multiproduct agricultural sector. Resource capacities and aggregate levels of intermediate inputs are determined as a function of previous incomes, prices and policy measures. Production is simulated either (nonagriculture) by an aggregate production function or (agriculture) by an agricultural allocation model. Total demand is simulated for consumption, investment, stock mutation and foreign trade, consistent with the basic constraints of the national expenditure system.

For each of the commodities distinguished in the agricultural resource allocation model, a yield function and a function to allocate labour and capital to crops and livestock are estimated simultaneously. A special feature of the approach is the

combination of parameter estimation and resource allocation. By imposing conditions of rational behaviour on the part of the producers, the input factors are allocated to different commodities and, at the same time, the parameters of yield and mechanization functions are estimated.

A series of tables containing empirical information on the EC agricultural sector is added in the appendix.



## TABLE OF CONTENTS

<u>Introduction</u>	1
I. <u>General Economic and Agricultural Situation in the EC</u>	
1.1. Overall economy	2
1.1.1 Population and employment	2
1.1.2 Production	2
1.1.3 Income	3
1.1.4 Aggregate international trade	4
1.1.5 Prices and exchange rates	4
1.1.6 Foreign aid	4
1.2. Agricultural sector	5
1.2.1. Resource structure	5
1.2.2. Production structure	6
1.2.3. Agricultural markets	7
1.2.4. Aggregated sectoral development	10
II. <u>Common Agricultural Policy (CAP)</u>	11
2.1. CAP - objectives	12
2.2. Instruments of CAP	13
2.3. Evaluation of CAP	18
III. <u>Policy Scenarios for the ECC</u>	22
IV. <u>Framework for a Model of the EC Agricultural Sector</u>	28
4.1. General outline	28
4.2. Macro model and intersectoral linkages	31
4.3. Specification of the farm allocation model	39
V. <u>References</u>	46



## INTRODUCTION

The EC-Project has to be seen as an integral part of the Food and Agriculture Project at IIASA<sup>1)</sup>. It is the objective of the EC-Project to build a simulation model of the agricultural sector in order to analyze the impact of alternative agricultural policies. By linking the EC-Model to other national or regional models we plan to be in a position to show the effects of EC-policy-changes on the world food situation and on the other hand to analyze the impact of changing world market conditions on the food situation within the EC.

The specification of the model depends on the kind of problems which are to be analyzed. In the first paragraph we will therefore give a brief description of the economic situation of the agricultural sector to other sectors and the world market. Basic statistical information is attached in the Appendix.

After an evaluation of the Common Agricultural Policy (CAP) some policy scenarios are discussed which might be open to the EC in the future. Finally, on the background of the foregoing problem assessment and taking into consideration the requirements which have to be fulfilled for the linkage procedure<sup>2)</sup>, the framework for an agricultural sector model is described.

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1) For a detailed description see: IIASA Research Plan 1977 Laxenburg, March 1977, P.41 and H. de Haen: Towards an International Link of Agricultural Sector Models. Paper presented at the Agricultural Sector Analysis Regional Seminar Cebu, Philippines Nov. 1977.

2) M. Keyzer: Linking National Models of Food and Agriculture: An Introduction. IIASA, RM-77-2, P.21.

## 1. General economic and agricultural situation in the EC

### 1.1 Overall economy

#### 1.1.1 Population and employment

Total population in the nine member countries of the EC (EUR-9) amounted to 258 millions in 1974, approximately 6 1/2 % of the world's total, roughly 20 % more than the US and 4 % more than the USSR population.<sup>1)</sup> The growth rate of EC population, which was near to 1 % p.a. in the early sixties went down to .5 % p.a. in mid-seventies. The percentage distribution of population among member countries is given in table 1 a, showing that each of Germany, France, Italy and the UK make up for more than 20 %, these four countries together comprising 88 % of total EC population.

The share of labor force to total population varies between 35 % and 48 % among member countries, averaging to 41 % for EUR-9 (table 1 a). The rate of unemployment was 2.9 % in 1974 for the average of EUR-9, varying between 7.9 % for Ireland to about 2 1/2 % for Germany and the U.K. Apart from typical fluctuations in the course of the business cycle there is a continuous tendency for Italy and Ireland to have higher unemployment than the rest of the EC. This can be taken as one of several signs of severe regional differences of labour market conditions within the EC.

#### 1.1.2 Production

Gross domestic product at market prices was 1 147 billion US \$ in 1974 for the total of EUR-9, 18 % below the GDP of the United States. West Germany contributes one third, France nearly one fourth and the U.K. only one sixth of the total GDP (table 1 a).

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1) Source: EUROSTAT, Statistische Grundzahlen der Gemeinschaft 1973-1974.

GDP per capita varies widely between member countries. Germany is nearly 40 % above the EC average, Ireland's per capita production is just over half the average of EUR-9. The GDP per capita in the US is nearly 50 % higher than the EC average.

The average annual rate of growth of GDP at constant prices for the period 1958 to 1974 was 4.6 %; France and Italy ranking highest and at the lower range the U.K. with only 3 % lowest. From 1960 to 1970 the increase of labour productivity (GDP at constant prices per head of population employed) was highest in Italy (5.3 % p.a.) and lowest in the U.K., (2.5 % p.a.), with the EC average at 4.1 % (table 1 a). For comparison purposes productivity growth of the US for the same period was 2 %, and Japan 8.3 % per year. The sectorial origin of GDP shows marked differences between EC member countries (table 1 a). Agriculture's share is lowest in U.K. (2.2 %) and highest in Italy (8.1 %), manufacturing is dominating Germany's economy (52.5 %), while services and government have a particularly high share in the U.K. (56.2 %).

### 1.1.3 Income

In 1974, 72.3 % of the national income of the EC accrued to wage and salary earners. The share of profits in national income was above average in Italy and Belgium and lowest in the U.K., reflecting not only differences in the stage of economic development but also in the cost structure of the national economies (table 1 a). Another sign of this is the relatively high level of wage and salary income per employee for the member countries (table 1 b).

The structure of expenditure gives some indication of the relative importance attributed to government services and investment in the respective economies (table 1 b). While on the average for the EC 15 % of GDP is spent for government services, some countries, like the U.K. and Denmark have considerably higher shares. The rate of investment averaging 24 %, is relatively high in France and Ireland but lower in the U.K.

#### 1.1.4 Aggregate international trade

The value of total exports of the EC to third countries in 1973 was 99 billions US \$, approximating one quarter of total world exports (excluding intra EC trade). Exports of the EC were nearly 40 % higher than US exports. Imports of the EC from third countries amounted to 104 billions US \$ in 1973 and comprised again one quarter of world imports (table 2.13 a).<sup>1)</sup>

#### 1.1.5 Prices and exchange rates

The average rate of inflation (growth rate of the price index of private consumption in national accounts) in EUR-9 for the period from 1960 to 1974 was 5.1 % per year. It rose considerably in recent years amounting to 6.3 % in 1972, 8.3 % in 1973 and 13.0 % in 1974.

A converse relationship between inflation rates and the changing national exchange rates (table 1 b) can be seen. From 1960 to 1974 the German Mark was revalued against the US \$ by 63 %, the British Pound devalued by 16 %, other currencies lying in between.

#### 1.1.6 Foreign aid

The total foreign aid (official and private, bilateral and multilateral, net) of EUR-9 was 10 billions US \$ in 1974, 38 % of total foreign aid of all DAC-countries. In terms of national income EUR-9 spent .87 % of its GDP for foreign aid, the relative shares of its member countries varied between 1.3 % for Netherlands and .27 % for Italy (table 1 b). The major part of this foreign aid came from direct contributions of the national member countries, but a growing share of total EC foreign aid is channeled via Community institutions. In 1974 12.3 % of total contributions of EUR-9 were distributed via the European Development Fund and the European Investment Bank. The bulk of this foreign aid on community level went to the AKP-countries now associated with the EC under the Lomé-Convention.

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1) Source: EUROSTAT, Statistische Grundzahlen der Gemeinschaft 1973-1974.

## 1.2 Agricultural sector

To get an insight into the problems of the "Common Agricultural Policy" (CAP) the intention of this chapter is to provide a brief overview of the economic situation of the agricultural sector. A more detailed discussion of structural differences between countries as well as development patterns over time and in particular an analysis of underlying causes will be undertaken in the context with the policy simulation model to be built for the EC.

### 1.2.1 Resource structure

In 1974 about 60 % of the total area of the EC-9 was used for agricultural purposes, of which 50 % was arable land and 44 % permanent grassland (table 2.1).

The main characteristics of the resource structure in the EC are small average farm sizes and livestock holdings and - related to that - a high labor and capital input per hectare. Fairly remarkable differences between countries, for example between U.K. and Germany, reflect basic differences in historical development of institutions and policies.

In 1973 60 % of the holdings (larger than one hectare) were smaller than 10 hectare using 14 % of the total agricultural area (table 2.2). Although compared to North America this structure looks rather poor it should be noticed that a considerable structural change took place. From 1960 to 1973 the total number of holdings was reduced by 1.6 millions (22 %). The average farm size rose from 12 to 16 hectares. At the same time the number of people employed in agriculture was reduced by 50 %, equivalent to an annual decrease of 4.2 % (table 2.3). Total agricultural area being the same, the land-man ratio doubled. This outflow of labor on the aggregate level brought about a rise in productivity in agriculture and thereby prevented a widening of the income gap between agricultural and non-agricultural sector. National differences in the rate of decrease of the agricultural labor force could be caused by the structure of labor force, e.g. age structure and relation family labor to hired labor (table 2.4), or by other factors of varying regional or national importance,

which limits the outmigration either directly, e.g. availability of jobs in other sectors, or indirectly through competing objectives and policy measures (see 2.5).

Closely related to the farm structure, the average size of livestock holdings is rather small, especially in the cattle sector. In 1973 3.288 million farms (58 % of the total) were raising cattle and, as a subset 2.431 million farms were keeping cows (43 % of the total number of holdings). Eighty-six % of farms keeping cows had less than 20 heads and 52 % of all cows were in holdings with less than 20 cows (table 2.5).

To get an idea about the order of magnitude of resources drawn from other sectors, the purchases by the agricultural sector of non-agricultural commodities and services could serve as an indicator (table 2.6). In spite of some deficiency in the statistical data available (see footnotes table 2.6) one could realize considerable differences in the share of purchases in final agricultural production across countries (e.g. Germany and France compared to Italy) and in general a significant increase of this share over time. The share of these purchases of GDP gives a crude aggregate measure of the importance of the agricultural sector as a customer to other sectors (table 2.6). It amounts to 4,7 % in Denmark, 2.1 % in Germany and to 2.7 % in the EC-6 average.

### 1.2.2 Production structure

The structure of final production shows considerable differences between countries. The main characteristics are a relatively low share of animal production in Italy compared to other countries and a relatively high share of vegetable production in Belgium, Netherlands and Italy (table 2.7). From 1963 to 1974 the share of animal production dropped by nearly 10 % in France and 4 % in Belgium and increased on the other hand in the Netherlands and Italy. The distribution of arable land to different crops is shown for the EC in table 2.8. Although the



comparability of figures between 1958 and 1974 is limited an expansion of barley in place of wheat as well as an increase of grain maize and sugar beet area is noted.

The latter might be temporarily only because of sharp increases of world market prices in 1973, 1974 and a resulting suspension of internal quota.

During the period from 1956-60 to 1973/74 in the EC-6 yields increased by about 70 % for cereals, 30 % for sugar beets and 40 % for potatoes (table 2.8 and 2.9). Beside other factors this was brought about by additional fertilizer use (table 2.9). During the time in question in the EC-6 the application of nitrogen nearly tripled, whereas the use of phosphate and potash doubled. However, there are remarkable differences between countries as for example the use of nitrogen is in Italy (1973/74) 39 kg/ha as compared to 196 kg/ha in the Netherlands. Corresponding to that the yield in cereal production in 1973/74 was 46.5 (100 kg/ha) in the Netherlands and 30.2 in Italy.

### 1.2.3 Agricultural markets

Through the last fifteen years the development of agricultural markets inside the EC-6 shows a considerable increase in the degree of self sufficiency<sup>1)</sup> on the aggregate scale (table 2.10). The same holds true for the EC-9 although no aggregated long-term data are available. Because the U.K. is a major food importer, the degree of self sufficiency for crop products is lower in the enlarged EC.

However, there are differences in the development patterns between commodity groups. Without going into any detail with respect to the determinants of production and consumption it

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1) It must be stressed that the computed degree of self-sufficiency is not the result of pure market forces within the countries, given a certain border protection. It is rather the result of market forces plus all administrative measures, of which the most important ones are temporary and/or regional (national) consumer subsidies for butter and beef or subsidies paid to livestock producers using skim milk powder instead of other protein sources. Without this EC-budget payments the degree of self sufficiency for certain commodities would be higher.

can be seen from tables 2.10 and 2.11 that for meat, the large increase in consumption was matched by an equivalent increase in production. On the beef market, newer figures show for 1974 even a degree of self sufficiency of 100% (not included in table 2.10). To avoid an explosion of budget expenditures as the result of surpluses of these non-staple food products, the internal price guarantee through intervention measures is rather weak. Given a relatively high border protection, these markets tend to fluctuate around full self sufficiency.

The main features of the grain market are a continuously growing demand for feed grain, a decrease in direct consumption<sup>1)</sup> of grain<sup>2)</sup> and considerable increases in grain production (tables 2.10 and 2.11). As discussed in the previous paragraph, the latter was brought about mainly by higher yields rather than through extended land use. Disregarding short term fluctuations due to varying weather conditions, the degree of self sufficiency rose considerably over time, leading to an absolute decrease in import quantities of grain (table 2.12).

On the milk market, supply exceeds demand almost since the beginning of the 'common market'. Although it is difficult to give reliable figures, the degree of self sufficiency for milk (basic product) is well above 100% in the EC-6 since 1970 and is estimated at about 105% to 108% even in the enlarged EC. As pointed out before, the degree of self sufficiency is the relation of domestic production to consumption at a given policy. Taking into account that the EC subsidises the use of skim milk and skim milk powder in the livestock sector and - at least

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1) The decrease in per capita consumption (table 2.11) is not fully compensated by population growth. The residential population in the EC-6 was 170 in 1958 and 194 Mio in 1974. The increase in total wheat consumption (table 2.10) is the result of increased quantities fed to livestock.

2) Mainly wheat, but including all other grain directly consumed.

regionally and temporarily - the consumption of butter, it must be realised that the degree of self sufficiency would be much higher without these measures. The market balances for the basic commodities with guaranteed prices, e.g. butter and skim milk powder, show in 1973/74 a far higher degree of self sufficiency for skim milk powder (table 2.10).

Of the markets, that are relatively important in terms of the share of final production, only the markets for fruits and vegetables show a slight decrease in the degree of self sufficiency (table 2.10). The fast growing consumption, due to high income elasticities, could not be fully covered by domestic production.

Another exception of the general trend of decreasing net imports of the EC is the market of protein meal, above all soybeans. There is no border protection for these products so far and the domestic production of soybeans is close to zero. Being highly competitive as a protein component in the feed mix, the imports are increasing at about the same rate as livestock production.

The basic patterns of foreign trade of the EC-9 in value terms are shown in table 2.13a. Not surprising at all after the above description, the share of agricultural imports in total imports decreased slightly whereas the share of agricultural exports increased. Exports and imports (values) of commodity groups (tables 2.13 b and c) reflect the basic domestic market situation discussed before. Although the global effects of the described development of the agricultural markets of the EC on the trade flows are obvious, the consequences for single trade partners differ widely<sup>1)</sup>. As for example soybean exports from Brasil and the US to the EC increased considerably over time, the traditional beef exports from Argentina to the EC were reduced

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1) A detailed breakdown of trade flows at the country level would go beyond the scope of this paper.

to about zero from 1973 to 1974.

To give a rough idea of the nominal degree of protection for agricultural production in the EC, world and EC prices are listed in table 2.14. Beside differences between commodities, the stabilising effects of the EC market regulations on domestic prices during the period of sharply increasing world market prices can be seen clearly. The effects on world market prices are logically reverse.

#### 1.2.4 Aggregated sectoral development

From 1963 to 1974 the final agricultural production in the EC-6 (at current prices and exchange rates) nearly doubled (table 2.15). During the same time period gross value added at factor costs rose only by about 60%, due to a tripling of intermediate consumption. The latter development is mainly the result of increases in the use of feedstuff for a fast expanding livestock production. The shares of some principal components of the agricultural accounts in the final production are listed in table 2.16. There are remarkable differences in the ratio of crop to livestock production between member countries. The share of animal production is relatively low in France and Italy on the one hand and high in Germany, Netherlands and Denmark on the other. Corresponding to that the share of intermediate consumption and net value added in final production varies between countries. Over time the sharp increase of the share of feedstuff could be seen for all countries. The development of fertilizer use as a share of final production shows a remarkable increase in France and decreases in the Netherlands and Belgium, which could be explained by the high level already reached in the latter countries.

Some important indicators for the evolution of productivity in the agricultural sector are shown in table 2.17. From 1968 to 1973 the annual growth rate of gross value added at constant prices was -0,2 % in Italy, 3,9 % in the UK and 1,0 % in the average of the EC-6. Depending on the prevailing general

economic situation in the different countries, e.g. jobs available outside agriculture and relative income position of farmers, the decrease of agricultural labor force varied from -5,3 % in Italy to -1,3 % in the UK with an average of -4,7 in the EC-6 (EC-9: -4,4). The resulting annual increase in gross value added per person employed in agriculture ("labor productivity") was 5,9 % in the EC-6, with a range of 8,3 % in Belgium to 3,7 % in France. The comparable figure for the total economy in the EC-6 was 5,4 %.

Although the figures of 'persons employed in agriculture' are somewhat uncertain and not fully comparable to respective figures in other sectors, the comparison of the share of people employed in agriculture with the share of agricultural gross value added at factor costs in the total of the economy might give some impression of the relative income position as well as the relative economic importance of agriculture in the different countries (table 2.18). Agriculture has in general a decreasing share in total gross value added (except Ireland) but is in some countries (Ireland, Denmark, Italy, France) still a relatively large sector of the economy. The same is true for the share in total employment. Between 1968 and 1973 the relative income position of the agricultural sector has slightly improved in general, but considerable income disparities remained in Germany, France, Italy and Ireland. Considering the relative importance of the sector and the relative income position at the same time, the conclusion is that Ireland, Italy and France are the countries with the most serious adjustment problems.

## 2. Common agricultural policy (CAP)

In giving a brief description of the "CAP", e.g. the basic decisions for the EC in market and price policy taken in Brussels by the Council of Ministers, it must be noted that important parts of the agricultural policy, e.g. regional, structural and social policy are left out. These policies are more or less in the responsibility of the member countries or - at an even lower level - of state or other regional authorities. Even so certain measures in regional or structural policy are supported financially by the community through the Guidance Fund of the "European

Agricultural Guidance and Guarantee Fund" (EAGGF). According to our plans to build a policy analysis model for the agricultural sector on the EC level, diaggregating only for commodities or groups but not in the spatial dimension, a restriction to the CAP seems justified because on the aggregate level the above mentioned policies are of minor importance in the short run. Certain effects in the long run, e.g. shifts in productivity, could be included implicitly in an appropriate model.

## 2.1 CAP - objectives<sup>1)</sup>

By signature of the Rome Treaty in 1957, France, Germany, Italy, the Netherlands, Belgium and Luxembourg agreed to undertake the integration of their economies. In establishing a common market with free trade between member countries and common customs tariffs some uniformity and centralization of the national agricultural support programs was necessary. The result was a common agricultural policy with certain very general objectives and very specific market regulations. In joining the EC in 1973 the United Kingdom, Denmark and Ireland accepted the basic structure of the CAP and agreed to adjust their price levels in stages, so that common prices would apply in 1978.

The objectives of the CAP are:

- a) to increase agricultural productivity by promoting technical progress and by ensuring the efficient development of agriculture and the optimal utilization of the factors of production, particularly labor;
- b) to ensure thereby a fair standard of living for the agricultural population, particularly by increasing the individual earnings of persons engaged in agriculture;

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<sup>1)</sup> The following chapter is partly identical with an English Language description in: USDA, the Common Agricultural Policy of the European Community, Washington, 1973.

- c) to stabilise markets;
- d) to guarantee regular supplies;
- e) to ensure reasonable prices to consumers.

Listed elsewhere in the treaty but certainly of relevance for the CAP:

- f) the member countries would support a harmonic development of world trade.

As it is readily apparent that this statement of objectives is a rather poor guide to the nature of CAP the description of the three fundamental and politically rather sensitive principles may be helpful for further understanding:

1. Common Pricing means that, as a minimum, prices should be regulated such as to permit the elimination of duties and restrictions on trade between the member countries and to promote exports from the main producing areas of the Community to the major deficit areas.
2. Community Preference is simply the notion that the European Community should constitute a preferred market for the products of member countries.
3. Common Financing means that the cost of agricultural support must be paid by all members, or as the basic financing regulation states: "the financial consequences of the CAP are the responsibility of the Community".

## 2.2 Instruments of CAP

### a) Market regulations

The core of the CAP are the price policy and the commodity specific market regulations to reach a certain internal price level (target prices). Because a detailed discussion of all instruments used on the various markets would go far beyond

the scope of this paper only the basic principles for the most important markets will be described. In the second part, policy measures towards third countries, e.g. preferential agreements and food aid will be explained briefly.

For the main crop products<sup>1)</sup> as well as for beef and milk products protection against foreign competition is accomplished through a levy system. The council of ministers decides yearly upon EC target prices and derived threshold prices at the border which are determined in "units of account" (UA). They are unique<sup>2)</sup> for all member countries. With world market prices below threshold prices, the variable levy as the difference between both prices, guarantees that no imports are possible below the threshold price. Depending on the internal market and budget situation exports are made possible through export subsidies (restitution payments). With world market prices above EC level exports could be taxed but imports would in general not be subsidised. In addition to this border protection there are internal intervention prices which can be understood as guaranteed minimum prices for the producer. Internal market prices below this level are avoided through unlimited buying of governmental intervention agencies. Supplementary to the basic regulations there are special consumer subsidies in surplus situations (high unplanned stocks), e.g. for beef and butter and permanent subsidies for using skim milk or skim milk powder in livestock production. Furthermore, there are quotas on the production of sugar.

For grain based livestock products (pork, poultry and eggs) protection for producers is accomplished through a gate price and a levy. The gate price is a calculated "fair" cost price

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1) There are deviating regulations for hard wheat and rape, basically deficiency payment regulations. There is no protection for soya and other protein meal and oil seeds.

2) Deviations of this principle were caused through parity changes between member countries and will be discussed in 2.5.3.



for products delivered to the EC. To this gate price a levy is added which is composed of two parts: one part compensating EC producers for higher costs of feedstuff (grain) and the other a 7 % preferential custom. If the gate price is undercut by foreign suppliers, the difference is offset by a supplementary levy. So the basic levy is more or less a value custom varying with the grain prices on the world market. There is no internal intervention regulation for poultry and eggs and only at very low level for pork. So the export subsidies which are paid for all products could be understood as an important instrument to stabilise internal markets.

The third group of commodities which is quite important in terms of share in final production (table 3.2) and in foreign trade are fruits and vegetables. There is no levy system for these products. Import duties apply to all products and for many the rates are bound in GATT. There is further protection from import competition by "reference prices", which in effect serve as minimum import prices. When the price, after certain adjustments, of an imported product is found to be selling below the reference price, the EC imposes an offsetting "compensatory tax". Furthermore a support system is introduced which functions in the first instance through producer organizations. Member states give aid for establishing producer groups that are able to hold their members produce off the market at price levels not to exceed ceilings set by the member states. In addition, for the most important products (approximately the same products for which reference prices are fixed) the EC Council fixes "base prices" and "purchase prices" each year - the former an average of recent market prices, the latter a considerably lower figure at which under certain conditions member states would begin to buy up quantities withheld from the market by the producer groups. In effect the system seeks to provide more even marketing of fruits and vegetables with government intervention if necessary at distress prices. When surpluses are withdrawn from the market, they may be donated to charity or provided to institutional feeding.

Export subsidies have been made available for fresh fruits and vegetables and - since 1970 - for processed products either.

Finally it should be mentioned that preferential tariffs apply to many fruits and vegetables, especially to citrus fruit imported from Mediterranean countries.

b) Multilateral agreements, food aid

Agricultural trade policy of the EC has to be viewed in the general context of trade policy, which confirms the rules and obligations arising out of the GATT. The main results of the negotiations of the Kennedy Round (1966) were a general elimination of import quotas<sup>1)</sup>, an elimination of duties which were less than 5 % and a general reduction of tariffs by 50 %. In ongoing negotiations of the "Tokyo Round", the EC holds the position that the negotiations on agricultural commodities should be conducted separately from industrial commodities and that the basic principles and regulations of the CAP should not be touched. It proposes for major agricultural commodities the negotiation of international commodity agreements, which should include regulations on a coordinated stockholding policy.

Furthermore the EC is a member of the International Wheat Agreement.

Beside this multinational agreements there are quite a few bilateral agreements between the EC and other countries, respective country groups, concerning the agricultural trade<sup>2)</sup>. In 1975 an agreement with 45 countries from Africa, the Carribean and the Pacific region (ACP) was signed, providing for trade preferences, the guaranteed annual import of 1,3 million tons of sugar by the EC and the stabilization of export revenues for certain tropical raw materials.

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1)

Some minor exceptions in the EC are seasonal quotas on the import of fruits and vegetables.

2)

Only the more important ones will be mentioned.

Since 1973 Greece and Turkey are associated with certain trade preferences to the EC and with Greece negotiations have been scheduled to become a member of the EC.

Except for Malta and Israel with which agreements are settled, there are ongoing negotiations with the other Mediterranean countries about preference agreements, which in the agricultural sector are mainly concerned with citrus fruits and olive oil.

With the UK joining the EC, special arrangements have been made for Commonwealth countries. Beside the agreement to import certain quantities of sugar up to February 1975 as the result of the Commonwealth sugar agreement, the UK is authorised to import certain quantities of butter and cheese over a transitional period of 5 years, up to 1978.

#### Food Aid

The EC is participating in the 1971 Food Aid Convention, making an annual contribution of 1,035 million tons of cereals. This contribution on the Community's part is extended through food aid projects of the Community as such and national projects of the Member States. The Community projects are financed entirely by the EAGGF. National projects are financed partly by the EAGGF and partly direct from the Member States' budget.

As regards other farm products, e.g. skim milk powder, butter, oil and sugar, the Community has provided food aid through 'ad hoc' decisions taken by the Council. Without going into details with respect to quantities actually delivered<sup>1)</sup>, it should be mentioned that the initial program was prolonged from July 1975 to June 1976<sup>2)</sup>, including capital aid to buy food (UNWRA Agreement).

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1) For further details, see: OECD, Agricultural Policy of the European Economic Community, Paris 1974, p.84.

2) EC COMMISSION, Report on the State of Agriculture in the EC, Part I, p.25.

### 2.3 Evaluation of CAP

In evaluating the CAP two aspects should be discussed. First, we provide an evaluation with respect to the objectives of CAP (listed in Chapter 2.5) and second, an evaluation with respect to objectives of non-member countries.

a) As far as the regulation of the price level is almost the only form of assistance to agriculture, there is a permanent conflict between the objective of maintaining or increasing the relative income of the farm sector on the one hand, and reasonable consumer prices as well as balanced markets on the other hand. As an economy grows, and income in general rises, more of the increase is usually spent on nonagricultural products. The demand for resources to produce nonagricultural products helps push up the prices of farm inputs as well, and farm costs usually rise faster than farm prices. If farm income is not to decline, this cost-price squeeze must be offset by higher productivity. However, unless resources (land, farmers) are then removed from agriculture, farm output will rise with higher productivity and will tend to depress prices. If, in addition, prices are maintained or increased by government regulation, production will rapidly outpace consumption and support costs will mount as long as domestic prices are above world market level. High prices for farm products also tend to raise prices for farmland and capital so that cost reduction is prevented. Trying to maintain farm income by raising prices tends therefore to be partly selfdefeating and leads to demands for further price increases, in particular from small farmers who cannot easily find financing for capital improvements and who must otherwise dig into existing capital in order to live.

Even if this fairly general analysis describes the problems of most industrialized market economies, it is particularly valid for the EC. With consumers being quite well off during periods of prevailing income growth, the agricultural price decisions were very much oriented towards farmers, or at least some of them, who had to carry much of the burden of unavoidable structural

change. Even more, as price decisions in context of the CAP have to be taken unanimously up to now, resulting compromises tended often to be close to demands of that country which asked for the highest price increases. This might have been a country with particularly low farm incomes compared to other sectors or a country which expected 'net gains' in spite of increasing surpluses, taking into account that support costs, e.g. storage costs, restitution payments and consumer subsidies are financed by the Community (KOESTER, 1977).

The main negative consequences of this protective policy are high consumer prices and an increasing degree of self sufficiency with mounting support costs (tables 2.10, 2.19 and 2.20) or, more general, welfare losses, because of a suboptimal allocation of resources.

However, as long as farm prices are the main determinants of farm income, there are certain limitations to a 'low price policy' bringing about 'reasonable' farm incomes by enforced removal of production factors, above all, outmigration of labor. First of all, depending on the age structure of farm population, there are psychological and educational factors which limit the intersectoral mobility even without the need of leaving the living place. As far as an intersectoral migration is combined with an interregional migration, there is a growing awareness of certain externalities as agglomeration on the one hand or an under utilization and resulting reduction of infrastructure on the other hand. Furthermore, environmental problems such as erosion of land no longer used for agricultural purposes, especially in the mountain areas are of growing concern.

In addition to that, the objective of 'guaranteed regular supplies' might not be compatible with a 'low price policy' on the long term.

One possible way out of this dilemma in price policy could be the introduction of direct income payments to farmers as an additional instrument. It will be discussed later in the context with policy alternatives.

As far as the stabilization of domestic markets is concerned, the system of market regulations accomplished fairly stable prices during a period of major price fluctuations on the world market. Nevertheless, considerable price fluctuations in the livestock sector (cattle, and hog) due to highly dynamic price supply interactions, could not be avoided.

Beside this evaluation of CAP with respect to the objectives stated explicitly at the beginning, some comments are necessary concerning the mentioned basic principles of CAP and related monetary problems. The common agricultural prices are defined in Units of Account (UA). Originally (before 1970), the UA was equal to one US \$, fixed as a gold parity. The parities to currencies of member countries were given through official exchange rates, notified at the IMF. After the worldwide collapse of the 'fixed parity system', there are basically three exchange rates between the UA and the currencies of member countries:

1. the 'old parity', still in use for the EC budget;
2. the 'green exchange rate', used for the calculation of common agricultural prices; and
3. the current exchange rate between member countries, based on the parity of the 'floating block' (FRG, Netherlands, BLEU, Denmark) with the UA. As far as the current exchange rates are used, e.g. for statistical purposes, the prices (except fixed prices of the market regulations) and values are expressed as 'EUR'.

Given frequent parity changes between member countries or even floating exchange rates, the 'green exchange rates' are fixed by the Council of Ministers and in fact are adapted only very slowly to current exchange rates. To maintain free trade inside the EC, exports to devaluating countries have to be subsidised and exports to revaluating countries have to be taxed and vice versa. These financial transactions (MCA, see table 2.19) are handled through

the EAGGF. The main consequences of this regulation are:

1. there are no longer 'unique' agricultural prices with respective consequences on resource allocation; and
2. massive devaluations of net importing countries, e.g. Italy and UK, are leading to high financial transfers from other member countries via the EAGGF, which might not be accepted forever.

'Common financing' is always stressed as one of the basic principles of the CAP and CAP itself as an imperative necessity of the EC in general. If the expenditures of the EAGGF will increase in the future even faster as up to now (table 2.19)<sup>1)</sup>, caused by exploding MCA payments, this development may not just endanger the CAP but the EC itself.

b) A brief general evaluation of the effects of CAP on non-member countries, not taking into account preferential agreements has to concentrate on two aspects; first, the level of protection, and second, stabilization policy.

1. Up to now, EC agricultural policies were more or less determined with respect to income objectives of the agricultural sector. The consequence was a relatively high degree of protection in the average (across commodities, table 2.14) with negative effects on resource allocation and trade on the world scale. Without going into a detailed analysis towards single commodity markets or countries, a lower protection rate in general could be considered as a policy alternative being even compatible with basic CAP objectives.

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1) It should be pointed out that the difference between receipts and expenditures of the EC (tables 2.19 and 2.20) is paid out of national budgets.

2. The basic regulations of the agricultural markets discussed above automatically transfer internal shocks to the world market and do not help to absorb shocks from the world market, at least as long as world market prices are below EC level. So far, there is no automatism for the reverse situation. However, there has been some experience with high world market prices (1973 to 1974). During this period in general no import subsidies were paid (except for sugar imports to the UK), but exports have been taxed. There is no EC stock policy so far, rather, the world market is used as a buffer stock. More cooperative approaches could be imagined and will be discussed in the context of the policy scenarios.

### 3 Policy Scenarios for the EEC

Departing from the forgoing problem assessment these scenarios are thought to provide some idea of what policy options might be open to the EC in the future and, therefore, what different sets of policies should be analyzed in the model with respect to their international and domestic effects. The scenarios are not chosen under the aspect whether it is or is not likely that current policy makers will adopt them, but the criterion has been whether they might or might not have an impact on the world's food situation.

Starting out from the current food and agricultural policy of the EC one might be interested in changes in three politically interrelated but conceptually separable areas, namely

- (1) level and method of protection and farm support
- (2) degree and method of stabilization
- (3) amount and form of foreign aid.

While in all of these three areas one might conceive of a continuum of policy options only a limited number of discrete policies are discussed here. The three areas of interest are dealt with in turn. For every concrete scenario to be analyzed in the model a defined combination of elements out of the three policy fields would have to be chosen.



(1) Level and Method of Protection and Farm Support

a) Continuation of current policy

Nature of policy: Farm incomes are supported via price protection. Level of protection is oriented only to desired income parity. Tariffs, export subsidies, market intervention at minimum prices and consumer subsidies for some products are used, quotas only for sugar. No budget restriction.

Relevance: Obvious.

Model requirements: Respective instruments must be included. Mechanism for decision on price relations on domestic markets and on export subsidies versus consumer subsidies necessary.

b) Pure free trade policy

Nature of policy: Level of protection zero (price stabilization at expected trend world market price through positive/negative tariffs and market intervention still possible). No income support to farmers.

Relevance: What happens to world market price level? To what extent is "need" for current price protection caused by itself? What countries gain/lose from protection? How would change in world market price affect food consumption in hunger countries?

Model requirements: No specific requirements (stabilization see below).

c) Free trade and direct income support to farmers

Nature of policy: If zero protection seems politically not acceptable from the point of view of farm incomes, direct income payments, not in any way related to actual production, are considered. Financing either via the general budget or via a special excise tax on food.

Relevance: How would production be affected as compared to (i,a) and (i,b)? Would the world trade situation improve? What amount of intersectoral transfers

would be involved?

**Model requirements:** Model must be specified to allow analysis of reaction of farmers to direct payments and of food consumption to excise taxes.

d) Protection differentiated with respect to commodities

**Nature of policy:** Current relations between effective rates of protection for single commodities (or current trends in these relations) are changed.

**Relevance:** EC might be pressed in international negotiations to change her pattern of commodity protection (e.g. to liberalize on grains while maintaining protection for livestock and dairy products). What would be the effects in terms of production structure, imports/exports, farm income?

**Model requirements:** No specific requirements.

e) Protection differentiated with respect to countries of origin of imports.

**Nature of policy:** EC keeps or extends preferential agreements with a number of developing countries.

**Relevance:** World market is not homogeneous but split up in areas of preferential trading. How does this affect trade flows, internal development of favoured countries, domestic production and consumption in the EC? What are the economic and financial consequences for the EC?

**Model requirements:** As long as farm product prices in the EC model are assumed to be completely determined by the government the only consequences are in terms of net imports/exports against "fourth" countries (countries outside the preferential area) and the respective flows of public finance (tariffs/export subsidies). If prices are allowed to vary inside a government determined range (threshold/intervention price) the actual prices can be explained only if preferentially imported quantities are known. In the

global system this issue can be explored thoroughly only if a complete trade matrix by countries results from the linkage procedure.

f) EC behaves as an oligopolist on the world market

Nature of policy: Sofar it has been assumed that EC takes world market prices as given and orients farm policies only to internal problems. Acting as an oligopolist EC would take the impact of its measures on world market prices (directly or via policy changes of other countries) into account and try to reach something like an "optimum tariff".

Relevance: EC is big enough an importer/exporter in single products to influence world market prices. How would the reaction parameters of an oligopolistic EC look like? What countries' reactions would the EC take into account? What strategies would the EC think of? How would world market prices and quantities be affected? Could the EC improve her own position? Which countries would suffer?

Model requirements: No specific requirements for the real world model. Government model has to include oligopolistic strategies.

2) Degree and Method of Stabilization

a) Continuation of current policy

Nature of policy: Domestic shocks are largely exported to the world market via variable levies/ export subsidies. No stabilizing stocks are held.

Relevance: Obvious.

Model requirements: No specific requirements.

b) Stabilization of EC imports and exports

Nature of policy: EC attempts at contributing to world market stability by stabilizing its imports and exports. Fluctuations in domestic production and/or consumption are offset by variations in domestic prices and/or government held buffer stocks.

Relevance: The EC is under increasing international pressure to engage herself in world wide stabilization. What method of stabilization would be relevant? What would be the internal market effects and economic costs? How would world market stability be affected?

Model requirements: Real world model has to produce shocks. Government model includes a mechanism to regulate domestic prices and/or to run bufferstocks in order to stabilize net imports/exports.

c) EC contributes to an international stabilization scheme

Nature of policy: EC cooperates under an international agreement. Two directions which could be combined are conceivable: Opening of domestic market to international fluctuations in order to broaden the buffer, and contribution to an international bufferstock scheme. The latter could be organized in various ways.

Relevance: How far would a gradual opening of domestic EC markets to world market fluctuations (protection of a constant degree may still exist) lower world market instability? How could an international bufferstock scheme look like? What would be optimum stock sizes, what costs would be associated with it? How would benefits from stability be distributed among countries, what way of burden sharing would be politically feasible and stabil?

Model requirements: Correlation between shocks in single countries has to be thoroughly analyzed and built in. Government model has to include respective instruments.

3) Amount and Form of Foreign Aid

The need for and effectiveness of foreign aid has to be looked at in the framework of the models for developing countries. The overall willingness of the EC to provide foreign aid can hardly be made endogenous in the model. Differing amounts of capital, technological, and food aid will have to be investigated in the global model. The main topic to be analyzed specifically in the EC context is

a) Increased amount of EC food aid

Nature of policy: EC provides considerably more food exports on concessional terms to food deficit countries.

Relevance: What commodities would the EC concentrate on? What rate of production increase would be technically feasible? What would be the social costs to the EC? How would this compare to buying the same amounts on the world markets? What would be the effect on world market prices?

Model requirements: For an output increase considerably above past trends the potentially usable resources have to be evaluated. The model has to be checked as to whether its structure and parameters apply to a high rate of expansion too. Government model has to include possibility of choosing among different expansionary instruments.

4) Framework for a Model of the EC Agricultural Sector

4.1 General Outline

The model building process to describe the physical and political aspects of the agricultural system of the EC as part of a world-wide linkage is an ongoing project. The following outline is therefore open to further revisions and in many parts, especially those relating to the policy model, it necessarily is rather general. The current research efforts are predominantly concentrated on the agricultural production model which is therefore presented in more detail. For the rest of the model the description concentrates on basic assumptions and specifications for the agricultural sector itself as well as its linkages within the general economy.

1. Basic Assumptions

- a. In spite of the existence of rather inhomogeneous natural conditions for agricultural production and national responsibilities for most economic policies including commerce, money and capital markets as well as foreign trade and even various agricultural policies (income policies, investment subsidies), the model will treat the EC as one economic and political unit. However, parameters are estimated on cross-country basis and numerical results for the EC are derived from aggregation of simulation runs at the national level to avoid aggregation errors.

The aggregated model is also a reflection of two facts, one being that it is the final objective of the EC to pursue a common economic and monetary policy and the second being that one set of major policy measures, i.e., agricultural price and trade policies, is mostly commonly controlled already now.

- b. The nonagricultural sectors of the EC economy are aggregated into one bloc and assumed to produce one homogeneous commodity. This is certainly an unrealistic assumption, since the resulting aggregate includes commodities as different as services, inputs to agricultural production (fertilizers, pesticides, etc.), investment goods for all

purpose, final consumer goods and supply of public goods. However, the emphasis of the modeling exercise is on the food production system and the reason for including the rest of the economy at all is to endogenize the real income and food consumption effect resulting from changes in agricultural production and food prices. Agricultural production is disaggregated into various commodities.

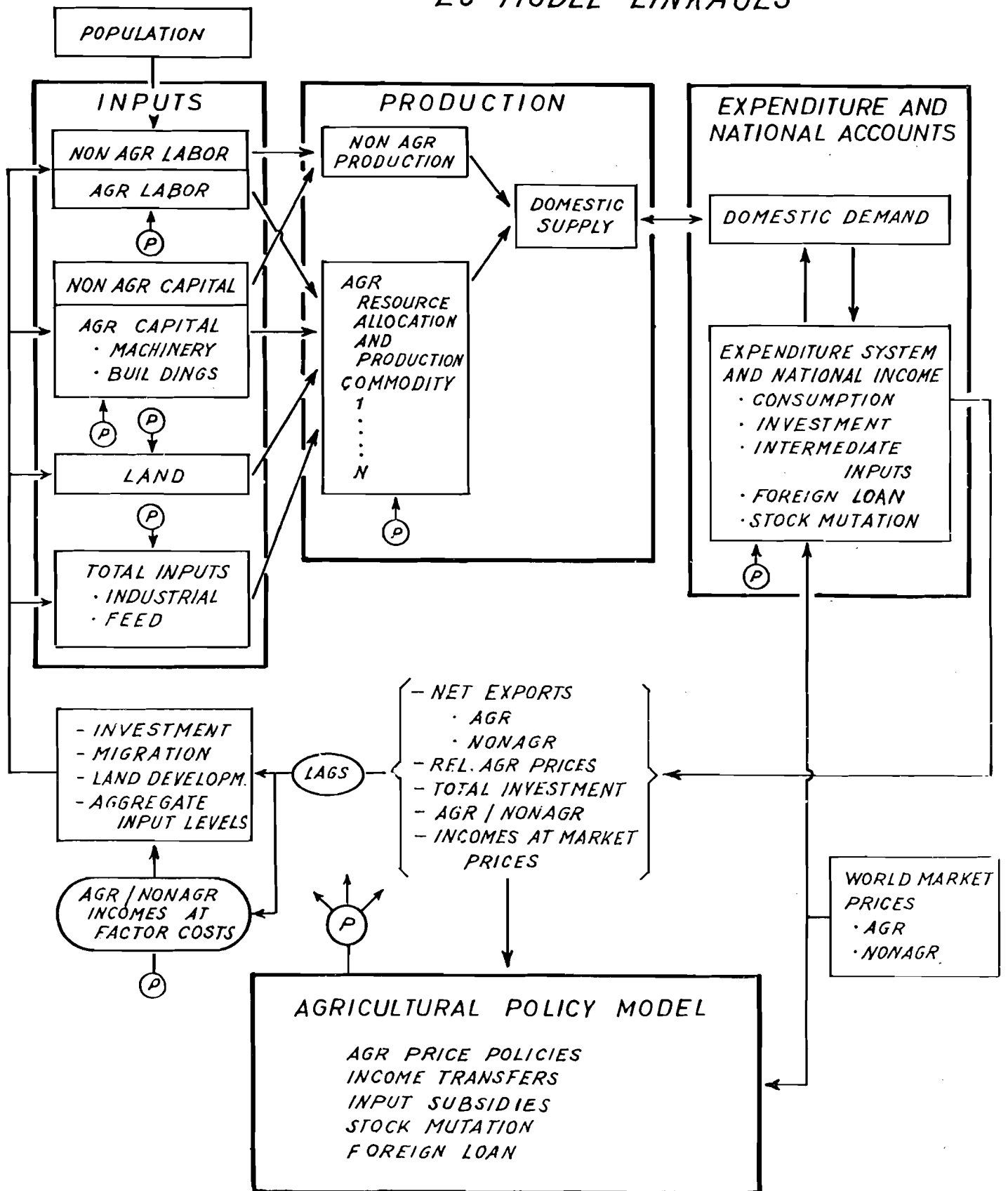
- c. Personal income distribution is not analyzed at all in the model, neither in the nonagricultural nor in the agricultural sector. This is done under the assumption that the distribution in the EC although certainly not even and subject to political controversy, at the given level of income is not critical w.r.t. nutrition and the availability of other basic human needs.

#### Basic Model Structure

A brief overview on the general model structure will be given before details are described. The basic structure of the model and the linkages between major components are sketched in figure 1. Basically, a distinction is made between a government think model, describing the policy decisions related to food and agriculture on the one side and a real world model of production, marketing, and the expenditure system on the other side. The real world model covers the whole economy, separated into the aggregated nonagricultural sector and the multiproduct agricultural sector. Subcomponents within the real world model are related to Population, Inputs, Production and Expenditure including National Accounts.

Population is assumed to grow exogenously without explicit consideration of international migration across the EEC borders. Resource capacities and aggregate input levels are determined as a function of previous incomes, prices and policy measures. This includes submodels determining the inter-sectoral migration of labor; agriculture's share in total investment, land development and withdrawal for nonagricultural use; the aggregate level of intermediate consumption

FIGURE 1: SCHEMATIC BLOC DIAGRAM OF THE EC MODEL LINKAGES





of industrial inputs (fertilizer, pesticides etc.) in agriculture. These inputs and resource levels are thus predetermined when entering the production component. The level of intermediate consumption is determined simultaneously within the allocation model. Since only one nonagricultural commodity is defined, net production of this results directly from the respective labour and capital input. In the agricultural sector, resources and intermediate inputs have to be allocated to the various production activities. This is done within a nonlinear constrained optimization submodel resulting the expected gross production for the agricultural commodities. The domestic supply may deviate from this due to random weather effects.

The next computational step is then to simulate the demand for various purposes, i.e. consumption, investment, stock mutation and foreign trade of the various commodities, consistent with the basic constraints of the national expenditure system. Demand components include behavioral functions, predetermined input demand and policy decisions w.r.t. stock and foreign trade policies. Assuming a competitive market and an open economy, world market prices are exogenous to the economy. Domestic prices may be policy influenced via tariffs, quotas or variable levies. The nonagricultural price is used as numeraire, hence inflationary effects are excluded in this version.

#### 4.2 Macro Model and Intersectoral Linkages

Following is a mathematical description of the complete model with emphasis on the intersectoral linkages within the real world model. (See also Figure 2) Model components related to agriculture are presented in a general form; details follow in section 4.3.

Assuming a one period decision delay for resource capacities and input levels, a recursivity is established for input and production. Nonagricultural production requires labor and

capita, agricultural production uses labor, capital, nonagricultural inputs, noncompetitive agricultural inputs (e.g., oil cake, protein feed) and land, separated into currently cultivated and potential agricultural land. Population is projected exogenously and converted into labor force by a time variant participation rate.

$$(1) \quad W_t = W_0 e^{\lambda t}$$

$$(2) \quad L_t = \mu_t W_t$$

$$(3) \quad \mu_t = \mu_0 e^{\delta t}$$

Migration out of agriculture is partly autonomous (e.g., age determined) and partly a function of income differentials and policy measures.

$$(4) \quad L_{at} = f(y_{a,t-1}/y_{n,t-1}, L_{a,0}, T_{Lt})$$

$$(5) \quad L_{nt} = L_t - L_{at}$$

Capital is accumulated via investment, the latter being equal to savings in the open economy.

$$(6a) \quad (X_{nt} - M_{nt})p_{nt}^w + (\overline{X}_{at} - \overline{M}_{at})p_{at}^{-w} + D_t = 0$$

$$(6b) \quad P_{nt}I_t = Y_t - C_{nt} \cdot p_{nt} - \overline{C}_{at} \cdot \overline{p}_{at} + D_t$$

A fraction of total investment, determined by price ratios, wages, etc. is going to agriculture.

$$(7) \quad I_{it}^a / I_t = f(p_{a,t-1}, p_{n,t-1}, L_{a,t-1}, T_{kt}) \quad \begin{array}{l} i=1: \text{ farm machinery} \\ i=2: \text{ farm building} \end{array}$$

$$(8) \quad I_t^n = (1 - \sum_i I_{it}^a / I_t) I_t$$

$$(9) \quad K_{nt} = K_{n,t-1}(1-d_{nt}) + I_{t-1}^n \text{ nonagricultural capital stock}$$

$$(10) \quad K_{at} = K_{a,t-1}(1-d_{at}^1) + I_{t-1}^a \text{ farm machinery capital stock}$$

$$(10a) B_{at} = B_{a,t-1} (1-d_{at}^2) \text{ farm building capital stock}$$

$$(10b) d_{jt}^i = f(K_{jo}, B_{aoj}, I_{i,t-s}^j \mid s = 1, \dots, Z) \text{ d: salvage ratio}$$

Aggregate fertilizer input levels to the agricultural sectors and other non-agricultural inputs like energy and maintenance are determined by lagged prices, productivities, capital, labor and other exogenous variables.

$$(11) \bar{V}_{at} = f(p_{a,t-1}, p_{n,t-1}, PR_n, L_{a,t-1}, K_{a,t-1}, K_{a,t})$$

The input of feed depends on the volume of livestock production on the one hand and on the volume of roughage production on the other. The composition of the feed mix takes into account the prices of different components and is determined within the agricultural production component.

$$(12) \bar{V}_{at} = f(\bar{Q}_{at}^S, p_{at})$$

Agricultural land is withdrawn for urban use (at a constant rate  $\psi$  or as a function of nonagricultural production) and expanded by land development.

$$(13) A_{pt} = f(p_{a,t-1}, p_{n,t-1}, T_{at}, \dots)$$

$$(14) A_{ct} = A_{co} e^{\psi t}$$

$$(15) A_t = A_{ct} + A_{pt}$$

Production (Supply)

$$(16) Q_{nt}^S = e^{\alpha n t} L_{nt}^\alpha K_{nt}^{1-\alpha}$$

$$(17) \bar{Q}_{at}^S = \bar{F}(L_{at}, K_{at}, V_t, A_t, \bar{p}_{a,t-1}, p_{n,t-1}, t) \text{ details: see agricultural production component}$$

Commodity Balances and Markets<sup>1)</sup>

Demand

$$(18) Q_{nt}^d = C_{nt} + I_t^n + I_t^a + V_t + (X_n - M_n)_t$$

$$(19) \bar{Q}_{at}^d = \bar{C}_{at} + (\bar{X}_a - \bar{M}_a)_t + \bar{V}_{at} + \bar{S}\bar{T}$$

Supply-Demand-Identity

$$(18a) Q_{nt}^d = Q_{nt}^s = Q_{nt}$$

$$(19a) \bar{Q}_{at}^d = \bar{Q}_{at}^s = \bar{Q}_{at}$$

Consumption of Nonagricultural Goods

$$(20) C_{nt} = C_{nt}(p_n, \bar{p}_a, Y, W)$$

Consumption of Agricultural Goods

$$(21) \bar{C}_{at} = \bar{C}_{at}(p_n, \bar{p}_a, Y, W)$$

Income and National Accounts

$$(22) Y_{at} = Q_{at}p_{at} - V_t p_{nt} - V_{at} p_{at} - K_{a,t-1}^d p_{nt} - B_{a,t-1}^d p_{at} + F_t + \sum_i T_i$$

$$(23) Y_{nt} = Q_{nt}p_{nt} + (X_a - M_a)_t (p_{at}^w - p_{at}) - K_{n,t-1}^d p_{nt} - F_t - \sum_i T_i \\ + (X_n - M_n)_t (p_{nt}^w - p_{nt})$$

$$(24) Y_t = Y_{at} + Y_{nt}$$

---

1) Agricultural production, consumption, foreign trade and prices are all written as vectors since they comprise m different agricultural commodities. The submodel indicated by equation (19) will therefore contain a system of equations with internal flows of intermediate goods and common factor use.

$$(25) \quad y_{at} = \frac{Y_{at}}{L_{at}}$$

$$(26) \quad y_{nt} = \frac{Y_{nt}}{L_{nt}}$$

### Prices

As mentioned before, this model version assumes a competitive world market. The price for agricultural goods is domestically determined by market and price policies, the latter being among others - a function of the world market prices.

$$(27) \quad \bar{p}_{at} = \bar{p}_{at}^P$$

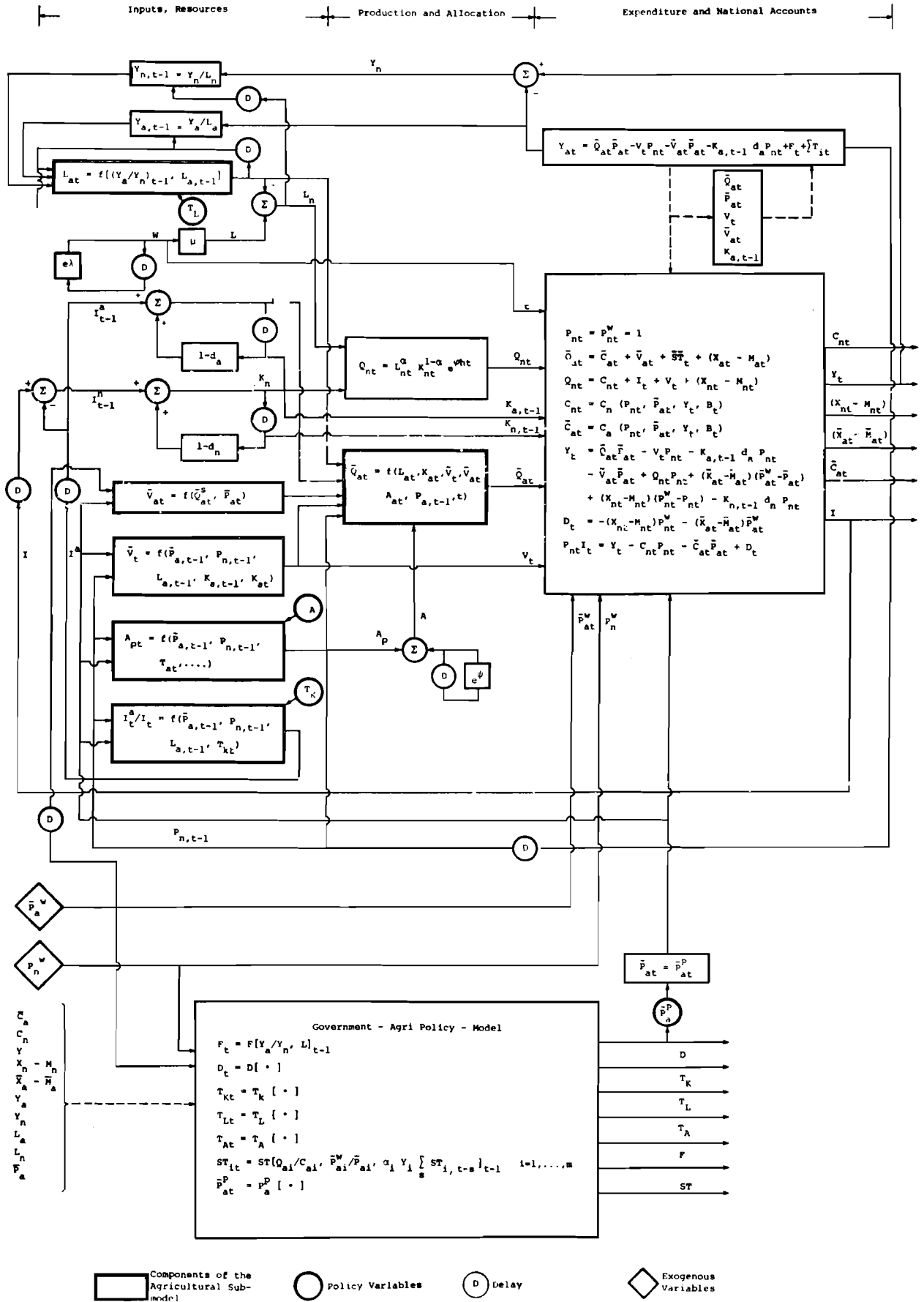
The nonagricultural prices are defined as numeraire.

$$(28) \quad p_{nt} = p_{nt}^W = 1$$

### Policy Variables

Policy variables related to agricultural production include agricultural prices,  $\bar{p}_{at}^P$ ; stock mutation,  $\bar{ST}$ ; direct income payments to agricultural labor,  $F_i$ , and subsidies to control the agricultural resource use,  $T_K$ ,  $T_L$  and  $T_A$  for capital, labor and areas respectively. Another policy variable is the net change in the foreign exchange position of the country,  $D$ ; some mechanism on the global model will have to guarantee that the  $D$ 's of all countries are globally consistent. The detailed structure will be described in a separate paper.

Figure 2: MATHEMATICAL DESCRIPTION OF THE EC MODEL



Following is a list of symbols.

Endogenous Variables

W	population
L	labor force, total
$\mu$	labor participation rate
$L_a$	agricultural labor force
$L_n$	nonagricultural labor force
$I^n$	investment (net) in the nonagricultural sector
$I^a$	investment (net) in the agricultural sector; i=1: machinery, i-2: building
$K_n$	nonagricultural capital stock
$K_a$	agricultural capital stock of farm machinery
$B_a$	agricultural capital stock of farm buildings
V	industrial inputs to the agricultural sector (fertilizer, pesticides, services, repair, energy)
$\bar{V}_a$	noncompetitive agricultural inputs (vector)
A	total utilized agricultural land
$A_p$	additional agricultural land area
$A_c$	agricultural land already under cultivation in the initial year
$\bar{Q}_a$	vector of production levels for agricultural commodities $Q_a = [Q_{a1}, \dots, Q_{ai}, \dots, Q_{am}]$
$Q_n$	nonagricultural production
$P_n$	price of nonagricultural goods
$(X_n - M_n)$	net foreign trade for nonagricultural goods

$Y_a$  agricultural income  
 $Y_n$  nonagricultural income  
 $Y$  total EEC income  
 $d_j^i$  salvage ratio (total capacity decline per unit of capital)  
i=0: nonagriculture; i=1: machinery; i=2: building;  
j=n: nonagriculture; j=a: agriculture

Policy Variables

$\bar{p}_a^p$  vector of policy determined agricultural prices  
 $\bar{p}_a$  vector of domestic agricultural prices  
ST government purchase for storage (stabilization policy)  
D net change in the foreign exchange position (debt increase)  
F nonagricultural-agricultural income transfer  
 $T_K, T_L, T_A$  Transfers to control specific resource use of mobility  
(capital, labor and land respectively)

Exogenous Variables

$\bar{p}_a^w$  world market prices of agricultural commodities  
 $\bar{p}_n^w$  world market price of nonagricultural commodity  
 $PR_{ni}$  vector of price ratios between various industrial input  
categories and the average price for nonagricultural goods  
 $T^p$  technology level in agricultural production



#### 4.3 Specificatin of the Farm Allocation Model

As a first approach it is suggested that the farm allocation model will be structured in a way that the profit maximization and the estimation problems are solved simultaneously. The specific reason for this stems from the fact that, while overall amounts of factor inputs to agriculture are known, there exist no data on product-specific volumes of factor inputs.

The allocation and production component is basically a static nonlinear optimization model, recursively linked to previous periods' events.<sup>1)</sup> Farmers maximize profits (revenue minus variable costs) plus the net expected gain from a reduction of the livestock herd:<sup>2)</sup>

$$\begin{aligned}
 (1) \quad Z = \max \Big\{ & \sum_{i=1}^{m-1} p_i y_i A_i + \sum_{i=+1}^n p_i v_i N_i \\
 & + \sum_{i=1}^2 \sum_{i=n+1}^{n+2} y_{ij} p_{ij} N_i + \sum_{i=n+1}^{n+2} (gq_i p_i^* - u_{N_i; t-1}) S_i \\
 & - \sum_{i=1}^{n+2} C_i - \sum_{i=m+1}^{n+2} \sum_{k=1}^{n+2} x_{ik} r_k N_i
 \end{aligned}$$

subjected to the following constraints:

Crop yields per hectare are a function of fertilizer input and the share of the acreage with the respective crop in total acreage:

$$(2) \quad y_i = y_i(F_i, A_i/A, t) \quad i=1, \dots, m$$

---

1. Perennial crops may have to be handled differently at a later point in time.

2. The iterative nonlinear estimation and optimization procedure will be described in a separate paper.

Yields of grain fed livestock and of cattle are determined outside of this model component. The livestock yields are a function of prices and input levels.

$$(3) \quad y_i = \bar{y}_i \quad i=m+1, \dots, n$$

$$y_{ij} = \bar{y}_{ij} \quad i=n+1, \dots, n+2; j = 1, 2$$

A package of labor and capital is needed to produce crops and livestock. It is applied in a fixed proportion to acreage and livestock units respectively. Within the package, substitution between labor and capital intensive techniques is possible. A distinction is made between machine capital (K) and buildings capital including equipment (B):

$$(4) \quad K_i^{\beta_i} L_i^{\gamma_i} = \alpha_i A_i \quad i=1, \dots, m$$

$$\beta_i + \gamma_i = 1$$

$$(5) \quad B_i^{\delta_i} L_i^{\epsilon_i} = \alpha_i N_i \quad i= m+1, \dots, n+2$$

$$\delta_i + \epsilon_i = 1 \quad \forall_i$$

Supply and demand for roughage have to be balanced. The supply of roughage (measured in FU)<sup>1)</sup> comes from main roughage land as well as from byproducts of other crops (e.g., sugar beets). Roughage supply of intercropping minus intake of horses is added exogenously (ZW):

$$(6) \quad \sum_{i=n+1}^{n+2} N_i x_{i1} = y_{m,2} A_2 + y_{m,4} A_4 + y_2 A_8 + ZW$$

---

1. Feed Units (FU) express the energy value of the feedstuffs

The intake per livestock unit of 1 feed mix components is determined according to profit maximization within dietary bounds.<sup>1)</sup> The bounds account for FU and protein in the case of grain fed livestock and for FU, protein and roughage (upper and lower bounds) for cattle. The intake of the j'th component per unit of cattle category i is  $X_{ik}$ , where  $X_{i1}$  stands for roughage.

$$(7) \quad \sum_{k=1}^{1-1} X_{ik} \cdot b_{k1} = f_{i1} \quad i = m+1, \dots, n$$

$$(8) \quad \sum_{k=1}^{1-1} X_{ik} \cdot b_{k2} = f_{i2} \quad i = m+1, \dots, n$$

$$(9) \quad \sum_{k=1}^1 X_{ik} \cdot b_{k1} = f_{i1} \quad i = n+1, n+2$$

$$(10) \quad \sum_{k=1}^1 X_{ik} b_{k2} = f_{i2} \quad i = n+1, n+2$$

$$(11) \quad X_{i1} b_{11} \leq f_{i3} \quad i = n+1, n+2$$

$$(12) \quad X_{i1} b_{11} \geq f_{i4} \quad i = n+1, n+2$$

Variables costs of crop production (others than those proportional to production which are deducted from gross price) are related to capital (e.g., energy and maintenance) and area (e.g. seed):

$$(13) \quad C_i = c_{i1} r_1 K_i + c_{i2} r_2 K_i + c_{i3} r_3 A_i \quad i = 1, \dots, m \text{ for } C_i, K_i$$

$$i = 1, \dots, m-1 \text{ for } A_i$$

For livestock they include penalty costs for changes in the production level, the latter acting as a dummy for a

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1. This feed-mix-cost minimization component is solved separately (recursive) to the rest of the model.

variety of factors which constrain immediate adjustment of herd sizes or slaughtering:

$$(14) \quad C_i = c_{i2}r_2B_i + \theta_i(N_{i,t} - N_{i,t-1})^2 \quad i = m + 1$$

$$(14a) \quad C_i = c_{i2}r_2B_i + \theta_iS_i^2 \quad i = n + 1, n+2$$

The overall amount of area, capital, labor and fertilizer is determined exogenously to the allocation model by recursive resource input functions. In addition, the area of some crops (e.g., sugar beets) may be constrained by quota (see equ. 15a)

$$(15) \quad \sum_{i=1}^m A_i \leq A_1 \quad (15a) \quad A_4 \leq \bar{A}_4$$

$$(16) \quad \sum_{i=1}^{n+2} L_i \leq L$$

$$(17) \quad \sum_{i=1}^m K_i \leq K$$

$$(18) \quad \sum_{i=1}^{n+2} B_i < B$$

$$(19) \quad \sum_{i=1}^m F_i A_i \leq F$$

While the production of grain fed livestock is assumed to be an annual enterprise, cattle including other livestock (sheep, goats) is treated as a perennial process, i.e., the units are assumed to be self reproducing with the related costs of

reproduction (minus salvage returns) directly deducted from the gross price. The following equations are an approximation of the dynamic relations between herd sizes of different periods, accounting for herd size expansion and reduction  $S$  (slaughtering), alternatively. The current herd size cannot exceed the previous size plus maximum natural expansion minus previous slaughtering.

$$(20) \quad N_{i,t} \leq (1 + C_{4i})N_{i,t-1} - S_{i,t-1} \quad i = n+1, n+2$$

The previous herd size which remained after slaughtering (at the end of the period) has to be used for either production or slaughtering:

$$(21) \quad N_{i,t} + S_{i,t} \geq N_{i,t-1} - S_{i,t-1} \quad i = n+1, N+2$$

Slaughtering has to be positive or Zero; it cannot exceed the current herd size:

$$(22) \quad S_{i,t} \geq 0 \quad ; \quad (23) \quad S_{i,t} \leq N_{i,t-1}(1+C_{4i}) - S_{i,t-1}$$

So far the current version of the production and allocation model. The following discussion is related to the computation of price expectations and yield levels.

Price expectations, entering the objective function are determined exogenously to the allocation model. The specific form of the price expectation functions (i.e., lag structure) will not be discussed here.

For cash crops, as well as for livestock products, these prices are basically related to expected gross prices (producer prices "at the farm gate"), since all other variable costs are explicitly accounted for in the model. For meat the prices refer to slaughter weight.

$$p_{ij} = \hat{p}_{ij}^g \quad i = 1, \dots, n+2$$
$$j = 1, 2$$

Symbols of the farm allocation model:

$i$  index for production enterprises

$i = 1$  wheat

$i = 2$  coarse grain

$i = 3$  protein and oil fruits

$i = 4$  sugar beets

$i = 5$  fruits and wine

$i = 6$  starchy roots and vegetables

$i = 7$  industrial crops

$i = 8 = m$  roughage

$i = 9 = n$  grain based livestock production

$i = 10$  cattle (dairy and beef)

$i = 11$  sheep and goats

$P_i$  net price per unit of category  $i$  (expected) ( $i = 1, n$ )  
( $P_{ij}$  = livestock specific net price of category  $i$  for product  $j$ ,  $j = 1, 2$ )

$y_i$  yield per hectare or unit of category  $i$  ( $i = 1, n$ )  
( $y_{ij}$  = yield of product  $j$  per category  $i$ )

$A_i$  number of hectares under crop  $i$  ( $i = 1, m$ )

$A_1 = \sum_{i=1}^m$  total cultivated area (hectares)

$\bar{A}_i$  quotas for acreage

$N_i$  number of animals of sort  $i$  (for perennial livestock  
 $i = n+1, n+2$ ) or yearly volume of production (for  
annual livestock,  $i = m + 1$ )

- $C_i$  area or capital related costs per category  $i$  ( $i=1, n+2$ )
- $c_{ic}$  variable costs per unit of capital or area for input categories  $c_c$ ;  $c=1,2,3$  (1 = energy, 2 = rest of inputs, 3 = seeds, pesticides)
- $r_c$  price per unit of input category
- $F_i$  fertilizer per hectare of crop  $i$  ( $i = 1, m$ )
- $L_i$  labor input per category  $i$  ( $i = 1, n+2$ )
- $K_i$  machinery capital input per crop  $i$  ( $i = 1, m$ )
- $B_i$  building capital input per livestock category  $i$  ( $i = m+1, \dots, n+1, n+2$ )
- $g$  capital recovery factor
- $ZW$  roughage supply from intercropping minus roughage intake of horses (exogenous)
- $p^g$  gross prices
- $r_k$  price per unit of input category  $k$
- $f_{ij}$  constraint vector of dietary conditions in livestock feeding (unit: one female animal plus replacement);  
 $j = 1$ : FU;  $j = 2$ : protein;  $j = 3$ :  
upper limit for roughage;  $j = 4$ : lower limit
- $X_{ik}$  intake of feed component  $k$  per unit of livestock category  $i$
- $S_i$  number of cattle units slaughtered ( $i=n+1, n+2$ ) (at the end of a period)

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Appendix

Table 1a: Indicators of the General Economic Situation of the EC

	EUR-9	FRG	F	I	NL	B	L	UK	IRL	DK
Total population 1974, % of EUR-9 total	100	24.1	20.5	21.4	5.3	3.8	0.1	21.8	1.2	2.0
Share of employed in total population 1974, %	40.7	42.2	41.2	35.8	34.6	39.2	42.3	44.9	34.3	47.5
Share of unemployment in 1974 in total labor force %	2.9	2.6	2.9	4.0	3.8	2.9	.	2.3	7.9	4.4
GDP at market prices 1974, % of EUR-9 total	100	33.2	23.2	13.1	6.0	4.6	0.2	16.5	0.6	2.7
Growth rate of GDP at constant prices 1960- 1970, % per year	4.4	4.3	5.5	5.0	5.3 <sup>1)</sup>	4.9	3.7	2.7	4.1 <sup>2)</sup>	4.3
Index of GDP per head of population 1974, Ø EUR-9 = 100	100	138	114	61	115	121	134	76	48	136
Growth rate of GDP at constant prices per capita (labor force) 1960 - 1970 % per year	4.1	4.2	4.7	5.3	4.6 <sup>1)</sup>	4.2	2.8	2.5	3.4 <sup>2)</sup>	3.2
GDP by sector of ori- gin 1972, % of coun- try's total										
agriculture, forestry, fishery	.	3.1	6.3	8.1	5.9	3.9	3.9	2.2	.	.
manufacturing (incl. energy and building)	.	52.5	47.1	41.2	40.5	40.9	41.8	41.6	.	.
services and government	.	45.6	50.3	52.2	50.3	53.8	54.3	56.2	.	.

1) 1963-1974.

2) 1970-1974.

Sources see table 1b.

Table 1b: Indicators of the General Economic Situation of the EC

	EUR-9	FRG	F	I	NL	B	L	UK	IRL	DK
Distribution of NDP at factor costs 1974, % of country's total										
wages and salaries	72.3	72.1	69.4	67.9	73.7	67.4	76.9	81.0	69.0	.
profits	27.7	27.9	30.6	32.1	26.3	32.6	23.1	19.0	31.0	.
Index of wages and salaries per employee 1974, $\emptyset$ EUR-9 = 100	100	129	106	78	140	124	132	71	65	115 <sup>3)</sup>
Growth rate of real wages and salaries per employee 1960-1974, % per year	4.7	5.1	4.9	6.1	6.1 <sup>1)</sup>	5.1	4.4	3.2	4.0 <sup>2)</sup>	4.7 <sup>4)</sup>
Use of GDP by goods category 1974, % of country's total										
private consumption	60.9	58.2	61.7	66.9	55.8	58.7	53.4	63.7	71.0	56.5
government consumption	15.3	13.9	13.0	14.0	17.2	14.7	12.1	20.5	18.2	22.9
gross investments	24.1	22.9	26.9	25.2	24.5	24.8	27.3	21.4	28.0	23.6
exports minus imports	-0.3	+5.0	-1.6	-6.1	+2.5	+1.8	+7.2	-5.6	-17.2	-3.0
Growth rate of price index of private consumption 1960-1974, % per year	5.1	4.2	5.3	5.9	6.2 <sup>1)</sup>	4.2	3.9	5.6	.	6.4
Index of exchange rate (US \$ per unit of national currency) 1974, 1960=100		163	103	96	142	128	128	84	84	114
Development assistance 1974 in % of country's GNP	.87	.83	1.23	.27	1.30	1.11	.	.79	.	.61

1) 1963-1974.

2) 1970-1974.

3) 1973.

4) 1960-1973.

Sources: EUROSTAT, National Accounts - ESA, 1960-1974.

EUROSTAT, General Statistics, Monthly Statistics 12/1975.

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BUNDESMINISTERIUM FÜR WIRTSCHAFTLICHE ZUSAMMENARBEIT, Bericht zur Entwicklungspolitik der Bundesregierung.

Table 2.1: Land Use, EUR-9, 1974

	FRG	France	Italy	Netherlands	Belue	U.K.	Ireland	Denmark
-1000 ha								
1. Total area	24861	54907	30126	3695	3310	24404	7028	4307
which								
2. Forest land	7145	14608	6292	304	703	2192	300	483
as % of 1	29	27	21	8	21	9	4	11
3. Other areas	4372	7858	6403	1290	922	3574	1882	897
as % of 1	18	14	21	35	28	15	27	21
4. Agric. area	13344	32441	17431	2101	1685	18637	4846	2928
as % of 1	54	59	58	57	51	76	69	68
of which								
5. Arable land	7874	17235	9262	807	866	7077	1271	2635
as % of 4	59	53	53	38	51	38	26	90
6. Permanent grassland	5264	13597	5209	1255	799	11484	3572	277
as % of 4	39	42	30	60	47	62	74	9
7. Permanent crops	206	1609	2959	42	20	76	3	15
as % of 4	2	5	17	2	1	0	0	1
area as share of EUR-9 (%)								
-1-	16	36	20	2	2	16	5	3
-2-	22	46	20	1	2	7	1	2
-4-	14	35	19	2	2	20	5	3
-5-	17	37	20	2	2	15	3	6

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975

Table 2.2: Number and area of agricultural holdings with 1ha AA and over - by size groups -

Country	size groups (ha)	number of holdings				agricultural land in use			
		1000		annual rate of change %	1973, in % of country's total	1000 ha		annual rate of change %	1973, in % of country's total
1960	1973	1960	1973			1960	1973		
FRG	1-<10	960.5	539.5	- 4.3	55.7	4105	2307	- 4.3	18.3
	10-<50	408.5	404.5	- 0.1	41.8	7495	8396	0.9	66.7
	> 50	16.3	23.8	3.0	2.5	1335	1888	2.7	15.0
	total	1385.3	967.8	- 2.7	100.0	12935	12591	- 0.2	100.0
France	1-<10	840.1	488.0	- 4.1	37.5	4033	2269	- 4.3	7.7
	10-<50	835.6	675.0	- 1.6	51.9	17716	15680	- 1.0	52.9
	> 50	97.8	137.0	2.6	10.5	8413	11700	2.6	39.4
	total	1773.5	1300.0	- 2.4	100.0	30162	29649	- 0.1	100.0
Italy	1-<10	2405.0	2037.2	- 1.3	83.5	8360	5900	- 2.6	34.8
	10-<50	318.2	351.5	0.8	14.4	5810	5224	- 0.8	30.8
	> 50	33.1	51.4	3.4	2.1	4490	5837	2.0	34.4
	total	2756.3	2440.0	- 0.9	100.0	18660	16961	- 0.7	100.0
Netherlands	1-<10	149.9	70.5	- 5.6	47.1	680	344	- 5.1	16.5
	10-<50	78.3	76.1	- 0.2	50.9	1452	1513	0.3	72.4
	> 50	2.0	3.0	3.2	2.0	152	235	3.4	11.2
	total	230.3	149.6	- 3.3	100.0	2283	2091	- 0.7	100.0
BLEU	1-<10	154.2	63.8	- 6.6	53.2	656	295	- 6.0	18.2
	10-<50	52.5	52.7	0.0	43.9	941	1067	1.0	65.7
	> 50	2.3	3.5	2.6	2.9	178	262	3.0	16.1
	total	209.1	120.0	- 4.2	100.0	1774	1623	- 0.7	100.0
U.K.	1-<10	188.9	82.9	- 6.1	28.9	767	389	- 5.1	2.2
	10-<50	171.5	120.7	- 2.7	42.0	4268	3105	- 2.4	17.5
	> 50	82.7	83.7	0.9	29.1	9157	14292	3.5	80.4
	total	443.1	287.4	- 3.3	100.0	14191	177862)	(1.8)	100.0
Ireland	1)1-<10	113.0	102.0	- 0.8	37.8	530	470	- 0.9	9.8
	10-<50	148.0	148.0	0.0	54.8	2741	2800	0.2	58.5
	> 50	20.0	20.0	0.0	7.4	1320	1520	1.1	31.7
	total	281.0	270.0	- 0.3	100.0	4591	4790	0.3	100.0
Danmark	1-<10	89.1	43.6	- 5.3	32.1	495	245	- 5.3	8.2
	10-<50	98.2	82.6	- 1.3	60.8	2011	1876	- 0.5	63.1
	> 50	6.4	9.7	3.3	7.1	545	854	3.5	28.7
	total	193.7	135.9	- 2.7	100.0	3051	2975	- 0.2	100.0
	1- 10	4901.0	3427.5	- 2.7	60.4	19626	12220	- 3.6	13.8
	10- 50	2111.0	1911.1	- 0.8	33.7	42434	39660	- 0.5	44.8
	> 50	260.6	332.1	1.9	5.9	25590	36587	2.8	41.4
	total	7272.0	5670.6	- 1.9	100.0	87647	88466	0.1	100.0

1) for 1960: estimation by EUROSTAT, 1973 = 1970.

2) including "rough grazings".

Source: EUROSTAT, Yearbook of Agricultural Statistics. EC - COMMISSION, Report on the state of agriculture in the EC, 1975.

Table 2.3: Total and agricultural<sup>1)</sup> employment

Country	total employment -1000-		share of EUR-9, % 1974	agricultural employment -1000-		share of agricul- ture in total, %		agricul- ture, share of EUR-9, % 1974	agriculture, average annual change 1974- 1958, %
	1958	1974		1958	1974	1958	1974		
FRG	25357	25689	25	3978	1882	16	7	21	-4.6
France	18823	21166	21	4459	2452	24	12	27	-3.7
Italy	20000	18715	18	6974	3111	35	17	34	-4.9
Netherlands <sup>2)</sup>	3899	4579	5	495	304	13	7	3	-3.0
BLEU	3598	3952	4	348	150	10	4	2	-5.0
U.K.	23658	24767	24	1030	705	4	3	8	-2.3
Ireland	1060	1047	1	407	254	38	24	3	-2.9
Denmark	1891	2355	2	380	227	20	10	2	-3.2
EUR-9	98286	102270	100	18071	9085	18	9	100	-4.2

1) including forestry and fishery

2) man years

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.

Table 2.4: Manpower<sup>1)</sup> on agricultural holdings of 1ha AA and above

Country	Year	1	2	3	4	5	6
		Farmers	other family labor	hired labor	total	3 as share of 4 %	persons per 100 ha
		1000 persons					
FRG	1960	877	1040	299	2216	13	15.6
	1973	628	580	100	1160	9	8.6
France	1960	1484	1579	466	3529	13	10.3
	1973	850	470	209	1529	17	4.7
Italy	1960	1053	1737	1217	4007	30	20.3
	1973	622	399	809	1830	44	10.5
Netherlands	1960	194	100	70	364	19	15.7
	1973	156	72	36	264	17	12.5
BLEU	1960	176	135	19	329	6	17.7
	1973	96	35	7	139	5	8.0
U.K.	1960	400	140	450	990	45	5.0
	1973	288	94	244	626	39	3.4
Ireland <sup>2)</sup>	1960	294	.	89	.	.	.
	1973	215	.	37	.	.	.
Danmark	1960	196	40	82	318	26	10.2
	1973	136	8	22	166	13	5.6

1) The definitions vary between countries. For EUR-6 it applies to: persons aged 14 years or more who carry out at least one half a normal year's work on agricultural holdings of 1 ha or over. For further details see quoted source.

2) Males only.

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975, p. 64.

Table 2.5: Livestock numbers and structure of livestock holdings, EUR-9, 1973.

	total	holdings with a total number of . . . heads									
		1 - 1000-	4 - % of total	5 - 1000-	19 - % of total	20 - 1000-	59 - % of total	> 1000-	60 - % of total		
1. cattle holdings animals	3288	828	25.2	1245	37.9	911	27.7	302	9.2		
	79006	2100	2.7	13083	16.6	31190	39.5	32632	41.3		
2. cows holdings animals	2431	979	40.3	1106	45.5	315	13.0	32	1.3		
	25533	2180	8.5	11107	43.5	9312	36.5	2934	11.5		
3. hog holdings animals	2740	1 - 1000-	19 - %	20 - 1000-	99 - %	100 - 1000-	399 - %	> 1000-	400 - %		
	63345	2175	79.4	430	15.7	115	4.2	20	0.7		
		8182	12.9	18740	29.6	21310	33.6	15113	23.9		

Source: EC-COMMISSION, Report on the state of agriculture in the EC, 1975 (Part III).

Table 2.6: Purchases of the agricultural sector from other sectors<sup>1)</sup>

- Mio EUR, in current prices and exchange rates -

	Year	EUR-6	FRG	F	I <sup>2)</sup>	N	BLEU	UK <sup>3)</sup>	DK	
intermediate consumption excluding feedstuff	1963	4816	1844	1786	683	317	187	-	-	
	1974	13102	4684	5682	1304	826 <sup>6)</sup>	601	2630	716	
gross investment	1963	3493	1086	1054	998	109	66	-	-	
	1974	6968	1830	2619	1629	616	274	-	445	
total	1963	8309	2930	2840	1681	426	253	-	-	
	1974	20070	6514	8301	2938	1442	875	-	1161	
share in final agricultural production	%	1963	31	41	30	10	22	20	-	-
		1974	38	46	48	22	29	32	-	37
share in total GDP at market prices	%	1974	2.7	2.1	3.9	2.4	2.6	2.0	-	4.7

1) There are no data available for Ireland. 2) Including fisheries and forestry. 3) Financial years. 4) Other minor intermediate inputs (e.g. seed and agricultural services) could not be excluded because of lacking data. 5) For the same reason as (4) investments in livestock and new plantations could not be excluded. 6) Excluding VAT.

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.



Table 2.7 Structure of final production<sup>1)</sup> by countries, %

final production <sup>2)</sup>	year	EUR-6 100	FRG 100	France 100	Italy 100	NL 100	Belgium 100	U.K. 100	Denmark 100
final plant production	1963	43.0	37.6	37.5	64.2	36.5	35.2	-	-
	1974	43.1	30.8	42.9	62.3	32.8	31.5	36.1	27.7
of which									
cereals (except rice)	1963	10.7	9.5	10.6	14.1	5.3	6.7	-	-
	1974	11.2	9.2	15.6	11.7	2.7	6.0	16.4	16.9
of which									
wheat	1963	7.1	4.7	6.4	12.3	2.3	5.5	-	-
	1974	6.9	4.4	8.6	9.9	1.6	4.0	8.0	2.2
barley	1963	1.7	2.4	2.5	0.1	1.2	0.9	-	-
	1974	2.0	2.8	3.1	0.1	0.6	1.7	8.0	12.8
sugar beets	1963	2.3	3.3	2.1	1.5	2.3	3.1	-	-
	1974	2.4	3.0	2.3	1.5	2.6	3.7	1.3	2.1
vegetables	1963	7.9	2.8	7.1	12.3	11.1	12.6	-	-
	1974	7.2	2.2	5.2	13.5	9.0	11.0	7.7	1.8
fruits	1963	5.2	5.0	3.9	8.1	3.1	2.9	-	-
	1974	4.2	3.8	3.1	6.8	2.1	3.8	2.6	0.8
wine	1963	5.7	2.1	8.5	8.1	0	.	-	-
	1974	6.6	2.0	9.9	10.8	0	.	.	0
final animal production	1963	57.5	70.2	62.5	35.1	63.5	64.8	-	-
	1974	54.8	58.9	52.6	37.2	67.2	60.6	63.9	72.3
of which									
cattle (without calves)	1963	14.0	12.4	11.8	7.7	8.8	15.7	-	-
	1974	13.9	16.1	10.0	8.8	9.3	14.2	14.3	13.5
hog	1963	12.8	22.5	10.8	4.6	14.7	15.0	-	-
	1974	11.8	20.8	6.2	5.6	17.8	21.3	10.4	27.4
milk	1963	13.3	24.8	18.6	9.0	73.1	23.4	-	-
	1974	17.7	22.6	7.6	9.9	26.2	14.5	20.7	23.6

1) 1974 Preliminary

2) Because of agricultural services, subsidies, etc., plant and animal production don't add up to 100%

Source: EUROSTAT, Agricultural Statistics, 3/1975.

Table 2.8: Land Use and Yields

	land use (1000 ha.)				yields (100 kg/ha)			
	EC - 6		EC - 9		EC - 6		EC - 9	
	1958	1974	1958	1974	1956-60	1974-5	1974-5	1974-5
1. Arable land <sup>1)</sup> of which	42291	36043	53253	47027	-	-	-	-
2. cereals as % of (1) of which	21409	20787	26312	26617	23.5	38.8	39.2	39.2
3. wheat as % of (2)	50.6	57.7	49.4	56.6	-	-	-	-
4. barley as % of (2)	10911	9651	12051	11050	22.3	37.7	38.8	38.8
5. grain maize as % of (2)	51.0	46.4	45.8	41.5	-	-	-	-
6. sugar beets as % of (1)	3051	4817	5012	8717	26.0	37.6	38.2	38.2
7. potatoes as % of (1)	14.3	23.2	19.0	32.8	-	-	-	-
8. rape & turnip rape as % of (1)	1645	2787	1645	2788	29.4	50.0	50.0	50.0
9. green fodder as % of (1)	7.7	13.4	6.3	10.5	-	-	-	-
	1033	1327	1392	1657	344	566	539	539
	2.4	3.7	2.6	3.5	-	-	-	-
	2488	1123	3009	1412	185	270	275	275
	5.9	3.1	5.7	3.0	-	-	-	-
	191	468	195	540	-	21.0	21.0	21.0
	0.5	1.3	0.4	1.1	-	-	-	-
	10145	8525	14011	12181	-	-	-	-
	24.0	23.7	26.3	25.9	-	-	-	-

1) There is a break in the comparability in 1968. Arable land as well as agricultural used area were corrected (reduced).

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975. EC-Commission, Report on the state of agriculture within the EC, 1975.

Table 2.9: Fertilizer use and yields

Year	EUR-9	EUR-6	FRG	France	Italy	Netherlands	Belgium	Luxembourg	U.K	Ireland	Denmark
	Fertilizer use (kg per ha HA)										
	nitrogen (N)										
∅ 1956-60	-	22	39	13	15	87	53	28	-	-	-
1965-66	36	38	63	26	24	138	89	51	35	7	64
1969-70	46	49	80	37	28	176	114	77	37	15	91
1973-74	60	63	83	57	39	196	106	93	47	27	124
	phosphate (P <sub>2</sub> O <sub>5</sub> )										
∅ 1956-60	-	28	42	24	20	48	59	40	-	-	-
1965-66	35	39	60	38	23	51	69	45	22	22	42
1969-70	42	48	63	52	25	49	91	49	25	34	43
1973-74	50	58	69	67	27	52	107	51	28	40	53
	potash (K <sub>2</sub> O)										
∅ 1956-60	-	27	67	19	4	66	98	41	-	-	-
1965-66	34	37	86	29	9	61	102	52	22	19	61
1969-70	38	42	82	39	10	55	117	57	24	29	62
1973-74	48	53	82	56	15	59	124	58	27	37	74
	yields (100 kg/ha)										
cereals											
1956-60	-	23.5	28.4	22.7	19.4	33.3	32.3 <sup>1)</sup>	-	29.4	-	32.8
1973-74	39.6	39.7	40.1	43.7	30.2	46.5	45.5	-	40.8	36.9	37.6
sugar beets											
1956-60	-	344	357	320	331	422	383	-	329	-	-
1973-74	437	445	451	443	400	477	492	-	393	438	399
potatoes											
1956-60	-	185	227	157	94	257	225	-	-	-	-
1973-74	269	262	285	231	162	368	284	-	304	279	234

1) Belgium &amp; Luxembourg

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.

Table 2.10 Market balances <sup>1)</sup>

	Production <sup>2)</sup> (1000t)			Consumption <sup>3)</sup> (1000t)			degree of selfsufficiency (%)		
	EC - 6		EC-9	EC - 6		EC-9	EC - 6		EC-9
	∅ 1956 - 60	∅ 1973 - 74	∅ 1973 - 74	∅ 1956 - 60	∅ 1973 - 74	∅ 1973 - 74	∅ 1956 - 60	∅ 1973 - 74	∅ 1973 - 74
Cereals (without rice)	50638	80035	10463 <sup>x)</sup>	59920	82424	115444 <sup>x)</sup>	85	97	91 <sup>x)</sup>
Wheat	23510	35335	40957	26243	31598	41052	90	112	100
Barley	-	18287	33696	-	16290	32106	84	112	105
Grain Maize	5500 <sup>e)</sup>	16260 <sup>x)</sup>	16260 <sup>x)</sup>	8594 <sup>e)</sup>	23350 <sup>x)</sup>	27452 <sup>x)</sup>	64	70 <sup>x)</sup>	59 <sup>x)</sup>
Sugar (white equivalent)	4784	7850	9266	4612	6916	10070	104	114	92
Total Meat	8785	14874	19606	9206	15904	20605	95	94	95
Beef and Veal	3026	4441	5922	3283	4977	6379	92	89	93
Pork	3913	6423	8314	3903	6508	8261	100	99	101
Poultry	691	2355	3146	743	2303	3040	93	102	103
Butter	818	1174	1420	809	997	1450	101	118	98
Skim Milk Powder	191	1529	1814	196	1295	1413	97	118	128
Cheese	1251	2395	2771	1248	2305	2680	100	104	103
Vegetables (including preserved vegetables)	18921	22779	26289	18250	23548	28079	104	97	94
fresh fruits (including preserved fruits and juices)	8965	13222	14004	9919	15696	17857	90	84	78

x) only 1973/74, e) estimate

1) The balances for livestock products are on the basis of calendar years. For crop production on the basis of financial years.

2) For crops: usable production, for livestock: gross interior production.

3) Interior consumption.

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.

Table 2.11 Food consumption of selected commodities, kg/head.

	Yearly <sup>1)</sup> averages	EUR-9	EUR-6	FRG	F	I	N	BLEU	UK	Ire	Danm.
total	1950-60	-	102	85	99	129	82	91	-	-	-
cereals	1973-74	-	87	97	72	131	63	78	-	85	66
potatoes	1956-60	-	104	141	121	42	92	139	-	-	-
	1973-74	83	78	93	95	39	84	110	101	123	69
sugar	1956-60	-	27	29	29	19	41	32	-	-	-
	1973-74	38	35	36	37	32	45	32	47	48	47
vegetables	1956-60	-	92	49	133	111	67	79	-	-	-
	1973-74	99	107	69	114	151	79	92	75	72	48
fresh fruits	1956-60	-	52	69	35	52	36	44	-	-	-
	1973-74	62	72	89	59	68	70	56	33	30	44
butter	1956-60	-	5	6	6	1	4	9	-	-	-
	1973-74	6	5	6	8	2	2	9	7	11	7
eggs	1956-60	-	11	12	11	9	11	14	-	-	-
	1973-74	14	14	17	13	12	11	12	15	13	11
beef and veal	1956-60	-	19	19	27	12	18	23	-	-	-
	1973-74	25	26	23	29	27	22	30	23	21	15
pork	1956-60	-	23	35	25	8	23	25	-	-	-
	1973-74	33	34	49	33	17	33	39	27	32	35
poultry	1956-60	-	4	3	8	3	1	6	-	-	-
	1973-74	12	12	9	14	15	7	10	12	12	7

1) for crop products averages of financial years.

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.

Table 2.12a: Foreign trade<sup>1)</sup>, EC-9 (in billion \$)

	1968	1969	1971	1972	1973
total exports	43.5	48.6	63.0	73.1	99.5
of which					
agricultural exports	3.8	4.0	5.3	6.3	9.4
as share of total (%)	8.7	8.2	8.4	8.5	9.4
total imports	45.9	52.1	63.5	72.9	103.8
of which					
agricultural imports	15.1	16.3	18.3	21.1	30.0
as share of total (%)	32.9	31.3	28.5	28.5	28.9

1) extra trade only

Source: EC-Commission, Report on the state of agriculture in the EC, 1975.

Table 2.12b: Agricultural imports from third countries, 1000 EUR

- 1973 -

Commodity	No. CST	EUR-9	EUR-6	FRG	F	Italia	Nederland	BLEU	UK	Ireland	DK
Cereals and cereal products	04	2217788	1737395	478194	112184	685123	368483	93461	422386	22401	35606
rice	(042)	102658	83980	27236	24678	2934	17530	11602	24056	283	1339
sugar beets, fresh or dried,	(054.82)	65	61	37	1	23	0	0	4	0	0
sugar cane	06	516684	194034	41983	102035	11204	31404	7408	315792	2996	3862
sugar products	05	3282239	2307910	1001518	681443	192742	284976	147231	869401	33365	71563
fruits and vegetables	112.1	304679	182172	42236	87480	10277	28902	13277	100867	3932	17708
wine	001.1	338377	336283	54960	4840	303920	3203	166	1556	0	532
cattle incl. buffalos	001.3	8550	8527	181	6332	1283	0	731	23	0	0
hogs	001.4	7235	7012	0	896	5847	184	85	200	22	1
living poultry slaughtered	011.4	54568	53792	44963	2635	4962	964	278	742	0	34
poultry and by products	022	5848	1924	588	233	173	190	740	1636	0	2288
milk and cream	023	112272	3773	352	1395	813	0	1213	108497	0	2
butter	024	137875	97872	19403	17143	48420	1059	11847	39329	35	639
cheese and curd	025	20697	14347	2399	1463	6204	3710	571	5715	0	635
eggs	4	950954	717390	200583	178671	190122	119371	28443	214247	8290	11027
animal and plants fats and oil	03	729916	473031	130696	177673	132561	24349	37152	208144	1755	46986
fish and fish products	12	732837	386861	195788	42562	37235	76385	34891	271024	24039	50913
tobacco and tobacco products	265.1	10491	7454	342	594	2007	70	4441	3014	23	0
flax	265.2	4625	3363	550	440	2187	5	181	1200	55	7
hemp	(054.84)	16837	14597	8100	1139	212	89	5057	738	1452	30
hops		14412859	10531523	3424703	2460988	2533694	1416684	695454	3249970	118210	513156
other agricultural products		23848494	17064669	5574429	3875007	4167974	2360699	1077560	5813743	215123	754959
agricultural products: total											

Source: Yearbook of Agricultural Statistics, 1975, p. 14.

Table 2.12c: Agricultural exports to third countries, 1000 EUR

- 1973 -

Commodities	No. CST	EUR-9	EUR-6	FRG	France	Italy	Nederland	BLEU	UK	Ireland	Denmark
cereals and cereal products	04	1074204	977286	211582	565335	80331	50920	69118	57222	3814	35882
rice	(042)	34735	34287	3110	539	24229	5892	517	128	0	320
sugar beets, fresh or dried, sugar cane products	(054.82)	117	38	1	37	0	0	0	0	0	79
sugar and sugar products	06	485647	356247	42260	233495	5161	39017	36314	100311	1213	27876
fruits and vegetables	05	555061	491496	62351	89989	215923	97445	25788	45033	3367	15165
wine	112.1	393829	379035	42624	251616	84118	607	70	13722	2	1070
cattle incl. buffalos	001.1	52064	33119	13695	8016	899	10509	0	7143	4090	7712
hogs	001.3	5013	3271	2062	201	1	532	475	1258	41	443
living poultry	001.4	13432	11229	2772	2850	699	4555	353	2149	20	34
slaughtered poultry and by products	011.4	97762	65473	15447	26192	241	18607	4986	1910	74	30305
milk and cream	022	483129	377127	27780	111249	225	196000	41693	19652	48098	38252
butter	023	208734	180466	33795	59199	4	31447	56021	9384	7796	11088
cheese and curd	024	186686	133444	13389	55115	27099	35625	2216	3378	1769	48095
eggs	025	20948	18459	5560	2194	830	8435	1440	1390	0	1099
animal and plants fats and oil	4	247593	210601	74321	49159	25495	57769	3857	18952	192	17848
fish and fish products	03	242095	103337	32134	33327	11871	21658	4347	47898	2832	88028
tobacco and tobacco products	12	165710	69184	16660	12894	6722	30597	2311	79713	5955	10858
flax	265.1	22384	21828	68	2720	138	280	18622	554	0	2
hemp	265.2	519	519	44	128	248	3	96	0	0	0
hops	(054.84)	26292	25884	24316	435	0	19	1112	305	102	1
other agricultural products		3122028	1765290	485293	512751	141460	548956	76830	867985	59122	429631
agricultural products: total		7376838	5197411	1031837	2016610	601465	1152962	344537	1277654	138385	763388

Source: Yearbook of Agricultural Statistics, 1975, p. 14.



Table 2.13: Agricultural commodity prices, EC and World  
- EUR/100 kg -

Commodity		financial year <sup>1)</sup>			
		1971/72	1972/73	1973/74	1974/75
soft wheat	EC <sup>2)</sup>	11.28	11.74	11.86	12.99
	World <sup>3)</sup>	5.39	7.67	14.94	12.11
	%	209	153	79	107
hard wheat	EC	16.82	17.38	26.46	25.18
	World	6.61	9.61	22.73	20.16
	%	254	181	116	125
husked rice	EC	20.91	21.31	21.47	23.84
	World	10.22	18.58	35.49	29.52
	%	205	115	60	81
barley	EC	10.14	10.57	10.68	11.82
	World	5.48	7.70	11.12	11.08
	%	185	137	96	107
maize	EC	9.81	10.32	10.43	11.52
	World	5.58	7.24	10.68	10.90
	%	176	143	98	106
white sugar	EC	23.80	24.55	24.80	27.53
	World	15.75	19.30	37.52	66.60
	%	186	127	66	41
beef (live weight)	EC	72.00	76.63	86.20	98.96
	World	53.96	68.26	77.50	58.80
	%	133	112	111	168
pork <sup>4)</sup> (carcase weight)	EC	78.50	77.46	85.82	95.64
	World	60.14	52.69	65.59	88.07
	%	131	147	131	109
eggs <sup>4)</sup>	EC	64.76	65.25	63.27	73.82
	World	40.00	41.00	57.00	45.00
	%	162	159	111	164
butter	EC	195.80	201.15	192.33	194.81
	World	114.35	80.82	60.08	60.96
	%	171	249	320	320
skim milk powder (spray)	EC	60.00	67.00	77.59	93.81
	World	53.61	46.25	49.72	67.22
	%	112	145	156	140
olive oil	EC	118.75	124.70	137.17	144.03
	World	77.51	99.76	142.52	151.48
	%	153	125	96	95
oil seeds	EC	21.01	21.72	21.96	24.19
	World	14.32	16.58	28.60	32.20
	%	147	131	77	75

- 1) Different financial years for commodities.
- 2) EC entry price.
- 3) EC entry price excluding levies and subsidies.
- 4) Calendar years 1971-1974.

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.

Table 2.14: Agricultural accounts<sup>1)</sup> at current prices and current exchange rates, Mio EUR

	Year	EUR-6	FRG	France	Italy	Nether- lande	BLEU	UK	Den- mark
final production	1963	26856	7233 <sup>2)</sup>	9344	7112	1896	1271	-	-
	1974	52496	14044 <sup>2)</sup>	17365	13357	4930	2711	8046	3109
intermediate consumption	1963	7859	2884	2404	1259	858	455	-	-
	1974	22641	7191	7687	3636	2502	1625	4983	1453
gross value added at market prices	1963	18996	4349	6940	5853	1038	816	-	-
	1974	29855	6854	9678	9720	2428	1175	3063	1655
subsidies	1963	651	433	76	26	107	10	-	-
	1974	1707	620	693	351	.	483	444	-
indirect taxes	1963	495	220	193	51	30	2	-	-
	1974	560	307	87	65	92	9	140	216
gross value added at factor costs	1963	19152	4562	6823	5829	1115	824	-	-
	1974	31002	7167	10284	10007	2336	1208	3647	1457
depreciations	1963	1851	605	590	498	87	70	-	-
	1974	4943	1786	1587	1219	244	107	770	-
net value added at factor costs	1963	17300	3957	6233	5331	1028	754	-	-
	1974	26060	5381	8698	8788	2091	1102	2877	-

1) There are no data available for Ireland until 1974.

2) After deduction of total subsidies.

Source: EUROSTAT, Yearbook of Agricultural Statistics, 1975.

Table 2.15: Principal components of the agricultural accounts as a share of final production <sup>1)</sup>, %.

	Year	EUR-6	FRG	France	Italy	Nether-lands	BLEU	UK	Den-mark
final production <sup>2)</sup>		100	100	100	100	100	100	100	100
final plant production	1963	43.0	32.6	37.5	64.2	36.5	35.2	-	-
	1974	43.1	30.8	42.9	62.3	32.8	31.5	36.1	27.7
final animal production	1963	57.5	70.2	62.5	35.1	63.5	64.8	-	-
	1974	54.8	58.9	52.6	37.2	67.2	60.6	63.9	72.3
total intermediate consumption	1963	29.3	39.9	25.7	17.7	45.2	36.0	-	-
	1974	43.1	51.2	44.3	27.2	50.7	58.6	61.9	46.8
of which	1963	11.3	14.4	6.6	8.1	28.5	21.4	-	-
feedstuff	1974	18.2	17.9	11.5	17.4	34.0	37.0	29.3	23.7
fertilizer and land improvement	1963	5.0	6.4	5.6	2.5	5.3	6.0	-	-
	1974	7.2	7.3	11.8	2.8	3.6	5.5	7.7	6.0
energy	1963	-	4.2	2.4	0.8	1.7	-	-	-
	1974	-	8.1	3.8	1.6	2.6	-	4.7	2.8
net value added at factor costs	1963	64.4	54.7	66.7	75.0	54.2	59.5	-	-
	1974	49.6	38.3	50.1	65.4	42.4	39.1	35.8	-

1) On the basis of current prices and exchange rates. 1974 preliminary.

2) Because of agricultural services, subsidies etc. (not included in the table), plant and animal production do not add up to 100 %.

Source: EUROSTAT, Agricultural Statistics, 3/1975.

Table 2.16: Yearly rates of change of final production, gross value added, employment and productivity in agriculture, constant prices, 1968(Ø 1967,68,69) - 1973 (1972,73,74) in %

	FRG	France	Italy	Nether-lands	ELEU	UK	Ire-land	DK	EUR-6	EUR-9
final production at prices and exchange rates of 1970	1.9	2.4	0.7	5.2	3.6	3.1	-	-	2.1	-
gross value added at prices and exchange rates of 1970	2.1	0.6	-0.2	4.4	1.6	3.9	-	-	1.0	-
persons employed in agriculture, forestry, fishery	-4.9	-3.7	-5.3	-2.6	-6.2	-1.3	-3.3	-4.7	-4.7	-4.4
labor productivity on the basis of final production	7.2	6.3	6.4	7.9	10.4	4.4	-	-	7.6	-
labor productivity on the basis of gross value added	7.4	3.7	4.5	7.2	8.3	4.1	-	-	5.9	-

Source: EC-COMMISSION, Report on the situation of agriculture in the EC, 1975, p. 16.

Table 2.17: Share of "agriculture, forestry and fishery in total gross value added at factor costs and in total number of persons employed, %.

	Year	FRG	France	Italy	Neder- lande	BLEU	UK	Ire- land	DK	EUR-9
gross value added at factor costs, current prices	1968	4.6	7.2 <sup>1)</sup>	11.1	7.0	5.2	3.0	16.4 <sup>1)</sup>	9.9 <sup>1)</sup>	6.3
	*1973	3.5	6.5	9.9	5.8	4.2	3.0	19.0	9.0	5.4
persons employed in agriculture	1968	9.9	15.7	22.4	7.9	5.6 <sup>2)</sup>	3.1	29.4	-	12.0 <sup>3)</sup>
	1973	7.2	11.3	15.7	6.5	3.7 <sup>2)</sup>	2.8	24.3	9.5	8.7

\*) since 1970 a new system for the accounting is used (SEC)

- 1) at market prices,
- 2) Belgium only,
- 3) without Denmark.

Source: EC-COMMISSION, Report on the situation of agriculture in the EC, 1975, p. 3.

Table 2.18: EC budget, expenditures (effective and planned) on selected markets, Mio EUR

market	1972 <sup>*)</sup>	1973	1974 <sup>1)</sup>	1975 <sup>1)</sup>	1976 <sup>1)</sup>
cereals - of which	908.2	1029.5	399.8	634.0	714.8
export subsidies	-	529.0	76.2	327.5	-
storage	-	72.4	32.2	66.0	-
rice	50.4	11.4	1.2	4.7	24.0
milk products - of	573.7	1497.0	1221.0	1152.9	1941.1
which export subs.	-	767.2	344.4	304.8	-
storage	-	115.1	93.5	197.1	-
consumption subs.	-	558.5	697.7	651.1	-
fats	269.9	368.7	146.7	262.0	411.3
of which: olive oil	171.2	281.4	135.0	228.5	337.8
other oil seeds	91.7	84.5	10.3	30.0	66.5
sugar - of which	151.7	136.5	108.8	325.6	170.4
export subsidies	-	55.4	8.0	40.0	-
storage	-	72.7	76.8	100.0	-
beef	7.4	16.6	320.8	848.0	679.4
of which: storage	-	13.4	246.6	278.5	-
pork	49.5	96.7	67.2	55.0	69.0
poultry and eggs	11.8	23.3	16.9	16.0	24.0
fruits and vegetables	61.4	34.9	66.9	83.5	112.8
wine	52.6	12.4	41.9	209.2	196.1
tobacco	88.5	129.6	187.7	216.4	203.3
expenditures in connection with trade with new member countries	-	264.3	332.5	348.8	262.0
expenditures in connection with trade due to changing exchange rates between member countries <sup>2)</sup>	-	140.3	137.6	335.4	170.5
total	2258.2	3814.6	3107.3	4572.0	5160.3

\*) EC-6

1) planned, 2) MCA: Monetary compensatory amounts.

Source: EC-COMMISSION, Report on the situation of agriculture in the EC, 1975, p. 358.

Table 2.19: Receipts of the EC budget<sup>1)</sup>, Mio EUR.  
in connection with market regulation

	1972	1973	1974	1975 <sup>2)</sup>	1976 <sup>2)</sup>
import levies	618.0	452.8	255.0	395.7	629.1
of which					
cereals + rice	520.0	355.8	178.5	263.7	372.1
milk products	30.0	20.0	14.3	79.0	133.0
beef	5.0	10.0	-	29.8	57.0
pork	45.0	30.0	13.8	16.7	45.0
poultry + eggs	13.0	7.0	5.4		12.0
others	5.0	30.0	43.0	6.6	10.0
sugar <sup>3)</sup>	181.0	103.4	75.1	81.0	107.9
total	799.0	556.2	330.1	476.7	737.0

1) - including receipts resulting from "price differences" between member countries, due to changes in exchange rates (MCA) or due to trade with new member countries.

- excluding customs.

2) planned, 3) receipts from producers for production above basic quota.

Source: EC-COMMISSION, Report on the state of agriculture in the EC, 1975, p. 366.