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COMPARISON OF REAL OUTPUT, PRODUCTIVITY AND PRICE LEVELS IN AGRICULTURE IN THE EC

A reconnaissance

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ABSTRACT

COMPARISON OF REAL OUTPUT, PRODUCTIVITY AND PRICE LEVELS IN AGRICULTURE IN THE EC; A RECONNAISSANCE
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Comparisons of agricultural output, productivity and price levels in the EC Member States can be made after values in national currency have been converted into a common currency unit by using the official exchange rate or a Purchasing Power Parity (PPP).

This study investigates whether an agricultural PPP, which is based exclusively on agricultural prices, can be used in such comparisons. First a review is given of the methodology for calculating PPPs in the International Comparisons Project of national expenditures. Next a design for calculating agricultural PPPs for the EC Member States is made based on methods of the International Comparisons Project. These agricultural PPPs are used as a conversion factor of values for agricultural aggregates in national currency. Finally the results of the calculation are discussed and the prospects of agricultural PPPs are given.

Purchasing Power Parity/International Comparisons Project/Expenditure approach/Product originating approach/Agriculture in the EC/Real output/Productivity/Price levels

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Preface

This study is a revised edition of the MA thesis by Ida J. Terluin, which was written at the Faculty of Economics of the University of Groningen.

It reports on the findings of the first phase of the research project *"A comparative study of real output, productivity and price levels in agriculture in the EC and its major trading partners"*. The aim of the project is to calculate purchasing power parities (PPPs) for the EC, the US, Canada, Japan and Australia, which are based only on agricultural prices. These agricultural PPPs can be used for converting values in national currencies of final output, intermediate consumption and gross value added in agriculture into a common currency unit. As a next step price level indices can be calculated as the ratio of the specific PPPs and the official exchange rate.

The research project consists of three phases. In the first phase a design has been made for a comparison of real output, productivity and price levels in the EC on a trial basis. In the second phase a full-scale intra-EC comparison in agriculture will be carried out. In the last phase the comparison will be extended to the USA, Canada, Japan and Australia, the major trading partners of the EC. Preparations for the second and third phase are made by Agricultural Economics Research Institute LEI.

The director,

J. de Veer

The Hague, August 1990

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Summary

Introduction

International comparisons of agricultural output and productivity can be made after values in national currency have been converted into a common currency by using the official exchange rate. A more suitable convertor in making international comparisons is the Purchasing Power Parity (PPP) as the official exchange rate does not necessarily reflect the real purchasing power of the national currency. PPPs are calculated in the scope of the International Comparisons Project and are based on price ratios of national expenditures.

These PPPs are used as a conversion factor in comparisons of agricultural aggregates. This is useful in comparing the purchasing power of these aggregates, but not the right way of comparing real productivity. The result would be the same if the PPP based on national expenditures was a reliable indicator of the relative prices in agriculture.

The aim of the present study is to design a method for calculating PPPs which are based exclusively on price ratios of agricultural products. These agricultural PPPs can be used as conversion factors in comparisons of agricultural output and productivity, in price comparisons and for assessing differences with PPPs based on expenditures.

Methodology

Chapter 2 gives an overview of methods used for obtaining PPPs based on price ratios of national expenditures. The calculation process can be divided into two steps:

(1) Calculation of price ratios at the commodity level.
(2) Aggregation of these price ratios to the output level.

The choice of methods depends on the statistical and economic properties that have to be satisfied. The main conditions are transitivity, base country invariance, the factor reversal test, transactions equality, internal consistency and characteristicity.

In international comparisons of expenditures the Elteto-Köves-Szulc method or Country Product Dummy method are used side by side at the commodity level. Disagreement exists about methods applied at the aggregation level: the Geary-Khamis method or the Implicit Prices method. In 1982 Hill decided this discussion in favour of the Geary-Khamis method, as this method has a single set of objective and meaningful international prices. Recently the discussion was reopened by the Expert Group on ICP Methodoloy. Criticism of the Geary-Khamis method concentrated on four

points: the Gerschenkron effect, the lack of sectoral independence, prices/quantity asymmetry and the lack of proportionality. Supporters of the Geary-Khamis method rely mainly on the following points: the Gerschenkron effect, consistency with national accounts principles and the partioning test.

In this study methods for estimating agricultural PPPs are used that have been developed in the scope of the expenditure approach of the ICP. These methods can be applied as the same problem has to be solved: the calculation of a PPP that is used as convertor of values in national currency. However, these PPPs are based on different baskets of goods. PPPs in an expenditure approach are based on price ratios of all expenditure items, while agricultural PPPs are based on agricultural prices. Each of these baskets has its own specific shortcomings and possibilities, which should be taken into account in switching over from an expenditure approach to an agricultural PPP.

We calculated two agricultural PPPs: one for output and one for intermediate consumption, as we assumed that the price structure of output and intermediate consumption differs. The Elteto-Köves-Szulc method has been applied at the commodity level. Agricultural output and intermediate consumption are therefore classified in 21 groups (basic headings) of rather homogeneous products. The more controversial Elteto-Köves-Szulc aggregation procedure has been used at the aggregation level.

Values of output and intermediate consumption in national currency are converted with the agricultural PPPs into real values. Real values for output are expressed in a currency unit referred to as Agricultural Standard for Output (ASO); real values for intermediate consumption in Agricultural Standard for Intermediate Consumption (ASI). Real values for GVA can be obtained by deducting real values for intermediate consumption from real values for output. These real values for GVA are related to the labour and land used in the production process in order to assess factor productivity.

Price level indices are obtained as the ratio of the specific PPP to the official exchange rate. Price level indices of output and intermediate consumption are indicators of the nominal rate of protection; the implicit price level index of GVA is an indiator of the effective rate of protection.

Data, benchmark years and countries

Data on prices and values are derived from Eurostat's CRONOS databank, PRAG and COSA domain. Data on labour and land are obtained from the EC Farm Structure Surveys (Eurostat, 1987a). The comparison has been made for the EC countries for the years 1975, 1980 and 1985. Luxembourg and Portugal are omitted for lack of data. Spain is omitted for that same reason for 1975.

Results

Differences between the official exchange rate, the PPP based on expenditures and the PPP based on agricultural products as convertors of values in national currency are discussed in chapter 4. Succesively attention is paid to the exchange rate deviation index, real values for output, intermediate consumption and GVA, price level indices and volume indices of labour and land productivity.

The difference between the PPP of an aggregate and the official exchange rate can be described by the exchange rate deviation index, which is the ratio of the PPP to the exchange rate. These indices have been calculated for ASO, ASI and PPS (values in national currency which are converted with a PPP based on expenditures are expressed in a currency unit refered to as Purchasing Power Standard (PPS)) and are presented in graph 4.1. There are quite sizeable differences between the deviation indices of PPS, ASO and ASI. Deviations of PPS, ASO and ASI from the official exchange rate are sometimes in an opposite direction. These differences confirm our expectation that the PPP based on expenditures is not a suitable convertor of values for agricultural output and intermediate consumption in international comparisons of real productivity. Moreover, deviations of ASO and ASI demonstrate the difference in price ratios for agricultural output and intermediate consumption and justify our decision to calculate two separate PPPs for agriculture.

Real values for agricultural output and intermediate consumption differ proportionally to the appropriate exchange rate deviation index from values in ECU. Converting values in national currency into real values can have consequences for the sequence of countries' shares in total EC output and intermediate consumption. In all years France is the major producer of agricultural output when values are expressed in ECU or ASO. However, when values are given in PPS, Italy is the biggest producer in 1975 and 1980.

GVA in ASO is the difference between agricultural output in ASO and intermediate consumption in ASI and is therefore determined by both the PPP for output and the PPP for intermediate consumption. GVA is consistently higher than GVA in ECU in the Netherlands, Belgium, the United Kingdom and Ireland, and lower in FR Germany and Italy in the three benchmark years. For all years GVA is biggest in France when values are expressed in ASO and biggest in Italy when values are given in PPS.

The relation between prices in a Member State and prices in the Community can be described by the price level index. The group of EC countries can be divided into a group of the original founder members of the EC in 1958 and a group of countries which joined the EC later. The first group has price level indices in ASO and ASI above the Community average in 1975, while price level indices in ASO and ASI of the latecomers are below it in

1975. In the course of the years 1975-1985 price level indices in ASO have tended towards the Community average. Price level indices in ASI do not show such a movement.

The distinction between the original Member States and countries which joined later can also be made with regard to the implicit price level index in ASO for GVA. Price level indices for GVA in the original Member States are close to the Community average. Price level indices for GVA in 1975 are rather low in the group of latecomers, but they tend to converge to the Community average.

Price level indices in PPS show another pattern. Price level indices in FR Germany, France, the Netherlands, Belgium and Denmark are consistently above the Community average, while those in Italy, Greece and Spain are consistently below it.

Labour productivity in the Netherlands is highest in all cases, no matter whether values are given in ECU, ASO or PPS, followed by Belgium in 1975 and 1980, and by Denmark in 1985. In Italy, Ireland, Greece and Spain it is consistently below the Community average. The Netherlands has also the highest land productivity in all cases, alternately followed by Belgium, Greece and Italy.

Assessment of this research project

The basic assumption in this study is that neither the official exchange rate nor the PPP based on expenditures are reliable convertors of nominal agricultural values in international comparisons of real productivity. The results of our calculations of agricultural PPPs confirm this assumption. Differences between deviations of ASO and ASI from the official exchange rate justify our decision to calculate separate PPPs for agricultural output and intermediate consumption.

Our conclusion is that the findings of the first phase, in which an intra-EC comparison has been carried out on a trial basis, are promising and justify continuation of the research project in the future. Methods for calculating agricultural PPPs have to be refined, especially in the field of weightings by product and the introduction of zero-value basic headings. Eurostat's CRONOS databank can be supplemented by alternative databases such as SPEL and FADN. When these databases offer reliable data for Luxembourg, the problem of the inclusion of Luxembourg in the comparison can be solved. When the US, Canada, Australia and Japan are added in the third phase of the project to the group of EC countries, it is worth considering the fixity principle, which means that intra-EC comparisons are not influenced by countries outside the EC.

1. Design of this research

1.1 Introduction

International comparisons of national aggregates that are converted into a common currency by using the official exchange rate can give distorted results as the official exchange rate does not necessarily reflect the real purchasing power of the currency on the national territority. On the one hand the exchange rate is determined by the demand and supply of foreign currency needed to pay for goods and services traded between countries. On the other hand it depends on factors such as capital flows, whether or not a country belongs to a monetary system (for example the European Monetary System), speculation, inflation and the political and economic situation in the country.

A more appropriate conversion factor for values in national currencies in making international comparisons is the purchasing power parity (PPP), which does reflect differences in real prices. PPPs are calculated by the International Comparisons Project (ICP) of the UN, the Statistical Office of the European Communities (Eurostat), and the OECD for purposes of comparing national accounts data of different countries. They are especially concerned with revaluing Gross National Expenditure (GNE) per capita and its main components, i.e. final consumption of households, collective consumption and gross fixed capital formation. The resulting real values of GNE per capita can be used as an indicator of the real standard of living.

However, the ICP expenditure approach is not the only way of making international comparisons. An alternative is a breakdown of GDP in terms of products originating in different economic sectors. Paige and Bombach applied such a product-originating approach in a comparison between the United Kingdom and the United States (1959). Real values for output and productivity provide information on the economic performance of a country. A product-originating approach places greater demands on data availability relative to an expenditure approach, as a double deflation procedure has to be followed. That is, comparisons must be made of output prices as well as input prices for each sector or industry. Recently researchers of the Faculty of Economics of the University of Groningen have made comparisons of output and productivity between the industrial sectors of the USA, Brazil and Mexico (Maddison and Van Ark, 1988), and the USA, Japan and S. Korea (Szirmai and Pilat, 1988). Comparisons have also been made for agriculture. A binary comparison of the agricultural sector of Japan and the Netherlands has been undertaken by Van der Meer, Yamada and Egaitsu (1987) and Van der Meer and Yamada (1988, 1989). Multilateral comparisons of agriculture have been

made by Van Ooststroom and Maddison (1984), the FAO (1986) and Goossens (1986). All these studies in agriculture, except for that of Goossens, concern both output and input. The studies undertaken by Van Ooststroom and Maddison and by the FAO are based on FAO data sources. Goossens based his study on Eurostat data, which have a broader coverage than the FAO data.

1.2 The present research project

The aim of our research project is to make an international comparison of real output, productivity and price levels in agriculture in the EC and its major trading partners. The conversion factor used for revaluing agricultural aggregates expressed in national currency is a PPP which is based exclusively on price ratios of agricultural products. Our research belongs to the group of studies which apply the product-originating approach. In this study, which forms the first phase of the project, this comparison will be made on a trial basis for the EC countries, and an assessment will be given of the feasibility of a full scale exercise.

In this study we firstly explain why a specific purchasing power parity for the agricultural sector should be calculated, and what our expectations are concerning the use of such a parity. Next we define the agricultural sector, the countries involved in our study and the years for which an agricultural PPP will be calculated. In the second chapter a general review is presented of the methodology for calculating PPPs and real values in international comparisons of expenditure. Some attention is paid to the disagreement on methodology. The calculation process in our research is described in chapter 3. Methods used in the expenditure approach are applied and adjusted in our product-originating approach of agriculture. The suitability of Eurostat data on prices and values of agricultural final output and intermediate consumption, on which our calculation is based, is extensively explored. We also use Eurostat data on labour and land for obtaining indices of factor productivity, but no attention is paid to the composition of these data. Real values for agricultural output, intermediate consumption and gross value added (GVA), price level indices and indices for labour and land productivity are presented and discussed in chapter 4. As we are interested in the differences between the official exchange rate and the PPP as convertors of data in national currency, we are not concerned with underlying agricultural symptoms, which can explain some aspects of the data. In the last chapter an assessment of the research project and its prospects is given.

If the results of the first phase are promising, a full scale intra-EC comparison will be carried out in the second phase of the project. Finally, in the last phase of the project, similar data will be added for the USA, Canada, Australia and Japan,

the major trading partners of the EC, to enable more than 90% of OECD agricultural production to be included in the study.

1.3 Why specific agricultural PPPs?

The PPPs which are calculated for GNE are based on price ratios of domestic final expenditure. When an aggregate is converted into a common currency unit by using the PPP, that currency unit is called purchasing power standard (PPS). Values expressed in PPS are referred to here as real values. This concept of real value should not be confused with the concept of real value that refers to a value in current prices, that is deflated by an intertemporal price index. Our real value is deflated by a spatial price index. The PPP of GNE is also used as a conversion factor for national aggregates of parts of the GDP. For example in the EC's Economic Accounts for Agriculture (EAA), gross value added (GVA) in agriculture, final agricultural output, intermediate consumption and gross fixed capital formation are expressed not only in national currency and ECU, but also in PPS. This is useful in comparing the purchasing power of these aggregates, but not the right way of comparing real production and productivity. The result would be the same if the PPP of GNE was a reliable indicator of the pattern of relative prices in agriculture.

The PPP of GNE between country A and country B is a weighted average of all the price ratios of expenditures 1...N in countries A and B. As the price ratios of each pair of products between the two countries are normally not the same, the PPP between countries A and B is sensitive to the price ratios it is composed of. If the structure of price ratios in agriculture deviates from the structure of price ratios in the other sectors of the economy, the agricultural PPP (i.e. PPP based only on agricultural price ratios) does not equal the expenditure PPP of GNE. In that case, conversion of national agricultural aggregates with the PPP based on GNE will give distorted results in comparisons of real production. Therefore a calculation of a specific agricultural PPP seems justified.

In this study we are interested in both real values for output, intermediate input and GVA in agriculture. If we assume that relative price structures for output and input will differ, we cannot use one single agricultural PPP for converting both national output and input data, for the same reason as mentioned above. We will therefore calculate two PPPs for agriculture: one for output and one for input.

1.4 Expected use of agricultural PPPs

Converting national agricultural aggregates into real values with agricultural PPPs can serve several economic and political

purposes in agriculture, of which the following are of significant importance.

(a) *Aggregation of data.*

Real values for each member state can be aggregated to obtain real EC totals. These aggregated figures for the Community as a whole can be used to derive the relative shares of the various countries in the real EC totals. In the same way each country's share of total EC value expressed in ECU can be obtained. It is interesting to compare the real shares with the ECU shares to note the difference vis-a-vis the official exchange rate. The countries' shares may play a role in the distribution of funds and budgetary affairs (Eurostat, 1982:19-20).

(b) *Comparing real values for output and intermediate input for each member state.*

(c) *Income analysis.*

Indicators of agricultural income, such as GVA in agriculture at market prices divided by total labour input in agriculture, can also be converted into PPS to eliminate differences in price levels between the various countries. In the series *Agricultural income, Sectoral income index analysis* Eurostat publishes income indicators expressed in the PPS of GNE, remarking that this conversion is made in the absence of a specific PPS for agriculture (Eurostat, 1989a:p.63). However, both convertors can be used in income analyses, depending on the aim pursued. Agricultural income converted by the PPP of GNE is an indicator of farmers' real income, as it reflects their purchasing power outside the agricultural sector. On the other hand, agricultural income converted by an agricultural PPP is a standard for real productivity in agriculture. In this case only the price structure in agriculture is relevant for obtaining volume ratios.

(d) *Price comparisons*

A price index for an aggregate can be obtained by dividing the specific PPP of that aggregate by the official exchange rate. When these indices are related to the Community average, price levels can be compared directly between countries.

(e) *GVA*

Real values for GVA can be obtained by deducting real values for intermediate consumption from real values for final agricultural output. This real GVA can be related to factor inputs of labour and land to obtain indices of labour and land productivity. Implicit price indices can be calculated as the ratio of GVA in national currency and GVA in real values. These indices equal one plus the effective rate of protection relative to the EC.

It should be noted that PPPs have to be regarded as instruments for carrying out volume comparisons. This implies that any interpretation and use of the PPPs other than as deflators of national accounts aggregates calls for caution.

1.5 Definition of the agricultural sector

So far we have indicated the problems of international comparisons of national aggregates and the usefulness of specific agricultural PPPs. Now we turn to a further investigation of the aggregates in agriculture that will be compared. No attention is paid here to prices at which these aggregates are valued, as this will be extensively done in section 3.3.

Firstly let us define the agricultural sector as consisting of all those units which produce, either uniquely or in conjunction with other, economic activities 1) (Eurostat, 1987b:8, 17):

(i) crops and crop products, whether cultivated or not.
(ii) animals and animal products of agriculture and hunting.
(iii) grape must and wine.
(iv) refined olive oil.

Units which supply machinery, material and operating staff for carrying out contract work at the agricultural producer stage (for example fertilizing, liming, ploughing, sowing, weed and pest control, plant protection, reaping, threshing and sheep shearing) are also treated as part of the agricultural sector. Production of butter, cheese and other manufactured dairy products is regarded as an industrial activity and does not belong to the agricultural sector. In defining the agricultural sector in this way, we follow the production branch concept which is used in the EAA.

Agricultural products can be divided into two groups depending on their use (Eurostat, 1985:62):

(i) products for human use (direct consumption or consumption after processing) or for export.
(ii) products to be sold within the agricultural sector as means of agricultural production, such as feedingstuffs, seeds or breeding animals.

In this research we will use the national farm concept, in which the whole agricultural sector is treated as a single holding producing the total output of agricultural products of a country's economy. This implies that only products sold, which do not return to the national farm, are recorded as output. So when cereals are sold by one farmer to another, these cereals are not considered as output. But when those cereals are sold to a manufacturer, they are included in output.

Comparisons of agricultural final output can give biased results, as prices and quantities of intermediate consumption are not taken into account. The share of these inputs in final output

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1) Two types of unit can be distinguished in the agricultural sector: the one type exclusively produces agricultural products, while the other type is primarily concerned with the production of non-agricultural goods, but also produces some agricultural goods.

varies between countries, depending on the price structure, the product mix and input/output price relations. That is why generally the value added concept is used as a measure for assessing the productivity of a sector. GVA can be obtained by deducting intermediate consumption from output. The two national aggregates for which an international comparison will be made are therefore output and intermediate consumption. Once we have revalued output and intermediate consumption in PPS, we are able to estimate GVA in agriculture in PPS by deducting real intermediate consumption from real output. The next step is to relate this GVA to labour and land that is used in the production process for assessing the productivity of labour and land. Capital productivity will not be considered in our study, as it is very difficult to estimate the capital used in the production process.

Output will be considered here as final output in agriculture, in the same sense as used in the EAA. This is the output which remains after wastage, intrabranch consumption and the change in stocks are deducted from gross production 1). If final stocks exceed initial stocks, the difference should be added to gross production. Final output consists of the following entries: processing by producers, sales, own consumption, own-account produced fixed capital goods and a change in stocks (only if final stocks exceed initial stocks). See appendix 1 for a schematic representation of agricultural final output.

Intermediate consumption comprises all goods (other than fixed capital goods) and market services consumed by the national farm in the production process in order to produce other goods (Eurostat, 1987b:33). Intrabranch consumption is not counted as intermediate consumption. Intermediate consumption includes the following items: seeds and plants, livestock and animal products, energy and lubricants, fertilizers and soil improvers, plant protection products, pharmaceutical products, feedingstuffs, material and small tools (maintenance and repairs) and services.

The use of the national farm concept can give distorted results in comparisons of final agricultural output and intermediate consumption between different countries. Suppose that countries A and B both produce 1000 tons of seed potatoes. Seed potatoes from country A are exported to country C, and are counted as final output in country A. In country B seed potatoes are used as intrabranch consumption and are not recorded as output. Final agricultural output in country A is 1000 tons and in country B 0 tons, although the same amount of seed potatoes has been produced. The seed potatoes imported by country C are counted as intermediate consumption in that country. So intermediate consump-

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1) Gross production includes all agricultural production which occurs in agricultural enterprises, in gardens other than farm gardens and in non-agricultural enterprises (Eurostat, 1987b:29).

tion in country C is 1000 tons of seed potatoes and 0 tons in country B, while both countries uses the same amount of seed potatoes.

1.6 Countries, benchmark years and data in this research

The comparison of output and intermediate consumption will be made for the EC countries for three years: 1975, 1980 and 1985. However, as serious data problems exist in Luxembourg and Portugal as we shall see later, these countries are for the time being omitted. Spain is omitted for the same reason for 1975. So the comparison for 1975 comprises FR Germany, France, Italy, the Netherlands, Belgium, the United Kingdom, Ireland, Denmark and Greece. For 1980 and 1985 Spain is added.

The comparison will be based on Eurostat data. Output and input values are published in the EAA, and are stored in the COSA domain of the CRONOS databank. Prices used are stored in the PRAG domain of CRONOS. These prices have been collected for the calculation of EC price indices.

2. Methods for calculating real values and PPPs

2.1 Introduction

In this chapter a mathematical presentation is first of all given of the problem of comparing aggregate values expressed in national currencies. The results of international comparisons can be subjected to a number of conditions. These conditions are discussed in the third section. Next we will describe the methodology for converting national aggregates in real values by using PPPs. PPPs are obtained in two separate steps:

(1) calculation of the price ratios or basic parities at the commodity level;
(2) aggregation of these basic parities to the output level and calculation of the corresponding real values.

A detailed description of the various methods in both phases is given in sections 2.4 and 2.5. As disagreement exists about the methods applied at the aggregation level, some thoughts on this controversy are given in the final section.

2.2 Comparison of values in national currency: a mathematical presentation

Consider the case of M countries producing N commodities. The production of country j can be expressed as:

$$Y_j = p_{1j}q_{1j} + p_{2j}q_{2j} + \cdots + p_{nj}q_{nj} = \sum_{i=1}^{N} p_{ij}q_{ij}$$

in which

Y_j = value of output of country j expressed in currency of country j, j = 1...M

p_{ij} = price of commodity i in country j expressed in currency of country j, i = 1...N

q_{ij} = commodity i produced in country j

A comparison between the nominal output values of countries j and k is not possible as they are not expressed in the same currency. This problem can be solved by converting both values using the exchange rate:

$$Y_j^* = \sum_{i=1}^{N} R_j p_{ij} q_{ij}$$

in which

Y_j^* = value of output of country j, expressed in a common currency unit

R_j = exchange rate of currency of country j against the common currency unit

In the same way we can revalue the output of country k and obtain Y_k^*. Now both values can be compared with each other and aggregated. However, such a conversion cannot be made in this context, as we raised serious objections to the use of the official exchange rate in international comparisons (see chapter 1). We should therefore use a PPP to convert the national aggregates into real values:

$$Y_j^{**} = \frac{\sum_{i=1}^{N} p_{ij}q_{ij}}{PPP_{jr}}$$

in which

Y_j^{**} = real value of output in country j, expressed in PPS
PPP_{jr} = purchasing power parity between currency of country j and currency of the reference country r

It is precisely these real values above that we are looking for in international comparisons.

2.3 Conditions for international comparisons

The choice of methods for calculating PPPs and real values depends on the statistical and economic properties that have to be satisfied. The specialized literature mentions a number of conditions on international comparisons, which are concerned on one hand with consistency and on the other hand with representativeness. The most important conditions will be described below; for an extended overview see Kravis, Heston and Summers, 1982:71-74 and Eurostat, 1983:34-38. It is impossible to meet all conditions simultaneously.

(a) *Transitivity*

Consider:

PPP_{kj} = purchasing power parity between currency of country k and currency of country j
PPP_{kl} = purchasing power parity between currency of country k and currency of country l
PPP_{jl} = purchasing power parity between currency of country j and currency of country l

The transitivity condition is satisfied if $PPP_{kj} = PPP_{kl} / PPP_{jl}$. In this case PPPs do not vary with the reference country, whose currency is chosen as numeraire 1).

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1) The kind of transitivity described here is in fact the weak form. There is also a "strong" form, if the transitivity condition is satisfied and if the PPPs are based on a function of prices and quantities which is the same for each pair of countries (Eurostat, 1983:34-35). In this study the transitivity concept refers to the weak form.

(b) *Base country invariance*
All countries should be treated symmetrically, so that the choice of the country that serves as a reference point has no influence on the results. This base country is called a numeraire country.
(c) *Factor reversal test*
This condition requires that the product of price and quantity ratios equals the expenditure ratio. In mathematical terms this condition can be written as:

$$PPP_{jk} * (Y_j^{**} / Y_k^{**}) = \sum_{i=1}^{N} p_{ij}q_{ij} / \sum_{i=1}^{N} p_{ik}q_{ik}$$

(d) *Transactions equality*
This condition is met if the relative importance of each transaction depends only on its magnitude and not on the size of the country in which it takes place.
(e) *Internal consistency*
(e.1) *Additivity*
Nominal values in the various countries at various aggregation levels can be converted into real values by using the PPPs specific to each aggregate. If the real value of an aggregate of a given country is equal to that obtained by adding the real values of the components at any aggregation level, the additivity condition is met.
(e.2) *Average test of volume ratios*
If the volume ratio of aggregates for any pair of countries lies between the highest and lowest volume ratio of the components at any aggregation level for those countries, this part of the internal consistency condition is satisfied.
(f) *Characteristicity*
This condition is based on the fact that consumption habits vary from country to country. In constructing price and quantity indices the sample of items should be representative of the goods found in the markets of the countries being compared. When a comparison of a group of homogeneous products between countries a and b involves a product that reflects the spending pattern of country a better than all other products of that group, the comparison is said to be characteristic of country a. If this comparison also contains a product that reflects the spending pattern of country b better than other products of the group, the comparison is called equi-characteristic for country a and b. This property is easier to satisfy in a binary comparison of two very similar countries than in a multilateral comparison of countries with different structures.

2.4 Calculation of basic parities at the basic heading level

When the commodities of countries j and k in a multilateral comparison of M countries are compared, it will soon be found that commodities are often not exactly identical. For example:

country j produces milk with 3.5 % fat, while the milk produced in country k contains 3 % fat. Another problem is that some commodities are produced in countries j and k, but not in country l, so that a price ratio for that product exists between countries j and k, but not between j and l, or k and l. In order to overcome difficulties like this, output can be broken down into groups of homogeneous products, for example a group with all kinds of milk or one with all kinds of wheat. These product groups are known as basic headings (BHs). They serve as a guide for which items of output prices and values have to be collected.

As it is not always possible to collect prices for all products within a BH, a selection of products has to be made, based on the following two criteria: representativeness and identity. Representativeness means that the selected products must reflect the structure of production as faithfully as possible, and that they must be representative for the whole group of products. Identity implies that the selected products must have the same properties (quality, size etc.) in all countries. Only prices for the selected products have to be collected. However, the value of a BH must be the aggregated value of all the products within a BH, and not only the value of the selected products.

Once the BHs are defined in a consistent way, and prices and quantities are collected, the calculation of basic parities (i.e. the price ratios between BHs of different countries) can start. First binary parities between each pair of countries are calculated, based on the product prices they have in common. This binary parity is a Fisher type parity for the following reasons. It is difficult to find products that are equally characteristic in all respects in two countries. Suppose products x and z are both representative in country a and b, but x is more representative in country a and z is more representative in country b. $p_{x,a}$ and $p_{z,a}$ are prices of x and z in country a; $p_{x,b}$ and $p_{z,b}$ in country b. The price ratio $p_{x,b}/p_{x,a}$ will often exceed $p_{z,b}/p_{z,a}$, as the price of a characteristic product tends to be lower than a less characteristic one. Here the price ratio $p_{x,b}/p_{x,a}$ is called a Laspeyres type index and $p_{z,b}/p_{z,a}$ is called a Paasche type index. A Laspeyres type index is the ratio of the prices of the representative product of the country in the denominator; a Paasche type index is the ratio of the prices of the representative product of the country in the numerator. When the binary parity between a BH of countries a and b is based on a Laspeyres type index, the parity is more representative for country a and underestimates the price level in a. However, when the parity is based on a Paasche type index, the parity is more characteristic for country b and overestimates the price level in country a. In order to obtain equal representativeness of products between country a and b and to avoid an under- or overestimation of the price level in country a, a Fisher type parity, which is the geometric mean of the Laspeyres and Paasche type indices, is used.

In reality things are more complicated than the above example indicates. A BH often contains more than a single representative item for country a. These are also found in country b, but are relatively less representative there than in country a. In that case binary parities are obtained in the same way as for the above example, but formulas are more complex. The Laspeyres type index with base country a is defined as:

$$L_{B/A} = \left[\prod_{x=1}^{Na} p_B^x / p_A^x \right]^{1/Na}$$

in which:

- x = representative item in country A, for which a price is also found in country B, x = 1 ... Na
- p_A^x = price of item x in country A
- p_B^x = price of item x in country B

The corresponding Paasche type index with base country a can be written as:

$$P_{B/A} = \left[\prod_{z=1}^{Nb} p_B^z / p_A^z \right]^{1/Nb}$$

in which:

- z = representative item in country B, for which a price is also found in country A, z = 1 ... Nb
- p_A^z = price of item z in country A
- p_B^z = price of item z in country B

It must be noted that these Laspeyres and Paasche type indices are unweighted geometric means of price ratios of representative products. This construction is chosen as it is difficult to determine the weight of each expenditure item in a BH. Weightings can be introduced when it is known how the total value of a BH is distributed according to its products (Eurostat, 1983:16-19).

Finally the Fisher index can be obtained as the geometric mean of the Laspeyres and Paasche type indices above:

$$F_{B/A} = \left[L_{B/A} * P_{B/A} \right]^{1/2}$$

The table of Fisher indices is not complete, as a Fisher index cannot be calculated for all pairs of countries. This arises when countries have no products in common for a certain BH. Suppose that BH h consists of the products:
-A*, B, C*, D and E* in country j
-C, D*, E*, F*, G* and H in country k
-F, G, H*, I* and J* in country l
(An asterix indicates that the product in that country is relatively more representative than in other countries.)
The Laspeyres index between countries j and k is based on the price ratios of products C and E; the Paasche index on price ra-

tios of products D and E. The Laspeyres index between countries k and 1 is based on the price ratios of products F and G; the Paasche index on the price ratio of product H. As both Laspeyres and Paasche indices exist between countries j and k and between countries k and 1, a Fisher index can be calculated. However, no Laspeyres and Paasche index can be calculated between countries j and 1 as they have no products in common. Hence there is no Fisher index between countries j and 1.

The table of Fisher indices can be completed by making use of all existing Fisher indices in the following way:

$$F_{1/j} = \left[\prod_{\alpha=1}^{T} F_{1/\alpha} * F_{\alpha/j} \right]^{1/T}$$

in which:

α = a country in which both $F_{1/\alpha}$ and $F_{\alpha/j}$ exist, $\alpha = 1 \ldots T$

Once the table of Fisher indices is completed in this way, there is still another problem in that it is not transitive. This problem can be solved by applying the Elteto-Köves-Szulc (EKS) method, which defines parities between each pair of countries as the geometric mean of all Fisher indices. These EKS parities are defined as follows:

$$EKS_{j/k} = \left[\prod_{\delta=1}^{M} F_{j/\delta} * F_{\delta/k} \right]^{1/M}$$

in which M is the total number of countries.
Elteto, Köves and Szulc have proved that the logarithmic of the least squares differences between these parities and the Fisher indices are minimal.

Parities at the BH level are obtained in this way by Eurostat and the OECD. However, the UNSO applies another method: the Country Product Dummy (CPD) method. For the sake of completeness, this method will be described here briefly.

The UNSO uses parities between a base country b and a partner country j for BH h, which are derived as the unweighted geometric mean of prices of all the products b and j have in common, as follows:

$$(p_j / p_b)_h = \left[\prod_{e=1}^{E} p_{ej} / p_{eb} \right]^{1/E}$$

in which:

e = product in BH h, $e = 1 \ldots E$

In the same way a parity between country k and b is obtained. However, p_j / p_k is often not equal to the ratio of p_j / p_b and p_k / p_b, as parities between each pair of countries can be based on prices of different items. So these parities are not transitive.

Transitivity can be obtained when one uses, for the parity between j and k, the ratio of the parities of each country with the base country:

$$(p_j / p_k)^*_h = (p_j / p_b)_h / (p_k / p_b)_h$$

However, by ignoring the original parity between j and k, products which are representative in both j and k but for which no prices are found in the base country are excluded. So the parity may be less characteristic for j and k.

This problem can be solved by applying the CPD method, which estimates missing prices for items in BH h in such a way that parities p_j / p_k, p_j / p_b and p_k / p_b are based on the prices of the same items. Here country b is called the bridge country. The CPD method is a linear regression technique, based on the assumption that the price of each product depends on a factor relating to the country in which the product is observed, and to a factor relating to the product. The regression equation takes the following form:

$$\ln p = \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_{n-1} X_{n-1} + \gamma_1 Z_1 + \gamma_1 Z_2 + \ldots + \gamma_A Z_A + \epsilon$$

in which:

ln p = natural logarithm of a price of a particular product in a country

X = a dummy variable that refers to a country other than the base country, X is 0 or 1

Z = a dummy variable that refers to an item in the BH h, Z is 0 or 1

ϵ = random error with mean zero and variance σ^2

Each regression coefficient β_j (j= 1...M-1) is the logarithm of the PPP between country j and the bridge country. These parities are transitive. (Kravis, Heston and Summers, 1982:82-89).

Basic parities, obtained by the EKS or CPD method, serve as input in the second phase of the calculation in which PPPs and real values are estimated.

2.5 Aggregation of the basic parities to the output level and the calculation of real values

In the first five phases of the ICP project the Geary-Khamis (GK) method has been used for aggregating parities at the BH level to the GDP level. This method will be described below. Attention will be also paid to alternative aggregation methods: the Gerardi (G) method, the EKS aggregation procedure and the Implicit Prices (IP) method. As the GK method has always been criticized, some thoughts on the arguments in the controversy about the methodology applied at the aggregation level will be given in the next section.

By applying the GK method, international prices and a PPP at the GDP level are estimated simultaneously. The international

price for BH i is simply the ratio of the total value of all items in BH i in all countries and the total quantity of BH i in all countries. The values of BH i in the different countries are not expressed in the same currency, so they have to be converted into a common currency unit of a numeraire country by using a PPP. However, this PPP can only be obtained if the international prices of all BHs are available. This circuitous situation can be resolved by the following system of simultaneous equations:

$$\pi_i = \left[\sum_{j=1}^{M} p_{ij} q_{ij} \; / \; PPP_{jo} \right] / \sum_{j=1}^{M} q_{ij}$$

$$PPP_{jo} = \sum_{i=1}^{N} p_{ij} q_{ij} \; / \; \sum_{i=1}^{N} \pi_i \, q_{ij}$$

in which:

- π_i = international price for BH i
- PPP_{jo} = purchasing power parity between currency of country j and the numeraire country o
- j = country, j = 1 ... M
- i = BH, i = 1 ... N

By using PPP_{jo}, values in national currency of country j can be converted into real values, expressed in the currency unit of the numeraire country.

The PPP_{jo}, derived according the GK method, satisfies the transitivity and internal consistency conditions, but does not pass the factor reversal test.

Eurostat has developed the Gerardi (G) method, which has recently been integrated in the IP method. The main difference between the GK and G methods is that GK uses a set of international prices which are the weighted (by quantities) averages of all prices of the participating countries, whereas G uses international prices, i.e. the unweighted geometric mean of price ratios in national currency. So in the G method each country has the same weight in the calculation of international prices. This is called unit country weighting (UCW).

Real values for each BH and for the aggregate are obtained in the G method as follows:

-First a parity is calculated for each BH i between the national currencies of each of the M countries and a standard of reference as the unweighted geometric mean of all parities between each pair of countries:

$$PPP^{i}_{j\ PPS} = \left[\prod_{\alpha=1}^{M} PPP^{i}_{j\alpha} \right]^{1/M}$$

in which:

- $PPP^{i}_{j\ PPS}$ = purchasing power parity between currency of country j and a standard of reference (PPS) for BH i

$PPP^{i}_{j\alpha}$ = purchasing power parity between currency of country j and currency of country α for BH i

α = country, $\alpha = 1 \ldots M$

-Next the nominal value of BH i in country j is divided by $PPP^{i}_{j\ PPS}$ in order to obtain a real value expressed in PPS for BH i in country j.

-Finally all real values of the BHs in country j are added, which results in a real value for the aggregate. These real values of the aggregates satisfy both the transitivity and internal consistency conditions. However, equi-characteristicity is not guaranteed.

The three phases described above are originally called the G method. Two further steps have been taken in order to arrive at equi-characteristicity for the comparison (*Expert Group*, 1989b). The EKS procedure, which is applied at the BH level to obtain transitivity for the basic Fisher parities, can also be applied at the level of aggregation. Starting point is now a M*M matrix with Fisher volume ratios between each pair of countries, which are obtained with the G method. Each element (j,k) can be represented as:

$$F^{VR}_{jk} = \left[\left(\sum_{i=1}^{N} \frac{p_{ij}\, q_{ik}}{PPP^{i}_{j\ PPS}} \Big/ \sum_{i=1}^{N} \frac{p_{ij} q_{ij}}{PPP^{i}_{j\ PPS}} \right) * \left(\sum_{i=1}^{N} \frac{p_{ik}\, q_{ik}}{PPP^{i}_{k\ PPS}} \Big/ \sum_{i=1}^{N} \frac{p_{ik} q_{ij}}{PPP^{i}_{k\ PPS}} \right) \right]^{1/2}$$

in which:

F^{VR}_{jk} = Fisher volume ratio between country j and k

An EKS volume ratio, which differs logarithmically in the least squares sense only minimally from the Fisher volume ratio is derived in the following way:

$$EKS^{VR}_{jk} = \left[\prod_{\alpha=1}^{M} F^{VR}_{j\alpha} * F^{VR}_{\alpha k} \right]^{1/M}$$

in which:

EKS^{VR}_{jk} = EKS volume ratio between country j and k

This EKS volume ratio is transitive and equi-characteristic between countries. A disadvantage of the EKS procedure is that this volume ratio does not pass the internal consistency test.

The IP method is the next step that can be applied after real values of the G method have been adjusted with the EKS procedure. The IP method also estimates volume ratios that differ logarithmically only minimally from the Fisher volume ratio by multiplying both the numerator and the denominator in the EKS volume ratio by the same scalar s^1. The volume ratios of the IP method are defined as:

$$IP_{jk}^{VR} = \sum_{i=1}^{N} s^i \, RV_j^{i\ EKS} \ / \ \sum_{i=1}^{N} s^i \, RV_k^{i\ EKS}$$

in which:

$RV_j^{i\ EKS}$ = real value for BH i in country j, derived according the G method and adjusted by the EKS aggregation procedure

s^i = scalar by which both real values of BH i in countries j and k are multiplied

Values for the vector s^i are found in an iterative algorithm when the minimum distance between IP_{jk}^{VR} and F_{jk}^{VR} is reached. As both real values of countries j and k are multiplied by the same scalar, volume ratios between j and k remain unchanged. The advantage of the IP method over the EKS procedure is not only that transitivity and equi-characteristicity is obtained, but that the average test of the volume ratios is satisfied too. Both methods fail to meet the additivity condition.

2.6 Disagreement about the methodology

In 1982 the Hill report *Multilateral measurements of purchasing power and real GDP* was published at the request of the UNSO, the OECD and Eurostat, in which an assessment was given by Peter Hill of problems, principles and methods of international comparisons. Hill's principle is that a common method should be used in order to avoid differences between official figures published by international organizations (Eurostat, 1982:7). Differences between these official figures are confusing for users.

In the discussion about the GK and G methods, Hill argues that the main difference between these two methods is whether the international price is a weighted average of national prices or not (Eurostat, 1982:52). In a two-country case with a large and a small country, the GK international prices will be very close to those of the large country. The volume index for the small country is very close to the Laspeyres volume index based on prices for the large country. The use of own prices in intertemporal or international comparisons tends to yield volume estimates for the other country which are higher than those obtained by the use of the other's prices. So in this case the GK method tends to overestimate the volume of the small country relative to that of the large country. The extent of the overestimation depends on the divergence of the patterns of relative prices (Eurostat, 1982:53-54).

In a multi-country case it is less likely that the prices of one or two countries will dominate the weighted international prices. However, this is not true if one of the countries is

large in relation to the group as a whole, for example the US in the group of OECD countries. For this case Hill made some simulations. Volume indices of the GK and G method are presented with alternately the US and Italy as reference country. When the US is taken as reference base, GK volume indices are higher than G volume indices for all countries, which demonstrates the tendency for the GK method to yield higher results. When the reference base is shifted to Italy, a medium-sized country, there is no bias in one direction of GK figures from the G figures. So Hill concludes that "it can be misleading to talk of one or other method yielding systematically higher or lower results than the other, unless the reference country (that is, the country with which the comparison is being made) is made quite explicit" (Eurostat, 1982:56).

The choice between the GK and G methods is made by Hill with regard to which set of international prices is used. Hill prefers the GK international prices, which are defined as the sum of all values of each BH in all countries divided by the quantities of that BH. These prices are simple, objective, meaningful and characteristic for the group as a whole (Eurostat, 1982:59). The G international prices are simply a means to obtain a PPP. Then they disappear.

However, Hill has a second argument in favour of the GK method. Another way to arrive at a set of international prices is to divide real values of each BH by its quantity. This set of international prices is identical to the GK international prices, but differs from the G international prices, which are used to calculate the PPPs. These two different sets of international prices of the G method are a source of confusion. So it is unnecessary to use the G method, as the two sets of international prices coincide in the GK method (Eurostat, 1982:61).

The Hill report constituted the justification for using the GK method in phase V of the ICP (1985), but was not convincing enough to dispel all displeasure about the GK method. Eurostat continued with the development of the G method. The discussion about aggregation methods was reopened and resulted in two meetings of the Expert Group on ICP Methodology in 1988 (Luxembourg) and 1989 (Paris). During these meetings criticism of the GK method concentrated on four points (*Expert Group 1989a, d*):

(1) *The Gerschenkron-effect*

The argument that in a two-country case GK international prices tend to overestimate volumes of the smaller country as the volume index is close to the Laspeyres index with the larger country as base, resurfaces in another form. GK international prices are closer to the prices of the central countries than to those of the peripheral countries. The underlying assumption is that the patterns of relative prices of central countries in the group differ less from each other than from those of peripheral countries. Hence volumes of peripheral countries are overestimated and those of central countries are underestimated. This is called the Gerschenkron-effect.

(2) *The lack of sectoral independence*

GK international prices are derived after national prices of each BH are converted into a common currency unit by using the PPP of the whole GDP. This implies that volume ratios and parities at the BH level are a function not only of prices and quantities of items of the BH, but of the prices and quantities of all other products as well. The justification for this phenomen is that prices are sectorally interdependent. However, from a practical point of view such an interdependency cannot be accepted. It means that in carrying out a price and volume comparison for the BH bread, one needs to know not only prices and quantities of all kinds of bread in all countries, but also prices and quantities of all other products. International prices in the IP method are calculated as an equi-weighted geometric mean of national prices (which are not converted into a common unit) and are sectorally independent.

(3) *Prices/quantities asymmetry*

Parities and volume ratios are treated asymmetrically in the GK method. Volume ratios are close to the Laspeyres index based on the central country, while parities are close to the Paasche index.

(4) *The lack of proportionality in the volume ratios*

If one multiplies all quantities of a partner country by a scalar, the overall volume index with another country is not the same as the previous index -obtained by the GK method- multiplied by that same scalar. The consequences of this lack of proportionality are made clear in the following example. Consider the case of per capita volume indices between country a and b. When these per capita volume indices are multiplied by the population ratio of the two countries, the result is not equal to the volume ratio, which is calculated directly from the nominal values.

Supporters of the GK method rely mainly on the following arguments (*Expert Group 1989a:4*):

(1) *The Gerschenkron-effect*

GK international prices are simple, objective and have an explicit economic meaning as they are the average prices for the group of countries as a whole. By using this set of international prices the Gerschenkron-effect is accepted. The properties of the GK international prices are considered of more importance than the resulting Gerschenkron-effect (*Expert Group 1989d:6*).

(2) *Consistency with national accounts principles*

The GK international prices are the spatial counterpart of the average prices used in the national accounts of individual countries. Such average prices are obtained by dividing the total value of transactions of a commodity by the total transacted quantity of that commodity.

In national accounts GDP and its components for different years can be revalued at constant prices so that a comparison between them is possible. In a matrix with real values of GDP and

its components in rows and countries in columns, such a comparison can also be made between countries, if rows and columns are additive. This condition is met when GK international prices are used to revalue national volumes.

(3) *The partitioning test*

GK international prices are not affected when a country is partioned in several parts, as all transacted quantities are treated independently of the country in which they take place.

The arguments pro and contra the GK method are briefly summarized in the above seven points. The opinion of the Expert Group after two meetings was against the GK method. In October 1989 it will be decided whether the ICP will continue with the EKS or IP method as the aggregation method.

3. The calculation of PPPs and real values for agriculture in this research

3.1 Introduction

The previous chapter gives a general treatment of the methodology for the calculation of real values and PPPs, without commenting specifically on agriculture. Now we shall describe which methods are used to obtain real values and PPPs for agriculture, and why these methods are chosen.

The EKS method is used for calculating basic parities at the BH level. There is hardly any disagreement about which method should be used at the BH level: the EKS or the CPD method. Our choice of EKS is rather a pragmatic one: we spent some time during our research at Eurostat and EKS is the customary method Eurostat uses for this part of the calculation.

At the aggregation level we applied the EKS aggregation procedure. This is contrary to the habits of the ICP, which used the GK method until now. However, considering the discussion about the GK method and the expected rejection of the use of this method in future calculations of the ICP, we thought it better to fall in with current thinking and use a method that is less controversial. We used the EKS aggregation procedure as this is less time-consuming than the IP method. It must be noted that IP figures differ hardly at all from EKS figures.

Having explained our choice of method, we can now turn to the actual calculation. This chapter consists of five sections, the second of which is devoted to the definition of BHs for agriculture, and the third to a description of the data. The fourth section is divided into a number of subsections, in which the different steps in the calculation process are described. In the final section attention is paid to some related studies.

3.2 Classification of agricultural output and intermediate consumption in BHs

A number of conditions must be satisfied for defining a BH, (see section 2.4):

(1) there must be a value for each BH in each country
(2) there must be a price for a representative product within each BH for each country
(3) the selected products within the BHs must have an equal degree of characteristicity for all the countries
(4) each country must have at least one price for a product for which there is also a price in another country

With this list of criteria in mind, we arrived at the following classification of BHs:

A. *OUTPUT*

CROP PRODUCTS

(1) wheat
(2) barley
(3) other cereals (rye, oats, maize, rice)
(4) potatoes
(5) sugar beet
(6) pulses
(7) fruit
(8) cauliflowers
(9) tomatoes
(10) other fresh vegetables
(11) flowers
(12) other crop products (wine, olive oil, rape, tobacco, hops) 1)

ANIMALS AND ANIMAL PRODUCTS

(13) cattle
(14) pigs
(15) sheep and goats
(16) poultry
(17) milk
(18) eggs

B. *INTERMEDIATE CONSUMPTION*

(19) fertilizers
(20) feedingstuffs
(21) energy and lubricants

Appendix 2 gives an overview of which products belongs to each BH.

The total value of the BHs is less than the value of both output and intermediate consumption, as some products are not included in the BHs. The coverage of value of output/intermediate consumption by the BHs is shown in table 3.1. Coverage by the BHs is less for input than that for output. The reason is that the following input items are not included in the list of BHs: plant protection products, materials and small tools (maintenance and repairs), services and other intermediate consumption. The problem is that prices are not available for these items, as they include products which are too heterogeneous. We assume that price ratios of covered output and input are representative for the price ratios of all products in output and input.

Probably the only BH that conflicts with the criteria is the BH "other crop products", which consists of a broad group of products. Wine is produced in only seven EC countries; in the

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1) It is not unusual to define the BH "other crop products" in this way; Goossens has done the same in his study.

Table 3.1 Covered output/intermediate consumption by BHs (in %)

	FR Germany	France	Italy	Nether-lands	Belgium	United Kingdom	Ireland	Denmark	Greece	Spain	EUR9/10 *)
1975											
Total output	96.27	95.50	97.10	96.80	97.30	97.08	97.33	94.42	96.93		96.38
Crop output	89.07	9.54	98.61	92.40	93.91	95.19	91.10	87.18	97.14		95.19
Animal output	99.30	9.47	94.76	98.95	99.01	98.07	98.58	96.93	96.40		97.26
Intermediate consumption	66.20	58.95	79.23	77.11	74.29	66.63	76.86	68.40	62.81		67.84
1980											
Total output	95.50	95.88	96.08	96.47	96.30	97.28	97.30	94.60	97.06	95.22	96.02
Crop output	87.09	9.80	97.10	91.96	91.24	95.85	92.88	90.81	97.20	96.20	94.93
Animal output	99.27	96.17	93.30	98.78	98.83	98.07	98.22	95.96	96.66	93.96	96.93
Intermediate consumption	67.72	59.44	80.20	78.90	71.20	68.00	74.88	73.19	64.30	69.58	68.86
1985											
Total output	96.02	95.87	91.20	96.07	96.14	97.22	96.43	94.10	89.90	90.99	94.37
Crop output	89.48	95.61	89.91	91.03	92.30	95.79	89.94	92.60	86.82	88.53	91.64
Animal output	99.17	96.14	93.88	98.70	98.10	98.11	97.46	94.81	97.10	94.27	96.78
Intermediate consumption	64.60	57.33	79.63	77.60	66.96	65.08	73.23	69.07	62.40	70.84	67.07

*) EUR9 for 1975; EUR10 for 1980 and 1985.

rest of the countries there is neither a price nor a value for wine. So a separate BH for wine cannot be defined. But omitting wine from the list of BHs means that this list is less representative for the wine producing countries. That is why the BH "other crop products" includes olive oil and industrial crops, in order to contain prices and values for the non-wine producing countries as well.

This classification of BHs was made after Luxembourg and Portugal had been omitted for lack of data for too many items. The data problem for Luxembourg consists mainly of missing prices, while for Portugal both prices and values are lacking. Otherwise the BHs have to be added in to bigger groups. Data for Spain for 1975 are not reliable, so Spain is omitted for that year.

3.3 Description of the data

The data needed in this research are values for each BH and prices for products within a BH. Both values and prices are obtained from Eurostat agricultural statistics. A detailed description of these data is given below. Also some attention is paid to labour and land data.

3.3.1 Prices

Prices are obtained from agricultural price statistics stored in the PRAG domain of the CRONOS databank. Orginally, these data on prices are collected for spatial comparisons between the Member States and for calculating price indices. A comparison of prices is only possible when prices are recorded for products which are representative for the production structure of the countries, and which are more of less identical. To guarantee this comparability, Eurostat has drafted target definitions for the characteristics of the products for which prices are collected by the national statistical offices. Some Member States are not able to collect price series for certain products, as those products are not normally available in their markets.

In order to satisfy the characteristicity condition, it is assumed here that if a country has a price for a product, this product is representative for the production structure of that country. This implies that the Laspeyres and Paasche type price indices between each pair of countries are identical. Hence the resulting Fisher type index between each pair of countries has the following form:

$$F_{jk} = \left[\prod_{g=1}^{G} p_{gj} / p_{gk} \right]_{h}^{1/G}$$

in which:

F_{jk} = Fisher type index between countries j and k for BH h

p_{gj} = price in country j of g^{th} commodity of BH h, which is representative in both countries j and k, g = 1 ... G

All prices are measured at the level at which they contribute directly to farmers' income. So selling prices of agricultural products are recorded at the first marketing stage, and purchasers' prices of the means of agricultural production at the last marketing stage when the product arrives at the farm. As prices must be representative of what the farmer actually receives or pays, taxes and subsidies linked to production must be taken into account. Taxes that reduce farmers' return (such as coresponsibility levies) are deducted from the selling price. Subsidies directly linked to production are added to the selling price. For purchasers' prices the opposite applies. Both prices are exclusive of value added tax (VAT) (Eurostat, 1988:6-18).

3.3.2 Values

Eurostat has two series of values for output and intermediate consumption: COSA and PRAG. COSA values are published in the EAA, while PRAG values are used as a weighting scheme for calculating EC price indices. Both values are measured exclusive of VAT. The main differences between the two series are the coverage of products and the prices against which volumes are valued.

COSA values cover a larger range of products than PRAG values, as COSA values reflect total final output. PRAG values consist of sales by the agricultural sector and do not make allowance for own consumption, processing by producers and changes in stocks.

COSA output values are based on ex-farm prices. This is the manufacturing cost price plus the producer's profit, plus taxes (other than VAT) paid by the producer on the products, such as coresponsibility levies, less subsidies received (Eurostat, 1987b:66-67). PRAG output values are measured at selling prices, which are exclusive of taxes and inclusive of subsidies linked to the product. PRAG values for intermediate consumption are measured in the same way as COSA, i.e. purchasers' prices inclusive of taxes (other than VAT) and exclusive of subsidies. However, subsidies directly paid to the farmer are not deducted from COSA purchasers' prices. COSA volumes are valued at the unit values of products entering the market in a reference year. The price for a product in PRAG is the average price for all units of that product recorded at the market in a reference year. See appendix A for a schematic representation of prices in COSA and PRAG.

Although PRAG values for output correspond better to the prices used, we do not use them for the following reasons. COSA values reflect final agricultural output, while PRAG values are limited to sales by the agricultural sector. PRAG values are not available for 1985. For this year we are obliged to use COSA values. As it is confusing to use two different sets of values for the various benchmark years, we opted for using COSA values. Moreover, COSA values exist for more items than PRAG values. So

the advantages of using COSA values compensate for the disadvantage of a distortion in used prices and values.

3.3.3 Labour and land

Data on labour and land, which are used for calculating indices of factor productivity, are derived from Eurostat sources. Although we are acquainted with the shortcomings of these data, no adjustments have been made. This can be justified by the fact that in this research the main accent is on the calculation of real values of output and GVA, in which no labour and land data are used. Labour is measured in annual work units (AWU) 1); land in hectares of agricultural area used (Eurostat, 1987a:216-217).

3.4 The calculation process

The calculation has been done with *APL* (A Programming Language). Real values and PPPs for output and intermediate consumption are calculated separately. The program is simply repeated six times. The calculation process can be broken down into several steps. Each step is described in a separate subsection.

3.4.1 Matrix with parities

The program is written in such a way that the results of the first phase (parities for BHs) and of the second phase (parities for the aggregate) are given in the same matrix with countries in columns and the aggregate and BHs in rows. Each element (i,k) of this matrix represents a parity between the currency of country k and the currency of FR Germany, the mark (DM), for BH i. The first line of the matrix consists of parities for total output/ intermediate consumption. Matrices are shown in appendix 8, tables A8.1-A8.6.

All parities in the matrix are expressed with regard to the DM, whichacts here as a standard of reference. This implies that the columns with parities for Germany consist only of ones. The choice of the DM as standard of reference is arbitrary. As all parities are transitive, we can for example divide the matrix by the column with parities of the French franc (FF) against the DM, and obtain a matrix in which all parities are expressed with regards to the FF, as follows:

$$(p_j / p_D) / (p_F / p_D) = p_j / p_F$$

---

1) An annual work unit (AWU) is defined as being equivalent to the labour input (in terms of working time) of a person employed full time for agricultural work on the holding (Eurostat, 1989a:73).

in which:

p_j / p_D = purchasing power parity in currency of country j with regard to the DM

p_F / p_D = purchasing power parity in FF with regard to the DM

p_j / p_F = purchasing power parity in currency of country j with regard to the FF

3.4.2 Matrix with real values in DM

Values in national currency for the aggregate and all BHs of all countries are placed in a matrix, which has the same size as the matrix with the parities. The matrix with values in national currency is divided by the matrix with parities. The result is a matrix with real values, expressed in what we call here real DM. Each element (i,k) of this matrix can be represented as follows:

$$\frac{p_{ik}q_{ik}}{p_{ik} / p_{iD}} = p_{iD}q_{ik}$$

in which:

$p_{ik}q_{ik}$ = value of BH i in national currency of country k

p_{ik}/p_{iD} = purchasing power parity for BH i in currency of country k with regard to the DM

$p_{iD}q_{ik}$ = real value of BH i in country k expressed in real DM

3.4.3 The choice of a standard of reference

As the choice of a standard of reference is arbitrary, we will also show what happens when the matrix of values in national currency is divided by a matrix in which all parities are expressed with regard to the FF. Each element (i,m) of this matrix is defined as:

$$\frac{p_{im}q_{im}}{p_{im} / p_{iF}} = p_{iF}q_{im}$$

in which:

$p_{im}q_{im}$ = value of BH i in national currency of country m

p_{im}/p_{iF} = purchasing power parity for BH i in currency of country m with regard to the FF

$p_{iF}q_{im}$ = real value of BH i in country m expressed in real FF

This operation has no consequences for the volume ratios of BHs or aggregates between each pair of countries. Suppose:

$\frac{p_{iD}q_{ik}}{p_{iD}q_{im}}$ is the volume ratio in real values expressed in real DM between country k and country m for BH i

and

$\frac{p_{iF}q_{ik}}{p_{iF}q_{im}}$ is the volume ratio in real values expressed in real FF between country k and country m for BH i

It will readily be seen that the two volume ratios, whether expressed in real DM or real FF, are equal. Only the absolute size of the real value is affected: the real value of BH i expressed in real DM differs with a fixed scalar x for all countries from the real values in real FF, as follows:

$$p_{iD}q_{ik} = x_i p_{iF}q_{ik} \quad \text{for all } k$$

in which:

k = country, k = 1 ... M

It can be concluded that a standard of reference is not a fixed unit. It can be chosen at will. The standard of reference influences only the absolute size of real values, not the volume ratios.

3.4.4 Matrices with real values in AS and PPS

As all real values are expressed in the same unit, we can add them over rows to obtain the total real value for EUR9/10 for the aggregate and each BH. We construct a vector with ratios of total real values for EUR9/10 and total values in ECU for the aggregate and each BH. An element of this vector V represents:

$$V_i = \left[\left(\sum_{k=1}^{M} p_{iD}q_{ik} \right) / \left(\sum_{k=1}^{M} (p_{ik}q_{ik} / R_{k\ ECU}) \right) \right]$$

in which:

$\sum_{k=1}^{M} p_{iD}q_{ik}$ = total real value for EUR9/10 for BH i

$R_{k\ ECU}$ = official exchange rate between currency of country k and the ECU

The matrix with real values in real DM is divided by this vector. As all elements of each line are divided by the same scalar, volume ratios in this new matrix remain unchanged. This matrix is our final matrix with real values for the aggregate and BHs. These real values are expressed in a standard of reference called the agricultural standard (AS). The advantage of this calculation with vector V is that values in ECU can be compared with values in AS, as the total values for EUR9/10 in both ECU and AS are now equal.

Next a matrix with values for the aggregate and BHs expressed in PPS of GNE is constructed. The matrix with values in national currencies is converted into values in PPS by using the conversion rate between the currency and the PPS calculated by ICP for each country.

3.4.5 Price indices

The price level index is defined as the ratio of the conversion rate between the national currency and the AS, and the offi-

cial exchange rate with the ECU. For the aggregate and each BH such indices can be calculated, although we focus only on price level indices of aggregates in the discussion of the results in the next chapter. The conversion rate between the national currency and the AS for the aggregate and each BH i can be derived as:

$$R_{ik\ AS} = \frac{p_{ik}q_{ik}}{(1/v_i)^* \ p_{iD}q_{ik}}$$

in which

v_i = i^{th} element of vector V

The price level index in AS (EUR9/10 = 100) can be written now as:

$$[\ R_{jk\ AS} / R_{k\ ECU}\ ] * 100 * \frac{\sum_{k=1}^{M}\sum_{i=1}^{N}(1/v_i)^* \ p_{iD}q_{ik}}{\sum_{k=1}^{M}\sum_{i=1}^{N} p_{ik}q_{ik} / R_{k\ ECU}}$$

and that in PPS (EUR9/10 = 100) as:

$$[\ R_{jk\ PPS} / R_{k\ ECU}\ ] * 100 * \frac{\text{total value of GNE in EUR9/10 in PPS}}{\text{total value of GNE in EUR9/10 in ECU}}$$

3.4.6 GVA

Real values for GVA can be obtained by deducting real values of intermediate consumption from real values of output. However, the standard of reference of output and the standard of reference of intermediate consumption do not have the same value in national currency. We mention therefore the AS in which real values for output are expressed ASO (agricultural standard for output), and the AS for intermediate consumption ASI (agricultural standard for intermediate consumption). The denominator problem can be solved by expressing values of output and intermediate consumption in the same units, ASO or ASI, so that intermediate consumption can be deducted from output. It does not matter which unit is chosen: volume ratios remain unchanged, only the absolute size of the real values changes. In our calculation intermediate consumption is expressed in ASO by dividing the matrix with values for intermediate consumption in real DM by vector V for output.

GVA in PPS is the difference of output and intermediate consumption in PPS.

3.4.7 Indices of labour and land productivity

Finally volume indices of labour and land productivity are calculated. Labour productivity in each country can be obtained by dividing GVA of that country by the agricultural labour force.

Labour productivity in EUR9/10, the average labour productivity in the Community, can be obtained by dividing total GVA in EUR9/10 by the total agricultural labour force of all member countries. Volume indices in each country can be derived by dividing the labour productivity of each country by the labour productivity of EUR9/10, as follows:

$$VI_{labour} = \frac{[\ GVA_j\ /\ \sum_{j=1}^{M} GVA_j\ ]}{ALF_j\ \ \ \sum_{j=1}^{M} ALF_j} * 100$$

in which:

ALF_j = agricultural labour force in country j, j = 1 ... M

In the same way a volume index of land productivity has been derived:

$$VI_{land} = \frac{[\ GVA_j\ /\ \sum_{j=1}^{M} GVA_j\ ]}{LAND_j\ \ \ \sum_{j=1}^{M} LAND_j} * 100$$

in which:

$LAND_j$ = agricultural area used in country j, j = 1 ... M

3.5 Some related studies

Recently some other multilateral comparisons in agriculture have been carried out by Van Ooststroom and Maddison (1984), FAO (1986) and Goossens (1986). We will discuss these briefly.

In their study *An international comparison of levels of real output and productivity in agriculture in 1975*, based on FAO data, Van Ooststroom and Maddison revalue the agricultural output and input of 14 countries (Argentina, Brazil, China, India, Indonesia, Korea, Mexico, Thailand, France, FR Germany, Japan, the Netherlands, the UK and the USA) in US prices. The value of each commodity produced in a country is expressed in dollars by multiplicating the quantity of that product and the US price of that product. In the same way feed and seed input is revalued. An agricultural PPP between each country and the US is calculated by dividing output valued at the country's own prices by the same output valued at US prices.

In the FAO paper *Inter-country comparisons of agricultural production aggregates* a comparison between the agricultural sectors of 95 (both developed and developing) countries is presented for the years 1970, 1975 and 1980. The FAO applies the GK method for obtaining PPPs and real values. The first phase of the calculation, in which basic parities are calculated, is omitted. This was possible because the FAO used data for prices and quantities

of commodities at a reasonably aggregated level. Originally, these data were collected for the calculation of production index numbers. A commodity is comparable with a BH. Another striking difference is that the FAO does not apply the strict criterion that a BH or a commodity can be only used in the comparison when it contains at least one representative item for each country and has a value for each country. If a country does not produce items of a certain commodity, that commodity gets a zero weight in the calculation.

The FAO gives real values for total agricultural production and final output (i.e. total production minus feed and seed input). Figures for land and labour productivity are not based on GVA but on final output, because of lack of data on non-agricultural input, although an attemption is made to estimate that input. An interesting phenomen of the FAO study is that by making comparisons for three years, it is possible to plot the development of PPPs, international prices, output and productivity.

Goossens' study *La comparaison en valeurs réelles de la production finale de l'agriculture 1984* is, in contrast to the above two studies, based on Eurostat data. His study comprises the then ten EC countries (FR Germany, France, Italy, the Netherlands, Belgium, Luxembourg, the United Kingdom, Ireland, Denmark and Greece). It acted as a guide for our study, especially in terms of the definition of BHs and the choice of methods for calculating PPPs and real values. This explains why our study looks very close to Goossens' study. We applied the same method as Goossens did, and our list of BHs differs only slightly from his. The main difference between Goossens' and our study is that the Goossens study is only concerned with the output side of agricultural production. Goossens revalues agricultural final output, expressed in ECU, into real ECU or Agricultural Standards (i.e. PPS for agriculture). He also gives an indication and an explanation of the agricultural price level of each Member State vis-à-vis the whole Community.

4. Results

4.1 Introduction

In this chapter the findings of our calculation are presented and discussed. A summary of the results is given in tables 4.1-4.3, while an extended overview of the results is presented in appendix 9. As this study is concerned with differences between the official exchange rate, ASO, ASI and the PPS as convertors of data in national currency, we will not search for underlying agricultural symptoms to explain some aspects of the data. Firstly we focus on the exchange rate deviation index, which is an indicator of differences between ASO, ASI or PPS and the official exchange rate, and on real values for agricultural final output, intermediate consumption and GVA. Next price level indices are analysed. Finally some attention is paid to land and labour productivity volume indices.

4.2 A comparison of PPS, ASO, ASI and the official exchange rate

The difference between the PPP of an aggregate and the official exchange rate can be described by the exchange rate deviation index, which is the ratio of the PPP of an aggregate to the exchange rate. We calculated these indices for ASO, ASI and PPS. These are presented in figures 4.1-4.3. Each bar in this graph reflects the percentage deviation of the specific PPP from the official exchange rate. When the bar is above the X-axis, the official exchange rate can be said to be overestimated with regard to the PPP. When the bar lies below the X-axis, the official exchange rate is underestimated with regard to the PPP.

In all years PPPs based on GNE are consistently lower than the official exchange rate in Italy, the United Kingdom, Ireland, Greece and Spain, and are consistently higher in Denmark. The PPS in FR Germany, France, Belgium and the Netherlands shows a movement from a positive deviation from the official exchange rate in 1975 towards a negative deviation in 1985. It is remarkably that the PPS in 1985 has a negative deviation from the official exchange rate in all countries except for Denmark 1).

It can be seen in the graph that there are sizeable differences between the deviation indices of PPS, ASO and ASI, and that deviations of PPS, ASO and ASI from the official exchange rate

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1) This can be explained by the fact that PPS are multiplied with a scalar less than one by Eurostat (Eurostat, 1989b:8-9).

are sometimes in an opposite direction. ASO is always higher than the official exchange rate in FR Germany and Italy, and always lower in the United Kingdom and Spain. ASI is consistently higher than the official exchange rate in France, the Netherlands, Belgium and Ireland and lower in Denmark, Greece and Spain. Deviations of ASO and ASI from the official exchange rate are relatively small in France, the Netherlands and Belgium. In the United Kingdom, Denmark, Greece and Spain negative deviations of ASO from the official exchange rate in 1975 tend to be less negative or even positive. The same applies for ASI in Italy, the United Kingdom and Spain. In FR Germany positive deviations of ASO and ASI are decreasing.

It is striking that only in two countries, Belgium and Spain, deviations of ASO and ASI from the official exchange rate consistently are in the same direction. Above that, differences between deviations of ASO and ASI tends to be quite high. There is a trend of decreasing deviations of ASO from the official exchange rate.

The quite sizeable differences between PPS and ASO/ASI confirm our expectation that the PPP based on GNE is not a suitable convertor of values of agricultural output and intermediate consumption in international comparisons of real production. Deviations of ASO and ASI demonstrate the difference in price ratios for agricultural output and intermediate consumption and justify our decision to calculate two separate PPPs for agriculture.

4.3 Real values for output, intermediate consumption and GVA

Values of agricultural output and intermediate consumption in national currency are converted into real values by using ASO, ASI and PPS. These real values differ from values in ECU proportionally to the appropriate exchange rate deviation index. It should be noted that when the deviation of the PPP from the official exchange rate is positive (i.e. bar above the X-axis), real values are lower than values in ECU. Real values are higher than values in ECU when the deviation of the PPP from the official exchange rate is negative.

Converting values in national currency into real values can have consequences for the sequence in magnitude of countries' shares in total EC output and intermediate consumption. In all years France is the major producer of final agricultural output in the EC, followed by Italy and FR Germany, when shares are expressed in ECU or ASO. However, when data are given in PPS, Italy is the biggest producer in 1975 and 1980, and Spain is the third producer in 1980 and 1985. In all cases France and FR Germany are the two biggest users of intermediate consumption. When values are expressed in ECU, the United Kingdom is the third consumer in the EC, but Italy takes the third place when values are expressed in ASI in 1980 and 1985, and also when values are expressed in PPS in 1985.

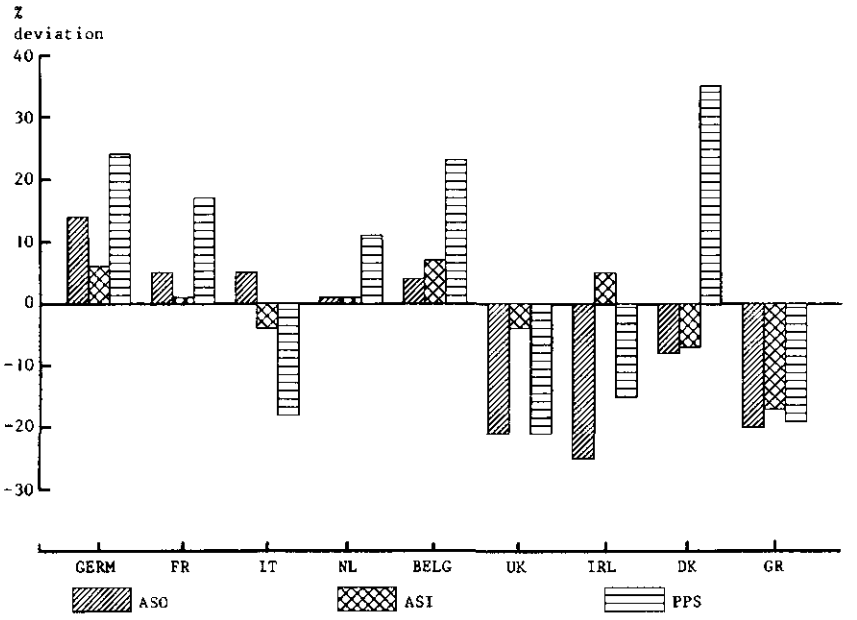

Figure 4.1 Exchange rate deviation index in 1975

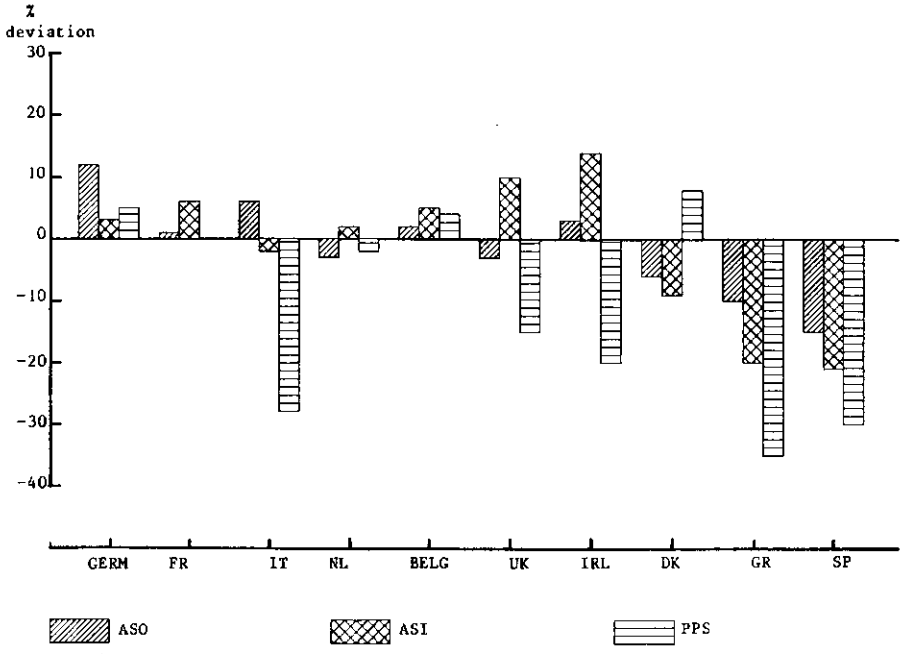

Figure 4.2 Exchange rate deviation index in 1980

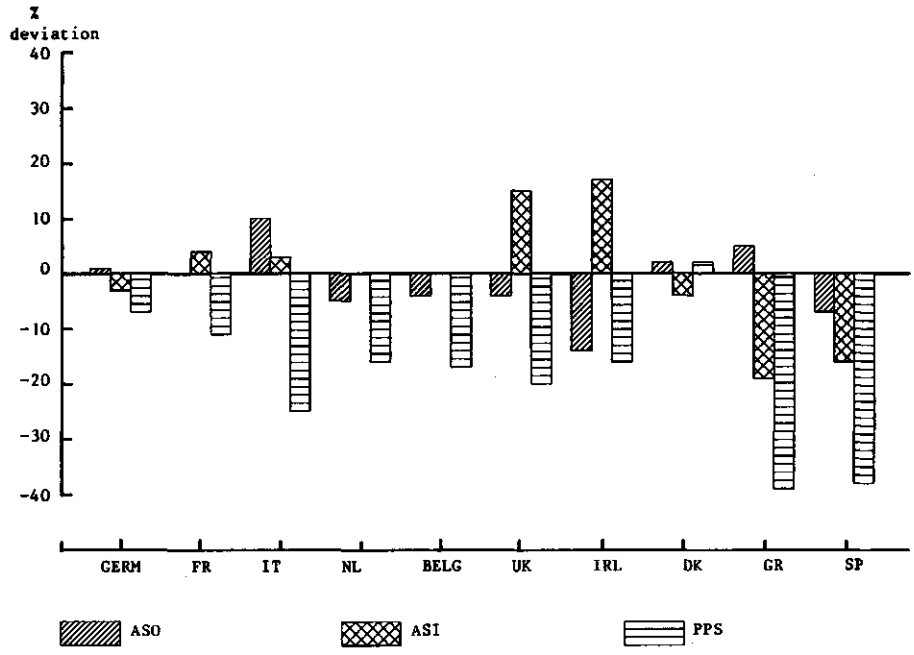

Figure 4.3 Exchange rate deviation index in 1985

In order to obtain GVA in agricultural standards we have to express output and intermediate consumption in the same standard of reference. We converted values of intermediate consumption in ASI into values in ASO (see section 3.4.6). Differences between values in GVA in ASO and in ECU are now determined by two PPPs: that of output and that of intermediate consumption. We are able to calculate an implicit PPP for GVA as the ratio of values of GVA in national currency to values in ASO. Such an implicit PPP can be used as a deflator of values of GVA in national currency. However, we do not give this implicit PPP for GVA to prevent it being interpreted as a PPP based on price ratios of GVA.

GVA in ASO is consistently higher than GVA in ECU in the Netherlands, Belgium, the United Kingdom and Ireland, and lower in FR Germany and Italy in the three benchmark years. A noteable feature is the large increase of GVA in ASO with regards to GVA in ECU in the United Kingdom in all years and in Ireland in 1975 and 1985. GVA in ASO is well down with regard to values in ECU in Italy, and to a lesser extent in FR Germany.

GVA in PPS, which is the difference between output in PPS and intermediate consumption in PPS, deviates proportionally to the exchange rate deviation index from GVA in ECU. For all years GVA is biggest in France when values are expressed in ASO and biggest in Italy when values are given in PPS.

4.4 Price level indices

The relation between prices in a Member State and prices in the Community can be described by the price level index. If a price level index of an aggregate in a given country exceeds 100, this means that the price of that aggregate is higher than the average price of that aggregate in the Community. The opposite applies if the price level index is less than 100. Since the price level index is expressed in relation to the Community average, the index enables direct comparisons to be made between price levels in different countries. Price level indices for output and input equal 100 plus the nominal rate of protection.

Price level indices in ASO, ASI and PPS differ as these are based on prices of different items. The price level index in ASO refers to items of agricultural output, and that in ASI to items of intermediate consumption. The price level index in PPS reflects prices of all national expenditures. It should be noted that prices of agricultural items are measured exclusive of VAT, whereas prices of expenditures are inclusive of VAT. In our research total EC output expressed in ECU equals total EC output in ASO, and total intermediate consumption expressed in ECU equals total EC intermediate consumption in ASI. This implies that price level indices in ASO or ASI equal 100 plus the appropriate exchange rate deviation index (see section 3.4.5 for definition of price index). So price level indices in ASO or ASI also indicate the difference between real values and values in ECU. When the price level index exceeds 100, values in ASO or ASI are less than values in ECU, and vice versa.

The group of EC countries can be divided into a group of the original founder members of the EC in 1958 (FR Germany, France, Italy, the Netherlands and Belgium), and a group of countries who joined the EC later (the United Kingdom, Ireland, Denmark, Greece and Spain). The first group of countries have price level indices in ASO and ASI above the Community average in 1975 (except for that in ASI in Italy), while the price level indices in ASO and ASI of the latecomers are below the Community average in 1975 (except for Ireland).

In the course of the years 1975-1985 price level indices in ASO have tended to converge towards the Community average. FR Germany and France are approaching the Community average from a higher price level index, while in the Netherlands and Belgium price level indices are decreasing from a point just above the Community average to a point just below it. In the group of latecomers there is a trend towards the Community average from a relatively low level, although price level indices in 1985 in Denmark and Greece are slightly above the Community average. In Ireland there is a damping oscillation from a very low price level index to a level above the Community average, and afterwards back to a less low price level index. Italy does not fit into this pattern of convergence towards the Community average:

its price level index is increasing and diverging from the average.

Price level indices in ASI in 1975 are closer to the Community average than in 1980 and 1985, when they tended to fluctuate in a wider, almost constant range. Price level indices in ASI in 1975 are at most 7% away from the Community average when Greece is not taken into account. Price level indices in ASI remain close to the Community average in FR Germany, France, Italy, the Netherlands, Belgium and Denmark. In the United Kingdom and Ireland indices in ASI diverge from the Community average towards a relatively high level. Greece and Spain have fairly low price level indices in ASI. The level in Greece remains persistently low, while that in Spain shows an upward movement. There are quite sizeable differences between price level indices in ASO and ASI in the United Kingdom and Ireland, and to a lesser extent in Greece and Spain, due to the fact that these countries are latecomers into the EC.

Price level indices in PPS in FR Germany, France, the Netherlands, Belgium and Denmark are consistently above the Community average, while those in Italy, Greece and Spain are consistently lower. In the United Kingdom and Ireland price level indices in 1975 are below the Community average, moving up to a point near the Community average in 1985. In all years price level indices in PPS are higher than indices in ASO or ASI in FR Germany, France, the Netherlands, Belgium and Denmark, and lower in Italy, the United Kingdom, Greece and Spain. The position of price level indices in PPS in Ireland with regard to the price level indices in ASO or ASI is less clear. Deviations of price level indices in PPS are generally higher than those in ASO or ASI for the following reason. ASO and ASI are based on price ratios of agricultural products, which are closer to each other than price ratios of all expenditure items, on which PPS is based.

The implicit price index, which can be obtained by using the implicit PPP for GVA, equals 100 plus the effective rate of protection. The distinction between the original Member States and countries which joined later can also be made with regard to the price index in ASO for GVA. Price indices in the five original member countries are close to the Community average, of which those of FR Germany and Italy are consistently higher than for France, the Netherlands and Belgium. Price indices in 1975 are rather low in the group of latecomers, but they tend to converge to the Community average. In Denmark, Greece and Spain price indices even overshoot the Community average. The indices are consistently less than 100 in the Netherlands, Belgium, the United Kingdom and Ireland. This negative rate of protection is caused by a combination of a price level index in ASO for output and an index in ASI for intermediate consumption, in which the former is lower than the latter. It is a striking fact that the price index for GVA in the United Kingdom and Ireland remains persistently low.

Table 4.1 Main results of the comparison: 1975 (currency units in MIO)

	Germany	France	Italy	Netherl.	Belgium	U.K.	Ireland	Denmark	Greece	EUR9 (a)
EXCHANGE RATE										
1 ECU = .. nat. currency	3.05	5.32	809.52	3.13	45.57	0.56	0.56	7.12	40.00	
PURCHASING POWER PARITIES										
1 ASO = .. nat. currency	3.47	5.58	851.20	3.17	47.31	0.44	0.42	6.58	31.96	
1 ASI = .. nat. currency	3.22	5.39	778.35	3.17	48.68	0.54	0.59	6.59	33.02	
1 PPS = .. nat. currency	3.79	6.22	661.00	3.49	56.20	0.45	0.47	9.61	32.50	
FINAL AGRICULTURAL OUTPUT										
in national currency	45577	113669	13029270	18551	137257	4671	865	20912	133838	
in ECU	14946	21369	16095	5918	3012	8341	1545	2936	3346	77508
in ASO	13123	20367	15307	5859	2901	10520	2069	3176	4188	77508
in PPS	12026	18275	19711	5315	2442	10497	1825	2176	4118	76385
RELATIVE SHARES IN FINAL AGRICULTURAL OUTPUT										
in ECU	19.28	27.57	20.77	7.64	3.89	10.76	1.99	3.79	4.32	100
in ASO	16.93	26.28	19.75	7.56	3.74	13.57	2.67	4.10	5.40	100
in PPS	15.74	23.92	25.81	6.96	3.20	13.74	2.39	2.85	5.39	100
PRICE LEVEL INDEX FINAL AGRICULTURAL OUTPUT										
in ASO	114	105	105	101	104	79	75	92	80	100
in PPS	120	113	79	108	119	77	82	131	79	100
INTERMEDIATE CONSUMPTION										
in national currency	20860	42880	3346900	9000	75642	2551	280	10941	28361	
in ECU	6841	8061	4134	2871	1660	4555	499	1536	709	30867
in ASI	6482	7950	4300	2843	1554	4742	478	1659	859	30867
in PPS	5504	6894	5063	2579	1346	5733	591	1139	873	29720
RELATIVE SHARES IN INTERMEDIATE CONSUMPTION										
in ECU	22.16	26.12	13.39	9.30	5.38	14.76	1.62	4.98	2.30	100
in ASI	21.00	25.76	13.93	9.21	5.03	15.36	1.55	5.37	2.78	100
in PPS	18.52	23.20	17.04	8.68	4.53	19.29	1.99	3.83	2.94	100

Table 4.1 (continued)

	Germany	France	Italy	Netherl.	Belgium	U.K.	Ireland	Denmark	Greece	EUR9 (a)
PRICE LEVEL INDEX INTERMEDIATE CONSUMPTION										
in ASI	106	101	96	101	107	96	105	93	83	100
in PPS	120	113	79	108	119	77	82	131	79	100
GROSS VALUE ADDED										
in national currency	24717	70789	9682370	9551	61615	2120	585	9971	105477	
in ECU	8106	13308	11960	3047	1352	3786	1045	1400	2637	46641
in ASO	6787	12398	10798	3075	1393	5842	1551	1563	3235	46641
in PPS	6522	11381	14648	2737	1096	4764	1234	1038	3245	46665
RELATIVE SHARES IN GROSS VALUE ADDED										
in ECU	17.38	28.53	25.64	6.53	2.90	8.12	2.24	3.00	5.65	100
in ASO	14.55	26.58	23.15	6.59	2.99	12.53	3.33	3.35	6.94	100
in PPS	13.98	24.39	31.39	5.86	2.35	10.21	2.64	2.22	6.95	100
IMPLICIT PRICE LEVEL INDEX GROSS VALUE ADDED										
in ASO	119	107	111	99	97	65	67	90	82	100
in PPS	120	113	79	108	119	77	82	131	79	100
VOLUME INDEX LABOUR PRODUCTIVITY										
in ECU	118	122	76	215	174	108	58	142	57	100
in ASO	99	114	68	217	179	167	86	158	70	100
in PPS	95	105	93	193	141	136	68	105	70	100
VOLUME INDEX LAND PRODUCTIVITY										
in ECU	126	87	140	281	177	44	40	91	151	100
in ASO	105	81	126	284	183	68	59	101	185	100
in PPS	101	74	171	252	144	56	47	67	185	100

a) EUR9 here in the meaning of the above nine countries; not to be confused with the concept of EUR9 used by Eurostat.
For notes and sources see appendices 3-9.

Table 4.2 Main results of the comparison: 1980 (currency units in MIO)

	Germany	France	Italy	Netherl.	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10(a)
EXCHANGE RATE											
1 ECU = .. nat. currency	2.52	5.87	1189.21	2.76	40.60	0.60	0.68	7.83	59.33	99.70	
PURCHASING POWER PARITIES											
1 ASO = .. nat. currency	2.82	5.94	1256.59	2.68	41.57	0.58	0.70	7.37	53.47	84.76	
1 ASI = .. nat. currency	2.61	6.20	1160.06	2.82	42.59	0.66	0.77	7.14	47.54	78.90	
1 PPS = .. nat. currency	2.66	5.87	851.00	2.70	42.30	0.51	0.54	8.44	38.40	69.80	
FINAL AGRICULTURAL OUTPUT											
in national currency	54916	189352	29781280	25818	170035	8661	1711	34897	323629	1479584	
in ECU	21756	32263	25043	9354	4188	14471	2531	4458	5455	14840	134359
in ASO	19469	31869	23700	9650	4090	14886	2450	4737	6052	17457	134359
in PPS	20645	32258	34996	9562	4020	16949	3180	4135	8428	21197	~~134725~~ (55370
RELATIVE SHARES IN FINAL AGRICULTURAL OUTPUT											
in ECU	16.19	24.01	18.64	6.96	3.12	10.77	1.88	3.32	4.06	11.05	100
in ASO	14.49	23.72	17.64	7.18	3.04	11.08	1.82	3.53	4.50	12.99	100
in PPS	~~15.32~~	~~23.94~~	~~25.98~~	~~7.10~~	~~2.98~~	~~12.58~~	~~2.36~~	~~3.07~~	~~6.26~~	~~15.73~~	100
	13.29	21.29	19.78	7.16	2.86	10.78	1.99	2.96	5.89	14.85	
PRICE LEVEL INDEX FINAL AGRICULTURAL OUTPUT											
in ASO	112	101	106	97	102	97	103	94	90	85	100
in PPS	117	111	79	109	116	95	88	120	72	78	100
INTERMEDIATE CONSUMPTION											
in national currency	30716	84265	8477700	14503	97962	4799	760	19453	73304	567994	
in ECU	12169	14358	7129	5254	2413	8019	1124	2485	1236	5697	59883
in ASI	11777	13586	7308	5152	2300	7306	988	2725	1542	7199	59883
in PPS	11547	14355	9962	5371	2316	9391	1413	2305	1909	8137	~~55160~~ 66707
RELATIVE SHARES IN INTERMEDIATE CONSUMPTION											
in ECU	20.32	23.98	11.90	8.77	4.03	13.39	1.88	4.15	2.06	9.51	100
in ASI	19.67	22.69	12.20	8.60	3.84	12.20	1.65	4.55	2.58	12.02	100
in PPS	~~20.93~~	~~26.02~~	~~18.06~~	~~9.74~~	~~4.20~~	~~17.03~~	~~2.56~~	~~4.18~~	~~3.46~~	~~14.75~~	100
	17.31	21.52	14.93	8.05	3.47	14.08	2.12	3.46	2.86	12.20	

Table 4.2 (continued)

	Germany	France	Italy	Netherl.	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10(a)
PRICE LEVEL INDEX INTERMEDIATE CONSUMPTION											
in ASI	103	106	98	102	105	110	114	91	80	79	100
in PPS	117	111	79	109	116	95	88	120	72	78	100
GROSS VALUE ADDED											
in national currency	24200	105087	21303580	11315	72073	3862	951	15444	250325	911590	
in ECU	9587	17905	17914	4100	1775	6452	1407	1973	4219	9143	74476
in ASO	8089	18203	15975	4607	1851	7665	1449	2090	4362	10183	74476
in PPS	9098	17902	25034	4191	1704	7558	1768	1830	6519	13060	~~79565~~ 88662
RELATIVE SHARES IN GROSS VALUE ADDED											
in ECU	12.87	24.04	24.05	5.51	2.38	8.66	1.89	2.65	5.66	12.28	100
in ASO	10.86	24.44	21.45	6.19	2.49	10.29	1.95	2.81	5.86	13.67	100
in PPS	~~11.45~~ 10.26	~~22.50~~ 20.19	~~31.46~~ 28.23	~~5.27~~ 4.73	~~2.14~~ 1.92	~~9.50~~ 8.52	~~2.22~~ 1.99	~~2.30~~ 2.06	~~8.19~~ 7.33	~~16.41~~ 14.73	100
IMPLICIT PRICE LEVEL INDEX GROSS VALUE ADDED											
in ASO	119	98	112	89	96	84	97	94	97	90	100
in PPS	117	111	79	109	116	95	88	120	72	78	100
VOLUME INDEX LABOUR PRODUCTIVITY											
in ECU	107	114	98	199	168	130	53	135	60	75	100
in ASO	90	116	87	223	175	154	55	143	62	83	100
in PPS	85	96	114	171	136	128	56	105	78	90	100
VOLUME INDEX LAND PRODUCTIVITY											
in ECU	119	93	171	305	189	57	42	102	180	59	100
in ASO	100	94	153	343	198	68	44	109	186	66	100
in PPS	95	78	201	262	153	56	45	80	234	71	100

a) EUR10 here in the meaning of the above ten countries; not to be confused with the concept of EUR10 used by Eurostat. For notes and sources see appendices 3-9.

Table 4.3 Main results of the comparison: 1985 (currency units in MIO)

	Germany	France	Italy	Netherl.	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10(a)
EXCHANGE RATE											
1 ECU = .. nat. currency	2.23	6.80	1447.97	2.51	44.91	0.59	0.72	8.02	105.74	129.17	
PURCHASING POWER PARITIES											
1 ASO = .. nat. currency	2.25	6.78	1593.92	2.39	43.06	0.57	0.61	8.15	111.06	120.59	
1 ASI = .. nat. currency	2.16	7.10	1497.94	2.51	44.70	0.67	0.84	7.70	85.69	108.66	
1 PPS = .. nat. currency	2.07	6.06	1086.00	2.12	37.20	0.47	0.60	8.17	64.50	79.50	
FINAL AGRICULTURAL OUTPUT											
in national currency	59759	293450	48861690	34537	241809	11387	2731	53809	863934	2685388	
in ECU	26842	43186	33745	13754	5384	19333	3818	6710	8170	20790	181733
in ASO	26548	43275	30655	14456	5616	20088	4448	6601	7779	22268	181733
in PPS	28869	48424	44992	16291	6500	24074	4529	6586	13394	33778	~~198570~~ 227437
RELATIVE SHARES IN FINAL AGRICULTURAL OUTPUT											
in ECU	14.77	23.76	18.57	7.57	2.96	10.64	2.10	3.69	4.50	11.44	100
in ASO	14.61	23.81	16.87	7.95	3.09	11.05	2.45	3.63	4.28	12.25	100
in PPS	~~14.54~~ 12.69	~~24.39~~ 21.29	~~22.66~~ 19.78	~~8.20~~ 7.16	~~3.27~~ 2.86	~~12.12~~ 10.58	~~2.28~~ 1.99	~~3.32~~ 2.90	~~6.75~~ 5.84	~~17.01~~ 14.85	100
PRICE LEVEL INDEX FINAL AGRICULTURAL OUTPUT											
in ASO	101	100	110	95	96	96	86	102	105	93	100
in PPS	113	108	91	102	100	97	102	123	74	75	100
INTERMEDIATE CONSUMPTION											
in national currency	34072	132692	14521000	18011	141125	6489	1263	27513	200599	1205739	
in ECU	15304	19528	10028	7173	3142	11017	1766	3431	1897	9335	82621
in ASI	15767	18692	9694	7168	3157	9621	1512	3573	2341	11096	82621
in PPS	16460	21896	13371	8496	3794	13719	2095	3368	3110	15167	~~85014~~ 101474
RELATIVE SHARES IN INTERMEDIATE CONSUMPTION											
in ECU	18.52	23.64	12.14	8.68	3.80	13.33	2.14	4.15	2.30	11.30	100
in ASI	19.08	22.62	11.73	8.68	3.82	11.64	1.83	4.32	2.83	13.43	100
in PPS	~~19.36~~ 16.22	~~25.76~~ 21.58	~~15.73~~ 13.18	~~9.99~~ 8.37	~~4.46~~ 3.74	~~16.14~~ 13.52	~~2.46~~ 2.06	~~3.96~~ 3.32	~~3.66~~ 3.06	~~17.84~~ 14.95	100

Table 4.3 (continued)

	Germany	France	Italy	Netherl.	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10(a)
PRICE LEVEL INDEX											
INTERMEDIATE CONSUMPTION											
in ASI	97	104	103	100	100	115	117	96	81	84	100
in PPS	113	108	91	102	100	97	102	123	74	75	100
GROSS VALUE ADDED											
in national currency	25687	160758	34340690	16526	100684	4898	1468	26296	663335	1479649	
in ECU	11538	23658	23717	6581	2242	8316	2052	3279	6273	11455	99112
in ASO	11043	24513	20660	7330	2502	10501	2900	3069	5354	11241	99112
in PPS	12409	26528	31621	7795	2707	10355	2434	3219	10284	18612	~~113585~~ 125964
RELATIVE SHARES IN GROSS VALUE ADDED											
in ECU	11.64	23.87	23.93	6.64	2.26	8.39	2.07	3.31	6.33	11.56	100
in ASO	11.14	24.73	20.85	7.40	2.52	10.60	2.93	3.10	5.40	11.34	100
in PPS	~~10.93~~ 9.85	~~23.36~~ 21.06	~~27.85~~ 28.10	~~6.86~~ 6.19	~~2.38~~ 2.15	~~9.12~~ 8.22	~~2.14~~ 1.93	~~2.83~~ 2.56	~~9.06~~ 8.16	~~16.39~~ 14.78	100
IMPLICIT PRICE LEVEL INDEX GROSS VALUE ADDED											
in ASO	104	97	115	90	90	79	71	107	117	102	100
in PPS	113	108	91	102	100	97	102	123	74	75	100
VOLUME INDEX LABOUR PRODUCTIVITY											
in ECU	105	126	93	234	175	128	62	223	56	67	100
in ASO	100	130	81	261	195	161	88	209	48	65	100
in PPS	89	111	98	218	166	125	58	172	72	85	100
VOLUME INDEX LAND PRODUCTIVITY											
in ECU	109	94	171	366	183	56	46	130	172	55	100
in ASO	105	97	149	408	204	70	65	122	147	54	100
in PPS	93	83	180	341	174	55	43	101	221	70	100

a) EUR10 here in the meaning of the above ten countries; not to be confused with the concept of EUR10 used by Eurostat. For notes and sources see appendices 3-9.

4.5 Volume indices of labour productivity

A volume index of labour productivity has been calculated in order to compare the labour productivity between the Member States of the EC. This index is a ratio of GVA and the agricultural labour force measured in annual work units (AWU). It has been derived in such a way that the average labour productivity in the EC equals 100. So every time when the volume index for labour productivity in a Member State exceeds 100, this means that the labour productivity in that country is higher than the Community average. When the volume index is less than 100, this implies that labour productivity is lower than the Community average.

Labour productivity in the Netherlands is highest in all cases, followed by Belgium in 1975 and 1980, and by Denmark in 1985. With one exception (measured in PPS in France in 1980) labour productivity in France and the United Kingdom is also above the Community average. In Italy, Ireland, Greece and Spain it is consistently below the Community average (except for productivity in PPS in Italy in 1980). Labour productivity in FR Germany fluctuates within a narrow range around the Community average. There is a kind of wave in the figures for FR Germany, France, the Netherlands, Belgium, Ireland and Denmark with a crest in 1975 and 1985, and a trough in 1980. An inverted version of this wave exists for the index of labour productivity in Italy.

4.6 Volume indices of land productivity

A volume index of land productivity can be used for comparisons of GVA per hectare of agricultural area used (AA). This index is constructed in such a way that the average land productivity in the EC equals 100. It can have an upwards bias because intensive livestock raising uses no land, but also a downwards bias by the inclusion of waste land in AA.

The Netherlands has the highest land productivity in all cases (about three times the Community average), alternately followed by Belgium, Greece and Italy. The level of land productivity in France, the United Kingdom, Ireland and Spain is in all cases below the Community average. Land productivity in FR Germany, France and Denmark is relatively close to the community average. The range in which the index fluctuates round the Community average is much wider than for the volume index of labour productivity.

5. Assessment of this research project

5.1 Introduction

In this last chapter we will discuss the developments of the research project until now and give an assessment of the prospects for full-scale implementation. In the next two sections attention is paid to the methodology, the way in which methods have been applied to the agricultural sector, and problems with Eurostat data, which have mainly to do with missing prices and values. A number of suggestions are given for improving comparisons in the next phases of the research project. In the fourth and fifth section we turn to the next phases and make some remarks about annual updating of the results of the comparisons and about the addition of the USA, Canada, Australia and Japan to the group of EC countries. In the final section an overall assessment is given of the findings in the first phase of the research project and its future prospects.

5.2 Methodology

In this study we have used methods for estimating agricultural PPPs and real values that have been developed within the scope of the expenditure approach. These methods can be applied in a product-originating approach, as in both cases the same problem has to be solved: the calculation of a PPP that is used as a convertor of values in national currency. However, these PPPs are based on different baskets of goods. PPPs in an expenditure approach are based on price ratios of all expenditure items, while PPPs in a product-originating approach are based on price ratios of output and input of an economic sector or industry. Each of these baskets has its own specific shortcomings and possibilities, which should be taken into account in switching over from an expenditure approach to a product-originating approach. Adjustments have to be made especially in the scope of the definition of BHs.

We applied the generally accepted EKS method for calculating basic parities in this study. At the aggregation level we used the more controversial EKS aggregation procedure. This can be considered as anticipating future developments in international comparisons. Moreover, the EKS aggregation procedure does not suffer from the Gerschenkron effect. This could be a problem in the group of EC countries, as there is some distinction between central and peripheral countries. By giving each country an equal weighting in the calculation, this problem is avoided in the EKS aggregation procedure.

It is a matter for consideration whether we should use the IP method instead of the EKS aggregation procedure. The IP method is not used in this research as it is rather time-consuming, and differences between the EKS aggregation procedure and the IP method are usually minimal. However, as it will be decided to use the IP method in the ICP, we should change and apply IP also, to align methods in our research project to present uses.

In the first phase of the research project we defined BHs according the conditions of representativeness and equivalence demanded in the expenditure approach. The condition of representativeness implies that a value of a BH cannot equal zero, as each country has at least one representative product in each BH that is purchased in sufficient amounts. With these conditions in mind, as many items of output and input as possible were classified in BHs. Defining BHs is easy for relatively homogeneous products like wheat, potatoes and sugar beet. BHs can also be defined for groups of more heterogeneous products like fruit, vegetables and fertilizers without much trouble. A minor group of products presents complications: wine and input items such as plant protection products, materials and small tools, services and other intermediate consumption. This group of input items was simply omitted in the calculation of PPPs, as these are very heterogeneous and the intensity of its use differs from country to country. Wine cannot be omitted, as this would imply that the list of BHs is less characteristic for wine-producing countries. This is why an artificial solution has been found in constructing the BH "other crop products", which besides wine also contains olive oil, rape, tobacco and hops. This construction is acceptable for the time being. However, in the future some other solution has to be found. The calculation of shadow prices for wine in the non-wine producing countries is a possible alternative.

The judgement whether products are representative for a country is clearcut. When there is a price for a product in the PRAG domain, it is assumed that the product is representative for that country. This assumption is based on the fact that Eurostat drafted target definitions for the products for which prices are collected. The target definitions guarantee comparibility between products of different countries and representativeness of the products for the country.

The distinction between products that are more representative than other products in the same BH in a country cannot be made. Therefore our Laspeyres and Paasche type indices are equal in the calculation of basic parities. One may wonder whether it is desirable to make such a distinction in the future. If it is possible, under- or overestimation of price levels can be avoided. However, it takes a lot of consultation with national statistical offices, and the number of Laspeyres and Paasche type indices that can be calculated between countries is reduced, as there are fewer products to compare with each other. In the extreme case it is even impossible to define a BH for a certain group of products. This is shown in the following example:

-in country j BH i contains the products A, B* and C
-in country k BH i contains the products C, D* and E
-in country l BH i contains the products E, F* and G
(An asterix indicates that the product is more representative in that country than the other products of BH i).
If we take the view that each product in BH i is representative for the country concerned, we can calculate Fisher parities between countries j and k and countries k and l. Next we calculate an indirect Fisher parity between j and l by using the two direct Fisher parities. If we assume that only the products B, D and F are representative in the different countries, it is impossible to calculate Fisher parities for BH i, as there are no prices for a common product. So BH i cannot be defined.

Two particular adjustments on the definition of BHs have to be considered. Firstly it has to be investigated whether weightings by product can be introduced. These can be used once it is known how the total value of a BH is distributed according to its products. In the expenditure approach unweighted basic parities are calculated for lack of (reliable) weightingsfor expenditures (see section 2.4). However, as the basket of agricultural products has other properties than the basket of expenditure items, weighting by product can be applied in agriculture. Weightings used in the calculation of EC price indices in PRAG can probably serve as suitable weightings for this purpose.

Secondly, attention has to be paid to the requirement that there must be a value for each BH in each country. This is a check on the representativeness of an item in the expenditure approach. Prices of non-representative expenditures generally tend to diverge from the average price level. However, an agricultural product cultivated on a small scale can be representative for the production structure and simultaneously have a value of (almost) zero. In this case the price of that product does not deviate from the average price level. So there are grounds for wondering whether BHs in some countries can have a value of zero in a product-originating approach.

5.3 Data

In this research two kinds of data are used: values for each BH and prices for products within those BHs. These data are derived from Eurostat's CRONOS data bank, COSA and PRAG domains. Data from CRONOS create two problems for our research. Firstly a lot of data are missing for Luxembourg, Spain and Portugal. Secondly data are lacking for the other countries in some individual cases. These problems have been solved in the following way: Luxembourg and Portugal are omitted for all years from our comparison. Spain is omitted for 1975. Individual missing data are derived from national statistics or are obtained by calculating shadow prices or by deflating a price/value for some other year.

The omission of Spain in 1975 is obvious: at that time Spain was not a member of the EC. In the near future Portugal can be included in our comparison, since the Portugese statistical office is devoting considerable effort to collecting data series for CRONOS. It may be possibly to include Portugal in the comparison for the years 1980 and 1985.

The exclusion of Luxembourg from our comparison is a more serious problem. For political reasons it is unacceptible to exclude Luxembourg. Data are missing partly because of the small size of the agricultural sector and the limited number of cultivated products. For some BHs the value is zero. In that case a BH must be omitted from our list of BHs, as there is then one country for which the BH is not representative. So inclusion of Luxembourg in our comparison would have reduced the number of BHs and thereby also the output and intermediate consumption coverage by BHs.

In this phase of the research we opted for a large coverage of output by BHs, in order to estimate PPPs which are based on a broad group of items. This could only be done after Luxembourg was omitted. In the next phases of the research project a solution has to be found to include Luxembourg in the comparison. The suggestion that BHs have a value of zero in some countries, given in the previous section, offers a possible solution. Otherwise the Sectoral Production and Income Model for the European Agricultural Sector (SPEL) and the Farm Accountancy Data Network (FADN) can perhaps serve as alternative sources from which missing data can be obtained. These sources might also be used for missing data in other countries and for missing intermediate consumption data.

The SPEL model is intended to provide information on and forecasts of trends in agricultural income in the Community. The model is constructed in such a way that GVA per agricultural subsector can be estimated. This is not possible in the EAA, which gives only a GVA value for the whole agricultural sector. The SPEL data bank contains unit value prices and values for output and input. These data are derived from Eurostat's CRONOS databank (PRAG and COSA), supplemented by calculated data.

The FADN contains accounting prices which are obtained from a sample of farm accounts. However, these farms are not representative for all enterprises in the agricultural sector. Another problem in using these accounting prices is that they are average farm prices. The PRAG domain contains national farm prices. So in using the FADN for supplementary data, a correction for the transition from micro to macro prices must be made.

We noted before (see section 3.4.2) that there is some inconsistency between PRAG prices and COSA values, caused by taxes (other than VAT) and subsidies. The PRAG domain also contains values which correspond to PRAG prices. The distortion caused by the inconsistency between COSA values and PRAG prices can be assessed in a calculation of two sets of PPPs for the same bench-

mark year: the one set based on PRAG values, the other on COSA values. When differences between the two sets of PPPs in this experiment are minimal, it is advisable to use COSA values in the future, as they are available earlier than PRAG values and cover a larger range of agricultural output.

5.4 Updating of the results

In this research comparisons have been carried out for the benchmark years 1975, 1980 and 1985. It is interesting to have annual estimates of the PPPs and real values for the intermediate years. These can be achieved by extrapolating the PPPs of the previous benchmark year with price indices, as follows:

$$\hat{PPP}_t^{kj} = PPP_0^{kj} * \frac{p_{0t}^k}{p_{0t}^j}$$

in which:

$\hat{PPP}_t^{kj}$ = extrapolated PPP between the currencies of countries k and j in year t

PPP_0^{kj} = PPP between the currencies of countries k and j in the benchmark year 0

p_{0t}^k = intertemporal price index in country k from year 0 to year t

This $\hat{PPP}_t^{kj}$ will not usually coincide with the directly estimated PPP_t^{kj}. The distortion can be caused by a different composition of the basket of goods on which the PPPs are based in the benchmark years 0 and t. A more fundamental reason for this distortion is the inconsistency of deflating a spatial PPP by intertemporal indices.

Intertemporal indices used for updating are taken from national statistics, while PPPs are based on a database specifically composed for international comparisons. Intertemporal indices relate to data in national currencies, whereas international comparisons are expressed in a common currency. Moreover, national intertemporal indices use index formulae, weighting shemes and basic- or chain-character, which differ from country to country (Szilagyi, 1984:155).

Considering the distortions between a directly estimated PPP and the extrapolated PPP, and the small number of products (less than 200) and countries (12 or 16) relative to the ICP, we suggest calculating annual PPPs. When necessary, the basket of products on which the PPPs are based can be revised every five years. Simultaneously with the revision of the basket a check can be carried out as to whether the list of BHs is still representative for the countries' production structure.

5.5 Comparison with major trading partners

When we add the USA, Canada, Australia and Japan in the third phase to the group of EC countries, the intra-EC parities and real values will change, due to the fact that each basic parity between the currency of an EC country and the standard of reference depends not only on the price ratios with other EC countries, but also on the price ratios of non-EC countries. There are grounds for wondering whether it is desirable for intra-EC parities to be influenced by countries outside the EC, for example in internal EC affairs. It is possible to calculate two PPPs: the one based on price ratios in the EC, the other on price ratios in the EC and the major trading partners. As the results generally differ, this is a source of confusion, which is why we suggest applying the concept of fixity, in which results obtained in the EC comparison remain unchanged in a comparison which embraces a larger group of countries. At the meeting of the Expert Group (1988) Eurostat proposed applying an EKS procedure for achieving fixity (*Expert Group*, 1988:15-18). Starting point is a world matrix for each BH which includes the complete regional submatrix with binary Fisher parities. For each country outside the regional group a binary comparison is made with a country inside the regional group. It is not necessary for each country outside the group to be compared with the same country inside the group. Next the world matrix of binary Fisher parities is completed and made transitive by EKS. Now real values for the BH in the regional group are added and broken down pro rata to the volume relatives previously estimated at the regional level. So within the regional group volume ratios remain unchanged.

At the aggregation level each aggregate is treated as if it were a BH. EKS is now applied to a complete world matrix with Fisher volume ratios between each pair of countries. Again real values of the aggregate of the regional group are added and broken down proportionally to the ratios previously estimated. It does not matter whether the EKS or IP method is applied at the regional level. However, it is not possible to use IP in interregional comparisons, as these are too complex.

5.6 Overall assessment of the research project

The basic assumption in this research is that neither the official exchange rate nor the PPP based on GNE are reliable convertors of nominal agricultural values in international comparisons of real production. They were rejected as being unlikely to reflect fully the pattern of relative prices in agriculture.

The results of our calculations of agricultural PPPs, which are based only on prices in agriculture, confirm our assumption. Differences between the official exchange rate, ASO, ASI and PPS are graphically presented by using an exchange rate deviation

index (see section 4.2), which shows the percentage deviation of ASO, ASI and PPS from the official exchange rate. It appeared that these deviations of ASO, ASI and PPS differ considerably, both within and between countries. The difference between deviations of ASO and ASI from the official exchange rate justify our decision to calculate separate PPPs for final agricultural output and intermediate consumption.

The EC countries can be divided into two groups with regard to their pattern of price level indices in ASO for output and GVA and in ASI for intermediate consumption: a group of EC founder members and a group of countries which joined later. Price level indices in the first group are generally close to the Community average. Price level indices in ASO for output in the latecomer countries tend to converge to the Community average from a relatively low level in 1975. Their price level indices in ASO for GVA and that in ASI for intermediate consumption do not show such a uniform pattern.

Our conclusion is that the findings of the first phase are promising and justify continuation of the project in the future. We briefly outline further research below.

Estimates of agricultural PPPs have been made with EKS methods, on both the BH and aggregation levels. These methods can be maintained in the next phases, perhaps supplemented by the IP method. They correspond with present opinions about which methods should be used in international comparisons. Our suggestions to introduce weightings by product and permitting values of zero for BHs have to be checked for feasibility.

Eurostat's CRONOS databank contains sufficiently reliable data for our comparisons, except for Luxembourg and some intermediate consumption items. This is why alternative databases such as SPEL and FADN have to be consulted for additional data.

We have made calculations of PPPs for three benchmark years: 1975, 1980 and 1985. Estimates for the intermediate years can be obtained by extrapolating the PPPs of the previous benchmark year with price deflators. However, there is an inconsistency in deflating spatial PPPs with temporal indices, which give rise to distortions. As the number of products and countries in our comparison is relatively small, it is preferable to make annual calculations of PPPs.

The main problems in the next phase will be including Luxembourg in the comparison and finding a more satisfactory treatment for wine. The SPEL and FADN databases may offer reliable data for Luxembourg. In our comparison wine has been classified in a rather heterogeneous BH "other crop products". The composition of this BH does not satisfy the conditions on BHs. Thought is needed on how a separate BH "wine" can be defined, for example by calculating shadow prices for wine in the non-wine producing countries. Perhaps these problems can be solved by the introduction of zero-value BHs.

When the major trading partners are added to the group of EC countries, it is worth considering the fixity principle, which means that intra-EC comparisons are not influenced by countries outside the EC.

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Appendices

Appendix 1 Schematic representation of agricultural final output, PRAG and COSA prices

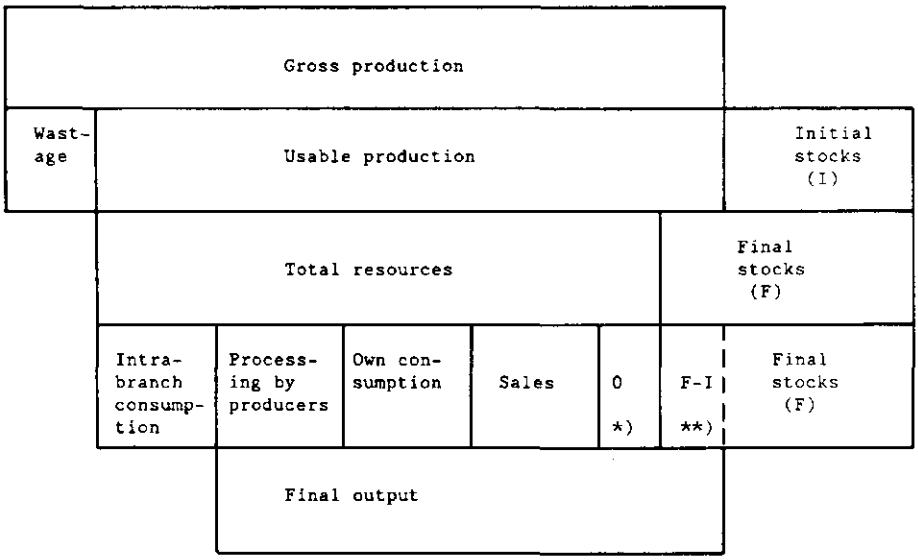

Figure A1.1 Schematic representation of agricultural final output

*) Own-account produced fixed goods.
**) Change in stocks (in the above diagram, it is assumed that final stocks are greater than initial stocks).

Source: Eurostat, *Manual on Economic Accounts for Agriculture and Forestry*, p. 28.

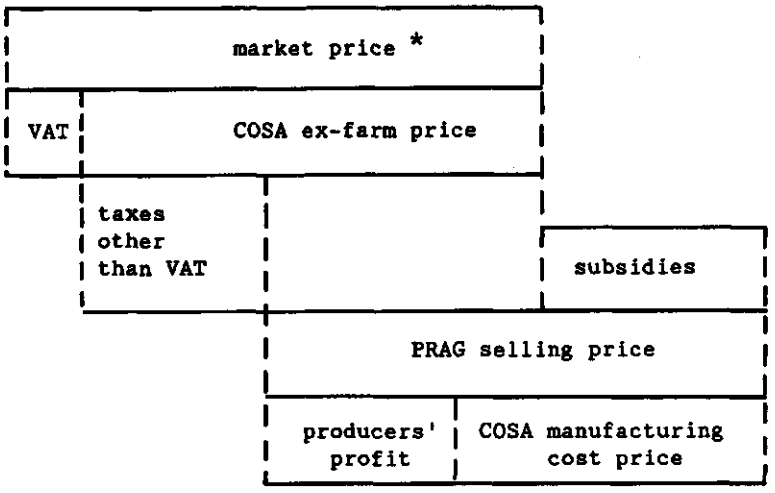

Figure A1.2 Schematic representation of prices of final agricultural output

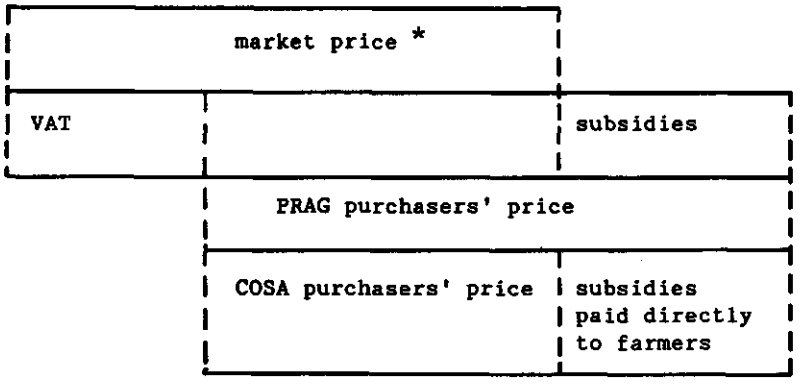

Figure A1.3 Schematic representation of prices of intermediate consumption

*) Market prices in COSA are unit values; market prices in PRAG are reference prices, which are the average prices for all the units of a specific product that entered into the market in the reference year.

Appendix 2 Classification scheme of agricultural output and intermediate consumption

BH or group no.	BH or group*	product no.	product	unit
1000	OUTPUT			
1100	CROP PRODUCTS			
1110	CEREALS			
1111	wheat	111101	soft wheat	100 kg
		111102	durum wheat	100 kg
1112	barley	111201	feeding barley	100 kg
		111202	malting barley	100 kg
1113	other cereals	111301	rye	100 kg
		111302	oats	100 kg
		111303	maize	100 kg
		111304	rice	100 kg
1121	potatoes	112101	early potatoes	100 kg
		112102	main crop food potatoes	100 kg
1131	sugar beet	113101	sugar beet: standard quality	100 kg
1141	pulses	114101	dried peas	100 kg
		114102	dried beans	100 kg
		114103	lentils	100 kg
1151	fruit	115101	dessert apples: all varieties	100 kg
		115102	dessert apples: golden delicious	100 kg
		115103	dessert apples: cox's orange pippin	100 kg
		115104	dessert pears: all varieties	100 kg
		115105	dessert pears: williams	100 kg
		115106	dessert pears: doyenne du comice	100 kg
		115107	peaches: all varieties	100 kg
		115108	apricots: all varieties	100 kg
		115109	cherries: sweet varieties	100 kg
		115110	cherries: sour cherries	100 kg
		115111	plums: quetches	100 kg
		115112	plums: greengages	100 kg
		115113	plums for drying and other plums	100 kg
		115114	strawberries: all types of production	100 kg
		115115	strawberries in the open	100 kg
		115116	strawberries under glas	100 kg
		115117	grapes: all varieties	100 kg
		115118	oranges: all varieties	100 kg
		115119	mandarins: all varieties	100 kg
		115120	lemons: all varieties	100 kg
		115121	melons	100 kg
		115122	water melons	100 kg
		115123	walnuts	100 kg

Appendix 2 (continued)

BH or group no.	BH or group*	product no.	product	unit
1151	fruit (continued)	115124	hazelnuts	100 kg
		115125	almonds	100 kg
		115126	chestnuts	100 kg
		115127	fresh figs	100 kg
		115128	dried figs	100 kg
		115129	carobs	100 kg
		115130	currants	100 kg
		115131	sultanas	100 kg
1160	FRESH VEGETABLES			
1161	cauliflowers	116101	cauliflowers: all qualities	100 kg
		116102	cauliflowers: quality I	100 kg
1162	tomatoes	116201	tomatoes in the open: all qualities	100 kg
		116202	tomatoes in the open: quality I	100 kg
		116203	tomatoes under glass: all qualities	100 kg
		116204	tomatoes under glass: quality I	100 kg
1163	other fresh vegetables	116301	brussels sprouts: all qualities	100 kg
		116302	brussels sprouts: quality I	100 kg
		116303	white cabbage: all qualities	100 kg
		116304	white cabbage: quality I	100 kg
		116305	red cabbage: all qualities	100 kg
		116306	red cabbage: quality I	100 kg
		116307	savoy cabbage: all qualities	100 kg
		116308	savoy cabbage: quality I	100 kg
		116309	lettuce in the open: all qualities	100 kg
		116310	lettuce in the open: quality I	100 kg
		116311	lettuce under glass: all qualities	100 kg
		116312	lettuce under glass: quality I	100 kg
		116313	asparagus: all qualities	100 kg
		116314	asparagus: quality I	100 kg
		116315	cucumbers in the open: all qualities	100 kg
		116316	cucumbers under glass: all qualities	100 kg
		116317	cucumbers under glass: quality I	100 kg
		116318	carrots: all qualities	100 kg
		116319	carrots: quality I	100 kg
		116320	onions: all qualities	100 kg
		116321	green peas: all qualities	100 kg
		116322	green peas: quality I	100 kg
		116323	french beans: all qualities	100 kg
		116324	french beans: quality I	100 kg
		116325	cultivated mushrooms: all qualities	100 kg
		116326	cultivated mushrooms: quality I	100 kg
1171	flowers	117101	roses	100 items
		117102	baccara roses	100 items
		117103	carnations	100 items
		117104	freesias	100 items
		117105	tulips	100 items
		117106	gladioli	100 items

Appendix 2 (continued)

BH or group no.	BH or group*	product no.	product	unit
1171	flowers (continued)	117107	chrysanthemums	100 items
		117108	cyclamens (potted)	100 items
		117109	azaleas (potted)	100 items
		117110	chrysanthemums (potted)	100 items
		117111	poinsettias (potted)	100 items
1181	other crop products	118101	rape	100 kg
		118102	raw tobacco: all varieties	100 kg
		118103	raw tobacco: most important variety	100 kg
		118104	raw tobacco: 2nd most important variety	100 kg
		118105	hop cones: all varieties	100 kg
		118106	hop cones: most important variety	100 kg
		118107	cotton (incl. seed)	100 kg
		118108	groundnuts	100 kg
		118109	extra virgin olive oil	100 liter
		118110	fine olive oil	100 liter
		118111	semi-fine olive oil	100 liter
		118112	wine	100 liter
1200	ANIMAL AND ANIMAL PRODUCTS			
1121	cattle	121101	calves	100 kg
		121102	young cattle	100 kg
		121103	heifers	100 kg
		121104	bullocks	100 kg
		121105	cows A (1st quality)	100 kg
		121106	cows B (2nd quality)	100 kg
		121107	cows C (3rd quality)	100 kg
		121108	young bulls (U3)	100 kg
		121109	young bulls (R3)	100 kg
		121110	young bulls (O3)	100 kg
		121111	bulls (R3)	100 kg
		121112	steers (R3)	100 kg
		121113	steers (O3)	100 kg
		121114	cows (R3)	100 kg
		121115	cows (O3)	100 kg
		121116	cows (P2)	100 kg
		121117	heifers (R3)	100 kg
		121118	heifers (O3)	100 kg
		121119	young bulls (unit values)	100 kg
		121120	steers (unit values)	100 kg
		121121	cows (unit values)	100 kg
		121122	heifers (unit values)	100 kg
		121123	adult cattle (unit values)	100 kg
1221	pigs	122101	pigs (light)	100 kg
		122102	pigs (carcasses), class II	100 kg
		122103	pigs (carcasses), class I	100 kg
		122104	piglets	100 kg
1231	sheep and goats	123101	pastured lambs	100 kg
		123102	hogglets	100 kg

Appendix 2 (continued)

BH or group no.	BH or group*	product no.	product	unit
1231	sheep and goats (continued)	123103	kids	100 kg
		123104	goats	100 kg
		123105	lambs and sheep	100 kg
		123106	young lambs	100 kg
1241	poultry	124101	chickens (live, 1st choice)	100 kg
		124102	chickens (class A, slaughtered)	100 kg
		124103	boiling fowls (slaughtered)	100 kg
		124104	ducks	100 kg
		124105	turkey hens	100 kg
		124106	turkey cocks	100 kg
1251	milk	125101	raw cow's milk: 3.7% fat content	100 kg
		125102	raw sheep's milk	100 kg
		125103	raw goat's milk	100 kg
1261	eggs	126101	fresh eggs (whole country)	100 items
2000	INTERMEDIATE CONSUMPTION			
2110	fertilizers	211001	sulphate of ammonia	100 kg
		211002	ammonium nitrate	100 kg
		211003	calcium nitrate	100 kg
		211004	phosphatic fertilizers: basic slag	100 kg
		211005	phosphatic fertilizers: superphosphate	100 kg
		211006	muriate of potash	100 kg
		211007	sulphate of potash	100 kg
		211008	binary fertilizers (N-P-K): 1-1-0	100 kg
		211009	binary fertilizers (N-P-K): 0-1-1	100 kg
		211010	binary fertilizers (N-P-K): 0-20-20	100 kg
		211011	ternary fertilizers (N-P-K): 1-0.5-0.5	100 kg
		211012	ternary fertilizers (N-P-K): 20-10-10	100 kg
		211013	ternary fertilizers (N-P-K): 1-1-1	100 kg
		211014	ternary fertilizers (N-P-K): 17-17-17	100 kg
		211015	ternary fertilizers (N-P-K): 1-1-2	100 kg
		211016	ternary fertilizers (N-P-K): 9-9-18	100 kg
		211017	ternary fertilizers (N-P-K): 1-2-2	100 kg
		211018	ternary fertilizers (N-P-K): 10-20-20	100 kg
2120	feedingstuffs	212001	feedingstuffs: fodder wheat	100 kg
		212002	feedingstuffs: wheat bran	100 kg
		212003	feedingstuffs: barley	100 kg
		212004	feedingstuffs: oats	100 kg
		212005	feedingstuffs: maize	100 kg
		212006	feedingstuffs: ground barley	100 kg
		212007	feedingstuffs: ground maize	100 kg
		212008	linseed cake (expeller)	100 kg
		212009	toasted extracted soyabean meal	100 kg
		212010	fish meal	100 kg
		212011	animal meal	100 kg
		212012	cereal straw	100 kg

Appendix 2 (continued)

BH or group no.	BH or group*	product no.	product	unit
2120	feedingstuffs (continued)	212013	meadow hay	100 kg
		212014	dried lucerne	100 kg
		212015	dried sugar beet pulp	100 kg
		212016	complementary feed for rearing calves	100 kg
		212017	milk replacer for calves	100 kg
		212018	complete feed: cattle fattening	100 kg
		212019	complementary feed: cattle fattening	100 kg
		212020	complementary feed: cattle (stall fed)	100 kg
		212021	complementary feed: dairy cattle at grass	100 kg
		212022	complete feed for rearing pigs	100 kg
		212023	complete feed for fattening pigs	100 kg
		212024	baby chick feed	100 kg
		212025	complete feed: broiler production	100 kg
		212026	complete feed: rearing pullets	100 kg
		212027	complete feed: battery hens	100 kg
2130	energy and lubricants	213001	motor spirit	100 liter
		213002	diesel oil	100 liter
		213003	heating gas oil	100 liter
		213004	residual gas oil	100 kg

* Items in capitals refer to groups (of BHs); items in small letters to BHs

Notes:
This list of products includes all items that have been used in any benchmark year. The basket of products for 1975 is exclusive of the items 114103, 115112, 115124, 115126, 115127, 115128, 115130, 115131, 116326, 118107, 118108, 118111, 121108-121123, 122103, 123103, 123104, 125102 and 125103. The basket of products in 1980 is exclusive of the items 115130, 115131, 121108-121123 and 123106. The basket of products for 1985 is exclusive of the items 115130, 115131 and 123106.
In the rest of the appendices the codes of this list are used instead of writing the name of the BH or product. Four-digit codes refer to groups or BHs: six-digit codes refer to products.

Appendix 3 Prices

Sources:
Unless otherwise indicated, prices for 1975 and 1980 from: Eurostat, *Agricultural prices 1973-1984*, Luxembourg, 1985, and prices for 1985 from: Eurostat, *Agricultural prices 1978-1987*, Luxembourg, 1988. Prices for rape for Denmark: unpublished data from Danmarks Statistik (Danish Statistical Office).

Notes:
(1) A zero in the tables means that there is no price for that item.
(2) Prices for pulses for Denmark are calculated by dividing COSA values for pulses by quantities: quantities from: Danmarks Statistik, *Landbrugsstatistik 1987* (*Agricultural Statistics 1987*), Copenhagen, 1988.
(3) For some products shadow prices have been calculated. The basic assumption in this calculation is that the relative price ratio between two products A and B in countries X and Y is equal, as follows:

$$\frac{p_{A,X}}{p_{B,X}} = \frac{p_{A,Y}}{p_{B,Y}}$$

in which:

$p_{A,X}$ = missing price of product A in country X
$p_{B,X}$ = known price of product B in country X
$p_{A,Y}$ and $p_{B,Y}$ = known prices of products A and B in country Y

The assumption implies that the production structure in countries X and Y with regard to the products A and B must be similar. For each missing price of product A in country X a separate weighting has to be made with regard to the choice of product B and country Y.

Shadow prices have been calculated for:

FR Germany: A shadow price for pulses combined with the price of wheat and the Netherlands.

Italy: A shadow price for raw cow's milk: 3.7% fat content combined with the price of raw cow's milk: actual fat content and France for 1975.

Ireland: A shadow price for cauliflowers combined with the price of cultivated mushrooms and the United Kingdom.
A shadow price for tomatoes, all qualities combined with the price of strawberries and the United Kingdom.
A shadow price for rape combined with the price of wheat and Denmark.

Greece: A shadow price for raw cow's milk: 3.7% fat content combined with the price of raw cow's milk: actual fat content and France for 1975 and Italy for 1980 and 1985.
A shadow price for flowers (roses, baccara roses, carnations, freesias, tulips, gladioli and chrysanthemums) combined with the price of rice and Italy.

(4) Sometimes the price series for a product does not cover the whole period 1975-1985, as it started later or was not continued. In those cases where no other prices in the same BH were available, prices have been extrapolated with a price index. This has been done for:

France: Price of tomatoes for 1975 has been extrapolated with the price index for tomatoes (1975=100).

Belgium: Price of dried peas for 1985 has been extrapolated with the price index for pulses (1980=100).

Ireland: Price of main crop food potatoes for 1985 has been extrapolated with the price index for potatoes (1980=100).
Price of dried peas for 1985 has been extrapolated with the price index for final crop output (1980=100).
Price of flowers (roses, baccara roses, carnations, freesias, tulips, gladioli and chrysanthemums) for 1975 has been extrapolated with the price index for final crop output (1975=100).

(5) *Wine prices.* Each type of wine is produced in a limited national territory and has no equivalent outside that territory. So wine prices cannot be compared with each other, as they refer to wine with different qualities and properties. Therefore a wine price for FR Germany, France, Italy and Greece has been calculated as the weighted average of the prices of the different types of wine in each country. The weighting factor for each type of wine consists of the ratio of the volume of that type of wine and the total volume of all wine in that country.
The weighting factors for 1975 are based on the table of composition of the EC agricultural price indices (1975=100) from Eurostat, *Methodology of EC agricultural indices (output and input)*, Luxembourg, 1985, p. 78-79. As no such weighting factors are available for FR Germany and Greece for 1980 and 1985, the weighting factor for 1975 has also been used in the calculation of the average wine price for 1980 and 1985. A weighting factor for 1980 for France and Italy has been derived from the weighting scheme for price indices (1980=100) from Eurostat, *EC Agricultural price indices 1988-1*, Luxembourg, 1988, p.12-13. These factors have been used for the calculation of an average wine price in 1980 and 1985 for these two countries.
For Spain no weighting factors are available. The wine price for 1980 and 1985 is calculated as the unweighted arithmetic average of the various wine prices.

Table A3.1 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1975

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
111101	42.79	59.53	10881	40.35	602.4	5.67	6.72	83.94	470
111102	0	109.64	16562	0	0	0	0	0	632
111201	39.29	54.39	10925	39.3	570.9	5.66	5.63	78.9	447
111202	42.9	57.96	0	40.75	591.2	6.29	6.51	0	0
111301	41.62	57.58	11232	39.5	564.4	0	0	79.96	0
111302	38.39	51.5	10359	36.15	530.7	5.46	4.87	75.09	468
111303	41.82	55.58	11211	0	0	0	0	0	491
111304	0	95.74	15337	0	0	0	0	0	741
112101	37.57	76.41	14959	55.18	1138	12.07	0	0	451
112102	21.45	32.8	8977	26	306.6	5.45	6.36	53.45	458
113101	81.4	129	30568	96.73	1203.8	18.1	17.7	177.3	1180
114101	51.89	178.2	0	62.7	808	14.07	14.58	95.87	0
114102	0	385	50148	114.2	661.1	0	0	0	2323
115101	78.1	94	11929	59.23	843	17.49	0	142	508
115102	68.49	0	0	72.14	939	14.33	0	178	0
115103	101.67	0	0	76.21	1127	22.71	0	140	0
115104	63.92	143	13378	66.77	977	18.48	0	151	0
115105	61.19	111	14832	0	634	19.84	0	0	0
115106	0	190	21510	104.46	1221	25.57	0	0	0
115107	0	461	26078	0	0	0	0	0	573
115108	0	524	39906	0	0	0	0	0	681
115109	265.61	374	37318	0	4040	67.7	0	543	1212
115110	197.41	0	0	0	2508	0	0	354	0
115111	187.54	0	0	0	2263	0	0	0	0
115112	0	0	0	0	5975	0	0	0	0
115113	0	0	18387	0	3206	27.75	0	336	0
115114	385.94	620	0	268.31	5329	63.4	23.6	634	0
115115	385.94	0	78553	210.76	3582	0	23.6	634	0
115116	0	0	0	580.63	10535	0	0	0	0
115117	0	216	17728	0	0	0	0	0	702
115118	0	0	10407	0	0	0	0	0	349
115119	0	0	15668	0	0	0	0	0	638
115120	0	0	21078	0	0	0	0	0	535
115121	0	0	13281	0	0	0	0	0	542
115122	0	0	9454	0	0	0	0	0	204
115123	0	0	54028	0	0	0	0	0	4228
115124	0	0	49716	0	0	0	0	0	0
115125	0	0	35455	0	0	0	0	0	1738
115126	0	0	25875	0	0	0	0	0	0
115127	0	0	18334	0	0	0	0	0	0
115128	0	0	33500	0	0	0	0	0	0
115129	0	0	5846	0	0	0	0	0	230
116101	62.48	0	12835	88.01	941	12.15	30.74	0	623
116102	56.95	773	0	0	651	14.51	0	222	0
116201	81.41	0	13669	0	1108	0	0	0	419
116202	77.78	0	0	0	1271	0	0	0	0
116203	109.36	0	0	137.81	2714	29.13	39.62	0	0
116204	123.75	0	0	0	2672	32.74	0	630	0
116301	91.92	0	0	82.84	0	13.25	20.13	0	0
116302	112.88	0	0	0	1870	0	0	416	0
116303	18.98	0	0	16.63	0	6.19	0	0	376
116304	27.8	0	0	0	322	0	0	60	0
116305	25.57	0	0	24.8	0	8.62	0	0	0
116306	33.53	0	0	0	290	0	0	84	0
116307	33.64	0	0	30.34	0	5.51	0	0	0

Table A3.1 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1975 (continued)

Product	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece
116308	38.08	0	0	0	432	0	0	0	0
116309	94.64	0	14070	101.58	1363	27.94	26.15	0	266
116310	127.7	0	0	0	671	0	0	0	0
116311	149	0	0	138.39	1593	48.72	0	0	0
116312	172.8	0	0	0	854	0	0	816	0
116313	548.73	0	54899	363.49	10058	110.79	0	1090	0
116314	723.95	721	0	0	11352	127.57	0	0	0
116315	19.94	0	13822	0	0	0	0	0	0
116316	64.25	0	0	69.45	0	22.87	0	0	0
116317	108	168	0	0	1090	26.86	0	371	0
116318	36.69	0	14457	41.24	0	6.23	15.29	0	0
116319	58.49	93	0	0	692	0	0	174	0
116320	44.93	81	12226	0	446	8.22	13.55	110	321
116321	130.31	0	24398	0	0	19.27	0	0	0
116322	142.16	0	0	0	3835	0	0	0	0
116323	57.87	0	29117	140.42	2841	0	0	0	0
116324	173.01	330	0	0	0	0	0	0	0
116325	0	0	0	237.68	0	54.17	0	605	0
116326	0	135	0	0	0	0	0	0	0
117101	70.14	167.85	21296	23.34	391	5.6	5.96	86	1028.9
117102	0	169.8	0	39.92	0	8.59	8.57	0	0
117103	40.02	45.62	3809	22.18	345	4.76	3.76	0	184.03
117104	0	0	0	17.98	325	16.6	4.17	69	0
117105	29.41	98.33	0	17.58	367	3.08	5.5	54	0
117106	38.77	168.22	17708	18.04	530	3.54	5.27	0	855.6
117107	95.25	143.97	0	37.65	892	8.67	13.37	130	0
117108	344	0	0	200.86	0	46.19	0	390	0
117109	545	0	0	221.95	0	99.24	0	521	0
117110	0	0	0	57.91	0	42	58.5	0	0
117111	0	0	0	196.56	0	75	125.71	0	0
118101	79.26	128.81	0	85.55	1267.3	0	13,69	171	0
118102	707.1	1120	146340	0	7840	0	0	0	9230
118103	650	1118	116200	0	6871	0	0	0	12690
118104	741	1290	187800	0	8700	0	0	0	8900
118105	452.14	452	0	0	5696	103.58	0	0	0
118106	447.9	450	0	0	6262	0	0	0	0
118109	0	0	156046	0	0	0	0	0	4928
118110	0	0	146083	0	0	0	0	0	4902
118112	82	128.7	17903.03	0	0	0	0	0	1233.48
121101	562.7	870	131675	526.7	7224	0	0	736	3749
121102	396.1	633.4	116340	367.8	6183	0	40.14	738	0
121103	344.7	631.7	100435	335.3	4994	38.25	35.55	628	0
121104	0	631.7	93938	343.3	5200	39.56	41.75	640	0
121105	316.3	579.4	85102	327	4866	30.27	31.38	570	0
121106	296	493	75505	285.5	4028	25.92	25.37	581	2666
121107	259.8	400.8	60813	250	3242	21.22	18.86	447	0
122101	312.2	0	78214	276.9	4423	48.28	47.04	585	3356
122102	374	626	95870	403	5342	64.48	0	775	0
122104	461.1	719	102899	467	7677	95.08	75.4	1050	4214
123101	0	836	103644	453.8	0	35.62	38.07	0	4868
123102	318.6	726	81186	261.1	4644	37.85	36.82	0	2165
123105	0	1562	191980	0	8600	74.78	80.26	1170	0
123106	0	1165	154753	0	0	0	39.35	0	5051
124101	175	357	66667	168	2911	0	32.76	363	2551

Table A3.1 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1975 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
124102	311	482	86622	294.6	5667	47.49	0	761	0
124103	210	293	78250	0	0	17.99	0	502	0
124104	0	758	0	0	0	57.08	0	1010	0
124105	429	0	120706	0	0	74.33	0	0	0
124106	0	0	125131	0	0	68.38	0	0	0
125101	49.5	76.74	14307.05	47.51	658	7.33	6.9	101	560.2
126101	16.4	22.97	3389	10.25	138	1.8	2.33	23.26	180
211001	0	223.3	26672	123.7	1756	0	30.85	0	952
211002	128.2	188.4	24112	113.4	1679	15.96	23.44	332.4	836
211003	0	248.1	39027	140.4	0	0	0	363.5	923
211004	16.8	20.85	5929	16.12	187.2	1.5	3.52	0	0
211005	0	244.3	33459	157.7	2171	27.11	24.6	309.9	650
211006	45.6	82.53	13623	54.81	786	9.42	10.2	106.6	0
211007	0	147.5	18133	71.68	993.7	0	15.78	170.4	240
211008	50.31	0	0	45.37	681.1	0	0	0	315
211009	39.08	91.33	0	0	239.6	0	7.66	59.65	0
211010	42.41	73.06	0	0	435.6	0	6.55	0	0
211011	0	0	10126	41.49	601.8	7.08	0	101.42	0
211012	0	0	10126	52.79	584.3	7.08	0	0	0
211013	46.17	95.82	7294	53.85	622.9	9	9.4	103.2	335
211014	52.32	95.82	12400	53.85	706	9	10.27	0	417
211015	45.21	69.3	7672	48.73	450.5	7.7	0	0	0
211016	32.88	62.37	7672	34	450.5	5.73	0	0	0
211017	0	91.75	6507	0	599.2	0	9.76	0	315
211018	0	91.75	11527	0	0	0	0	0	394
212001	0	0	0	42.6	0	6.51	0	0	451
212002	36.66	46.96	8570	32.9	551.2	6.02	7.38	0	336
212003	42.62	65.72	11336	40.4	652.5	6.47	0	82.55	507
212004	0	61.34	10332	38	636.2	6.35	7.44	79.25	592
212005	45.43	66.13	10637	42	728.2	6.96	0	0	591
212006	0	0	0	46.7	696.7	6.82	7.5	0	0
212007	0	0	12840	48.4	768.4	7.19	8.16	0	0
212008	0	94.27	15670	50	880.5	11.44	0	0	0
212009	50.85	90.02	0	40.5	722.9	9.56	0	100.74	0
212010	85.59	134	26776	72.7	995.2	14.73	0	170.51	0
212011	0	92.31	0	55.2	595	8.96	0	116.96	0
212012	0	16.77	2521	19	246	2.08	0	0	0
212013	0	37.48	4507	32.4	321.2	4.7	0	0	0
212014	0	48.96	0	35.6	526.1	6.8	0	0	427
212015	32.5	47.2	8118	36.8	546	6.53	4.53	0	0
212016	0	0	15047	48.2	861	7.64	9.22	0	493
212017	169.3	291.2	0	173.2	2830	29.25	0	0	0
212018	0	0	13191	44.1	750.1	6.94	0	97.62	0
212019	47.3	91.36	12984	43.45	748.6	8.63	0	0	432
212020	0	0	0	50.2	834	0	8.34	107.58	415
212021	0	0	0	41.1	714.2	6.92	8.6	0	0
212022	0	103.2	15281	58.9	1018	10.69	8.74	0	0
212023	54.6	0	13434	49	799.4	7.98	8.32	100.57	526
212024	0	122.8	15533	54.6	980.1	8.77	10.18	0	633
212025	58.76	0	14828	58.3	960.4	9.62	0	0	525
212026	0	0	0	52.4	841.1	8.17	0	0	0
212027	52.15	0	14713	50.7	845.4	8.27	9.26	0	528
213001	67.32	118.3	7553	84.78	1311	16.02	15.86	93.77	1467
213002	30.9	0	6607	30.8	454	5.45	5.04	67.48	499

Table A3.1 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1975 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
213003	25.36	62.53	6530	25.09	442	4.88	5.19	65.66	499
213004	0	0	0	17.28	0	0	4.71	0	0

(a) Prices for wine, olive oil, heating gas oil, diesel oil and motor spirit per 100 litres; prices for flowers and eggs per 100 items.

Table A3.2 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1980

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
111101	46.79	88.18	22418	44.95	681.3	10.03	8.91	129.37	955	1675
111102	0	132.02	29870	0	0	0	0	0	1330	1953
111201	41.55	77.73	20557	43.05	607.6	9.38	8.36	117.76	909	1262
111202	44.96	81.81	0	43.8	672.5	9.52	9.52	0	965	1290
111301	45.15	77.41	21790	44.3	632.3	0	0	120.2	0	1307
111302	40.69	73.3	21716	41.8	605.7	9.7	8.71	121.27	995	1250
111303	47.37	84.78	21839	0	0	0	0	0	907	1552
111304	0	0	30310	0	0	0	0	0	1101	2092
112101	27.36	57.44	26386	54.39	935	6.02	0	0	950	1158
112102	21.4	31.37	17626	17.2	215	6.21	11.07	76.56	947	1041
113101	91.1	193.39	52000	116.24	1400.3	24.04	27	266.2	2100	4430
114101	75.88	152.08	0	72.9	933	18.21	14.01	107.73	0	2180
114102	0	353	71801	155	1068.1	0	0	0	4772	6042
114103	0	0	0	0	0	0	0	0	4107	5270
115101	67.52	150	29433	48.87	637	25.88	0	177	1390	1907
115102	54.15	131	27416	62.33	777	19.2	0	132	1242	1882
115103	98.02	0	0	86.96	996	33.51	0	262	0	0
115104	60.36	172	28986	74.53	1012	23.25	0	313	2291	2161
115105	59.16	143	27082	0	594	22.56	0	0	2028	0
115106	0	173	41625	108.36	1406	33.69	0	0	0	0
115107	0	353	49931	0	1920	0	0	0	1538	4346
115108	0	464	83603	0	0	0	0	0	2765	2222
115109	237.21	617	125270	0	7484	81.86	0	1025	4995	9280
115110	195.25	0	0	0	2899	0	0	350	0	0
115111	92.8	0	0	0	2034	0	0	0	0	0
115112	0	441	0	0	2434	0	0	0	0	3974
115113	0	0	46873	0	1668	24.59	0	424	0	0
115114	467.09	849	149485	284.23	5784	83.7	51.33	884	4177	6488
115115	467.09	0	137828	228.11	3391	0	51.33	884	4177	0
115116	0	0	147686	602.65	8471	0	0	0	0	0
115117	0	366	33376	0	0	0	0	0	2259	2537
115118	0	0	2830	0	0	0	0	0	1334	1317
115119	0	0	36878	0	0	0	0	0	1852	1658
115120	0	0	47514	0	0	0	0	0	1492	2573
115121	0	0	50200	0	0	0	0	0	1250	1950
115122	0	0	21852	0	0	0	0	0	764	1410
115123	0	0	141500	0	0	0	0	0	10576	11264
115124	0	0	163619	0	0	0	0	0	8100	12355
115125	0	0	90447	0	0	0	0	0	4286	8592
115126	0	0	94700	0	0	0	0	0	3158	3292
115127	0	0	59046	0	0	0	0	0	3386	2429
115128	0	0	99125	0	0	0	0	0	3802	0
115129	0	0	17350	0	0	0	0	0	484	0
115130	0	0	0	0	0	0	0	0	5965	0
115131	0	0	0	0	0	0	0	0	6478	0
116101	73.28	0	34699	120.65	1018	18.58	22.99	0	1464	2346
116102	69.18	95	0	0	599.6	23.66	0	388	0	0
116201	110.72	0	27375	0	1586	0	0	0	974	1519
116202	76.94	363	0	0	1970	0	0	0	0	0
116203	150.24	0	55799	177.08	2864	50.36	30.88	0	0	0
116204	145.29	0	0	0	3183	55.28	33.9	799	0	0
116301	116.67	0	0	102.28	0	16.33	0	0	0	0
116302	123.26	0	0	0	3164	19.55	0	410	0	0
116303	21.75	0	0	15.96	0	9.64	0	0	916	1820

Table A3.2 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1980 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
116304	29.7	0	0	0	515	10.98	0	87	0	0
116305	30.67	0	0	21.6	0	11.93	0	0	0	0
116306	34.38	0	0	0	447	0	0	114	0	0
116307	45.87	0	0	46.29	0	10	0	0	0	0
116308	52.34	0	0	0	836	11.48	0	0	0	0
116309	91.48	0	31276	103.71	919	24.57	0	0	791	0
116310	137.95	0	0	0	554	27.27	0	0	0	0
116311	144.44	0	0	163.99	1771	68.37	0	0	0	0
116312	195.25	0	0	0	1418	73.04	0	833	0	0
116313	870.18	0	213896	554.57	16492	200.58	0	1632	0	10834
116314	1131.96	1310	0	0	18320	222.95	0	0	0	0
116315	67.97	0	29814	0	0	0	0	0	1820	1759
116316	90.08	0	0	100.86	0	36.6	0	0	0	0
116317	125.3	255	0	0	1728	40.56	0	551	0	0
116318	50.35	0	30160	45.78	0	8.15	0	0	1098	1419
116319	56.7	117	0	0	807	10.43	0	210	0	0
116320	52.72	142	29283	0	691	10.87	0	190	1320	1367
116321	155.08	0	43845	0	0	25.42	0	0	2242	4236
116322	199.97	0	0	0	5296	35.54	0	739	0	0
116323	72.04	0	70447	252.36	4670	0	0	0	2749	5860
116324	294.57	0	0	0	0	0	0	0	0	0
116325	0	680	0	268.32	0	119.5	147.8	1010	0	7685
116326	0	187	0	0	0	0	0	271	0	1661
117101	77.27	256.3	46175	29.23	508	10.86	9.36	111	1677.3	1423
117102	0	257.3	44742	54.66	0	15.3	13.46	0	1625.24	0
117103	47.79	74.5	9470	30.69	433	7.34	5.91	182	344	551
117104	46.82	0	20559	21.95	348	23.57	6.55	107	746.8	0
117105	42.24	99	29983	22.95	456	6.72	8.64	88	1089.1	0
117106	45.7	151.2	28067	19.78	518	5.49	8.28	0	1019.5	0
117107	103.29	187	37617	55.55	1204	15.53	21	178	1366.4	0
117108	404	0	0	259.6	0	84.94	0	787	0	0
117109	663	0	0	357.83	0	162.37	0	950	0	0
117110	200	0	0	84.61	0	76	91.92	374	0	0
117111	432	0	0	197.66	0	119.5	197.5	806	0	0
118101	95.45	180.63	0	92.2	1515	0	18.04	264	0	0
118102	751.94	1628	233775	0	9417	0	0	0	15580	15988
118103	696	1628	203500	0	9355	0	0	0	23360	0
118104	761	0	220100	0	9709	0	0	0	12960	0
118105	2330.38	720.57	0	0	24283	218.4	0	0	0	31840
118106	2320.96	780	0	0	25285	0	0	0	0	0
118107	0	0	0	0	0	0	0	0	3633	7600
118108	0	0	0	0	0	0	0	0	4355	7075
118109	0	0	263187	0	0	0	0	0	8320	12949
118110	0	0	252290	0	0	0	0	0	8312	12784
118111	0	0	0	0	0	0	0	0	7905	12352
118112	169.91	220.05	30648.57	0	0	0	0	0	2480.9	1541
121101	559.6	1208	227085	522	7809	0	0	1042	7300	16664
121102	407.1	889.14	235958	407	6726	0	79.09	1042	0	13544
121103	358.4	891.52	173858	379	5745	74.48	71.42	911	0	0
121104	0	909.44	147515	379	6073	84.1	79.37	968	0	0
121105	321.6	821.34	184428	366	5375	62.97	63.07	838	0	11023
121106	302.3	700.96	127577	312	4488	57.58	54.65	857	5905	7579
121107	269.5	584.16	112975	267	3831	50.42	43.91	620	0	0
122101	306	0	150403	267	4675	67.2	66.45	717	6332	9266

Table A3.2 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1980 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
122102	343	802	180688	0	5554	84.32	0	961	0	13472
122103	372	0	0	0	0	88.86	0	1031	0	0
122104	458.05	986	209697	418	7933	116.65	85.12	1160	8266	10325
123101	0	1084	210771	444	0	57.24	86.8	797.5	13462	17201
123102	315.9	887	161083	266	4342	67.2	85.12	0	6097	0
124101	194	479	101011	200	3299	0	55.34	506	4290	7947
124102	343	580	138878	388	6383.3	75.37	0	1030	0	10616
124103	269	457	120033	0	0	27.43	0	652	0	8106
123103	0	0	0	0	0	0	0	0	14063	26803
123104	0	0	0	0	0	0	0	0	7342	5527
123105	757	1974	0	0	11370	132.64	0	1922	0	44932
124104	0	804	0	0	0	104.89	0	1406	0	0
124105	424	735	0	0	0	101.58	0	0	0	0
124106	0	704	0	0	0	93.16	0	0	0	0
125101	55.25	113.38	29125	56.99	764.5	11.9	11.45	159	1055.62	0
125102	0	0	0	0	0	0	0	0	2006	5586
125103	0	0	0	0	0	0	0	0	1403	3109
126101	17.2	34.8	7251	12.66	173	2.86	4.11	39.78	317	542
211001	147.8	284.81	55873	154.51	1904.2	0	0	0	1917	1216
211002	144.17	340.09	49274	145.63	2159.4	29.38	36.14	418.54	1680	1699
211003	200.1	503.48	81365	188.54	0	0	0	499.32	1856	0
211004	17.31	33.9	9428	20.1	252.3	2.69	6.02	0	0	0
211005	156.4	319.39	60765	182.26	2341.7	33.62	41.57	393.31	1300	780
211006	56.47	126.12	26759	68.25	922.5	0	14.9	162.8	0	799
211007	72	208.6	35538	94.51	1190.9	0	0	240.05	804	1228
211008	50.65	0	0	50.85	775.6	0	0	0	634	0
211009	36.99	115.47	0	0	309.3	0	10.86	74.35	0	0
211010	43.41	92.37	0	0	562.4	0	9.31	0	0	0
211011	47.81	0	19690	51.45	690.2	11.91	0	128.1	0	2132
211012	45.35	0	19690	51.45	646.8	11.91	0	0	0	2132
211013	48.57	134.17	14318	57.35	713.8	12.45	12.81	130.25	673	1151
211014	55.04	134.17	24341	57.35	808.9	14.1	13.8	0	839	2205
211015	47.86	108.17	15982	53.5	571.9	11.92	0	0	0	1256
211016	35.09	97.35	15982	36.85	507.1	0	0	0	0	1256
211017	45.95	130.5	13251	0	686.6	0	13.44	0	634	2156
211018	53.77	130.5	23424	0	0	0	0	0	793	2156
212001	46.65	0	0	49.7	0	12.06	0	0	840	1814
212002	40.79	68.06	18713	38.2	666	11	16.66	0	579	1304
212003	45.66	93.47	21545	47.3	778.7	11.17	0	126.05	920	1484
212004	40.37	87.95	21256	45.4	775.2	11.82	14.81	0	1159	1549
212005	57.3	102.95	21426	53.4	925.9	14.33	0	0	935	1443
212006	0	0	25206	57.4	843.2	11.93	13.71	0	0	0
212007	0	0	25817	62.2	982	14.84	16.2	0	0	0
212008	0	0	27264	50.8	945.9	16.71	0	0	0	0
212009	58.25	155.65	26906	54.1	956.2	15.44	0	169.82	0	2398
212010	107.36	240.97	53612	111.9	1630.2	27.69	0	350.42	0	4048
212011	0	141.42	26662	74	853.5	14.64	0	187.14	0	2585
212012	0	22.35	6678	17.8	171.2	2.27	0	0	249	378
212013	0	38.56	16742	38.4	343.3	5.64	0	0	0	700
212014	0	66.99	19239	41.6	613.9	12.71	0	0	867	1409
212015	37.5	75.6	17377	45.2	660.5	11.34	9.6	0	479	1307
212016	0	128.91	26717	58.8	989.9	12.43	15.65	143.45	950	2069
212017	180.87	498.14	89942	218	3153.7	50.82	0	0	0	0
212018	0	130.43	24814	51.9	877.3	12.29	0	140.33	0	0

Table A3.2 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1980 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
212019	50.88	138.18	27109	52.1	855.4	14.52	0	0	833	0
212020	0	0	26758	61.4	927.5	0	14.46	154.19	801	0
212021	50.48	124.62	26338	49.9	851.1	12.27	14.92	0	0	0
212022	67.56	154.47	28416	74.7	1189.8	18.39	15.51	146.44	0	0
212023	0	134.09	26429	58.5	955.1	14.23	15.09	146.71	986	1992
212024	0	165.53	29561	66.55	1137	15.17	17.82	0	1184	0
212025	64.5	165.47	28639	72.2	1165.1	16.53	0	0	983	0
212026	0	148.43	29177	63.8	1012.7	14.16	0	0	0	0
212027	56.23	137.52	28076	62.6	1009.4	14.18	16.3	0	991	0
213001	101.67	194.65	22483	120.31	1934	28.32	32.71	194.26	3083	3027
213002	60.67	242.75	28834	62.17	911	15.48	0	167.26	1532	2154
213003	54.81	162.45	23761	50.59	905	13.68	16	168.03	1532	1150
213004	0	0	0	37.18	570	0	10.83	0	0	0

(a) Prices for wine, olive oil, heating gas oil, diesel oil and motor spirit per 100 litres; prices for flowers and eggs per 100 items.

Table A3.3 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1985

Product	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain
111101	42.05	110.83	31301	45.65	791.3	11.18	9.11	152.46	1947	2604
111102	0	162.3	44017	0	0	0	0	0	3337	2917
111201	39.85	104.09	30380	45.9	759.9	10.66	9.25	143.24	1919	2205
111202	42.2	105.78	0	47.1	0	11.44	10.33	0	2166	2240
111301	41.91	95.64	30594	43.6	775.3	0	0	138.59	0	2371
111302	38.62	88.18	38289	42.5	700	10.03	7.77	133.38	2597	2223
111303	47.59	120.52	33957	0	0	0	0	0	1818	2636
111304	0	0	53468	0	0	0	0	0	3484	3810
112101	24.58	71.78	45189	41	742	6.35	0	0	2323	1629
112102	18.54	67.29	27934	14.4	189.4	4.61	0	69.38	2113	1217
113101	95.6	218.37	83670	125.22	1606.8	26.7	34.59	279.56	4900	7230
114101	73.5	198	0	79.8	0	19.6	0	201.54	0	3857
114102	0	763.03	137475	172.8	0	0	0	0	11376	0
114103	0	0	0	0	0	0	0	0	9884	12541
115101	90.64	253	55096	74	1270	36.92	0	284	3235	2396
115102	74.51	231	50365	70	1116	27.94	0	207	2840	2265
115103	137.98	0	0	162	2099	54.37	0	411	0	0
115104	79.31	295	59802	90	1623	32.51	0	414	4662	2210
115105	74.38	212	55097	0	951	29.3	0	0	3240	0
115106	0	502	74642	125	1938	47.52	0	0	0	0
115107	0	428	72076	0	2404	0	0	0	3763	5431
115108	0	560	117437	0	0	0	0	0	4588	3618
115109	253.7	814	187885	0	6131	84.9	0	1429	8868	11827
115110	104.46	0	0	0	2749	0	0	421	0	0
115111	92.08	0	0	0	1034	0	0	0	0	0
115112	0	456	0	0	2293	0	0	0	0	2751
115113	0	0	64769	0	2107	38.26	0	571	0	0
115114	404.18	1365	0	527	8801	132.96	78.67	1285	7015	12453
115115	404.18	0	214100	485	7844	0	78.67	1285	7015	0
115116	0	0	340397	685	10626	0	0	0	0	0
115117	0	384	64231	0	0	0	0	0	4744	3866
115118	0	0	54345	0	0	0	0	0	2686	3510
115119	0	0	49143	0	0	0	0	0	2645	2455
115120	0	0	76659	0	0	0	0	0	3238	7586
115121	0	0	48326	0	0	0	0	0	2651	2180
115122	0	0	21669	0	0	0	0	0	1241	1181
115123	0	0	208000	0	0	0	0	0	14247	19043
115124	0	0	248874	0	0	0	0	0	20508	22007
115125	0	0	103739	0	0	0	0	0	8162	11072
115126	0	0	171500	0	0	0	0	0	9214	7218
115127	0	0	90875	0	0	0	0	0	6639	5741
115128	0	0	160000	0	0	0	0	0	7819	0
115129	0	0	34458	0	0	0	0	0	2447	0
115130	0	0	0	0	0	0	0	0	12556	0
115131	0	0	0	0	0	0	0	0	13352	0
116101	76.49	0	79469	123	1552.4	28	30.48	0	4443	3679
116102	95.69	251	0	0	1142.4	29.33	0	461	0	0
116201	73.45	0	48503	0	1034	0	0	0	2505	2404
116202	82.7	368	0	0	1197	0	0	0	0	0
116203	98.14	0	0	173	3097	54.87	32.47	0	0	0
116204	91.82	0	0	0	3313	59.99	35.49	734	0	0
116301	154.18	0	0	117	0	31.42	0	0	0	0
116302	238.31	613	0	0	3597	36.8	0	507	0	0
116303	18.86	0	0	25	0	14.27	0	0	2963	2801

Table A3.3 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1985 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
116304	23.07	0	0	0	595.5	15.16	0	74	0	0
116305	28.87	0	0	42	0	17.46	0	0	0	0
116306	33.68	0	0	0	592.5	0	0	109	0	0
116307	42.62	0	0	85	0	15.66	0	0	0	0
116308	75.67	0	0	0	845.5	16.99	0	0	0	0
116309	90.68	0	60239	103	775	32.15	0	0	1961	0
116310	118.5	0	0	0	0	36.86	0	0	0	0
116311	162.2	0	0	300	2641	78.56	0	0	0	0
116312	209.6	0	0	0	0	82.47	0	1127	0	0
116313	834.6	0	370792	689	21216	297.58	0	4251	0	15469
116314	1127.01	1506	0	0	24918	326.34	0	0	0	0
116315	39.91	0	55130	0	0	0	0	0	4145	2825
116316	81.6	0	0	113	0	41.73	0	0	0	0
116317	118.86	416	0	0	2062	47.05	0	650	0	0
116318	40.42	0	61312	53	0	12.53	0	0	2507	1965
116319	53.61	197	0	0	1034	12.69	0	263	0	0
116320	36.96	166	43045	0	509	12.68	0	141	2404	1280
116321	228.36	0	124431	0	0	28.82	0	0	5243	10192
116322	262.1	0	0	0	7360	39.55	0	1262	0	0
116323	92.47	0	99972	166	4687	0	0	0	7368	9832
116324	214.81	982	0	0	0	0	0	0	0	0
116325	0	932	0	243	0	132.98	144.76	1485	0	11160
116326	0	344	0	0	0	0	0	381	0	2367
117101	82.63	406	94201	34.54	674	10.85	12.47	185	6138.18	2132
117102	0	414.57	95495	63.48	0	15.53	13.24	0	6222.3	0
117103	57.45	103.2	13233	35.34	549	9.1	10.9	316	862.27	871
117104	51.98	0	38775	24.09	490	34.5	8.62	149	2526.6	0
117105	45.07	153.9	33575	23.82	491	7.22	9.16	116	2187.8	0
117106	52.68	258.5	67235	21.29	738	6.75	13.89	0	4381.06	0
117107	102.69	298.1	49790	56.83	1287	21.94	24.85	302	3244.34	0
117108	428	0	0	290.23	0	111.93	0	951	0	0
117109	734	0	0	369.02	0	183.75	0	1872	0	0
117110	201	0	0	146.68	0	105.07	138.89	559	0	0
117111	471	0	0	263.03	0	158.63	213.41	918	0	0
118101	102.38	278.88	0	108.5	1956	0	21.05	360	0	0
118102	792.56	2620	357559	0	14880	0	0	0	38168	27339
118103	728	2620	319000	0	14900	0	0	0	64460	0
118104	881	0	369000	0	17000	0	0	0	35960	0
118105	732.92	914	0	0	7092.3	227.8	0	0	0	46910
118106	802	914	0	0	7912	0	0	0	0	0
118107	0	0	0	0	0	0	0	0	11083	11850
118108	0	0	0	0	0	0	0	0	11316	14500
118109	0	0	518523	0	0	0	0	0	28611	19597
118110	0	0	469002	0	0	0	0	0	27559	19276
118111	0	0	0	0	0	0	0	0	25510	18765
118112	160.97	318.1	53210.74	0	0	0	0	0	5254.36	2352.7
121101	572.1	1764	353423	595	10692	0	0	1362	20296	30519
121102	413.2	1295.72	318236	477	8697	0	117.41	1357	0	25690
121103	373.2	1275.68	227375	428	7239	93.13	100.97	1231	0	0
121104	0	1298.64	224608	420	8019	96.98	115.5	1352	0	0
121105	326.5	1196.64	318450	408	6653	78.8	85.22	1134	0	20563
121106	297.6	991.64	173605	348	5768	71.17	71.72	1160	14869	14658
121107	258.3	823.68	141908	295	4940	60.31	54.51	863	0	0
121108	745.12	2341.52	553628	871.12	15064.2	196.08	210.42	3010.22	39540	0

Table A3.3 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1985 (continued)

Product	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain
121109	717.53	2256.4	516615	841.33	14354.4	195.63	191.59	2829.46	39045	0
121110	678.54	2172.64	468620	810.79	13583.1	189.99	182.73	2665.63	38247	0
121111	0	2060.73	0	0	0	0	0	2430.4	0	0
121112	713.05	2346.84	0	0	15259.6	193.45	217.49	2572.77	0	0
121113	0	2208.77	0	0	0	186.89	216.8	2480.29	0	0
121114	606.86	2157.46	372176	713.04	13352.1	0	172.87	2384.64	30875	0
121115	566.24	1915.65	333378	688.71	11835.8	143.56	167.72	2237.54	29788	0
121116	0	1639.42	278915	596.72	10038.6	135.65	152.7	1969.35	28914	0
121117	653.78	2307.4	502315	724.17	13720.6	186.95	201.58	2511.25	37338	0
121118	612.58	1966.28	398039	694.38	0	179.95	196.5	2378.4	36398	0
121119	716.59	2287.54	513697	835.6	14469.6	192.83	190.47	2723.84	39009	0
121120	717.03	2355.07	0	0	15579.7	190.82	217.21	2519.86	0	0
121121	581.71	1902.41	322226	680.36	11780.2	141.84	164.31	2214.4	28720	0
121122	636.64	2204.1	482160	693.5	14427.5	182.04	198.63	2403.71	36858	0
121123	664.34	2111.87	475995	737.4	13557.4	179.43	202.13	2468.52	37405	0
122101	319.6	0	224832	312	6431	81.15	0	976	17834	16466
122102	344	1171.92	267852	394	7483	94.4	0	1317	0	24012
122103	371	0	0	406	0	104.1	0	1389	0	0
122104	478.51	1286.33	315940	505	11204	141.81	112.73	1960	23283	20215
123101	0	1524	338743	525	0	74.31	104.6	1180	32493	29105
123102	0	1167	271263	364	6375	87.42	100.51	0	13511	0
123103	0	0	0	0	0	0	0	0	35937	45481
123104	0	0	0	0	0	0	0	0	16988	7146
123105	810	2502	0	0	19624	166.5	0	2557	0	75550
124101	206	638	187554	222	4243	0	70.35	654	11988	13665
124102	357	850	258199	369	7658.3	14.36	0	1817	0	21542
124103	256	623	187554	0	0	44.09	0	1252	0	12527
124104	0	1159	0	0	0	125.99	0	2053	0	0
124105	460	1080	0	0	0	143.38	0	0	0	0
124106	0	1014	0	0	0	138.61	0	0	0	0
125101	60.25	165.4	49228	67.3	1075	14.41	16.33	221	2962.02	0
125102	0	0	0	0	0	0	0	0	5808	9824
125103	0	0	0	0	0	0	0	0	3978	5337
126101	15.64	45.8	10560	12.2	201	3.07	4.69	45.96	973	999
211001	164.5	449.58	91220	188.7	2407.1	0	0	0	3205	2341
211002	159.54	468.72	86415	163.3	2920	53.72	51.3	616.51	2808	3406
211003	0	0	134194	237	0	46.16	0	910.48	3101	0
211004	24.4	49.99	20010	33.4	289.4	0	0	0	0	0
211005	188.78	536.47	118898	197.2	3355.6	54.73	76.4	614.91	3106	1585
211006	71.03	207.72	46995	89	1552.6	17.78	25.48	279.97	0	1515
211007	104	368.84	67271	130	2153	0	43.55	454.2	1346	3022
211008	57.8	0	0	60.9	1075.5	19.88	0	0	1035	0
211009	44.43	168.66	0	0	503.3	15.18	15.95	116.67	0	0
211010	51.98	168.66	0	0	914.9	12.64	13.65	0	0	0
211011	52.34	0	28035	59.3	1000.3	16.9	0	222.67	0	3770
211012	49.48	0	28035	59.3	958.4	15.36	0	0	0	3770
211013	54.09	183.44	22100	67.9	1020.2	18.01	18.54	223.34	1124	2078
211014	61.3	183.44	35832	67.9	1156.2	18.01	20.02	0	1401	3849
211015	53.41	0	23528	64.4	853.5	17.06	0	0	0	2144
211016	39.43	0	23528	43.4	765.9	11.2	0	0	0	2144
211017	50.21	0	38897	0	0	18.48	20.1	0	1060	3779
211018	59.65	0	66670	0	0	16.74	0	0	1325	3779
212001	43.15	0	0	53.1	0	14.78	0	0	2432	2704
212002	40.75	86.22	24674	0	881.8	13.87	26	0	1916	2195

Table A3.3 Prices for products per 100 kg (a) in mio national currency (for Italy: 000 mio) in 1985 (continued)

Product	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
212003	44.8	127.61	31719	51.5	994.1	13.68	0	157.41	2386	2607
212004	40.11	110.09	35352	46.3	1000.2	13.85	0	0	3318	2304
212005	54.46	144.84	32449	62.2	1273	18.32	0	0	2370	2765
212006	0	0	40565	63.2	1070	14.97	16.68	0	0	0
212007	0	0	40888	74.4	1336.9	18.21	22.48	0	0	0
212008	0	0	41330	0	1207.3	19.97	0	0	0	0
212009	64.02	224.78	39770	55.4	1225.8	19.31	0	206.96	0	3765
212010	108.41	328.77	81953	105.9	2127.5	33.53	0	458.2	0	6455
212011	0	200.98	41673	82.4	1113.5	18.62	0	233.22	0	4070
212012	0	25.57	9734	22.3	224.3	2	0	0	513	650
212013	0	74.76	21855	43.7	508.8	6.53	0	0	0	1120
212014	0	81.06	38781	45.4	747.2	14.22	0	0	2694	2349
212015	39.39	104.21	31525	51.8	886.6	12.97	13.4	0	1332	2481
212016	0	186.08	43317	62.6	1288.8	14.73	20.83	195.08	2560	3707
212017	214.38	804.15	153261	276	4882.8	78.57	0	0	0	0
212018	0	175.39	39700	51.2	1120.2	14.83	0	186.05	0	0
212019	51.58	175.25	41760	54.1	1107.7	17.44	0	0	2240	0
212020	0	0	45731	64.5	1178.9	0	17.65	201.81	2240	0
212021	49.22	168.74	42356	48.9	1078.1	14.41	18.26	0	0	0
212022	68.16	214.03	46025	78.4	1521.4	22.57	20.16	196.64	0	0
212023	0	199.93	42760	60.6	1226	17.74	19.57	191.38	2698	3664
212024	0	224.78	47790	72.4	1537	17.14	24.2	0	3145	0
212025	0	222.5	46145	81.8	1595.9	21.79	0	0	2787	0
212026	0	189.57	46353	68.8	1344.9	18.03	0	0	0	0
212027	59.18	179.24	44584	69.2	1316.3	17.73	21.66	0	2732	0
213001	120.15	417.34	42368	157.34	2654	43.14	54.19	284.13	6033	4975
213002	78.56	424.13	51604	84.96	1399	30.28	0	262.48	3429	4600
213003	69.58	301.23	67713	78.76	1399	23.05	29.06	268.51	3429	3040
213004	0	0	0	58.65	1005	0	21.85	0	0	0

(a) Prices for wine, olive oil, heating gas oil, diesel oil and motor spirit per 100 litres; prices for flowers and eggs per 100 items.

APPENDIX 4 Values of final agricultural output and intermediate consumption in national currency

Sources:
Unless otherwise indicated: Eurostat, *CRONOS databank for macro economic time series, COSA domain: Economic accounts for agriculture and forestry*, Luxembourg.

Notes:
(1) Volumes of tomatoes and cauliflowers in FR Germany from: *Statistisches Jahrbuch über Ernährung. Landwirtschaft und Forsten der Bundesrepublik Deutschland*, 1982, 1988. Landwirtschaftsverlag GMBH, Münster-Hiltrup. Volumes of wheat in Denmark from: Danmarks Statistik, *Landbrugsstatistik 1987 (Agricultural Statistics 1987)*, Copenhagen, 1988. These volumes have been multiplied by prices to obtain values.
(2) Values of flowers in 1975 in Greece have been calculated by deflating the values of flowers in 1980 with the value index for final crop output (1975=100).
(3) Arable land with flowers in Ireland in 1985 is 500 ha (Eurostat, *Farm structure, 1985 survey: main results*, Luxembourg, 1987). We have assumed that the arable land with flowers in 1975 and 1980 is the same as in 1985, and that the revenue from flowers per ha in Ireland is equal to the revenue from flowers per ha in Denmark to enable values of flowers in Ireland to be calculated.
(4) The values of pulses in 1975 and 1985 in Ireland are missing: for 1975 the value of 1974 has been used, for 1985 the unweighted average of the values of 1984 and 1987.

Tabel A4.1 Values of final agricultural output in national currency (in MIO) in 1975

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
1000	45577	113669	13029270	18551	137257	4671	865	20912	133838
1100	13519	52148	7942750	6092	46118	1564	142	5363	88033
1110	2966	17192	1532570	385	5590	570	53	2430	12764
1111	1718	8919	1142700	196	4007	254	13	436	9330
1112	1162	3491	16340	116	1208	306	40	1872	769
1113	86	4782	373530	73	375	11	1	122	2665
1121	759	3234	231220	795	5716	287	26	363	3692
1131	1696	3151	383290	632	5862	85	23	532	2719
1141	2	290	66840	32	96	21	0	11	1386
1151	1807	4273	1451100	375	4704	97	3	173	19774
1160	948	7669	1750090	1639	16691	358	24	411	11266
1161	49	401	84350	52	425	27	1	21	254
1162	33	899	246790	479	2711	33	8	103	5297
1163	866	6369	1418950	1108	13555	298	14	287	5716
1171	1975	2997	352280	1718	4157	52	14	523	809
1181	1889	11017	2064590	53	495	18	0	233	33106
1200	32058	61521	5086520	12459	91139	3107	724	15549	45805
1211	8227	20954	1479260	2424	24909	719	347	2985	8169
1221	10063	9003	739360	3373	32903	494	67	6068	5141
1231	87	2518	67500	147	110	175	25	9	9806
1241	677	4679	816760	753	3793	298	19	438	4562
1251	10420	18911	1290570	5080	21565	1064	240	5283	12561
1261	2361	2668	426350	551	6958	297	15	289	3980

Table A4.2 Values of intermediate consumption in national currency (in MIO) in 1975

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
2000	20860	42880	3346900	9000	75642	2551	280	10941	28361
2110	3417	8103	334930	660	6265	342	69	1589	3966
2120	7334	14166	2092070	5770	44911	1170	118	5165	9936
2130	3125	3010	224610	510	5016	188	28	730	3911

Table A4.3 Values of final agricultural output in national currency (in MIO) in 1980

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain
1000	54916	189352	29781280	25818	170035	8661	1711	34897	323629	1479584
1100	16973	92692	17988390	8746	56588	3065	265	9456	219746	833022
1110	4725	35543	3254440	554	9622	1459	133	4842	41467	185502
1111	2724	20578	2208790	395	5899	790	23	840	28334	90876
1112	1819	6530	48690	102	3374	642	107	3803	2938	62636
1113	182	8435	996960	57	349	27	3	199	10195	31990
1121	701	2495	491290	915	4369	330	34	419	9788	51183
1131	2144	5882	795000	713	8107	195	31	834	3178	25231
1141	6	482	73090	21	28	23	0	14	2862	11883
1151	1965	6901	3483860	385	5230	168	6	206	59436	182455
1160	1087	10899	4097890	2460	17920	567	39	525	30304	170358
1161	60	522	158790	58	626	56	2	30	741	5025
1162	33	1447	680000	698	2831	57	14	107	11053	32618
1163	994	8930	3259100	1704	14463	454	24	388	18510	132715
1171	2215	4374	810310	2953	5709	103	35	1221	1761	15356
1181	1938	22022	4534670	40	645	93	0	526	64900	159419
1200	37943	96660	11792890	17073	113447	5596	1446	25441	103883	646562
1211	9760	29514	3263190	2868	34106	1383	626	4296	15429	102392
1221	10813	12619	1812690	4516	37555	776	130	10242	14267	141581
1231	169	4657	254790	182	285	333	54	7	28172	74025
1241	1034	8740	1701000	1071	5101	513	49	660	8549	89498
1251	13651	33065	3241090	7106	27848	1989	541	8731	26235	136399
1261	2239	4367	801000	1121	7220	495	21	476	7766	63645

Table A4.4 Values of intermediate consumption in national currency (in MIO) in 1980

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain
2000	30716	84265	8477700	14503	97962	4799	760	19453	73304	567994
2110	4467	16113	933690	1039	8037	640	165	1971	9149	83824
2120	11489	26373	5027500	8965	53294	2219	316	10668	23182	266718
2130	4846	7602	837790	1446	8418	407	89	1599	14807	44651

Table A4.5 Values of final agricultural output in national currency (in MIO) in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
1000	59759	293450	48861690	34537	241809	11387	2731	53809	863934	2685388
1100	19435	149651	29097000	11835	81384	4354	323	17158	605118	1532082
1110	4820	54694	5343450	465	13397	2140	134	8117	79471	377615
1111	2871	30577	2849190	354	9286	1324	41	3007	42807	122709
1112	1778	8794	209500	81	3826	784	89	4420	5265	160298
1113	171	15323	2284760	30	285	32	3	690	31399	94608
1121	918	2360	741590	970	4803	303	36	474	21644	59964
1131	2331	7612	765690	782	10991	232	44	1104	11695	48778
1141	67	2294	155500	91	67	69	0	1092	4674	18734
1151	2494	10645	6048570	459	8293	231	7	242	143243	338829
1160	1307	18740	6891190	3269	26967	798	59	808	104457	285307
1161	60	796	209500	62	1288	66	3	42	2264	8109
1162	21	1981	1200390	899	5062	57	5	131	43197	58393
1163	1226	15963	5481300	2308	20617	676	51	635	58996	218805
1171	2345	5876	1992590	4682	9525	137	62	2071	5966	32922
1181	3109	40861	4223970	55	1072	261	4	1981	154197	194212
1200	40324	143799	19764690	22702	160425	7033	2408	36651	258816	1153306
1211	10064	45228	5152000	3607	50421	1758	1034	5599	35135	163225
1221	11327	18570	3192890	6742	51129	965	151	15417	28128	295058
1231	184	5031	381290	156	528	492	97	22	71197	135401
1241	1086	14176	3000390	1370	7739	718	72	983	17178	139805
1251	15381	49241	5627500	9109	39270	2466	965	12158	76783	241858
1261	1949	5996	1200090	1422	8285	501	28	568	22891	111833

Table A4.6 Values of intermediate consumption in national currency (in MIO) in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
2000	34072	132692	14521000	18011	141125	6489	1263	27513	200599	1205739
2110	4588	24431	1805890	1184	11957	928	290	3418	21377	148868
2120	11465	39011	8051290	10836	68061	2673	479	13467	61747	589830
2130	5959	12896	1705190	1957	14485	623	156	2117	42059	115459

APPENDIX 5 Values of final agricultural output and intermediate consumption in ECU

Values in ECU are obtained by converting values in national currency by the official exchange rate. For sources and notes: see appendix 4.

Table A5.1 Values of final agricultural output in ECU (in MIO) in 1975

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	EUR9
1000	14946	21369	16095	5918	3012	8341	1545	2936	3346	77508
1100	4433	9804	9811	1943	1012	2793	253	753	2201	33004
1110	973	3232	1893	123	123	1018	95	341	319	8117
1111	563	1677	1412	63	88	454	22	61	233	4573
1112	381	656	20	37	27	546	71	263	19	2019
1113	28	899	461	23	8	19	2	17	67	1525
1121	249	608	286	254	125	512	46	51	92	2223
1131	556	592	473	202	129	152	40	75	68	2287
1141	1	55	83	10	2	38	0	2	35	224
1151	593	803	1792	120	103	172	5	24	494	4108
1160	311	1442	2162	523	366	639	42	58	282	5825
1161	16	75	104	17	9	48	2	3	6	281
1162	11	169	305	153	59	59	15	14	132	918
1163	284	1197	1753	353	297	532	25	40	143	4626
1171	648	563	435	548	91	92	24	73	20	2496
1181	619	2071	2550	17	11	32	0	33	828	6161
1200	10513	11566	6283	3974	2000	5548	1292	2183	1145	44504
1211	2698	3939	1827	773	547	1284	620	419	204	12312
1221	3300	1693	913	1076	722	883	120	852	129	9687
1231	29	473	83	47	2	312	45	1	245	1239
1241	222	880	1009	240	83	531	33	61	114	3174
1251	3417	3555	1594	1620	473	1900	428	742	314	14045
1261	774	502	527	176	153	530	27	41	100	2827

Table A5.2 Values of intermediate consumption in ECU (in MIO) in 1975

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	EUR9
2000	6841	8061	4134	2871	1660	4555	499	1536	709	30867
2110	1121	1523	414	211	137	611	123	223	99	4461
2120	2405	2663	2584	1841	986	2089	211	725	248	13752
2130	1025	566	277	163	110	335	50	102	98	2727

Table A5.3 Values of final agricultural output in ECU (in MIO) in 1980

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
1000	21765	32263	25043	9354	4188	14471	2531	4458	5455	14840	134359
1100	6724	15794	15126	3168	1394	5121	392	1208	3704	8355	60986
1110	1872	6056	2737	201	237	2438	197	619	699	1861	16916
1111	1079	3506	1857	143	145	1320	35	107	478	911	9582
1112	721	1113	41	37	83	1072	159	486	50	628	4389
1113	72	1437	838	21	9	46	4	25	172	321	2945
1121	278	425	413	331	108	552	50	54	165	513	2889
1131	849	1002	669	258	200	325	45	107	54	253	3762
1141	2	82	61	8	1	38	0	2	48	119	362
1151	778	1176	2930	140	129	281	8	26	1002	1830	8299
1160	431	1857	3446	891	441	947	58	67	511	1709	10358
1161	24	89	134	21	15	93	3	4	12	50	445
1162	13	247	572	253	70	95	21	14	186	327	1796
1163	394	1522	2741	617	356	759	35	50	312	1331	8117
1171	878	745	681	1070	141	172	52	156	30	154	4078
1181	768	3752	3813	15	16	155	0	67	1094	1599	11279
1200	15032	16470	9917	6185	2794	9350	2139	3250	1751	6485	73373
1211	3867	5029	2744	1039	840	2310	926	549	260	1027	18590
1221	4284	2150	1524	1636	925	1296	192	1308	240	1420	14976
1231	67	793	214	66	7	557	79	1	475	742	3002
1241	410	1489	1430	388	126	857	73	84	144	898	5899
1251	5408	5634	2725	2574	686	3323	800	1115	442	1368	24076
1261	887	744	674	406	178	827	31	61	131	638	4577

Table A5.4 Values of intermediate consumption in ECU (in MIO) in 1980

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
2000	12169	14358	7129	5254	2413	8019	1124	2485	1236	5697	59883
2110	1770	2745	785	377	198	1069	244	252	154	841	8435
2120	4552	4494	4228	3248	1313	3707	467	1363	391	2675	26436
2130	1920	1295	704	524	207	680	131	204	250	448	6364

Table A5.5 Values of final agricultural output in ECU (in MIO) in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
1000	26842	43186	33745	13754	5384	19333	3818	6710	8170	20790	181733
1100	8730	22024	20095	4713	1812	7393	451	2140	5723	11861	84941
1110	2165	8049	3690	185	298	3634	187	1012	752	2924	22896
1111	1290	4500	1968	141	207	2248	58	375	405	950	12140
1112	799	1294	145	32	85	1332	125	551	50	1241	5653
1113	77	2255	1578	12	6	54	4	86	297	732	5102
1121	412	347	512	386	107	515	50	59	205	464	3058
1131	1047	1120	529	311	245	393	61	138	111	378	4332
1141	30	338	107	36	1	117	0	136	44	145	955
1151	1120	1567	4177	183	185	392	10	30	1355	2623	11641
1160	587	2758	4759	1302	600	1356	83	101	988	2209	14742
1161	27	117	145	25	29	111	4	5	21	63	547
1162	9	292	829	358	113	97	8	16	409	452	2582
1163	551	2349	3785	919	459	1147	71	79	558	1694	11613
1171	1053	865	1376	1865	212	233	86	258	56	255	6259
1181	1396	6013	2917	22	24	443	6	247	1458	1504	14030
1200	18112	21162	13650	9041	3572	11941	3367	4571	2448	8929	96792
1211	4520	6656	3558	1436	1123	2985	1446	698	332	1264	24019
1221	5088	2733	2205	2685	1138	1639	212	1923	266	2284	20172
1231	83	740	263	62	12	835	135	3	673	1048	3855
1241	488	2086	2072	546	172	1218	100	123	162	1082	8050
1251	6909	7247	3886	3628	874	4186	1350	1516	726	1872	32195
1261	875	882	829	566	184	851	39	71	216	866	5381

Table A5.6 Values of intermediate consumption in ECU (in MIO) in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
2000	15304	19528	10028	7173	3142	11017	1766	3431	1897	9335	82621
2110	2061	3595	1247	472	266	1575	405	426	202	1153	11402
2120	5150	5741	5560	4315	1515	4538	670	1679	584	4566	34320
2130	2677	1898	1178	779	323	1057	218	264	398	894	9685

APPENDIX 6 Values of final agricultural output and intermediate consumption in PPS

Values in PPS are obtained by converting values in national currency by the PPP based on GNE. For sources and notes: see appendix 4.

Table A6.1 Values of final agricultural output in PPS (in MIO) in 1975

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	EUR9
1000	12026	18275	19711	5315	2442	10497	1825	2176	4118	76386
1100	3567	8384	12016	1746	821	3515	299	558	2709	33614
1110	783	2764	2319	110	99	1281	113	253	393	8114
1111	453	1434	1729	56	71	571	27	45	287	4674
1112	307	561	25	33	21	687	83	195	24	1936
1113	23	769	565	21	7	24	3	13	82	1505
1121	200	520	350	228	102	644	54	38	114	2250
1131	447	507	580	181	104	191	48	55	84	2197
1141	1	47	101	9	2	48	0	1	43	251
1151	477	687	2195	107	84	217	6	18	608	4400
1160	250	1233	2648	470	297	804	50	43	347	6141
1161	13	64	128	15	8	60	3	2	8	300
1162	9	145	373	137	48	74	18	11	163	978
1163	228	1024	2147	317	241	670	30	30	176	4863
1171	521	482	533	492	74	116	29	54	25	2327
1181	498	1771	3123	15	9	40	0	24	1019	6500
1200	8459	9891	7695	3570	1622	6982	1526	1618	1409	42772
1211	2171	3369	2238	695	443	1616	733	311	251	11826
1221	2655	1447	1119	966	585	1111	142	631	158	8816
1231	23	405	102	42	2	393	54	1	302	1323
1241	179	752	1236	216	67	669	39	46	140	3343
1251	2749	3040	1952	1456	384	2392	506	550	386	13415
1261	623	429	645	158	124	667	31	30	122	2829

Table A6.2 Values of intermediate consumption in PPS (in MIO) in 1975

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	EUR9
2000	5716	7160	5259	2678	1398	5954	613	1182	906	30867
2110	955	1380	537	200	118	814	154	175	129	4461
2120	1964	2311	3212	1678	811	2668	253	545	310	13752
2130	878	515	362	156	95	449	63	81	128	2727

Table A6.3 Values of final agricultural output in PPS (in MIO) in 1980

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain	EUR10
1000	20645	32258	34996	9562	4020	16948	3180	4135	8428	21197	155369
1100	6381	15791	21138	3239	1338	5997	492	1120	5723	11934	73154
1110	1724	5878	3714	190	228	2597	250	565	1014	2525	19502
1111	1024	3506	2596	146	139	1546	43	100	738	1302	11139
1112	684	1112	57	38	80	1256	200	451	77	897	4851
1113	68	1437	1172	21	8	54	5	24	265	458	3512
1121	264	425	577	339	103	647	63	50	255	733	3456
1131	806	1002	934	264	192	381	57	99	83	361	4179
1141	2	82	86	8	1	45	0	2	75	170	470
1151	739	1176	4094	143	124	329	10	24	1548	2614	10800
1160	409	1857	4815	911	424	1109	73	62	789	2441	12890
1161	23	89	187	22	15	109	3	4	19	72	541
1162	12	247	799	258	67	111	26	13	288	467	2288
1163	374	1521	3830	631	342	889	44	46	482	1901	10061
1171	833	745	952	1094	135	202	65	145	46	220	4436
1181	729	3752	5329	15	15	182	1	62	1690	2284	14057
1200	14264	16467	13858	6323	2682	10951	2688	3014	2705	9263	82215
1211	3669	5028	3835	1062	806	2705	1163	509	402	1467	20646
1221	4065	2150	2130	1673	888	1518	241	1214	372	2028	16278
1231	64	793	299	67	7	652	99	1	734	1061	3777
1241	389	1489	1999	397	121	1004	92	78	223	1282	7072
1251	5132	5633	3809	2632	658	3892	1005	1034	683	1954	26432
1261	842	744	941	415	171	968	39	56	202	912	5291

Table A6.4 Values of intermediate consumption in PPS (in MIO) in 1980

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain	EUR10
2000	10366	12887	8943	4822	2079	8431	1268	2069	1714	7305	59883
2110	1519	2482	992	348	172	1133	277	211	215	1086	8435
2120	3817	3970	5220	2934	1113	3837	518	1117	533	3377	26436
2130	1653	1175	893	486	181	723	150	172	350	581	6364

Table A6.5 Values of final agricultural output in PPS (in MIO) in 1985

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain	EUR10
1000	28869	48424	44992	16291	6500	24074	4528	6586	13394	33778	227438
1100	9389	24695	26793	5583	2188	9205	535	2100	9382	19271	109140
1110	2329	9025	4920	219	360	4525	222	993	1232	4750	28575
1111	1387	5046	2624	167	250	2799	68	368	664	1544	14915
1112	859	1451	193	38	103	1658	148	541	82	2016	7089
1113	83	2529	2104	14	8	67	5	84	487	1190	6571
1121	443	389	683	458	129	641	60	58	336	754	3951
1131	1126	1256	705	369	295	490	72	135	181	614	5244
1141	32	379	143	43	2	145	0	134	72	236	1187
1151	1205	1757	5570	217	223	488	12	30	2221	4262	15983
1160	631	3092	6345	1542	725	1688	98	99	1619	3589	19429
1161	29	131	193	29	35	139	5	5	35	102	703
1162	10	327	1105	424	136	121	9	16	670	735	3552
1163	592	2634	5047	1089	554	1429	84	78	915	2752	15174
1171	1133	970	1835	2208	256	290	102	253	92	414	7554
1181	1502	6743	3889	26	29	551	7	242	2391	2443	17823
1200	19480	23729	18200	10708	4313	14868	3993	4486	4013	14507	118297
1211	4862	7463	4744	1701	1355	3717	1715	685	545	2053	28841
1221	5472	3064	2940	3180	1374	2040	251	1887	436	3711	24357
1231	89	830	351	74	14	1040	160	3	1104	1703	5367
1241	525	2339	2763	646	208	1517	119	120	266	1759	10262
1251	7430	8126	5182	4297	1056	5212	1601	1488	1190	3042	38624
1261	942	989	1105	671	223	1060	47	70	355	1407	6867

Table A6.6 Values of intermediate consumption in PPS (in MIO) in 1985

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece	Spain	EUR10
2000	13402	17828	10887	6917	3089	11170	1705	2742	2532	12349	82621
2110	1824	3318	1369	460	265	1614	395	344	273	1541	11402
2120	4441	5162	5945	4099	1467	4531	637	1322	768	5949	34320
2130	2357	1742	1286	756	319	1078	212	212	534	1189	9685

APPENDIX 7 Conversion rates in ECU and PPS, farm labour force and agricultural area in use

Table A7.1 Conversion rates in ECU: 1 ECU = ... national currency

	Germany	France	Italy	Netherlands	Belgium	United Kingdom	Ireland	Denmark	Greece	Spain
1975	3.05	5.32	809.54	3.14	45.57	0.56	0.56	7.12	39.99	
1980	2.52	5.87	1189.21	2.76	40.60	0.60	0.68	7.83	59.32	99.70
1985	2.23	6.80	1447.99	2.51	44.91	0.59	0.72	8.02	105.74	129.17

Source: Eurostat, Economic Accounts for agriculture and forestry 1982-1987, Luxembourg, 1989.

Table A7.2 Conversion rates in PPS: (based on GNE): 1 PPS = ... national currency

	Germany	France	Italy	Netherlands	Belgium	United Kingdom	Ireland	Denmark	Greece	Spain
1975	3.79	6.22	661.00	3.49	56.20	0.45	0.47	9.61	32.50	
1980	2.66	5.87	851.00	2.70	42.30	0.51	0.54	8.44	38.40	69.80
1985	2.07	6.06	1086.00	2.12	37.20	0.47	0.60	8.17	64.50	79.50

Source: Eurostat, Economic Accounts for agriculture and forestry 1982-1987, Luxembourg, 1989.
Notes: PPS in 1985 are based on the comparison of GNE of the twelve EG countries in 1985. PPS in 1975 and 1980 have been extrapolated backwards from the 1985 parities by Eurostat.

*Table A7.3 Total farm labour force in annual work units (AWU) (*1000)*

	Germany	France	Italy	Nether-lands	Belgium	United Kingdom	Ireland	Denmark	Greece	Spain	EUR9/10
1975	1233.6	1949.7	2826.5	253.7	139.6	625.7	324.7	176.7	828.1	0.0	8358.3
1980	1050.9	1847.5	2157.6	242.2	123.9	582.8	310.3	171.6	828.1	1432.5	8747.4
1985	917.9	1568.8	2125.7	234.4	106.9	543.0	275.8	122.4	931.2	1432.5	8258.6

Source: Eurostat, *Farm structure 1985 survey: main results*, Luxembourg, 1987.

Notes: For AWU in 1975 in Greece the figure of 1979/80 has been used; for AWU in 1980 and 1985 in Spain the figure of 1983 has been used.

*Table A7.4 Agricultural area in use (AA) in ha (*1000)*

	Germany	France	Italy	Nether-lands	Belgium	United Kingdom	Ireland	Denmark	Greece	Spain	EUR9/10
1975	12398.6	29463.6	16485.5	2086.3	1467.5	16469.0	5076.6	2966.0	3372.6	0.0	89785.7
1980	12212.3	29277.7	15857.8	2037.1	1421.0	17098.4	5048.5	2920.3	3549.8	23506.0	112928.9
1985	11884.0	28486.8	15600.7	2026.2	1381.0	16829.8	4995.6	2834.6	4116.3	23506.0	111661.2

Source: Eurostat, *Farm structure 1985 survey: main results*, Luxembourg, 1987.

Notes: For AA in 1975 in Greece the figure of 1977 has been used; for AA in 1980 and 1985 in Spain the figure of 1983 has been used; for AA in 1980 in the rest of the countries the figure for 1979/80 has been used.

APPENDIX 8 Matrices with basic parities

Parities are expressed with regard to the DM, which acts here as a standard of reference. See for an explanation section 3.4.1.

Table A8.1 Basic parities for output in 1975

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece
1000	1.00	1.61	245.10	0.91	13.62	0.13	0.12	1.90	9.20
1100	1.00	1.61	242.26	0.83	13.41	0.18	0.18	2.07	9.97
1110	1.00	1.41	261.38	0.96	14.13	0.14	0.15	1.97	11.10
1111	1.00	1.43	253.35	0.94	14.08	0.13	0.16	1.96	10.72
1112	1.00	1.37	277.23	0.98	14.28	0.14	0.15	2.00	11.34
1113	1.00	1.37	267.10	0.94	13.69	0.14	0.13	1.94	12.06
1121	1.00	1.71	410.48	1.31	19.14	0.28	0.31	2.61	17.07
1131	1.00	1.58	375.53	1.19	14.79	0.22	0.22	2.18	14.50
1141	1.00	3.97	654.49	1.31	12.44	0.27	0.28	1.85	30.32
1151	1.00	1.68	171.93	0.77	12.59	0.22	0.07	1.93	5.38
1160	1.00	1.82	219.72	1.00	14.96	0.23	0.32	3.19	6.14
1161	1.00	1.35	205.27	1.41	13.56	0.22	0.49	3.90	9.96
1162	1.00	3.19	199.02	1.11	19.12	0.24	0.32	4.75	6.10
1163	1.00	1.65	228.84	0.98	14.33	0.23	0.32	2.84	6.36
1171	1.00	2.27	257.03	0.43	8.88	0.11	0.12	1.26	12.42
1181	1.00	1.48	222.51	0.98	13.21	0.27	0.16	1.96	14.50
1200	1.00	1.64	263.12	0.94	13.77	0.11	0.11	1.83	9.33
1211	1.00	1.66	257.74	0.96	13.86	0.09	0.09	1.72	8.36
1221	1.00	1.58	241.04	0.99	15.12	0.18	0.16	2.08	9.90
1231	1.00	2.20	264.10	0.91	13.84	0.11	0.10	1.66	8.49
1241	1.00	1.75	336.04	0.93	16.96	0.14	0.18	2.25	14.08
1251	1.00	1.55	289.03	0.96	13.29	0.15	0.14	2.04	11.32
1261	1.00	1.40	206.65	0.63	8.41	0.11	0.14	1.42	10.98

Table A8.2 Basic parities for intermediate consumption in 1975

BH	Ger-many	France	Italy	Neth.-lands	Bel-gium	U.K.	Ire-land	Den-mark	Greece
2000	1.00	1.68	241.89	0.98	15.12	0.17	0.18	2.05	10.26
2110	1.00	1.76	217.96	1.01	12.82	0.16	0.20	2.24	6.04
2120	1.00	1.55	254.81	0.95	15.19	0.16	0.17	1.98	10.46
2130	1.00	2.03	181.93	1.07	17.23	0.20	0.20	1.98	19.24

Table A8.3 Basic parities for output in 1980

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
1000	1.00	2.11	445.49	0.95	14.74	0.21	0.25	2.61	18.96	30.05
1100	1.00	1.92	419.13	0.84	13.86	0.22	0.31	2.80	19.68	26.24
1110	1.00	1.88	486.32	0.98	14.62	0.22	0.20	2.79	21.10	32.33
1111	1.00	1.93	478.46	0.96	14.56	0.21	0.19	2.76	20.56	34.81
1112	1.00	1.85	490.92	1.01	14.76	0.22	0.21	2.81	21.71	29.69
1113	1.00	1.77	506.82	1.00	14.40	0.23	0.21	2.83	22.30	30.91
1121	1.00	1.69	877.30	1.15	16.39	0.26	0.57	3.95	40.16	46.01
1131	1.00	2.12	570.80	1.28	15.37	0.26	0.30	2.92	23.05	48.63
1141	1.00	2.13	475.60	0.99	9.89	0.24	0.18	1.42	31.57	32.74
1151	1.00	2.25	398.30	0.86	13.24	0.29	0.16	2.79	17.80	24.69
1160	1.00	2.40	424.98	1.02	17.19	0.28	0.44	3.76	16.76	24.62
1161	1.00	1.43	464.38	1.61	11.84	0.28	0.31	5.83	19.59	31.40
1162	1.00	4.06	334.00	1.15	18.94	0.33	0.20	5.02	10.55	16.45
1163	1.00	2.23	445.43	0.96	17.15	0.27	0.47	3.40	20.04	26.80
1171	1.00	2.47	451.78	0.50	9.43	0.19	0.17	2.11	16.41	16.89
1181	1.00	1.20	248.98	0.77	12.62	0.15	0.15	2.20	17.10	17.15
1200	1.00	2.23	474.50	0.99	15.05	0.20	0.19	2.54	18.66	33.03
1211	1.00	2.31	459.58	1.02	15.31	0.19	0.18	2.44	17.46	29.83
1221	1.00	2.22	487.06	0.92	16.33	0.24	0.21	2.54	19.76	28.77
1231	1.00	2.73	537.68	1.00	14.24	0.18	0.25	2.15	26.55	47.77
1241	1.00	1.98	469.40	1.03	17.02	0.19	0.27	2.71	20.79	35.40
1251	1.00	2.05	527.15	1.03	13.84	0.22	0.21	2.88	19.11	47.46
1261	1.00	2.02	421.57	0.74	10.06	0.17	0.24	2.31	18.43	31.51

Table A8.4 Basic parities for intermediate consumption in 1980

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
2000	1.00	2.38	444.79	1.08	16.33	0.25	0.29	2.74	18.23	30.25
2110	1.00	2.45	392.21	1.12	14.29	0.23	0.28	2.83	12.17	20.03
2120	1.00	2.22	482.82	1.09	16.84	0.26	0.29	2.77	17.78	34.96
2130	1.00	2.78	352.10	1.04	16.79	0.26	0.32	2.52	27.90	27.77

Table A8.5 Basic parities for output in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
1000	1.00	3.01	708.11	1.06	19.13	0.25	0.27	3.62	49.34	53.57
1100	1.00	2.85	703.10	0.90	16.67	0.29	0.27	3.53	45.34	42.61
1110	1.00	2.57	781.51	1.10	18.80	0.27	0.22	3.57	51.08	57.06
1111	1.00	2.66	743.97	1.09	18.82	0.27	0.22	3.63	48.14	59.14
1112	1.00	2.57	762.97	1.14	19.08	0.27	0.24	3.60	49.24	54.53
1113	1.00	2.33	853.39	1.05	17.69	0.25	0.19	3.30	57.96	56.86
1121	1.00	3.26	1664.32	1.14	17.56	0.25	0.46	4.16	103.78	65.96
1131	1.00	2.28	875.21	1.31	16.81	0.28	0.36	2.92	51.26	75.63
1141	1.00	2.90	636.40	1.00	15.67	0.27	0.33	2.74	49.70	53.47
1151	1.00	3.27	611.58	1.11	18.00	0.36	0.21	3.67	30.69	31.68
1160	1.00	3.93	869.38	1.15	21.18	0.37	0.47	5.08	50.27	41.39
1161	1.00	3.06	958.49	1.48	16.94	0.34	0.37	5.62	53.59	44.37
1162	1.00	5.52	830.56	1.50	22.27	0.49	0.29	6.20	42.90	41.17
1163	1.00	3.77	881.03	1.06	21.39	0.36	0.52	4.87	55.00	41.69
1171	1.00	3.53	686.65	0.52	10.82	0.20	0.21	3.03	44.74	23.16
1181	1.00	2.28	412.00	0.92	15.16	0.38	0.18	3.06	44.70	38.34
1200	1.00	3.09	714.27	1.12	20.04	0.24	0.28	3.63	53.06	61.06
1211	1.00	3.29	672.04	1.15	20.43	0.26	0.28	3.62	52.21	58.81
1221	1.00	2.92	705.93	1.06	22.02	0.28	0.24	3.71	53.42	51.64
1231	1.00	3.64	895.40	1.30	22.68	0.22	0.30	3.06	65.44	80.01
1241	1.00	2.61	834.42	1.15	22.81	0.09	0.35	4.05	58.95	62.31
1251	1.00	2.75	817.06	1.12	17.84	0.24	0.27	3.67	49.16	74.06
1261	1.00	2.93	675.19	0.78	12.85	0.20	0.30	2.94	62.21	63.87

Table A8.6 Basic parities for intermediate consumption in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
2000	1.00	3.28	693.18	1.16	20.69	0.31	0.39	3.56	39.66	50.28
2110	1.00	3.24	594.79	1.17	18.21	0.30	0.36	3.99	18.22	31.73
2120	1.00	3.00	750.81	1.17	21.71	0.31	0.37	3.56	47.92	58.61
2130	1.00	4.28	606.28	1.17	20.00	0.36	0.44	3.11	47.83	46.81

APPENDIX 9 Overview of results

Table A9.1 Values of final agricultural output in ASO (in MIO) in 1975

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	EUR9
1000	13123	20367	15307	5859	2901	10520	2069	3176	4188	77508
1100	4048	9694	9818	2204	1030	2553	236	777	2643	33004
1110	838	3457	1657	114	112	1165	102	348	325	8117
1111	490	1777	1285	59	81	547	23	63	248	4573
1112	319	699	16	32	23	579	74	257	19	2019
1113	24	978	391	22	8	21	3	18	62	1525
1121	302	753	224	242	119	410	33	55	86	2223
1131	592	694	356	186	138	134	36	85	65	2287
1141	1	48	67	16	5	52	0	4	30	224
1151	415	585	1936	111	86	100	10	21	844	4108
1160	284	1261	2384	488	334	464	22	39	549	5825
1161	14	85	118	11	9	36	1	2	7	281
1162	10	81	358	124	41	40	8	6	251	918
1163	261	1163	1872	341	286	387	13	30	271	4626
1171	486	325	337	974	115	112	28	102	16	2496
1181	549	2168	2698	16	11	20	0	35	664	6161
1200	9115	10669	5496	3755	1882	7886	1893	2411	1396	44504
1211	2236	3431	1560	689	488	2125	1046	471	265	12312
1221	3138	1779	956	1067	679	865	132	910	162	9687
1231	23	300	67	42	2	436	64	1	303	1239
1241	223	884	802	266	74	719	34	64	107	3174
1251	3140	3676	1346	1595	489	2166	518	780	334	14045
1261	585	472	511	218	205	670	26	50	90	2827

Table A9.2 Values of intermediate consumption in ASI (in MIO) in 1975

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	EUR9
2000	6482	7950	4300	2843	1554	4742	478	1659	859	30867
2110	1047	1411	471	200	150	660	105	217	201	4461
2120	2234	2776	2501	1842	901	2198	214	796	289	13752
2130	1033	490	408	158	96	307	46	122	67	2727

Table A9.3 Values of final agricultural output in ASO (in MIO) in 1980

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
1000	19469	31869	23700	9650	4090	14886	2450	4737	6052	17457	134359
1100	5642	16015	14266	3481	1358	4556	281	1121	3712	10553	60986
1110	1675	5982	2590	207	231	2508	190	657	775	2189	16916
1111	969	3800	1642	146	144	1311	44	108	490	929	9582
1112	623	1209	34	35	78	999	179	463	46	723	4389
1113	62	1613	667	19	8	40	4	24	155	351	2945
1121	307	647	246	348	117	558	26	47	107	488	2889
1131	879	1136	571	229	216	302	42	117	57	213	3762
1141	2	84	57	8	1	36	0	4	34	135	362
1151	626	976	2788	143	126	185	11	24	1064	2356	8299
1160	379	1585	3361	837	363	710	31	49	630	2412	10358
1161	21	129	120	13	19	70	2	2	13	56	445
1162	9	99	565	168	41	47	19	6	291	550	1796
1163	356	1437	2621	633	302	603	18	41	331	1774	8117
1171	618	494	500	1640	169	155	56	162	30	254	4078
1181	416	3942	3907	11	11	133	0	51	814	1994	11279
1200	13805	15790	9043	6252	2743	10236	2707	3650	2025	7122	73373
1211	3531	4625	2569	1020	806	2597	1244	636	320	1242	18590
1221	3954	2076	1361	1794	841	1184	231	1473	264	1799	14976
1231	70	703	196	75	8	783	88	1	438	640	3002
1241	369	1574	1292	370	107	987	66	87	147	901	5899
1251	5140	6067	2315	2594	758	3477	982	1142	517	1082	24076
1261	719	693	610	489	231	956	28	66	135	649	4577

Table A9.4 Values of intermediate consumption in ASI (in MIO) in 1980

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
2000	11777	13586	7308	5152	2300	7306	988	2725	1542	7199	59883
2110	1574	2313	839	328	198	988	208	246	265	1475	8435
2120	4490	4635	4069	3219	1236	3370	420	1505	510	2981	26436
2130	1874	1056	920	537	194	603	108	246	205	622	6364

Table A9.5 Values of final agricultural output in ASO (in MIO) in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
1000	26548	43275	30655	14456	5616	20088	4448	6601	7779	22268	181733
1100	8171	22101	17399	5535	2053	6406	502	2045	5611	15118	84941
1110	2075	9160	2943	183	307	3475	257	978	670	2849	22896
1111	1245	4993	1661	141	214	2159	82	360	386	900	12140
1112	755	1451	117	30	85	1240	160	522	45	1248	5653
1113	72	2791	1135	12	7	55	7	89	230	705	5102
1121	491	388	238	456	146	639	42	61	111	486	3058
1131	1011	1445	379	259	284	360	52	164	99	280	4332
1141	28	329	102	38	2	107	0	165	39	146	955
1151	890	1162	3530	148	164	226	12	24	1666	3818	11641
1160	652	2378	3955	1425	635	1077	63	79	1037	3440	14742
1161	30	131	110	21	38	96	4	4	21	92	547
1162	10	177	713	296	112	57	9	10	497	700	2582
1163	612	2114	3104	1089	481	946	49	65	535	2618	11613
1171	736	522	911	2811	276	211	90	214	42	446	6259
1181	1056	6090	3484	20	24	234	8	220	1172	1721	14030
1200	18137	20937	12446	9114	3601	13402	3931	4536	2194	8495	96792
1211	4601	6276	3505	1428	1128	3096	1701	707	308	1269	24019
1221	5033	2831	2010	2826	1032	1542	278	1847	234	2539	20172
1231	95	716	221	62	12	1137	167	4	564	877	3855
1241	386	1931	1278	423	121	2850	74	86	104	797	8050
1251	6823	7957	3055	3618	976	4573	1580	1470	693	1449	32195
1261	794	835	724	743	263	1041	38	79	150	714	5381

Table A9.6 Values of intermediate consumption in ASI (in MIO) in 1985

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain	EUR10
2000	15767	18692	9694	7168	3157	9621	1512	3573	2341	11096	82621
2110	1905	3133	1260	418	273	1292	330	356	487	1948	11402
2120	5410	6133	5060	4363	1479	4126	603	1788	608	4749	34320
2130	2843	1437	1342	796	345	833	168	324	420	1177	9685

Table A9.7 Price level indices in ASO for final agricultural output in 1975 (EUR9 = 100)

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
1000	114	105	105	101	104	79	75	92	80
1100	110	101	100	88	98	109	107	97	83
1110	116	93	114	108	110	87	94	98	98
1111	115	94	110	106	108	83	98	97	94
1112	119	94	125	114	114	94	95	102	103
1113	117	92	118	107	108	91	81	97	108
1121	82	81	128	105	106	125	140	92	107
1131	94	85	133	109	93	114	111	88	104
1141	50	113	122	63	41	73	76	39	115
1151	143	137	93	107	120	172	52	118	59
1160	110	114	91	107	110	138	191	150	51
1161	115	89	89	157	104	135	307	192	87
1162	114	208	85	123	145	149	198	231	53
1163	109	103	94	104	104	138	192	132	53
1171	133	173	129	56	79	82	86	72	126
1181	113	96	95	108	100	163	96	95	125
1200	115	108	114	106	106	70	68	91	82
1211	121	115	117	112	112	60	59	89	77
1221	105	95	95	101	106	102	91	94	79
1231	125	158	124	111	116	72	71	89	81
1241	99	99	126	90	113	74	98	96	107
1251	109	97	118	102	97	88	83	95	94
1261	132	106	103	80	75	79	102	80	111

Table A9.8 Price level indices in ASI for intermediate consumption in 1975 (EUR9 = 100)

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece
2000	106	101	96	101	107	96	105	93	83
2110	107	108	88	105	92	92	117	103	49
2120	108	96	103	100	109	95	98	91	86
2130	99	115	68	103	114	109	110	84	146

Table A9.9 Price level indices in ASO for final agricultural output in 1980 (EUR10 = 100)

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
1000	112	101	106	97	102	97	103	94	90	85
1100	119	99	106	91	103	112	139	108	100	79
1110	114	92	118	102	104	105	85	103	103	94
1111	111	92	113	98	101	101	79	99	97	98
1112	116	92	121	107	106	107	89	105	107	87
1113	117	89	126	107	105	114	90	107	111	91
1121	90	66	168	95	92	99	193	115	154	105
1131	97	88	117	113	92	108	107	91	95	119
1141	106	97	107	96	65	107	73	49	143	88
1151	124	120	105	98	102	152	74	112	94	78
1160	114	117	103	106	121	133	186	138	81	71
1161	113	69	111	166	83	133	129	211	94	89
1162	143	249	101	150	168	200	109	231	64	59
1163	111	106	105	98	118	126	192	121	94	75
1171	142	151	136	65	83	111	92	97	99	61
1181	185	95	98	130	145	117	103	131	134	80
1200	109	104	110	99	102	91	79	89	86	91
1211	109	109	107	102	104	89	74	86	81	83
1221	108	104	112	91	110	109	83	89	91	79
1231	96	113	110	88	85	71	90	67	108	116
1241	111	95	111	105	118	87	111	97	98	100
1251	105	93	118	99	91	96	81	98	86	126
1261	123	107	110	83	77	87	110	92	97	98

Table A9.10 Price level indices in ASI for intermediate consumption in 1980 (EUR10 = 100)

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
2000	103	106	98	102	105	110	114	91	80	79
2110	112	119	94	115	100	108	117	103	58	57
2120	101	97	104	101	106	110	111	91	77	90
2130	102	123	77	97	107	113	122	83	122	72

Table A9.11 Price level indices in ASO for final agricultural output in 1985 (EUR10 = 100)

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
1000	101	100	110	95	96	96	86	102	105	93
1100	107	100	115	85	88	115	90	105	102	78
1110	104	88	125	101	97	105	73	103	112	103
1111	104	90	118	100	97	104	70	104	105	106
1112	106	89	124	107	100	107	78	106	110	99
1113	106	81	139	98	93	99	63	97	129	104
1121	84	90	215	85	73	80	120	97	184	96
1131	104	78	139	120	86	109	117	84	112	135
1141	108	103	106	95	84	109	110	82	113	100
1151	126	135	118	123	112	173	82	128	81	69
1160	90	116	120	91	95	126	132	127	95	64
1161	89	90	132	117	75	116	102	139	101	68
1162	91	165	116	121	100	169	82	157	82	65
1163	90	111	122	84	95	121	145	122	104	65
1171	143	166	151	66	77	110	95	121	135	57
1181	132	99	84	108	99	189	74	112	124	87
1200	100	101	110	99	99	89	86	101	112	105
1211	98	106	102	101	100	96	85	99	108	100
1221	101	97	110	95	110	106	76	104	114	90
1231	87	103	119	100	97	73	81	74	119	120
1241	126	108	162	129	143	43	136	142	157	136
1251	101	91	127	100	90	92	85	103	105	129
1261	110	106	114	76	70	82	103	90	144	121

Table A9.12 Price level indices in ASI for final agricultural output in 1985 (EUR10 = 100)

BH	Germany	France	Italy	Neth.-lands	Belgium	U.K.	Ireland	Denmark	Greece	Spain
2000	97	104	103	100	100	115	117	96	81	84
2110	108	115	99	113	98	122	123	120	41	59
2120	95	94	110	99	102	110	111	94	96	96
2130	94	132	88	98	93	127	130	81	95	76

APPENDIX 10 List of abbreviations

AA	Agricultural Area in Use
AS	Agricultural Standard
ASI	Agricultural Standard for Intermediate Consumption
ASO	Agricultural Standard for Output
AWU	Annual Work Unit
BH	Basic Heading
EAA	Economic Accounts for Agriculture
EC	European Community
ECU	European Currency Unit
EKS	Elteto-Köves-Szulc
EUR9	FR Germany, France, Italy, the Netherlands, Belgium, the United Kingdom, Ireland, Denmark and Greece
EUR10	FR Germany, France, Italy, the Netherlands, Belgium, the United Kingdom, Ireland, Denmark, Greece and Spain
FADN	Farm Accountancy Data Network
FAO	Food and Agricultural Organization
G	Gerardi
GDP	Gross Domestic Product
GK	Geary-Khamis
GNE	Gross National Expenditure
GVA	Gross Value Added
ICP	International Comparisons Project
IP	Implicit Prices
OECD	Organization for Economic Cooperation and Development
PPP	Purchasing Power Parity
PPS	Purchasing Power Standard (based on GNE)
SPEL	Sectoral Production and Income Model for the European Agricultural Sector
VAT	Value Added Tax
UN	United Nations