

Handbook for EU Agricultural Price Indices

2000=100

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Foreword

The EU Agricultural Price Indices is the principal domain amongst the EU Agricultural Price Statistics.

The previous *Handbook for EU Agricultural Price Statistics* (version 1.0; February 2002) resulted from the revision of the methodology of the Economic Accounts for Agriculture (EAA)¹ and of the European System of Accounts². With the re-basing of the EU Agricultural Price Indices to the base 1995 = 100, the methodology of EU Agricultural Price Statistics was adapted in order to be closer in line with the new accounts methodology.

The present *Handbook for EU Agricultural Price Indices* has taken into account all the modifications introduced as a consequence of the rebasing to 2000=100. Its purpose is to provide all producers and users an updated guide and reference in the field of agricultural price indices.

¹ *Regulation of the European Parliament and of the Council on Economic Accounts for Agriculture in the Community...*

² EUROSTAT: *European System of Accounts. ESA 1995*, Luxembourg, 1996.

1. Introduction

1.1 Objectives of Agricultural Price Indices vis-à-vis other Agriculture Price Statistics

- 1.01 *Agricultural Price Indices* (API) are used above all in relation to the analysis of **price developments** and their effect on agricultural income.
- 1.02 API have a close link with *Absolute Agricultural Prices* (AAP), whose main use is the comparison of the agricultural **price levels** between Member States.
- 1.03 In some Member States, absolute agricultural prices and agricultural price indices are also used in the framework of the *Economic Accounts for Agriculture* (EAA), but this requires methodological compatibility of these statistics.
- 1.04 The statistics on *Unit Values of Agricultural Products* form part of EUROSTAT'S EAA. Unit values are not prices in the true sense of the term. They are obtained by dividing a value component by the corresponding quantity component. Apart from the *pure* price variations from one year to the other, changes in unit values reflect changes in other characteristics which determine products and can affect these prices. This concerns particularly the physical (variety, calibre, quality etc.) and commercial characteristics (e.g. sale conditions). Some methodological remarks to the unit values statistics can be found in chapter VI of the EAA/EAF 97 manual¹.
- 1.05 EUROSTAT also receives data on *Agricultural Land Prices and Rents*. Since they refer to factors of production, these data are managed separately. The methodologies used in the individual Member States were described in the EUROSTAT annual publication on agricultural land prices and rents in the EU².

1.2 Treatment of data

- 1.06 The national authorities of the Member States (National Statistical Offices and/or Ministries of Agriculture) are responsible for calculating price indices and periodically updating the weights. The common methodology to be applied by Member States is discussed and adopted by the Working Group on Agricultural Accounts and Prices.
- 1.07 Data on API is sent to EUROSTAT according to the following timetable:
- monthly price indices: 6 weeks after the end of the reference month;
 - annual price indices: by 31 March of the following year.
- 1.08 For the purpose of calculating indices for EU-15, the same steps applied in the Harmonized Index of Consumer Prices (HICP) are followed in the API:
- Estimation of the API for the European Monetary Union (EMU) with the national weights
 - Conversion of the EMU weight and weights of the non-EMU Member States into Purchasing Power Standards (PPS)
 - Calculation of the API for the EU with the PPS weights

¹ EUROSTAT: *Manual on the economic accounts for Agriculture and Forestry EAA/EAF (Rev.1.1)*, Luxembourg, 2000

² EUROSTAT: *Agricultural land prices and rents in the EU. 1977-1998*, Theme 5 Series C, Luxembourg, 2000.

Further details of PPS and their application can be found in *Purchasing power parities and related economic indicators – Results for 1998*¹.

2. General remarks

2.1 Historical overview

- 2.01 The EU Agricultural Price Indices (output and input) comprise:
- the index of producer prices of agricultural products and
 - the index of purchase prices of the means of agricultural production.
- 2.02 The development of these indices began with the construction of an EU index for the selling prices of agricultural products at the beginning of the 1960s, initially based on the years 1957-58-59² and then on 1963³. In the early 1970s, United Kingdom, Ireland and Denmark were incorporated which led to a new Community index of producer prices of agricultural products for the nine Member States and for the Community as a whole (EU-9) with base 1970 = 100. For this index, a *Methodology*⁴ was published in 1976. For the first time, Community indices of purchase prices of the means of agricultural production, again with base 1970 = 100, were also produced.
- 2.03 These indices were replaced in 1980 by new ones based on 1975, and 1981 saw the accession of Greece to the EC and the extension of the Community indices to EU-10. In 1985 a methodology of the EC Agricultural Price Indices (output and input)⁵ was published. This methodology was based mainly on the indices 1975 = 100, but outlined as well the changes taking place in the rebasing of the indices for the base 1980 = 100 (which was carried out in 1985).
- 2.04 With the accession of Spain and Portugal in 1986 to the EC, and of Austria, Finland and Sweden in 1995 to the EU, the EU Agricultural Price Indices have been extended to cover all the Member States of EU-12 and EU-15. First indices with the base 1985 = 100 were published in 1990, and rebased to 1990 = 100 in 1996. The rebasing to 1995=100 took place in 1999-2001, the handbook with the revised methodology was published in 2002⁶. Finally, in 2004 the new base year 2000=100 was implemented applying the same methodology of the previous base year (1995).

2.2 Aims and importance

- 2.05 Along with the physical quantities, the selling prices of agricultural products and purchase prices of the means of production have a decisive influence on farmers' incomes. It therefore seems useful to have indicators showing how agricultural revenue and expenditure are influenced by their price component⁷.
- 2.06 The purpose of the price indices is to provide information on trends in producer prices of agricultural products and purchase prices of the means of agricultural production. They are intended to permit comparison of these trends both between the various Member States and the

¹ Luxembourg, 2000.

² Cf. EUROSTAT: *Agricultural prices*, No 5 (Special issue), May 1965.

³ Cf. EUROSTAT: *Agricultural prices*, Supplement 5/1971.

⁴ EUROSTAT: *Methodology of the EC index of producer prices of agricultural products 1968-75*, 1976.

⁵ EUROSTAT: *Methodology of EC Agricultural Price Indices (output and input)*, Luxembourg, 1985.

⁶ EUROSTAT: *Handbook for EU Agricultural Price Statistics*. Version 1.0. February 2002.

⁷ See also Section 11: *Analysis: Terms of Trade*.

European Union as a whole and between the different products within a Member State or the European Union. They are also intended to facilitate comparisons between trends in producer prices and trends in purchase prices of the means of agricultural production. They cannot, however, express differences between the Member States in terms of absolute agricultural price levels.

2.07 The following points should be borne in mind in interpreting the EU Agricultural Price Indices:

- As regards spatial comparisons, the structures of the weights with respect to products and means of production reflect the sales and purchases in each country during the base year. The weights therefore differ from one country to another and this obviously has an effect on trends in the aggregate indices.
- In comparing the trends in output prices with those in input prices, the field of observation of the latter does not cover, as will be seen later, the whole of the operating expenditure of the agricultural sector.

2.08 In the majority of Member States, national indices of agricultural prices may differ from the EU Agricultural Price Indices in respect of their base, formula or field of observation.

3 Field of observation

3.01 The field of observation for a price index covers all the goods and services for which it is desired to measure the price trends. However, there are several concepts which can be distinguished, and these concepts are characterized by a different coverage of agricultural products.

3.02 Depending on their end use, agricultural products can be divided into two groups:

- products sold outside the agricultural sector (for direct utilisation or utilisation after processing) or for export;
- products to be sold within the agricultural sector as means of production, such as animal feedingstuffs, seeds or rearing animals.

3.03 When an agricultural price index covers only transactions between the agricultural and other economic sectors, treating the whole agricultural sector as a single holding, the coverage is that of the *national farm*. When also those products sold within the agricultural sector are covered, the concept corresponds to that of an *average farm*. For certain products, the distinction is an important one. Thus, for example, in the former case, sales of cereals as animal feed to other farmers will not be included (though sales of cereals to manufacturers of animal feedingstuffs will be included), whereas in the latter case all sales made by farmers will be included.

3.04 The index of producer prices of agricultural products (output index) is based on the **sales** of the agricultural products, and the input index is based on the **purchases** of the means of agricultural production. In the revised EAA methodology, and so in Agricultural Price Statistics, the *national farm* concept has been dropped¹. The sales concept has been extended and includes now also sales/purchases of agricultural output between agricultural units (farms) for intermediate consumption purposes, excluding however trade in animals between agricultural units. In contrast to Agricultural Price Indices, the EAA also includes the intra-unit production and consumption of animal feeding stuffs.

¹ For the calculation of the EU Agricultural Price indices, the *national farm* concept had been used for all Member States since the introduction of the 1975 = 100 indices. For the 1970 = 100 indices, a *mixed* system was used, whereby Germany drew up indices based on the *average farm* concept and the other eight Member States drew up indices based on the *national farm* concept. The indices for EUR 9 were also drawn up on the basis of the *national farm* concept, with Germany supplying the basic data required to calculate indices based on the same concept.

Limitation on the field of observation

- 3.05 A limitation on the field of observation of the index of purchase prices of the means of agricultural production results from the exclusion of the service part of insurance premiums. In contrast these premiums are covered in agricultural accounts.
- 3.06 By definition, the index of purchase prices of the means of agricultural production does not cover factors of production. Thus, wages and wage costs, rent and interest payments are **not** part of the field of observation.

Geographical coverage

- 3.07 The EU Agricultural Price Indices refer to the Member States (national level). They are not calculated on a regional level. Concerning the geographical coverage the following has to be taken into account:
- Spain: including Canary and Balearic islands;
 - France: including certain products of the overseas departments and territories (DOM/TOM).
 - Portugal: the indices refer to the mainland excluding the islands of Madeira and the Azores.

4 Structure of the indices

- 4.01 The general structure of the EU output and input indices, i.e. the list of groups, subgroups, classes, subclasses and categories for which partial indices should be calculated, is shown in Annex 1 for the 2000 = 100 indices¹. However, a number of additional points should also be noted:

Selection of representative price series by Member States

- 4.02 As the structure of production varies from one country to another, it was left to the discretion of the Member States which representative price series should appear in the subgroup in their own case.

Different coverage of the item *Other products*

- 4.03 When the breakdown of a given level of the classification does not fully cover all the items in the level, a new item *Others* has been added. The content of this heading could also vary from one country to another quite considerably.

Combined input index

- 4.04 Since 1993 EUROSTAT publishes a combined input price index which comprises the index of the prices of *Goods and services for current consumption in agriculture* (input I) and the index of price of *Goods and services contributing to agricultural investment* (input II).
- 4.05 The combined input index does not cover all input items of the agricultural branch and it varies from country to country in its composition.

Nomenclature

- 4.06 The nomenclature applied in the Agricultural Price Indices 2000=100 is the NACE Rev.1.

¹ Annex 1: *API Classification. Consolidated list of variables for the 2000 = 100 agricultural price indices.*

5 Weighting scheme

5.1 General remarks

- 5.01 To enable indices of groups of products or an overall index to be compiled from the various elementary indices of prices, it is essential to have a weighting scheme, and the weighting problem is exacerbated in the case of an international index covering several countries.
- 5.02 In principle, price indices can relate either to the production of agricultural products and the consumption of the means of production or to sales and purchases, but whichever pairing is chosen the weights must be consistent with them.
- 5.03 As the coverage of the EU Agricultural Price Indices are sales and purchases the weights consequently relate to these, and not to production of agricultural products and consumption of the means of agricultural production¹.

5.2 Output price index

- 5.04 The value weight attached to each elementary index in the output index is equal to the value of the sales of this product (exclusive of VAT) over the base period. This kind of weighting scheme differs substantially from a scheme based on values of total agricultural output. The two systems would be identical only if the proportion of sales to other sectors in total output were the same for all products.
- 5.05 Under the EAA, output is valued at the *basic price*, which is defined as the price received by the producer after deduction of any taxes or levies on the products and including any subsidies on products. However, practical difficulties arise with the use of the basic price concept for the calculation of the price indices, especially monthly ones. Thus the Working Party on Agricultural Price Statistics decided to use the *market price* concept (called *producer price concept* in the context of agricultural accounts). The market price is defined as the price received by the producer *without* the deduction of taxes or levies (except deductible VAT) and *without* the inclusion of subsidies².
- 5.06 In the framework of the EU Agricultural Price Indices (output), the value of sales should:
- **include** the value of production sold to dealers;
 - **include** the value of direct sales by farmers of crop products made to other agricultural units;
 - **include** the value of direct sales by farmers on the domestic market;
 - **include** the value of direct sales by farmers abroad (direct exports);
 - **include** the value of products processed on the farm, which, except in the case of *olive oil* and *grape must* or *wine*³, must be calculated on the basis of the quantities and prices of the raw materials from which they are made;

¹ It has to be taken into account that this choice makes the indices less useful as a guide to changes in the values of outputs and inputs, and hence to changes in incomes.

² The treatment of taxes, levies and subsidies is also considered in paragraphs 5.06, 5.09 and 8.28 to 8.32.

³ It should be noted, that, under the revised EAA, the production of *wine* and *olive oil* (exclusively using grapes and olives grown by the same holding) is considered as a characteristic agricultural activity. The production of wine or olive oil by units closely linked to agricultural holdings (e.g. agricultural cooperatives) is also treated as a characteristic agricultural activity. In contrast, the production of wine or olive oil by agro-food businesses is excluded.

- **include** the value of product related levies/taxes (other than deductible VAT).
 - **exclude** the value of any monetary compensation received by farmers in respect of the destruction of given quantities of products;
 - **exclude** the value of subsidies on products which farmers might have received;
 - **exclude** the value of consumption of own produce on agricultural holdings;
 - **exclude** the value of products sold from private, non-agricultural gardens¹;
 - **exclude** the value of changes in stock;
- 5.07 The elementary indices for the prices of animals refer to animals leaving agriculture (slaughter or export) and the weight is calculated as the value of the corresponding sales. Imports of animals are regarded as negligible².

5.3 Input price index

- 5.08 By analogy with the output index, the expenditure incurred by farmers in purchasing the means of production, including the purchases of crop products from other agricultural units for intermediate consumption, over the base period constitutes the basic value for calculating the value weights for the input index. This expenditure too is expressed excluding (deductible and reimbursable) VAT.
- 5.09 Means of production have to be valued at the purchase price which is the price the purchaser actually pays for the products. *It includes taxes less subsidies on products (but excludes deductible taxes like deductible VAT).*
- 5.10 In the case of the EU Agricultural Price Indices (input), it is assumed by convention that the fertilizers and feedingstuffs purchased are used in the same production period and that there are no stocks on farm.
- 5.11 The weights used in the index for *Goods and services contributing to agricultural investment* represent the expenditure incurred by farmers over the base period in purchasing this kind of goods and services.
- 5.12 The purchase of animals for production by agricultural holdings is no longer considered as intermediate consumption. Their weight in the input index is zero.

6 Type of index and calculation

6.1 General case

- 6.01 Several types of indices can be chosen according to the nature of the phenomena they are to describe and to the sources of information available. In most cases however, the principle of the Laspeyres index is at the basis of the index calculation. It can be calculated for a period of several years without it being necessary to alter the basket of representative products or the weights. Furthermore the parameters used for the calculation of the indices are well known at the time the

¹ It should be noted that under the revised EAA a distinction is made between units engaged in subsistence farming and units for which the agricultural activity represented solely a leisure activity, including the output of units engaged in subsistence farming in the EAA while excluding the agricultural output from leisure activities

² Animal imports are in many cases of very minor importance compared to the other components of animal output and so this assumption is usually acceptable. If it cannot be assumed that prices move in parallel, the proper solution would be to introduce a negative weighting factor for imported animals and to establish an index for this category of animals.

base is established. Changes only need to be made when the evolution of the products used and of their relative importance have made the basic structure inappropriate¹.

- 6.02 The EU Agricultural Price Indices are calculated for each Member State on the basis of the Laspeyres formula². The fixed weighting structure is representative of the base year. The following formulas show the Laspeyres index in its basic and in its weighted price relative form:

$$I^t = \frac{\sum_{i=1}^k p_i^t q_i^0}{\sum_{i=1}^k p_i^0 q_i^0} \cdot 100 = \sum_{i=1}^k \frac{p_i^t}{p_i^0} \cdot \frac{p_i^0 q_i^0}{\sum_{i=1}^k p_i^0 q_i^0} \cdot 100$$

where I : index (output or input);
 p : prices of products (or means of production);
 q : quantities sold of products (or quantities purchased of means of production);
 i : product i (or means of production i), ($i = 1, 2, \dots, k$);
 t : observation period;
 0 : base period.

- 6.03 However, in practice there are in most cases several price quotations for a given product i . It is then necessary to calculate separately, on the basis of the available prices, a representative price relative for the product concerned. The Laspeyres formula can rarely be applied at this level, given that the weighting of the individual price series is not always known.

- 6.04 Replacing $\frac{p_i^t}{p_i^0}$ by R_i^t in the formula set out in paragraph 6.02, one obtains the following formula:

$$I^t = \sum_{i=1}^k R_i^t \cdot \frac{p_i^0 q_i^0}{\sum_{i=1}^k p_i^0 q_i^0} \cdot 100$$

with R_i^t being the **elementary price index** for the individual product i (or means of production i) in observation period t (i.e. the index of each product or means of production or the smallest grouping of them for which an index weight is used). In this formula the index is expressed in the form of the weighted average of the elementary indices with fixed base weights. The weights used are values (of sales or purchases) and not quantities. This formula allows one to adapt the calculation of the elementary indices to the different practical circumstances.

- 6.05 There are several possibilities for the calculation of the elementary price indices. The choice of the appropriate method depends essentially on the data available and on the degree of homogeneity of

¹ See also Section 7: *Base period*.

² Following a decision by the Conference of the Directors-General of the National Statistical Institutes of the Community countries, Fisher indices are preferred to be used for prices, volumes and values. Nevertheless, the use of Laspeyres indices is acceptable for practical reasons, as long as the period between two rebasements is not too long. As the EU Agricultural Price Indices (output and input) are rebased every 5 years, this criterion is considered as being met.

the products or means of production for which prices are recorded. As these circumstances might differ from one Member State to the other, a given elementary price index can be calculated using different methods. The most important of these methods are presented in Annex 2¹.

Relation between monthly and annual indices, treatment of complementary payments

- 6.06 The indices are calculated on a monthly and an annual basis.
- 6.07 The elementary monthly index of the price of a product is obtained by relating the monthly price to the reference price, i.e. to the average price of the elementary product in the base year. The aggregated monthly indices (for a group of products or for all products) are obtained by calculating the weighted average of the elementary indices of the group or of all products.
- 6.08 In some countries only an annual price (and therefore an annual index) is available for certain products. An example of this is sugar beet, for which the annual index (or the index of the crop year) is used each month to calculate the monthly indices (until the beginning of the new harvest).
- 6.09 The annual indices can be obtained in two ways: (i) either as a simple or weighted² arithmetic mean of the corresponding monthly indices or (ii) on the basis of an annual mean price, eventually stemming from other data sources. EUROSTAT advocates the first method which is used in most cases (weighted arithmetic mean for the output indices, simple arithmetic mean - as a rule - for the input indices).
- 6.10 However inconsistencies will arise if the components of annual, monthly and base prices are not the same. In some Member States, producers receive for certain products a preliminary payment when selling the product and a complementary payment afterwards (eventually at the end or after the marketing year). Such complementary payments are part of the price and are not subsidies. The complementary (or final) payments should be included in the annual as well as in the monthly price indices. If at the time of calculating a given monthly or annual index the amount of the complementary payment is not yet known, an estimate for this payment should be made. Once information on the complementary payment is available, the indices concerned should be revised.

Calculation of indices for the EU as a whole

- 6.11 For the calculation of EU Agricultural Price Indices for the European Union as a whole, the three steps procedure explained in paragraph 1.08 is followed. The PPS have been used to convert national currencies into a common unit since the rebasing for the 1980=100 indices. The PPS replaced the European Currency Unit (EURO) in this calculation in order to compensate for distortions resulting from differing price levels in the Member States.

Treatment of seasonal discontinuity of price series

- 6.12 When there are no transactions and therefore no prices for certain products in some months, the last recorded price is used for the period concerned. The elementary index for the product therefore remains unchanged. This method however presents some disadvantages, namely: it restrains the evolution of the index until the next appearance of the item in question and it involves some kind of arbitrariness since the index is computed with fictitious prices of non-existing products.
- 6.13 Another procedure is the repetition of the last price, adjusted on the basis of the changes in the prices of the group of the product or other relevant groups of products. As the repeated last price is adjusted according to the price changes of the remaining products in the relevant product group, the development of the index is less restrained than in the case of unadjusted repetition. This method is particularly advantageous in the case of countries with high inflation. However this

¹ Annex 2: *Calculation of the elementary indices.*

² In the case of weighted averages, the weights are related to quantities and not to values.

technique is based on the assumption that the prices of products which are currently not offered follow the changes in the prices of the remaining products in the relevant product group.

- 6.14 None of these procedures is very satisfactory in the case of highly seasonal products such as fresh fruit and vegetables. A system of variable monthly weights has therefore been adopted for this group of products (cf. Section 6.2 below).

Treatment of missing observations

- 6.15 Another problem which Member States often face is the failure to collect the intended number of representative prices, which leads to “missing observations”. The procedures which are mainly followed by countries are:
- (i) repetition of the last recorded price. In the case of a high rate of inflation, it may be appropriate to adjust the last recorded price as described in paragraph 6.15.
 - (ii) repetition of the last recorded price by applying the normal seasonal pattern to it.
 - (iii) to impute price changes on the basis of prices recorded on other markets for the same product.

Deseasonalisation

- 6.16 Many monthly series of agricultural prices or price indices show a marked seasonal pattern. For example, the price of cereals is lowest at harvest time but rises over the succeeding months as storage costs are recovered when the grain is sold. Some Member States, such as France and Ireland, calculate and publish seasonally adjusted agricultural price indices. There exist several methods of adjustment and the choice amongst them has been controversial.
- 6.17 However no seasonally adjusted indices are calculated. Discussion is limited to comparisons with the corresponding period (month) of the previous year. Annual rates of change are thus calculated and their interpretation is limited to an evaluation of the development of prices compared to their previous year's level.

6.2 Index of fresh fruit and vegetable prices, price index for potatoes

General

- 6.18 The inclusion of fresh fruit and vegetables in the monthly EU index of producer prices of agricultural products presents particular problems which cannot be resolved solely by the methods used for the other products.

Price index for fresh fruit and vegetable

- 6.19 Fruits and vegetables are extremely seasonal products having production and marketing periods (and therefore periods when a price can be ascertained), which in most cases do not exceed a few months, in some cases even a few weeks. The problem of the periodic absence of prices could not be solved by repeating the last recorded prices (such in the case of sugar beet), since the last price is very often determined on the basis of fairly low-volume transactions at the end of the marketing period (where prices often tend to rise) and is therefore not very representative. Similar problems apply to the calculation of a price index for early and main crop food potatoes.
- 6.20 It was therefore decided, to use for the monthly indices of fresh fruit and vegetables the method of variable baskets with fixed monthly weights in the base year. The principle of this calculation

method is explained in the following paragraphs. Annex 3¹ gives a detailed example for the calculation of the monthly EU Agricultural Price Indices for fresh fruit and vegetables.

Fresh fruit and vegetable: calculation of national monthly indices

- 6.21 For each of the two groups, fresh fruit and fresh vegetables, each Member State determines 12 monthly baskets of representative products. The composition of these baskets varies each month. Certain products whose marketing period covers the whole year appear in all 12 monthly baskets, while others, which are more seasonal, appear only in some of them. However, the composition of the basket for a given month is fixed from one rebasing to the next.
- 6.22 The monthly weights for each product are obtained by valuing the quantities sold during the corresponding month of the base period at the **annual** average base price of the product. This makes it possible to get back to the annual weighting structure by summing the 12 monthly baskets.
- 6.23 For calculating the monthly elementary indices for fresh fruit and fresh vegetables a standard procedure has been adopted by the EU Member States. The monthly elementary indices are calculated in terms of the current monthly price *vis-à-vis* the average annual price for the base year.
- 6.24 The monthly aggregated index for each of the two groups of products of a Member State is obtained by aggregating the elementary indices of the products involved, using the corresponding monthly weights.

Fresh fruit and vegetable: calculation of monthly indices for the EU

- 6.25 The aggregated monthly indices of *Fresh fruit* and *Fresh vegetables* for the EU as a whole are calculated by aggregating the Member States' *Fresh fruit* and *Fresh vegetables* indices with the sum of the Member States' monthly weights and not - as in the case of the other products' indices - with annual weights.
- 6.26 Monthly price indices are not calculated for Luxembourg and Finland since their share in the Union's production is rather low. Annual price indices however are calculated for both Member States and are incorporated in the annual index for the European Union as a whole.

Fresh fruit and vegetable: calculation of the monthly indices "Total" and "Crop products" including fruit and vegetables

- 6.27 The monthly index headings *Total, including fruit and vegetable* and *Crop products, including fruit and vegetables* are calculated for EU by incorporating *Fresh fruit* and *Fresh vegetables* in the appropriate headings calculated without fruit and vegetables². The headings *Total* and *Crop products* are also presented exclusive of fresh fruit and vegetables.

Advantages and problems of the method of variable baskets with fixed monthly weights

- 6.28 The fundamental advantage of this method of variable baskets is to make it possible to calculate a monthly indicator of trends in the prices of fresh fruit and vegetables without having to extrapolate prices or indices over long periods, when prices are not available for certain months. However, this system has a major disadvantage, in that the monthly movement in the index is not a pure price trend but the product of the price trend and the change in the structure of the weights. It is therefore hazardous to compare two successive monthly indices, at least when dealing with aggregated

¹ Annex 3: *Calculation of the monthly EU Agricultural Price Indices for fresh fruit and vegetables: an example.*

² This procedure is also called *vertical aggregation* in contrast to the "horizontal aggregation" which is the aggregation of the individual Member States' indices to indices for the European Union as a whole.

indices. Only a comparison of the indices for one period with those for the same period in other years is meaningful.

Price index for potatoes

- 6.29 In the case of potatoes, a slightly different approach has been chosen. It is assumed that early and store potatoes¹ are not on the market at the same time. So with the arrival of the new (early) potatoes these replace the main crop food potatoes. After a certain number of months (which may vary from Member State to Member State) the early potatoes themselves are replaced again by store potatoes.

7 Base period

- 7.01 The concept of base period is involved in the calculation of a price index, (i) in determining the weights for each product in the field of observation (*weighting year*) and (ii) in determining the base prices for these products. Furthermore, the term *base year* is also used when it is referred to the year for which the index is fixed at level 100.

Base period for weighting and base prices²

- 7.02 As outlined in the previous Section 6, the EU Agricultural Price Indices, as well as the Laspeyres index on which they are based, have a fixed weighting structure which is assumed to be representative of the base year³. While in the case of the Laspeyres index, the base periods for weights and base prices are the same, for the EU Agricultural Price Indices, some Member States have chosen different base periods for weights and base prices. For instance, the quantity figures for the calculation of the value weights in some cases are based not on a single year, but on a period covering a number of years centred on the base year. The base price always refers to the base year solely.

¹ *Main crop food potatoes* in the terminology of EU Agricultural Price Indices.

² Care has to be taken not to mix up the terms *base price* and *basic price* (what is a particular problem for the French readers because in French both terms in principle are translated as "*prix de base*"; to avoid confusion, the term *base price* has been replaced by *base period price* in the French version of this handbook). While the term *base price* relates to indices, the term *basic price* is used in the Economic Accounts for Agriculture where the *basic price* is a concept which has to be seen as being opposed to the concept of the *producer price* which corresponds to the concept of the market price in agricultural price statistics.

³ The choice of the base period is thus of particular importance. The index should therefore in principle be constructed with reference to a period when the structure of the agricultural transactions involved is more or less normal. In other words, the base period for a Laspeyres-type index should ideally not be one in which the bulk of transactions in important products took place at abnormal levels of volume or price. Given the substantial differences in production conditions from one country to another, selecting a common base year is quite a problem. For instance, in the previous base (1995) it was the year of accession of Austria, Finland and Sweden, and thus not a typical year. For the calculation of indices for the EU as a whole, the value weights expressed in national currencies must be converted to a common unit. To this end, a base period of relative monetary stability without major fluctuations among the different European currencies should be chosen (it should however be noted that the use of Purchasing Power Standards as common unit (see Section 1.2) already takes account of this problem). In practice, it is obvious that these requirements are difficult to reconcile, particularly as there are certain constraints. For instance, with a view to harmonizing the different statistics and facilitating subsequent economic analyses, it may be decided that a particular year will be taken as the base period not only for the indices of agricultural prices but also for other indicators for which the requirements regarding the base period may differ considerably. As part of this effort to harmonize, the base period may even be chosen before its main features regarding agriculture are known.

Five-yearly rebasing

- 7.03 The Conference of the Directors-General of the National Statistical Institutes of the Community decided that the base for the agricultural indices would be changed every five years with effect from 1970. So a rebasing is done for the years ending in "0" and in "5". The indices in a recent base year should be available every five years in the third year following these base years (i.e. years ending in "3" or "8").
- 7.04 The five-yearly rebasing comprises three major changes:
- (i) change of the reference year;
 - (ii) change of the weighting coefficients to adapt them to changes which have taken place in the last few years in the structure of European agricultural production and in production techniques;
 - (ii) update of the data used in order to account for changes in the markets; improvement of harmonization of the concepts and calculation methods used in the Member States.

8 Definition of the prices**8.1 Choice of representative products and considerations related to price formation**

- 8.01 For each index heading¹, a representative product must be selected whose price is to be monitored. The choice of these representative products is in the Member States' responsibility. It must be noted that the selected products should have an important share in the sales or purchases of the country in question so that the corresponding price series represent what the farmer actually receives (selling price) or pays (purchase price).
- 8.02 Differences in prices which are related, for example, to changes in quality, variations in the tonnage delivered, changes in the list of survey points or changes to any other price determining characteristic, must be eliminated by the Member States from the data forwarded, so that, as far as possible, only "pure" price variations are taken into account. The requirement regarding changes in quality applies to both output and input price indices. For industrial products (input) these changes are relatively frequent and major, and often represent an improvement in quality.
- 8.03 In order to avoid changes in prices, which might be caused by differences in quality, variety, packaging or terms of delivery etc., the selected products or services must be defined as to the quality, variety, weight, packaging and other characteristics which influence the prices.
- 8.04 Loosely defined specifications, or the use of unit values, may cause considerable "unit value bias", i.e. distortions due to the fact that for instance quality or variety changes are treated as price changes. For example, if in the case of the output price indices the unit value is taken for an agricultural product, an improvement of the quality and a tendency towards production of more highly priced varieties, would result in an increase of the product's average price (unit value). In the case of the input price indices, if the quality of a means of production, for example of ternary fertilizers, is loosely defined (i.e. 1-1-2) and an important quality characteristic such as the concentration of N-P-K is omitted from the definition, and the price observed is the average price (unit value) of the same product with different ratio of N-P-K, then this average price may increase simply for the reason that the concentration of N-P-K was increased between the two periods.

¹ i.e. product or means of production or the smallest grouping of them for which an index weight is used.

Treatment of quality changes and product replacement

- 8.05 It is sometimes necessary to change one of the selected products or means of production whose price is being used in the index. When this is done and a replacement product or means of production is selected there may be an associated change in quality or other price determining characteristics. This problem may be dealt with in several ways though, in the following, only the most important practices will be outlined.
- 8.06 Concerning the output price indices, changes in the definitions of the collected prices do not happen frequently. The effects of changes in quality on price may be readily quantified and the observed price of the item adjusted to allow for the change in quality. Also changes in other price determining characteristics (for instance in packaging, place of delivery, terms of payment etc.) in most cases can be valued and taken into account in a satisfactory way.
- 8.07 Changes in the definitions are more frequent in the case of the input price indices and concern chiefly the quality of the input. Frequent quality changes can occur particularly for compound feedingstuffs, fertilizers and, above all, agricultural tools and machinery. In the case where a defined input becomes unavailable, either generally or in a particular district, then a new product is chosen to replace the old one. If however an existing input is replaced by another of differing quality, then the problem is to assess how much of the price difference is attributable to differences in quality between the substitute and the replaced input. On this basis the price of the new product is adjusted to be conform with the quality level of the replaced product.
- 8.08 If however the change in quality is so great or difficult to quantify that no such adjustment can be made, then the old product is replaced by the new one. If both products existed in parallel during the month before substitution, then the price of the new product is recorded both for the month of substitution and the preceding month. The substitute product is linked into the index and a fictitious reference price is imputed for it on the basis of the rise in the elementary index of the replaced item from the base period.

$$p_i^{(0)} = \frac{p_i^{(t-1)}}{i_i^{(t-1)}} \cdot 100$$

- where $p_i^{(0)}$: imputed base price of the substitute product (or means of production) i;
 $p_i^{(t-1)}$: price of substitute product i in the preceding month;
 $i_i^{(t-1)}$: elementary index in the preceding month.

- 8.09 If no reliable information on the actual price of the substitute product in the preceding month can be provided, then the price of the preceding month is estimated according to the price changes of similar products and a fictitious base price is calculated for the new product.

8.2 Marketing stage

- 8.10 Prices should be recorded at points which are as close as possible to those of the transactions which the farmer actually undertakes. This means that product prices should be recorded at the first marketing stage so as to best indicate the actual producer prices received by farmers. Similarly the prices paid by farmers for their means of production should be recorded at the last marketing stage, that at which the items arrive on the farm, so as to best indicate the purchase prices paid by farmers.
- 8.11 It is generally easier to fulfil this objective for the purchase prices of the means of production than for the selling prices of agricultural products. This is because agricultural products are marketed through a wide range of channels and prices are not always determined at the points through which the farmer markets his products. The prices to be received by farmers for their products may, in some cases, be determined at later stages; for example, when they have been transported from

the farm, perhaps stored for some time and even processed in some way. It is therefore necessary to distinguish between several sources of information on product prices, each reflecting the ways in which the products are marketed.

- 8.12 This need also arises because of the impracticality of collecting price information from monthly surveys of farmers. The number of farmers which would need to be covered would be too great and the delays in collecting and processing the information too long to allow this to be a practical possibility. The number of channels through which the produce flows, and the number of the purchasing persons and organisations, is usually much lower than the number of producers thus making it, in many instances, more practical and cheaper to collect price information from observation of these channels or from the purchasers of the produce. Moreover given the potentially sensitive nature of information on agricultural prices it may be desirable for the collection process to be as detached as possible from those who might be affected by its outcome.
- 8.13 This latter point favours the use of price information from the direct observation of markets, whether this is done by those compiling the statistics or by organisations whose role includes the monitoring of agricultural prices. However, and especially when it is likely to affect the price movements to be indicated by the indices, attempts should be made to evaluate the price likely to have been received by farmers (the *farm-gate* price) by deducting transport, storage and processing costs and the margins and taxes which the products attract upstream, in so far as these are relevant and quantifiable (possibly through periodic ad hoc surveys rather than continuous monitoring).
- 8.14 Further to what has been said above, it should be recognised that a considerable amount of information on the prices at which agricultural products are sold is often collected, compiled and made available in summary form by a variety of organisations. These include statutory or quasi-statutory bodies, associations representing the interests of agricultural producers or those involved in its processing or distribution and specialist parts of the media (e.g. journals aimed at a farming readership). It may not therefore be necessary for those compiling the agricultural price indices to organise the collection of all the basic information which they will utilise, relying instead on information collected and processed by others. However they should be aware of the basic types of information on prices which may be available, or which they may otherwise have to collect directly, and of the advantages and disadvantages of these different types of information. A brief guide to these is therefore provided below.

a) Product price monitoring at the producer stage

- 8.15 Even the prices received directly by producers may be monitored in several different ways, reflecting the marketing channels used and the characteristics of the products and any associated administrative or support system.
- (a.1) *Direct sales by producers***
- 8.16 In some cases farmers may sell their products directly to merchants at local fairs and markets or to final consumers, both at such markets or at the farm-gate or through farm shops. Direct sales of this nature are particularly common in the case of fruit, vegetables (including potatoes), flowers and eggs but may also occur for other products. The prices received by farmers for produce marketed in these ways are, in principle, directly observable though the mechanisms for their observation and recording are not likely to permit comprehensive recording through time and across space.
- 8.17 Some form of sampling is therefore likely to be required for the collection of such price information. Moreover there may be practical difficulties in discovering the prices at which transactions actually take place, since bargaining between the two parties may be common and transactions between individuals are not usually publicised or generally known. On the other hand the prices may be readily observable, particularly when they are established through public auctions or by price committees. It should however be noted that the person or organisation making such sales, and particularly those at fairs and markets, may not be the producing farmer but a merchant or

merchandising organisation who has bought the produce from a farmer and whose price is thus likely to differ from and probably exceed that actually received by the farmer.

(a.2) Records of transactions

- 8.18 In some instances the prices at which sales of produce are made may be recorded in some systematic way as part of an administrative process which may be utilised by those compiling the price indices. For example, in France sales of wine by producers are recorded as part of the tax procedures and one copy of the relevant documentation is sent to the professional bodies which then publish statistics on the quantities and prices of wine sold by producers.

(a.3) Administered prices

- 8.19 The market for certain products may be officially administered by public authorities who set the parameters for production and for payments to farmers. The number of sectors covered in this way has been largely reduced in recent years. There are, however, in some countries and for some products inter-professional agreements covering certain sectors like champagne, starch potatoes or ewe's milk.

(a.4) Enquiries to bodies collecting or purchasing the produce

- 8.20 In the case of some products all, or virtually all, of the production is collected by or sold to a single organisation or group of organisations, from which information on the prices paid to farmers can be obtained. These bodies may perhaps be producer co-operatives or first-hand processors of agricultural produce. An example of the collection of product price information collected in this way is provided by that of milk in the United Kingdom. Until 1994, virtually all milk marketed in the UK had to be sold to one of five statutory marketing boards. These have now been replaced by a larger number of first-hand and commercial purchasers of the milk but, under both sets of marketing arrangements, the information on the prices received by farmers for the milk they produce has been obtained from the purchasers of the milk.

b) Product price monitoring at intermediate stages

- 8.21 In the course of their production and distribution, goods normally pass through a number of stages between that of the production of the raw materials (from which they are produced) and their ultimate sale to the final consumer. This also happens for much of agricultural production, for example as raw agricultural production is (eventually) refined and processed and the processed products pass through the distribution chain. This allows prices to be observed at a number of different points in the process, though, as each becomes successively further removed from the farm-gate, the degree of adjustment needed to derive farm-gate prices becomes ever greater.

(b.1) Price monitoring at the despatch and transportation stages

- 8.22 The despatch point is that at which produce collected directly by merchants from producers leave the locality within which they were produced. The prices received by farmers at this point may be determined from direct enquiries to the operators involved in the transportation and onward distribution of the produce. The form which these enquiries might take will depend upon the precise details of the distribution system.

(b.2) Survey of prices at necessary stages in the distribution and processing chain

- 8.23 It is sometimes possible to obtain information on prices when the produce passes through a particular stage in the distribution and processing chain. This possibility is especially relevant when it is necessary for all the produce to pass through a particular stage. An example is provided by the slaughtering of livestock, preceding or following which transaction prices may be recorded.

(b.3) Prices on wholesale markets and for produce sold on contract

- 8.24 It is also possible to utilise information relating to later stages in the distribution chain even when it is not necessary for all produce to pass through them. An important example is the use of information on wholesale prices for which good quality information can often be obtained on the

produce actually passing through such markets. Wholesale markets are particularly common and potentially useful sources of price information for horticultural produce. Furthermore, in certain cases it is the first marketing stage. However it needs to be recognised that neither the actual production passing through such markets, nor the prices received for it, need be representative of the totality of production or of the spread of prices received for that production.

- 8.25 In particular, with the increasing development and use of direct contract arrangements between agricultural producers, on the one hand, and the food processing and retailing industries, on the other, it needs to be recognised that both the quality of the produce sold on such markets and the prices prevailing on such markets may be more volatile than for the totality of the production. One of the purposes of contract arrangements is to give greater certainty (about availability, quality and price) to both parties than would otherwise be obtainable and this greater certainty to the parties to the contracts is reflected in greater volatility in the wholesale markets which consequently serve as residual markets.
- 8.26 Unfortunately price information relating to contract arrangements is not usually readily obtainable. This creates a problem for indices which are intended to reflect the prices received for all forms of sale and whose weights will reflect the value of all sales (subject, of course, to the problem of correctly estimating prices for contract sales in the base year). It is therefore necessary to devise some means of estimating or allowing for the prices received for contract sales. While these may be related, to some extent, to prices currently prevailing on wholesale markets they are likely to be less volatile than those latter prices which should consequently not be used, without careful consideration or amendment, as indicators in the construction of the price indices. It has to be admitted that this is a difficult area, and one of growing importance, on which the experience of different Member States may be made known and compared to mutual advantage.

c) Prices paid for the means of production

- 8.27 The prices paid by farmers for their means of production may also be collected through a variety of ways, each reflecting the nature of the supply of the particular means of production and their own characteristics.

8.3 Treatment of taxes, levies and subsidies

- 8.28 Under the market price concept (see paragraph 5.05) the prices received from the sale for products and paid for the purchase of the means of production should be recorded without the deduction of product linked taxes or levies (except deductible VAT; see below) and without the addition of subsidies.
- 8.29 The treatment of taxes, levies and subsidies in the agricultural price statistics is the same as their treatment in the economic accounts for agriculture. Further detail may be found in the *Regulation of the European Parliament and of the Council on Economic Accounts for Agriculture in the Community*.

Value-added tax

- 8.30 This leaves the question of value-added tax (VAT), which presents a particular problem on account of both the amounts involved and the different systems applicable to agriculture. The principles adopted for the EU Agricultural Price Indices are as follows.
- 8.31 The EU indices of agricultural prices (output and input) are calculated exclusive of value added tax. The value added tax received by farmers on their sales is used to offset the value added tax paid on their purchases of the means of agricultural production; it cannot be regarded as a component of the selling price and must therefore be deducted. In the same way, the value added tax paid

must not be regarded as a component of the purchase price since it is offset by the value added tax received on the sales refunded in another form¹.

- 8.32 The only exception to the principle of recording prices net of VAT concerns the value added tax on purchases of certain means of agricultural production for which there is neither compensation nor refund. This “non-deductible” or “non-reimbursable” VAT, which is paid, for example, on certain fuels in France, is not deducted from prices. It is the only one which is regarded as a component of purchase prices for the purpose of the EU Statistics on Agricultural Prices.

9 Nominal and deflated indices

- 9.01 The procedures for constructing the indices at differing levels of aggregation, across products and means of production, for each Member State and for the European Union as a whole are described in paragraphs 6.11 and 6.12. These procedures yield indices which reflect the movements of the prices of agricultural products and means of production within their particular coverage. They allow a wide range of meaningful comparisons to be made within each Member State, for example between the several products and means of production, both individually and in total.
- 9.02 However these indices do not, by themselves, necessarily allow meaningful comparisons to be made between Member States when those Member States have experienced different rates of general inflation through time. For example although Member State A might have had a faster rate of product price increases (say 8 %) than Member State B (say 4 %), the impression given by the difference between these changes in product prices would have to be heavily qualified if the rate of general inflation had been 10 % in A but only 2 % in B. In those circumstances product prices would have increased by more than the rate of inflation in B but by less than it in A. Such a pattern is commonly expressed by saying that product prices have fallen “in real terms” (or that “real” product prices have fallen) in A, but risen in B.
- 9.03 The relevance of comparing changes in the indices of the prices of products or of means of production is not however limited to comparisons between countries. It also helps to put the figures for individual countries in perspective and is helpful when examining changes for the EU as a whole.
- 9.04 For example if the EU level indices indicated price increases for crop products of say 7 % and for animal products of say 5 % one would naturally conclude that the price increases had been greater for crops than for animals. However if the crop products had been produced in Member States with

¹ Various taxation procedures are used for VAT in the Member States. Basically a distinction is made between normal taxation procedures (“standard systems”) and simplified systems or “flat rate systems”. Farmers who have opted for the standard system are liable to pay the fiscal authorities the difference between the VAT invoiced on their sales and the “deductible” VAT paid on their purchases of the means of production. Parallel to this there is a flat rate system - representing a special provision for agriculture - in which it is assumed that the deductible VAT already paid is balanced by the VAT received on sales. The majority of farmers in the European Union have opted for this type of taxation system, which does not require extensive book-keeping. There are two basic types of flat rate system used in the European Union: (1) farmers sell their products at a gross price including VAT. The VAT received is retained by the farmer as compensation for the VAT paid when purchasing the means of production. This procedure is used in most of the Member States; (2) farmers sell their products at a net price without invoicing the VAT. On application to the tax office they receive a refund equal to the VAT paid on their purchases of the means of production, up to the limit of the flat rate VAT applied to the value of their sales. This system is used in France.

If the flat rates applicable to sales are calculated so that the VAT received and the deductible VAT paid cancel each other out, the flat rate system has no effect on income. In this case the agricultural prices should be recorded net of VAT, as for the standard system. However, if this is not the case, prices net of VAT are not wholly reliable indicators of income in agriculture.

relatively high rates of inflation, say 9 %, and the animal products in ones with relatively low rates of inflation, say 3 %, the picture is rather different. In this case there would have been a fall in real product prices in the Member States producing crops and a rise in real product prices in the Member States producing animals. While the overall EU level rates of increase in the prices of crop and animal products might each be compared with the overall EU level rate of inflation, say 6 %, this would still indicate a real increase in the prices of crop products and a real fall in those of animal products. It is therefore desirable to first adjust for inflation at Member State level and then compile EU wide indices of real changes from corresponding indices at Member State level.

- 9.05 The main problem with the calculation of changes in indices in real terms lies in the selection of the indicator of general inflation with which the change in the particular index in question is to be compared. Preference is often given to the price index relating to GDP, or to one relating to an associated national income aggregate, which is derived from comparison of these aggregates at current and constant prices. However such a choice would present practical problems in the context of the indices of prices of agricultural products and means of production. This is because these are compiled and published monthly, and with only a relatively short lag, whereas the GDP indices are only compiled quarterly and only available after a longer lag. Moreover, given the method of their derivation they are inevitably subject to periodic revisions through time, which revisions would affect the estimates of changes in real terms in the agricultural price indices. Preference has therefore been given to the use of the Harmonized Consumer Price Index which is calculated monthly, and with a relatively short lag, for each Member State.
- 9.06 The precise method of calculating changes in real terms in a particular price index is to divide that index by that of the chosen deflator, the Harmonized Consumer Price Index. The changes in the resulting series are then the desired ones in real terms. Ideally both the particular price index and the deflator will be expressed relative to the same reference period (= 100) so that the "real price" series resulting from their division (which might usefully be multiplied by 100) will have the same reference period though this is not essential and does not affect the resulting indications of changes in real terms.

10 Estimates of the EU Agricultural Price Indices

- 10.01 Although the indices relating to the prices of agricultural products and means of production in each month are calculated relatively quickly (within 6 weeks of the end of the relevant month), and usually much more quickly than statistics relating to the associated quantities and values, there is a demand for yet more up-to-date information. This inevitably involves the generation of estimates, whether for the prices of individual items or at the more aggregated levels of the price indices.
- 10.02 Eurostat therefore requires Member States to provide estimates of the output and input indices for the current year as a whole, first by the end of September and then by the end of November, at levels specified in the tables which Member States are required to complete.
- 10.03 The methodology for the production of these estimates is not harmonised across Member States nor usually discussed in detail by the Working Party on Agricultural Accounts and Prices, though that group does examine comparisons between the estimates made and the actual outturns. One reason for this lack of harmonisation is that, at the points in time at which the estimates are required, the annual crop harvests in the Member States may have progressed to very different extents, depending on the composition of the crops being produced, the normal climatic conditions and the weather in the particular year. Moreover the extent to which the different Member States have up-to-date information on actual prices may differ to some extent, thus affecting the length of the remainder of the year for which estimates are required in order to generate the figures for the year as a whole. However although no particular methodology is stipulated or even advised it may be useful to offer some guidance as to the range and choice of methodologies which Member States may choose to adopt.

- 10.04 Given that only a single estimate figure is required for each of the specified indices and that this is to cover the year as a whole, considerable use can be made of the actual values of the indices for the months of the year for which they have been compiled and also of any more recent price information which may not yet be compiled into a particular month's index. Indeed these may together span a large part of the year up to the point in time at which the estimates are produced.
- 10.05 Such information is particularly likely to be available and of use for those agricultural products which are produced continuously throughout the year, namely animals and livestock products such as eggs and milk. For these products it is not very difficult to generate estimates for the remaining months of the year, and thus the year as a whole, from the starting point of the latest available figures for the indices or prices. Although there will inevitably be some movement from these over the remainder of the year this movement may not be very great and may, at least to some extent, be predictable on the basis of past patterns of change or knowledge of factors which are likely to affect the prices over the remaining months of the year. Similar considerations apply to the generation of the estimates for most of the means of production.
- 10.06 The production of the required forecasts of the annual indices for crop products poses greater problems, particularly in view of the time of year at which the estimates, and especially the first ones, are required. This is close to the time of harvests, the scale and quality of which will have a significant influence on the prices of the products over the whole next marketing year.
- 10.07 There are often steep jumps in the prices of crop products between marketing years and these tend to coincide closely with the time at which the estimates are required, thus making the generation of the estimates more difficult. It may however be possible to utilise early indications of the scale of the harvest, or of the prices resulting from it, or to make predictions of the harvest - and then of prices - from knowledge of the scale of plantings and of the planting, growing and harvesting conditions. In any case the greater degree of trade between Member States and other countries and developments in technology (e.g. less susceptibility to drought) and in food tastes (e.g. less dependence on particular products) all mean that price fluctuations between years may not be as great as they once were.
- 10.08 There are a wide range of methods by which estimates of a price or of an index may be generated from its current and past values and knowledge of the factors which may affect its future values. These include ones based solely on its own current and past values, ranging from very simplistic projections, through methods allowing for growth and seasonality to more complex methods of univariate analysis and forecasting. Other methods include econometric ones in which the index may be related to one or more possible determining variables, knowledge of which may assist in its forecasting.
- 10.09 However modern methodologies tend to combine the best of these approaches though the degree of sophistication involved may not be necessary or warranted for each of the separate indices for which forecasts are required. Use may also be made of expert knowledge if this is available, though it is good practice to subject estimates produced from this to the same critical appraisal as would be applied in respect of more sophisticated methodologies. Sometimes indications may be provided by particular market mechanisms, for example the prices set on futures markets may be used for the commodities for which such markets exist.
- 10.10 It may in fact be desirable to draw on a number of methodologies, perhaps running them in parallel so as to compare their actual forecasting performance. Whether or not this is done it is likely that the methodology used to generate the forecasts is likely to change through time in the light of evolving experience about their reliability. This is not in itself a cause for concern, indeed it may be indicative of the importance given to the generation of the estimates, but it is desirable to record the basis for the estimates made, particularly when there is a substantial change in the methodology employed. Similarly the estimates made should be compared with the outturns and the differences analysed, as part of a feedback process in the development of the estimation methodology. However outturns are often affected by some factors which could not have been predicted at the time the estimates were made and that estimation will consequently never be perfect.

11 Analysis: Terms of Trade

- 11.01 Section 9 explained how the rates of change shown by the agricultural price indices may be adjusted, to allow for the general rate of inflation in each Member State, so as to make comparisons between Member States and across the EU more meaningful. One form of comparison which may be considered particularly important, and useful in analysing the changing economic position of the industry, is that between the rates of change in the output and input indices.
- 11.02 This is because the relative movements in these (or the difference between them) is likely to be indicative, at least to some extent, of changes in gross value added, to which the various measures of agricultural incomes are closely related. This is despite the fact that there are several substantial differences between the coverage of the price indices and the aggregate economic accounts for agriculture which make the relationship between the two sets of statistics less close than they might otherwise be.
- 11.03 Two factors make information on price changes of particular use as a guide to parallel changes in income. The first is that the price indices are available more frequently (i.e. for months) than is information on the industry's aggregate incomes or the volumes of its outputs and inputs (much of which is only available annually). The second is that (due to the relative price inelasticity of demand for many agricultural products) changes in prices, and especially output prices, are often of greater numerical importance, than changes in quantities (which they may reflect), in determining changes in gross value added and hence incomes. However it should be noted that the price changes may be more volatile than the associated changes in value since, for example, large price increases for outputs are likely to reflect low levels of production and large price increases for inputs may induce reductions in input usage.
- 11.04 Eurostat consequently calculates measures which provide direct comparisons of changes in agricultural output and input prices and includes these in the *Statistics in Focus* publication which presents the indices. The form of measure which has been used by Eurostat since early 1993 is the percentage change in the ratio of the output and input price indices between the most recent month (i.e. that being reported upon) and the corresponding month of the previous year. This calculation is made on the basis of indices expressed in real terms (i.e. after deflation for the general rate of inflation) and with the input index covering both the goods and services consumed in agriculture and those contributing to agricultural investment.
- 11.05 It will be seen that this measure indicates the change in the purchasing power of agricultural outputs and inputs expressed in terms of each other. For this reason the measure is entitled the *terms of trade*¹, which expression in this context, refers to those between agriculture and the rest of the economy (for a given territorial coverage) rather than to comparisons between countries.
- 11.06 Prior to 1993 Eurostat compared the changes in the output and input price indices using the *net price effect*. This was based on a weighted average (arithmetic mean) of the changes in the output and input indices, with the lesser weight (reflecting the initial ratio of the value of input to that of output) being given to the change in the input price index. This formula thus indicated the net effect of the price changes on the change in value added. The changes used in this calculation were those in the quarterly indices of outputs and inputs, each expressed in real terms, over the

¹ Sometimes also the term "price scissors" is used.

preceding year and the weights related to the latest year for which accounts data were available.
For more details see LUND¹

¹ Lund, P.J.: *The Combination of Agricultural Output and Input Price Indices*, Journal of Agricultural Economics, September 1994.

**Annex 1 - API classification. Consolidated list of variables for the
2000=100 agricultural price indices**

	1		Output
Item	API code	Frequency	Description
01	010000	A, M	CEREALS (including seeds)
01.1	011000	A, M	Wheat and spelt
01.1.1	011100	A, M	Soft wheat and spelt
01.1.2	011200	A, M	Durum wheat
01.2	012000	A, M	Rye and meslin
01.3	013000	A, M	Barley
01.3.1	013100	A, M	Feed barley
01.3.2	013200	A, M	Malting barley
01.4	014000	A, M	Oats and summer cereal mixtures
01.5	015000	A, M	Grain maize
01.6	016000	A, M	Rice
01.9	019000	A, M	Other cereals
02	020000	A, M	INDUSTRIAL CROPS
02.1	021000	A, M	Oil seeds and oleaginous fruits (including seeds)
02.1.1	021100	A, M	Rape and turnip rape seed
02.1.2	021200	A, M	Sunflower
02.1.3	021300	A, M	Soya
02.1.9	021900	A, M	Other oleaginous products
02.2	022000	A, M	Protein crops (including seeds)
02.3	023000	A, M	Raw tobacco
02.4	024000	A, M	Sugar beet
02.9	029000	A, M	Other industrial crops
02.9.1	029100	A	Fibre plants
02.9.2	029200	A	Hops
02.9.9	029900	A	Other industrial crops: others
03	030000	A, M	FORAGE PLANTS
03.1	031000	A, M	Fodder maize
03.2	032000	A, M	Fodder root crops (including forage beet)
03.9	039000	A, M	Other forage plants
03.9.1	039100	A	Hay
03.9.2	039200	A	Straw
03.9.3	039300	A	Silage
03.9.9	039900	A	Other forage plants: others
04	040000	A, M	VEGETABLES AND HORTICULTURAL PRODUCTS

04.1	041000	A, M	Fresh vegetables
04.1.1	041100	A, M	Cauliflower
04.1.2	041200	A, M	Tomatoes
04.1.9	041900	A, M	Other fresh vegetables
04.1.9.1	041910	A	Cabbage
04.1.9.2	041920	A	Lettuce
04.1.9.3	041930	A	Spinach
04.1.9.4	041940	A	Cucumbers
04.1.9.5	041950	A	Carrots
04.1.9.6	041960	A	Onions
04.1.9.7	041970	A	Green beans
04.1.9.8	041980	A	Pulses
04.1.9.9	041990	A	Peas
04.1.9.9.9	041999	A	Other fresh vegetables: other
04.2	042000	A, M	Plants and flowers
05	050000	A, M	POTATOES (including seeds)
05.1	051000	A, M	Potatoes for consumption
05.1.1	051100	A, M	Early potatoes
05.1.2	051200	A, M	Main crop potatoes
05.2	052000	A, M	Seed potatoes
05.9	059000	A, M	Other potatoes
06	060000	A, M	FRUITS
06.1	061000	A, M	Fresh fruit
06.1.1	061100	A, M	Dessert apples
06.1.2	061200	A, M	Dessert pears
06.1.3	061300	A, M	Peaches
06.1.9	061900	A, M	Other fresh fruit
06.1.9.1	061910	A	Cherries
06.1.9.2	061920	A	Plums
06.1.9.3	061930	A	Strawberries
06.1.9.4	061940	A	Nuts and dried fruit
06.1.9.4.1	061941	A	Nuts
06.1.9.4.2	061942	A	Dried fruit
06.1.9.9	061990	A	Other fresh fruit: other
06.2	062000	A, M	Citrus fruit
06.2.1	062100	A	Sweet oranges

06.2.2	062200	A	Mandarins
06.2.3	062300	A	Lemons
06.2.9	062900	A	Other citrus fruits
06.3	063000	A, M	Tropical fruit
06.4	064000	A, M	Grapes
06.4.1	064100	A	Dessert grapes
06.4.9	064900	A	Other grapes
06.5	065000	A, M	Olives
06.5.1	065100	A	Table olives
06.5.9	065900	A	Other olives
07	070000	A, M	WINE
07.1	071000	A, M	Table wine
07.1.1	071100	A	"Vin de pays" or "Vinho regional" or "Vino de la tierra"
07.1.9	071900	A	Other table wine
07.2	072000	A, M	Quality wine
07.9	079000	A, M	Other wine
08	080000	A, M	OLIVE OIL
09	090000	A, M	OTHER CROP PRODUCTS
09.1	091000	A, M	Vegetable materials used primarily for plaiting
09.2	092000	A, M	Seeds
09.9	099000	A, M	Other crop products: others
10	100000	A, M	CROP OUTPUT (010000 TO 090000), including fruits (060000) and vegetables (040000)
10.1	101000	A, M	CROP OUTPUT (010000 TO 090000), excluding fruits (060000) and vegetables (040000)
11	110000	A, M	ANIMALS
11.1	111000	A, M	Cattle
11.1.1	111100	A, M	Cattle excluding calves
11.1.2	111200	A, M	Calves
11.2	112000	A, M	Pigs
11.3	113000	A, M	Equines
11.4	114000	A, M	Sheep and goats
11.5	115000	A, M	Poultry
11.5.1	115100	A, M	Chickens
11.5.9	115900	A, M	Other poultry
11.9	119000	A, M	Other animals
12	120000	A, M	ANIMAL PRODUCTS

12.1	121000	A, M	Milk
12.1.1	121100	A, M	Cows milk
12.1.9	121900	A, M	Other milk types
12.2	122000	A, M	Eggs
12.9	129000	A, M	Other animal products
13	130000	A, M	ANIMAL OUTPUT (110000+120000)
14	140000	A, M	AGRICULTURAL GOODS OUTPUT (100000+130000), including fruits (060000) and vegetables (040000)
14.1	141000	A, M	AGRICULTURAL GOODS OUTPUT (101000+130000), excluding fruits (060000) and vegetables (040000)
	2		Input 1 (Goods and services currently consumed in agriculture)
Item	API code	Frequency	Description
20	200000	A, M	GOODS AND SERVICES CURRENTLY CONSUMED IN AGRICULTURE (INPUT 1)
20.1	201000	A, M	SEEDS AND PLANTING STOCK
20.2	202000	A, M	ENERGY; LUBRICANTS
20.2.1	202100	A, M	Electricity
20.2.2	202200	A, M	Fuels for heating
20.2.3	202300	A, M	Motor fuels
20.2.4	202400	A, M	Lubricants
20.3	203000	A, M	FERTILISERS AND SOIL IMPROVERS
20.3.1	203100	A, M	Straight fertilizers
20.3.1.1	203110	A, M	Nitrogenous fertilizers
20.3.1.2	203120	A, M	Phosphatic fertilizers
20.3.1.3	203130	A, M	Potassic fertilizers
20.3.2	203200	A, M	Compound fertilizers
20.3.2.1	203210	A, M	NP fertilizers
20.3.2.2	203220	A, M	PK fertilizers
20.3.2.3	203230	A, M	NPK fertilizers
20.3.9	203900	A, M	Other fertilizers, soil improvers
20.4	204000	A, M	PLANT PROTECTION PRODUCTS AND PESTICIDES
20.4.1	204100	A, M	Fungicides
20.4.2	204200	A, M	Insecticides
20.4.3	204300	A, M	Herbicides
20.4.9	204900	A, M	Other plant protection products
20.5	205000	A, M	VETERINARY EXPENSES

20.6	206000	A, M	ANIMAL FEEDINGSTUFFS
20.6.1	206100	A, M	Straight feeding stuffs
20.6.1.1	206110	A, M	Cereals and milling by-products
20.6.1.2	206120	A, M	Oilcakes
20.6.1.3	206130	A, M	Products of animal origin
20.6.1.9	206190	A, M	Other straight feeding stuffs
20.6.2	206200	A, M	Compound feeding stuffs
20.6.2.1	206210	A, M	Compound feeding stuffs for calves
20.6.2.2	206220	A, M	Compound feeding stuffs for cattle excluding calves
20.6.2.3	206230	A, M	Compound feeding stuffs for pigs
20.6.2.4	206220	A, M	Compound feeding stuffs for poultry
20.6.2.9	206290	A, M	Other compound feeding stuffs
20.7	207000	A, M	MAINTENANCE OF MATERIALS
20.8	208000	A, M	MAINTENANCE OF BUILDINGS
20.9	209000	A, M	OTHER GOODS AND SERVICES
	3		Input 2 (Goods and services contributing to agricultural investment)
Item	API code	Frequency	Description
21	210000	A, M	GOODS AND SERVICES CONTRIBUTING TO AGRICULTURAL INVESTMENT (INPUT 2)
21.1	211000	A, M	MATERIALS
21.1.1	211100	A, M	MACHINERY AND OTHER EQUIPMENT
21.1.1.1	211110	A, M	Rotovators and other 2 wheel equipment
21.1.1.2	211120	A, M	Machinery and plant for cultivation
21.1.1.3	211130	A, M	Machinery and plant for harvesting
21.1.1.4	211140	A, M	Farm machinery and installations
21.1.1.4.1	211141	A, M	Farm machinery and installations for crop production
21.1.1.4.2	211142	A, M	Farm machinery and installations for animal production
21.1.1.4.9	211149	A, M	Other farm machinery and installations
21.1.2	211200	A, M	TRANSPORT EQUIPMENT
21.1.2.1	211210	A, M	Tractors
21.1.2.9	211290	A, M	Other vehicles
21.2	212000	A, M	BUILDINGS
21.2.1	212100	A, M	FARM BUILDINGS (NON-RESIDENTIAL)
21.2.9	212900	A, M	OTHER WORKS EXCEPT LAND IMPROVEMENTS (OTHER BUILDINGS, STRUCTURES, ETC.)

21.9	219000	A, M	OTHER
	3		Input total (Input 1 + Input 2)
Item	API code	Frequency	Description
22	220000	A, M	INPUT TOTAL (INPUT 1 + INPUT 2)

Annex 2 - Calculation of the elementary indices

Calculation of the elementary price indices

This presentation focuses on the calculation of a given elementary price index on the basis of various price series, but it should be born in mind that in many countries the elementary price indices themselves are calculated by aggregating the indices of several regions, varieties, types of sources etc. Furthermore, this annex is not meant to give an exhaustive overview of all the techniques employed.

In the case of homogenous products, many countries prefer the ratio of mean prices for compiling price indices for the elementary aggregates. In the case of non-homogenous products, the mean of price relatives is often used. But it is also possible to calculate for a non-homogenous product in a first step indices by variety, quality etc. using the method of ratio of (arithmetic) mean prices, and then to aggregate these indices in order to obtain the elementary index of the product concerned. Many times also the ratio of geometric mean prices is used.

Ratio of mean prices

In principle arithmetic and geometric mean prices may be unweighted or weighted. The ratio of weighted geometric mean prices however is rarely used in this context. The use of weights depends mainly on the availability of appropriate data for the weighting coefficients. It has to be mentioned that in the case of the unweighted means a weighting can be reintroduced by varying the number of recording places in a given region.

(a) ratio of unweighted arithmetic mean prices

$$R_i^t = \frac{\frac{1}{n} \sum_{j=1}^n p_{ij}^t}{\frac{1}{n} \sum_{j=1}^n p_{ij}^0}$$

(b) ratio of weighted arithmetic mean prices

$$R_i^t = \frac{\sum_{j=1}^n p_{ij}^t G_{ij}^0}{\sum_{j=1}^n p_{ij}^0 G_{ij}^0}$$

(c) ratio of unweighted geometric mean prices

$$R_i^t = \frac{\left[\prod_{j=1}^n p_{ij}^t \right]^{\frac{1}{n}}}{\left[\prod_{j=1}^n p_{ij}^0 \right]^{\frac{1}{n}}}$$

- where R_i^t : elementary price index for the individual products i (or means of production i) in observation period t ;
 p : collected prices of products (or means of production);
 G : weighting coefficient;
 i : product i (or means of production i), ($i = 1, 2, \dots, k$);
 j : price j recorded for product i (or means of production i), ($j = 1, 2, \dots, n$);
 t : observation period;
 0 : base period.

Mean of price relatives

As in the case of mean prices, the mean of (arithmetic or geometric) price relatives may also be unweighted or weighted. It has to be noted that the unweighted geometric mean of price relatives and the ratio of unweighted geometric mean prices lead to the same results, and one can be derived from the other.

(a) unweighted arithmetic
mean of price relatives

$$R_i^t = \frac{1}{n} \sum_{j=1}^n \frac{p_{ij}^t}{p_{ij}^0}$$

(b) weighted arithmetic
mean of price relatives

$$R_i^t = \sum_{j=1}^n \frac{p_{ij}^t}{p_{ij}^0} \cdot G_{ij}^0$$

**Annex 3 - Calculation of the monthly EU Agricultural Price
Indices for fresh fruit and vegetables: an example**

Calculation of the monthly EU Agricultural Price Indices for fresh fruit and vegetables: an example

Preliminary remarks

The example has been drawn up from the calculation method followed in Germany to estimate the index for fruit. The index for vegetables is not presented separately since it is calculated according to the same methodological rules as are used for fruit.

The various stages of the calculation

In the example, the index for fresh fruit is calculated for each month of a given year (yyyy) and for the year as a whole.

1. Composition of the product basket

If the basket of items is to be regarded as genuinely representative of prices, it must contain products (as price representatives) with a significant volume of sales. With regard to fruit varieties, an adequate number of products are chosen to ensure that the product range as a whole is sufficiently representative. Owing to the special features of fruit production, however, some products must be included which are not in themselves particularly suitable for an ongoing observation of prices. These products must be included because, although for seasonal reasons they are not on the market for long, they account for a large share of the annual value of production (e.g. cherries and strawberries). Leaving them out would lead to sizeable gaps in the product range.

As detailed in section 6.2, the monthly indices of fresh fruit and vegetables are calculated using a different basket of representative products and a different set of weights for each month of the year. **Table A 3.1** shows the varieties included in the index calculation and their distribution over the various months (indicated by a weighting). The initially adopted selection of items for each month and their weights are decided and estimated from the information of the base year, bbbb, and remain unchanged until the next change of base.

2. The weighting scheme

The weights required for drawing up the weighting scheme are based on the proceeds from the sale of fruit and vegetables recorded for agriculture in the base year (bbbb). These figures are derived from the Economic Accounts for Agriculture. Value weightings are attributed to the selected products in such a way that each product contributes to the index according to the size of its market share. The first column of **Table A 3.1** shows the total absolute value weightings for each fruit variety and for fresh fruit in the base year.

3. Calculation of value weightings for the months of the base year, bbbb

The monthly value weightings for the fruit varieties in the basket are calculated by allocating the **annual** absolute weight of each product between the months in which it is on the market. Since it was decided what to include in the basket for the months in question when the composition of the basket was originally adopted (cf. **Table A 3.1**), account has now to be taken of the different weightings in each month.

For each month, the permillages (‰) for the fruit varieties in question are calculated from the absolute value weights. The monthly weight for the product group “total fruit” is made equal to the weight used for total fruit in the annual index (19.54 ‰). To do this, the permillages for a particular month are multiplied by a common factor so that they sum to the weight used for the annual index (**Table A 3.2** shows the weight distribution in ‰ for the base year and its months).

This weighting - just like the composition of the basket - remains constant for the duration of the index calculation as long as the weighting for the total fruit group relative to the weighting for the other groups of the index remains unchanged.

4. Drawing up the monthly weights for calculating base prices and annual mean price relatives (in the base year, bbbb)

For non-seasonal products the base prices and annual mean price relatives are obtained as unweighted annual averages from the data for the individual months. In contrast, owing to the considerable seasonal fluctuations in the sale of fruit, the base prices and annual mean price relatives are obtained by calculating weighted averages using monthly weights (according to conditions in the base year).

The monthly weights to be used for this purpose are calculated for each fruit variety from the proportion of the absolute annual value that is marketed in each month (cf. **Table A 3.1**).

The monthly weights converted into percentages for the various fruit varieties are given in **Table A 3.3**.

5. Calculation of base prices

The base price for an individual fruit variety is calculated by multiplying the price for each month by the corresponding monthly weight in per cent (cf. **Table A 3.3**) and dividing the sum of these weighted monthly prices by one hundred. Several individual price series would normally be used to construct a price representative (fruit variety), each of which would have to be given a weighted base price. **Table A 3.4** shows how weighted base prices are calculated.

6. Calculation of monthly price relatives for a given year yyyy

The monthly price relatives are calculated from the ratio of current monthly prices to the weighted average annual price for the base year (i.e. to the base price of **Table A 3.4**) (cf. **Table A 3.5**).

7. Calculation of monthly indices for a given year yyyy

The monthly indices for fruit and for the various groupings are obtained by aggregating (“vertically”) the price relatives for the component products which make up these groups, using the weights that apply in each month and which were calculated in **Table A 3.2**. While the monthly weight for the product group “total fruit” remains unchanged, the combination of products and the product weightings change from month to month. This means in fact that twelve completely separate indices for fruit are calculated.

Table A 4.6 illustrates the way in which monthly indices for fruit, fresh fruit, dessert apples, dessert pears, cherries, plums and quetsches, strawberries and other fresh fruit are calculated.

8. Calculation of annual indices

Like base prices, the annual average indices of seasonal products are not calculated as a simple arithmetic mean of the monthly indices. First of all, for each fruit variety covered by the index a weighted annual mean price relative is calculated; this is obtained from the monthly price relatives in the same way and by applying the same seasonal weights as in the calculation of base prices. Thus the monthly price relatives come into play only according to the unchanging “standard” period chosen for each product with its monthly weighting. The annual index is then obtained by aggregating (“horizontally”) the annual price relatives with the annual index weights. The calculation of the annual indices is illustrated in **Table A 3.7**.

9. Incorporation of the monthly and annual indices for fresh fruit and vegetables into the overall index of agricultural products

The monthly and annual indices for fresh fruit and vegetables are incorporated into the overall index of agricultural products by adding the indices of the two groups to the index excluding fruit and vegetables) by means of the corresponding annual weights. Similarly, fruit and vegetables are incorporated into the index for crop products by adding the fruit and vegetable indices to the monthly/annual indices for crop products excluding fruit and vegetables.

The combination of the fruit and vegetable indices with the partial indices to form the overall indices is illustrated in **Table A 3.8**. In the monthly calculation only the group indicators for fruit and vegetables are recorded, while in the annual indices there is also a subdivision into individual indices for various fruit and vegetable varieties.

Table A 3.1 Product basket and weighting scheme of the EU Agricultural Price Index for fresh fruit in absolute values (1000 currency units)

Item	Year bbbb	January bbbb	February bbbb	March bbbb	April bbbb	May bbbb	June bbbb	July bbbb	August bbbb	September bbbb	October bbbb	November bbbb	December bbbb
James Grieve	10 000	-	-	-	-	-	-	-	2 850	6 410	660	80	-
Cox Orange	84 400	9 284	9 453	4 389	422	-	-	-	-	10 381	22 197	17 218	11 056
Boskoop	120 700	14 001	13 880	12 311	7 242	3 380	362	-	-	5 311	25 106	22 692	16 415
Golden Delicious	88 000	8 272	9 680	11 880	11 440	9 856	5 016	1 496	616	1 232	9 944	12 144	6 424
Jonagold	162 900	12 055	14 335	20 362	12 706	8 634	3 258	1 466	-	5 539	36 978	28 019	19 548
Gloster	113 300	9 291	18 921	17 901	14 729	13 369	6 345	1 246	227	227	2 606	13 029	15 409
Elstar	82 700	6 616	8 683	8 353	5 210	248	-	-	1 654	14 886	13 976	12 488	10 586
Dessert apples	662 000	59 519	74 952	75 196	51 749	35 487	14 981	4 208	5 347	43 986	111 467	105 670	79 438
Williams	10 600	-	-	-	-	-	-	-	106	10 377	106	11	-
Charneux	9 000	63	27	45	-	-	-	-	45	1 512	3 501	3 096	711
Conference	5 200	150	198	26	-	-	-	-	203	1 383	728	1 669	843
Alexander Lucas	20 400	714	530	286	-	-	-	-	41	2 162	6 671	6 446	3 550
Dessert pears	45 200	927	755	357	-	-	-	-	395	15 434	11 006	11 222	5 104
Bigarreau cherries	36 600	-	-	-	-	-	2 928	30 195	3 477	-	-	-	-
Morell cherries	58 400	-	-	-	-	-	30 427	22 542	5 431	-	-	-	-
Cherries	95 000	-	-	-	-	-	33 355	52 737	8 908	-	-	-	-
Plums	5 400	-	-	-	-	-	4 449	929	22	-	-	-	-
Quetsches	160 200	-	-	-	-	-	5 927	77 857	58 313	18 103	-	-	-
Plums/Quetsches	165 600	-	-	-	-	-	10 376	78 786	58 335	18 103	-	-	-
Strawberries	214 700	-	-	-	-	-	128 820	79 224	4 294	2 362	-	-	-
Cider apples	53 400	1 442	1 442	1 388	-	-	-	2 296	2 296	2 350	14 098	14 044	14 044
Perry pears	11 500	-	-	-	-	-	-	-	127	1 483	4 002	5 485	403
Redcurrants	42 700	-	-	-	-	-	2 946	30 445	8 925	384	-	-	-
Blackcurrants	10 800	-	-	-	-	-	108	10 530	162	-	-	-	-
Peaches	5 000	-	-	-	-	-	400	2 220	2 080	300	-	-	-
Gooseberries	59 700	-	-	-	-	-	9 552	48 178	1 970	-	-	-	-
Raspberries	33 700	-	-	-	-	-	2 022	26 050	2 763	843	2 022	-	-
Other fresh fruit	216 800	1 442	1 442	1 388	-	-	15 028	119 719	18 323	5 360	20 122	19 529	14 447
Fresh fruit	1 399 300	61 888	77 149	76 941	51 749	35 487	202 560	334 674	95 602	85 245	142 595	136 421	98 989
Fruit	1 399 300	61 888	77 149	76 941	51 749	35 487	202 560	334 674	95 602	85 245	142 595	136 421	98 989
Total output	71 612 078												

Table A 3.2 Yearly and monthly value weights for fresh fruit in permillages

Item	Year bbbb		January bbbb	February bbbb	March bbbb	April bbbb	May bbbb	June bbbb	July bbbb	August bbbb	September bbbb	October bbbb	November bbbb	December bbbb
	1000 c.u.	%o	%o	%o	%o	%o	%o	%o	%o	%o	%o	%o	%o	%o
James Grieve	10 000	0.14	-	-	-	-	-	-	-	0.58	1.47	0.09	0.01	-
Cox Orange	84 400	1.18	2.93	2.39	1.11	0.16	-	-	-	-	2.38	3.04	2.47	2.18
Boskoop	120 700	1.69	4.42	3.52	3.13	2.73	1.86	0.03	-	-	1.22	3.44	3.25	3.24
Golden Delicious	88 000	1.23	2.61	2.45	3.02	4.32	5.43	0.48	0.09	0.12	0.28	1.36	1.74	1.27
Jonagold	162 900	2.27	3.80	3.63	5.17	4.80	4.75	0.32	0.08	-	1.27	5.07	4.01	3.86
Gloster	113 300	1.58	2.96	4.79	4.55	5.56	7.36	0.61	0.07	0.05	0.05	0.36	1.87	3.04
Elstar	82 700	1.15	2.07	2.20	2.12	1.97	0.14	-	-	0.34	3.41	1.91	1.79	2.09
Dessert apples	662 000	9.24	18.79	18.98	19.10	19.54	19.54	1.44	0.24	1.09	10.08	15.27	15.14	15.68
Williams	10 600	0.15	-	-	-	-	-	-	-	0.02	2.38	0.01	0.01	-
Charneux	9 000	0.13	0.02	0.01	0.01	-	-	-	-	0.01	0.35	0.48	0.44	0.14
Conference	5 200	0.07	0.05	0.05	0.01	-	-	-	-	0.04	0.32	0.10	0.24	0.17
Alexander Lucas	20 400	0.28	0.22	0.13	0.07	-	-	-	-	0.01	0.49	0.92	0.92	0.70
Dessert pears	45 200	0.63	0.29	0.19	0.09	-	-	-	-	0.08	3.54	1.51	1.61	1.01
Bigarreau cherries	36 600	0.51	-	-	-	-	-	0.28	1.76	0.71	-	-	-	-
Morell cherries	58 400	0.82	-	-	-	-	-	2.94	1.32	1.11	-	-	-	-
Cherries.....	95 000	1.33	-	-	-	-	-	3.22	3.08	1.82	-	-	-	-
Plums	5 400	0.07	-	-	-	-	-	0.43	0.05	0.01	-	-	-	-
Quetsches	160 200	2.24	-	-	-	-	-	0.57	4.55	11.92	4.15	-	-	-
Plums/Quetsches	165 600	2.31	-	-	-	-	-	1.00	4.60	11.93	4.15	-	-	-
Strawberries.....	214 700	3.00	-	-	-	-	-	12.43	4.63	0.88	0.54	-	-	-
Cider apples	53 400	0.75	0.46	0.37	0.35	-	-	-	0.13	0.47	0.54	1.93	2.01	2.77
Perry pears	11 500	0.16	-	-	-	-	-	-	-	0.03	0.34	0.55	0.78	0.08
Redcurrants	42 700	0.60	-	-	-	-	-	0.28	1.78	1.82	0.09	-	-	-
Blackcurrants	10 800	0.15	-	-	-	-	-	0.01	0.62	0.03	-	-	-	-
Peaches	5 000	0.07	-	-	-	-	-	0.04	0.13	0.43	0.07	-	-	-
Gooseberries	59 700	0.83	-	-	-	-	-	0.92	2.81	0.40	-	-	-	-
Raspberries	33 700	0.47	-	-	-	-	-	0.20	1.52	0.56	0.19	0.28	-	-
Other fresh fruit	216 800	3.03	0.46	0.37	0.35	-	-	1.45	6.99	3.74	1.23	2.76	2.79	2.85
Fresh fruit	1 399 300	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54
Fruit	1 399 300	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54	19.54
Total output	71 612 078	1000.00												

Table A 3.3 Monthly weights for calculating base prices and annual mean price relatives for fresh fruit

Item	January bbbb	February bbbb	March bbbb	April bbbb	May bbbb	June bbbb	July bbbb	August bbbb	September bbbb	October bbbb	November bbbb	December bbbb	Total
James Grieve	-	-	-	-	-	-	-	28.5	64.1	6.6	0.8	-	100
Cox Orange	11.0	11.2	5.2	0.5	-	-	-	-	12.3	26.3	20.4	13.1	100
Boskoop	11.6	11.5	10.2	6.0	2.8	0.3	-	-	4.4	20.8	18.8	13.6	100
Golden Delicious	9.4	11.0	13.5	13.0	11.2	5.7	1.7	0.7	1.4	11.3	13.8	7.3	100
Jonagold	7.4	8.8	12.5	7.8	5.3	2.0	0.9	-	3.4	22.7	17.2	12.0	100
Gloster	8.2	16.7	15.8	13.0	11.8	5.6	1.1	0.2	0.2	2.3	11.5	13.6	100
Elstar	8.0	10.5	10.1	6.3	0.3	-	-	2.0	18.0	16.9	15.1	12.8	100
Dessert apples													
Williams	-	-	-	-	-	-	-	1.0	97.9	1.0	0.1	-	100
Charneux	0.7	0.3	0.5	-	-	-	-	0.5	16.8	38.9	34.4	7.9	100
Conference	2.9	3.8	0.5	-	-	-	-	3.9	26.6	14.0	32.1	16.2	100
Alexander Lucas	3.5	2.6	1.4	-	-	-	-	0.2	10.6	32.7	31.6	17.4	100
Dessert pears													
Bigarreau cherries	-	-	-	-	-	8.0	82.5	9.5	-	-	-	-	100
Morell cherries	-	-	-	-	-	52.1	38.6	9.3	-	-	-	-	100
Cherries													
Plums	-	-	-	-	-	82.4	17.2	0.4	-	-	-	-	100
Quetsches	-	-	-	-	-	3.7	48.6	36.4	11.3	-	-	-	100
Plums/Quetsches													
Strawberries													
Strawberries	-	-	-	-	-	60.0	36.9	2.0	1.1	-	-	-	100
Other fresh fruit													
Cider apples	2.7	2.7	2.6	-	-	-	4.3	4.3	4.4	26.4	26.3	26.3	100
Perry pears	-	-	-	-	-	-	-	1.1	12.9	34.8	47.7	3.5	100
Redcurrants	-	-	-	-	-	6.9	71.3	20.9	0.9	-	-	-	100
Blackcurrants	-	-	-	-	-	1.0	97.5	1.5	-	-	-	-	100
Peaches	-	-	-	-	-	8.0	44.4	41.6	6.0	-	-	-	100
Gooseberries	-	-	-	-	-	16.0	80.7	3.3	-	-	-	-	100
Raspberries	-	-	-	-	-	6.0	77.3	8.2	2.5	6.0	-	-	100
Fresh fruit													
Fruit													

Table A 3.4 Calculation of weighted base prices (in c.u.) for fresh fruit

Item	January bbbb		February bbbb		March bbbb		April bbbb		May bbbb		June bbbb		July bbbb	
	Weight	Price	Weight	Price	Weight	Price	Weight	Price	Weight	Price	Weight	Price	Weight	Price
James Grieve ..	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cox Orange	11.0	182.16	11.2	199.09	5.2	212.70	0.5	212.70	-	-	-	-	-	-
Boskoop	11.6	173.17	11.5	181.09	10.2	175.28	6.0	159.82	2.8	159.82	0.3	159.82	-	-
Golden Delicious	9.4	100.40	11.0	103.36	13.5	113.92	13.0	111.74	11.2	126.25	5.7	126.25	1.7	126.25
Jonagold	7.4	109.47	8.8	116.74	12.5	131.22	7.8	138.44	5.3	150.35	2.0	150.35	0.9	150.35
Gloster	8.2	83.39	16.7	85.26	15.8	98.25	13.0	98.37	11.8	100.41	5.6	100.41	1.1	100.41
Elstar	8.0	137.33	10.5	136.28	10.1	155.20	6.3	155.20	0.3	155.20	-	-	-	-
Dessert apples														
Williams	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charneux	0.7	120.00	0.3	120.00	0.5	120.00	-	-	-	-	-	-	-	-
Conference	2.9	170.00	3.8	173.33	0.5	173.33	-	-	-	-	-	-	-	-
Alexander Lucas	3.5	177.36	2.6	185.94	1.4	185.94	-	-	-	-	-	-	-	-
Dessert pears														
Bigarreau cherries	-	-	-	-	-	-	-	-	-	-	8.0	443.69	82.5	384.67
Morell cherries ..	-	-	-	-	-	-	-	-	-	-	52.1	209.00	38.6	251.55
Cherries														
Plums	-	-	-	-	-	-	-	-	-	-	82.4	115.00	17.2	380.85
Quetsches	-	-	-	-	-	-	-	-	-	-	3.7	235.00	48.6	336.30
Plums/Quetsches														
Strawberries											60.0	464.65	36.9	313.51
Cider apples	2.7	23.18	2.7	23.70	2.6	23.45	-	-	-	-	-	-	4.3	21.36
Perry pears	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redcurrants	-	-	-	-	-	-	-	-	-	-	6.9	536.05	71.3	320.86
Blackcurrants ...	-	-	-	-	-	-	-	-	-	-	1.0	752.50	97.5	654.14
Peaches	-	-	-	-	-	-	-	-	-	-	8.0	231.25	44.4	231.25
Gooseberries ...	-	-	-	-	-	-	-	-	-	-	16.0	492.95	80.7	601.46
Raspberries	-	-	-	-	-	-	-	-	-	-	6.0	970.85	77.3	702.60
Other fresh fruit ..														
Fresh fruit														
Fruit														

Table A 3.4 Calculation of weighted base prices (in c.u.) for fresh fruit

August bbbb		September bbbb		October bbbb		November bbbb		December bbbb		Year bbbb		Item
Weight	Price	Weight	Price	Weight	Price	Weight	Price	Weight	Price	Weight	Price	
28.5	190.47	64.1	156.47	6.6	115.31	0.8	115.31	-	-	100	163.11	James Grieve
-	-	12.3	243.78	26.3	221.26	20.4	234.74	13.1	253.31	100	223.71	Cox Orange
-	-	4.4	177.82	20.8	238.14	18.8	247.55	13.6	232.99	100	208.92	Boskoop
0.7	126.25	1.4	192.50	11.3	174.03	13.8	170.35	7.3	168.62	100	133.26	Golden Delicious
-	-	3.4	284.24	22.7	231.66	17.2	220.86	12.0	218.59	100	184.37	Jonagold
0.2	100.41	0.2	100.41	2.3	155.45	11.5	160.68	13.6	156.30	100	111.68	Gloster
2.0	155.20	18.0	255.63	16.9	231.94	15.1	241.00	12.8	238.94	100	206.50	Elstar
Dessert apples												
1.0	200.00	97.9	169.91	1.0	169.91	0.1	169.91	-	-	100	170.21	Williams
0.5	120.00	16.8	198.50	38.9	149.47	34.4	142.76	7.9	90.83	100	150.18	Charneux
3.9	173.33	26.6	173.33	14.0	159.58	32.1	154.26	16.2	132.64	100	158.60	Conference
0.2	185.94	10.6	185.94	32.7	201.92	31.6	183.14	17.4	162.19	100	185.85	Alexander Lucas
Dessert pears												
9.5	384.67	-	-	-	-	-	-	-	-	100	389.39	Bigarreau cherries
9.3	251.55	-	-	-	-	-	-	-	-	100	229.38	Morell cherries
Cherries												
0.4	215.33	-	-	-	-	-	-	-	-	100	161.13	Plums
36.4	283.44	11.3	196.88	-	-	-	-	-	-	100	297.56	Quetsches
Plums/Quetsches												
2.0	459.64	1.1	414.69	-	-	-	-	-	-	100	408.23	Strawberries
4.3	26.50	4.4	27.80	26.4	29.50	26.3	29.35	26.3	27.20	100	27.82	Cider apples
1.1	14.95	12.9	14.95	34.8	29.80	47.7	29.80	3.5	29.80	100	27.72	Perry pears
20.9	376.20	0.9	573.38	-	-	-	-	-	-	100	349.55	Redcurrants
1.5	654.14	-	-	-	-	-	-	-	-	100	655.12	Blackcurrants
41.6	271.75	6.0	271.75	-	-	-	-	-	-	100	250.53	Peaches
3.3	601.46	-	-	-	-	-	-	-	-	100	584.10	Gooseberries
8.2	991.70	2.5	1 023.70	6.0	1 023.70	-	-	-	-	100	769.69	Raspberries
Other fresh fruit												
Fresh fruit												
Fruit												

Table A 3.5 Calculation of monthly price relatives (MPRs) for the individual fruit varieties (prices in c.u.) (bbbb = 100)

Item	Base price bbbb=100	January yyyy		February yyyy		March yyyy		April yyyy		May yyyy		June yyyy	
		Price	MPR ⁽¹⁾	Price	MPR	Price	MPR	Price	MPR	Price	MPR	Price	MPR
James Grieve ..	163.11	-	-	-	-	-	-	-	-	-	-	-	-
Cox Orange	223.71	129.73	58.0	135.92	60.8	158.19	70.7	142.50	63.7	-	-	-	-
Boskoop	208.92	122.98	58.9	134.86	64.6	144.54	69.2	162.70	77.9	162.70	77.9	162.70	77.9
Golden Delicious	133.26	94.85	71.2	89.99	67.5	94.02	70.6	92.76	69.6	89.81	67.4	84.00	63.0
Jonagold	184.37	98.59	53.5	103.25	56.0	104.59	56.7	106.09	57.5	108.59	58.9	108.59	58.9
Gloster	111.68	83.19	74.5	85.84	76.9	90.78	81.3	93.10	83.4	94.66	84.8	94.66	84.8
Elstar	206.50	121.55	58.9	131.65	63.8	148.73	72.0	150.39	72.8	148.81	72.1	-	-
Dessert apples													
Williams	170.21	-	-	-	-	-	-	-	-	-	-	-	-
Charneux	150.18	65.37	43.5	65.37	43.5	65.37	43.5	-	-	-	-	-	-
Conference	158.60	71.78	45.3	71.78	45.3	71.78	45.3	-	-	-	-	-	-
Alexander Lucas	185.85	93.28	50.2	93.28	50.2	93.28	50.2	-	-	-	-	-	-
Dessert pears													
Bigarreau cherries	389.39	-	-	-	-	-	-	-	-	-	-	426.01	109.4
Morell cherries .	229.38	-	-	-	-	-	-	-	-	-	-	201.18	87.7
Cherries													
Plums	161.13	-	-	-	-	-	-	-	-	-	-	128.12	79.5
Quetsches	297.56	-	-	-	-	-	-	-	-	-	-	199.09	66.9
Plums/Quetsches													
Strawberries													
Cider apples	27.82	31.68	113.9	28.83	103.6	26.10	93.8	-	-	-	-	367.42	90.0
Perry pears	27.72	-	-	-	-	-	-	-	-	-	-	-	-
Redcurrants	349.55	-	-	-	-	-	-	-	-	-	-	476.60	136.3
Blackcurrants ...	655.12	-	-	-	-	-	-	-	-	-	-	520.00	79.4
Peaches	250.53	-	-	-	-	-	-	-	-	-	-	287.80	114.9
Gooseberries ...	584.10	-	-	-	-	-	-	-	-	-	-	534.13	91.4
Raspberries	769.69	-	-	-	-	-	-	-	-	-	-	1	182.5
												404.30	
Other fresh fruit ..													
Fresh fruit													
Fruit													

⁽¹⁾ MPR: monthly price relative

Table A 3.5 Calculation of monthly price relatives (MPRs) for the individual fruit varieties (prices in c.u.) (bbbb = 100)

July yyyy		August yyyy		September yyyy		October yyyy		November yyyy		December yyyy		Item
Price	MPR	Price	MPR	Price	MPR	Price	MPR	Price	MPR	Price	MPR	
-	-	98.18	60.2	83.13	51.0	76.65	47.0	76.65	47.0	-	-	James Grieve
-	-	-	-	132.93	59.4	101.78	45.5	97.57	43.6	109.35	48.9	Cox Orange
-	-	-	-	131.09	62.7	109.44	52.4	95.36	45.6	96.75	46.3	Boskoop
84.00	63.0	84.00	63.0	110.20	82.7	110.01	82.6	85.49	64.2	82.76	62.1	Golden Delicious
108.59	58.9	-	-	132.24	71.7	107.08	58.1	87.88	47.7	89.73	48.7	Jonagold
94.66	84.8	94.66	84.8	94.66	84.8	83.70	74.9	76.90	68.9	69.13	61.9	Gloster
-	-	148.81	72.1	126.66	61.3	112.65	54.6	106.35	51.5	114.43	55.4	Elstar
Dessert apples												
-	-	88.05	51.7	79.44	46.7	92.77	54.5	92.77	54.5	-	-	Williams
-	-	65.37	43.5	65.37	43.5	81.49	54.3	81.39	54.2	76.70	51.1	Charneux
-	-	71.78	45.3	71.78	45.3	88.92	56.1	73.99	46.7	65.57	41.3	Conference
-	-	93.28	50.2	93.28	50.2	130.39	70.2	90.66	48.8	85.48	46.0	Alexander Lucas
Dessert pears												
316.79	81.4	367.60	94.4	-	-	-	-	-	-	-	-	Bigarreau cherries
244.96	106.8	172.47	75.2	-	-	-	-	-	-	-	-	Morell cherries
Cherries												
174.79	108.5	88.17	54.7	-	-	-	-	-	-	-	-	Plums
174.79	58.7	88.17	29.6	78.58	26.4	-	-	-	-	-	-	Quetsches
Plums/Quetsches												
Strawberries												
26.08	93.7	26.08	93.7	19.78	71.1	23.70	85.2	23.96	86.1	23.20	83.4	Cider apples
-	-	17.50	63.1	17.50	63.1	17.50	63.1	17.50	63.1	17.50	63.1	Perry pears
263.36	75.3	287.43	82.2	319.30	91.3	-	-	-	-	-	-	Redcurrants
465.16	71.0	385.50	58.8	-	-	-	-	-	-	-	-	Blackcurrants
287.80	114.9	287.80	114.9	287.80	114.9	-	-	-	-	-	-	Peaches
442.98	75.8	402.77	69.0	-	-	-	-	-	-	-	-	Gooseberries
820.50	106.6	768.55	99.9	889.25	115.5	895.33	116.3	-	-	-	-	Raspberries
Other fresh fruit												
Fresh fruit												
Fruit												

Table A 3.6 Calculation of monthly indices for fresh fruit (total) (bbbb = 100)

Item	January yyyy		February yyyy		March yyyy		April yyyy		May yyyy		June yyyy	
	Weight	MPR ⁽¹⁾	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR
James Grieve ..	-	-	-	-	-	-	-	-	-	-	-	-
Cox Orange	2.93	58.0	2.39	60.8	1.11	70.7	0.16	63.7	-	-	-	-
Boskoop	4.42	58.9	3.52	64.6	3.13	69.2	2.73	77.9	1.86	77.9	0.03	77.9
Golden Delicious	2.61	71.2	2.45	67.5	3.02	70.6	4.32	69.6	5.43	67.4	0.48	63.0
Jonagold	3.80	53.5	3.63	56.0	5.17	56.7	4.80	57.5	4.75	58.9	0.32	58.9
Gloster	2.96	74.5	4.79	76.9	4.55	81.3	5.56	83.4	7.36	84.8	0.61	84.8
Elstar	2.07	58.9	2.20	63.8	2.12	72.0	1.97	72.8	0.14	72.1	-	-
Dessert apples ...	18.79	61.8	18.98	65.9	19.10	69.3	19.54	72.0	19.54	72.9	1.44	71.6
Williams	-	-	-	-	-	-	-	-	-	-	-	-
Charneux	0.02	43.5	0.01	43.5	0.01	43.5	-	-	-	-	-	-
Conference	0.05	45.3	0.05	45.3	0.01	45.3	-	-	-	-	-	-
Alexander Lucas	0.22	50.2	0.13	50.2	0.07	50.2	-	-	-	-	-	-
Dessert pears	0.29	48.9	0.19	48.6	0.09	48.9	-	-	-	-	-	-
Bigarreau cherries	-	-	-	-	-	-	-	-	-	-	0.28	109.4
Morell cherries ..	-	-	-	-	-	-	-	-	-	-	2.94	87.7
Cherries	-	-	-	-	-	-	-	-	-	-	3.22	89.6
Plums	-	-	-	-	-	-	-	-	-	-	0.43	79.5
Quetsches	-	-	-	-	-	-	-	-	-	-	0.57	66.9
Plums/Quetsches	-	-	-	-	-	-	-	-	-	-	1.00	72.3
Strawberries	-	-	-	-	-	-	-	-	-	-	12.43	90.0
Cider apples	0.46	113.9	0.37	103.6	0.35	93.8	-	-	-	-	-	-
Perry pears	-	-	-	-	-	-	-	-	-	-	-	-
Redcurrants	-	-	-	-	-	-	-	-	-	-	0.28	136.3
Blackcurrants ...	-	-	-	-	-	-	-	-	-	-	0.01	79.4
Peaches	-	-	-	-	-	-	-	-	-	-	0.04	114.9
Gooseberries ...	-	-	-	-	-	-	-	-	-	-	0.92	91.4
Raspberries	-	-	-	-	-	-	-	-	-	-	0.20	182.5
Other fresh fruit ..	0.46	113.9	0.37	103.6	0.35	93.8	-	-	-	-	1.45	113.2
Fresh fruit	19.54	62.8	19.54	66.4	19.54	69.7	19.54	72.0	19.54	72.9	19.54	89.4
Fruit	19.54	62.8	19.54	66.4	19.54	69.6	19.54	72.0	19.54	72.9	19.54	89.4

⁽¹⁾ MPR: monthly price relative

Table A 3.6 Calculation of monthly indices for fresh fruit (total) (bbbb = 100)

July yyyy		August yyyy		September yyyy		October yyyy		November yyyy		December yyyy		Item
Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	
-	-	0.58	60.2	1.47	51.0	0.09	47.0	0.01	47.0	-	-	James Grieve
-	-	-	-	2.38	59.4	3.04	45.5	2.47	43.6	2.18	48.9	Cox Orange
-	-	-	-	1.22	62.7	3.44	52.4	3.25	45.6	3.24	46.3	Boskoop
0.09	63.0	0.12	63.0	0.28	82.7	1.36	82.6	1.74	64.2	1.27	62.1	Golden Delicious
0.08	58.9	-	-	1.27	71.7	5.07	58.1	4.01	47.7	3.86	48.7	Jonagold
0.07	84.8	0.05	84.8	0.05	84.8	0.36	74.9	1.87	68.9	3.04	61.9	Gloster
-	-	0.34	72.1	3.41	61.3	1.91	54.6	1.79	51.5	2.09	55.4	Elstar
0.24	68.0	1.09	65.3	10.08	61.5	15.27	56.4	15.14	51.5	15.68	52.8	Dessert apples
-	-	0.02	51.7	2.38	46.7	0.01	54.5	0.01	54.5	-	-	Williams
-	-	0.01	43.5	0.35	43.5	0.48	54.3	0.44	54.2	0.14	51.1	Charneux
-	-	0.04	45.3	0.32	45.3	0.10	56.1	0.24	46.7	0.17	41.3	Conference
-	-	0.01	50.2	0.49	50.2	0.92	70.2	0.92	48.8	0.70	46.0	Alexander Lucas
-	-	0.08	47.3	3.54	46.7	1.51	64.1	1.61	50.0	1.01	45.9	Dessert pears
1.76	81.4	0.71	94.4	-	-	-	-	-	-	-	-	Bigarreau cherries
1.32	106.8	1.11	75.2	-	-	-	-	-	-	-	-	Morell cherries
3.08	92.3	1.82	82.7	-	-	-	-	-	-	-	-	Cherries
0.05	108.5	0.01	54.7	-	-	-	-	-	-	-	-	Plums
4.55	58.7	11.92	29.6	4.15	26.4	-	-	-	-	-	-	Quetsches
4.60	59.2	11.93	29.6	4.15	26.4	-	-	-	-	-	-	Plums/Quetsches
4.63	77.9	0.88	108.0	0.54	85.3	-	-	-	-	-	-	Strawberries
0.13	93.7	0.47	93.7	0.54	71.1	1.93	85.2	2.01	86.1	2.77	83.4	Cider apples
-	-	0.03	63.1	0.34	63.1	0.55	63.1	0.78	63.1	0.08	63.1	Perry pears
1.78	75.3	1.82	82.2	0.09	91.3	-	-	-	-	-	-	Redcurrants
0.62	71.0	0.03	58.8	-	-	-	-	-	-	-	-	Blackcurrants
0.13	114.9	0.43	114.9	0.07	114.9	-	-	-	-	-	-	Peaches
2.81	75.8	0.40	69.0	-	-	-	-	-	-	-	-	Gooseberries
1.52	106.6	0.56	99.9	0.19	115.5	0.28	116.3	-	-	-	-	Raspberries
6.99	83.0	3.74	88.3	1.23	79.7	2.76	84.0	2.79	79.7	2.85	82.8	Other fresh fruit
19.54	77.5	19.54	51.4	19.54	53.2	19.54	60.9	19.54	55.4	19.54	56.8	Fresh fruit
19.54	77.5	19.54	51.4	19.54	53.2	19.54	60.9	19.54	55.4	19.54	56.8	Fruit

Table A 3.7 Calculation of annual indices for fresh fruit (bbbb = 100)

Item	January yyyy		February yyyy		March yyyy		April yyyy		May yyyy		June yyyy		July yyyy	
	Weight	MPR ⁽¹⁾	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR
James Grieve ..	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cox Orange	11.0	58.0	11.2	60.8	5.2	70.7	0.5	63.7	-	-	-	-	-	-
Boskoop	11.6	58.9	11.5	64.6	10.2	69.2	6.0	77.9	2.8	77.9	0.3	77.9	-	-
Golden Delicious	9.4	71.2	11.0	67.5	13.5	70.6	13.0	69.6	11.2	67.4	5.7	63.0	1.7	63.0
Jonagold	7.4	53.5	8.8	56.0	12.5	56.7	7.8	57.5	5.3	58.9	2.0	58.9	0.9	58.9
Gloster	8.2	74.5	16.7	76.9	15.8	81.3	13.0	83.4	11.8	84.8	5.6	84.8	1.1	84.8
Elstar	8.0	58.9	10.5	63.8	10.1	72.0	6.3	72.8	0.3	72.1	-	-	-	-
Dessert apples	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Williams	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charneux	0.7	43.5	0.3	43.5	0.5	43.5	-	-	-	-	-	-	-	-
Conference	2.9	45.3	3.8	45.3	0.5	45.3	-	-	-	-	-	-	-	-
Alexander Lucas	3.5	50.2	2.6	50.2	1.4	50.2	-	-	-	-	-	-	-	-
Dessert pears	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bigarreau cherries	-	-	-	-	-	-	-	-	-	-	8.0	109.4	82.5	81.4
Morell cherries .	-	-	-	-	-	-	-	-	-	-	52.1	87.7	38.6	106.8
Cherries	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plums	-	-	-	-	-	-	-	-	-	-	82.4	79.5	17.2	108.5
Quetsches	-	-	-	-	-	-	-	-	-	-	3.7	66.9	48.6	58.7
Plums/Quetsches	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strawberries	-	-	-	-	-	-	-	-	-	-	60.0	90.0	36.9	77.9
Cider apples	2.7	113.9	2.7	103.6	2.6	93.8	-	-	-	-	-	-	4.3	93.7
Perry pears	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redcurrants	-	-	-	-	-	-	-	-	-	-	6.9	136.3	71.3	75.3
Blackcurrants ...	-	-	-	-	-	-	-	-	-	-	1.0	79.4	97.5	71.0
Peaches	-	-	-	-	-	-	-	-	-	-	8.0	114.9	44.4	114.9
Gooseberries ...	-	-	-	-	-	-	-	-	-	-	16.0	91.4	80.7	75.8
Raspberries	-	-	-	-	-	-	-	-	-	-	6.0	182.5	77.3	106.6
Other fresh fruit ..	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fresh fruit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fruit	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(1) MPR: monthly price relative

Table A 3.7 Calculation of annual indices for fresh fruit (bbbb = 100)

August yyyy		September yyyy		October yyyy		November yyyy		December yyyy		Year yyyy			Item
Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Weight	MPR	Sum of monthly weights	Index Weight	MPR/ Index	
28.5	60.2	64.1	51.0	6.6	47.0	0.8	47.0	-	-	100	0.14	53.3	James Grieve
-	-	12.3	59.4	26.3	45.5	20.4	43.6	13.1	48.9	100	1.18	51.8	Cox Orange
-	-	4.4	62.7	20.8	52.4	18.8	45.6	13.6	46.3	100	1.69	56.9	Boskoop
0.7	63.0	1.4	82.7	11.3	82.6	13.8	64.2	7.3	62.1	100	1.23	69.2	Golden Delicious
-	-	3.4	71.7	22.7	58.1	17.2	47.7	12.0	48.7	100	2.27	55.0	Jonagold
0.2	84.8	0.2	84.8	2.3	74.9	11.5	68.9	13.6	61.9	100	1.58	76.7	Gloster
2.0	72.1	18.0	61.3	16.9	54.6	15.1	51.5	12.8	55.4	100	1.15	60.1	Elstar
-	-	-	-	-	-	-	-	-	-	-	9.24	61.1	Dessert apples
1.0	51.7	97.9	46.7	1.0	54.5	0.1	54.5	-	-	100	0.15	46.8	Williams
0.5	43.5	16.8	43.5	38.9	54.3	34.4	54.2	7.9	51.1	100	0.13	52.0	Charneux
3.9	45.3	26.6	45.3	14.0	56.1	32.1	46.7	16.2	41.3	100	0.07	46.6	Conference
0.2	50.2	10.6	50.2	32.7	70.2	31.6	48.8	17.4	46.0	100	0.28	55.6	Alexander Lucas
-	-	-	-	-	-	-	-	-	-	-	0.63	51.8	Dessert pears
9.5	94.4	-	-	-	-	-	-	-	-	100	0.51	84.9	Bigarreau cherries
9.3	75.2	-	-	-	-	-	-	-	-	100	0.82	93.9	Morell cherries
-	-	-	-	-	-	-	-	-	-	-	1.33	90.4	Cherries
0.4	54.7	-	-	-	-	-	-	-	-	100	0.07	84.4	Plums
36.4	29.6	11.3	26.4	-	-	-	-	-	-	100	2.24	44.8	Quetsches
-	-	-	-	-	-	-	-	-	-	-	2.31	46.0	Plums/Quetsches
2.0	108.0	1.1	85.3	-	-	-	-	-	-	100	3.00	85.8	Strawberries
4.3	93.7	4.4	71.1	26.4	85.2	26.3	86.1	26.3	83.4	100	0.75	86.6	Cider apples
1.1	63.1	12.9	63.1	34.8	63.1	47.7	63.1	3.5	63.1	100	0.16	63.1	Perry pears
20.9	82.2	0.9	91.3	-	-	-	-	-	-	100	0.60	81.1	Redcurrants
1.5	58.8	-	-	-	-	-	-	-	-	100	0.15	70.9	Blackcurrants
41.6	114.9	6.0	114.9	-	-	-	-	-	-	100	0.07	114.9	Peaches
3.3	69.0	-	-	-	-	-	-	-	-	100	0.83	78.1	Gooseberries
8.2	99.9	2.5	115.5	6.0	116.3	-	-	-	-	100	0.47	111.4	Raspberries
-	-	-	-	-	-	-	-	-	-	-	3.03	85.7	Other fresh fruit
-	-	-	-	-	-	-	-	-	-	-	19.54	68.6	Fresh fruit
-	-	-	-	-	-	-	-	-	-	-	19.54	68.6	Fruit

Table A 3.8: Incorporation of the monthly and annual indices for fresh fruit and vegetables into the overall index of producer prices of agricultural products (bbbb = 100)

Item	Index weight	January yyyy	February yyyy	March yyyy	April yyyy	May yyyy	June yyyy	July yyyy	August yyyy	September yyyy	October yyyy	November yyyy	December yyyy	Year yyyy
Total (excl. fruit and vegetables)	921.87	92.5	93.4	93.8	93.2	95.7	95.3	95.0	94.5	93.7	91.4	89.9	91.0	93.0
Crop products (excl. fruit and vegetables).....	283.44	92.4	92.5	92.7	93.3	95.8	95.0	93.8	91.3	90.7	89.0	88.3	88.4	91.2
Fruit	19.54	62.8	66.4	69.6	72.0	72.9	89.4	77.5	51.4	53.2	60.9	55.4	56.8	68.6
Fresh fruit	19.54	62.8	66.4	69.6	72.0	72.9	89.4	77.5	51.4	53.2	60.9	55.4	56.8	68.6
Dessert apples	9.24	-	-	-	-	-	-	-	-	-	-	-	-	61.1
Dessert pears	0.63	-	-	-	-	-	-	-	-	-	-	-	-	51.8
Cherries	1.33	-	-	-	-	-	-	-	-	-	-	-	-	90.4
Plums	2.31	-	-	-	-	-	-	-	-	-	-	-	-	46.0
Strawberries	3.00	-	-	-	-	-	-	-	-	-	-	-	-	85.8
Other fresh fruit	3.03	-	-	-	-	-	-	-	-	-	-	-	-	85.7
Fresh vegetables	21.00	82.1	85.7	103.7	121.0	88.0	78.4	101.9	76.3	81.9	74.3	66.4	66.0	84.9
Lettuce	1.37	-	-	-	-	-	-	-	-	-	-	-	-	92.7
Cauliflowers	1.13	-	-	-	-	-	-	-	-	-	-	-	-	98.3
Cabbage	3.26	-	-	-	-	-	-	-	-	-	-	-	-	68.4
Tomatoes	0.53	-	-	-	-	-	-	-	-	-	-	-	-	88.4
Carrots	1.40	-	-	-	-	-	-	-	-	-	-	-	-	74.8
Spinach	3.77	-	-	-	-	-	-	-	-	-	-	-	-	108.0
Green peas	0.26	-	-	-	-	-	-	-	-	-	-	-	-	142.2
Green beans	0.63	-	-	-	-	-	-	-	-	-	-	-	-	88.6
Onions	0.78	-	-	-	-	-	-	-	-	-	-	-	-	62.5
Cucumbers	1.00	-	-	-	-	-	-	-	-	-	-	-	-	83.2
Other fresh vegetables	6.87	-	-	-	-	-	-	-	-	-	-	-	-	78.4
Crop products	323.98	89.9	90.5	92.0	93.8	93.9	93.6	93.3	87.9	87.9	86.4	84.9	85.0	89.4
Total	1 000.00	-	-	-	-	-	-	-	-	-	-	-	-	-
