The European organic food market
- How to increase its transparency?

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List of abbreviations

BMVEL, BMELV	Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy
CAPI	Computer-assisted personal interview
CATI	Computer-assisted telephone interview
COMEXT	Harmonised database on intra- and extra-EU trade, compiled by Eurostat
DEFRA	Department for Environment, Food and Rural Affairs
EFTA	European Free Trade Association
EISfOM	European Concerted Action project "European Information System for Organic Markets"
EU	European Union
Eurostat	Statistical office of the European Union
FAO	Food and Agriculture Organisation
FMD	Foot and mouth disease
HPAI	High pathogenic avian influenza
ITC	International Trade Centre
Nd	No data
OECD	Organisation for Economic Cooperation and Development
OFCAP	EU-funded research project "Effects of the CAP-reform and possible further developments on organic farming in the EU"
OMIaRD	EU-funded research project "Organic Marketing Initiatives and Rural Development"
oSBS	Organic Supply Balance Sheet
SBS	Supply Balance Sheet
TRACES	Trade Control and Expert System, database of the European Commission on import and export of live animals and animal products to and from the European Union
UAA	Utilisable Agricultural Area
UN	United Nations
ZMP	Zentrale Markt- und Preisberichtstelle

AT	Austria
BE	Belgium
DE	Germany
DK	Denmark
ES	Spain
FI	Finland
FR	France
GR	Greece
IE	Ireland
IT	Italy
LU	Luxembourg
NL	The Netherlands
PT	Portugal
SE	Sweden
UK	United Kingdom
CZ	Czech Republic
SI	Slovenia
CH	Switzerland
NO	Norway

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1 Introduction

1.1 Background of the study

The European market for organic food has experienced significant changes during the last four decades. In the 1970s and 1980s only a small group of consumers was interested in organic products. At that time the term “organic” food was not clearly defined and no certification of production and trade was in place yet. At the end of the 1980s the organic production method attracted the interest of policy makers, mainly because they discovered organic farming as a tool to reduce agricultural surplus production. Government payments were introduced on the basis of several EU support schemes such as the extensification programme EC regulation 4115/88 (Commission 1988) and the support programme for environmentally friendly farming EC regulation 2078/92 (Council 1992). The decisive impulse for market growth was the introduction of the EC regulation 2092/91 (Council 1991) on the certification of organic products. As a consequence of these measures, the area under organic cultivation in the EU increased with two-digit average annual growth rates in the years after 1993 (Hamm and Gronefeld 2004, p. 11), from 700,000 hectares in 1993 to 4.3 million hectares in 2001.

The focus of policy makers in the 1990s was to support the supply of organic food. However, the organic market was not able to completely absorb the increased organic production. Parts of the production had to be sold on the conventional market without any price premium, and some farmers decided to re-convert their farms to conventional production. At the time, several European countries started to address the need for a more balanced support of both supply and demand of the organic market and a stronger focus on marketing activities for organic food. Action Plans for organic farming were set up on a national level by Denmark, Germany and the United Kingdom (Häring et al. 2004, pp. 53) and in 2004 the first European Action Plan was published (Commission 2004). The combination of increased political support of the organic sector, a general trend to healthier nutrition and life style of consumers as well as the occurrence of food scandals in the conventional sector led to a strong rise in the demand for organic food. Since 2005 the demand has grown so rapidly that organic supply has become the limiting factor for further market growth.

Compared to the total food market, the market for organic products is still a small and volatile market segment. One important problem hampering a balanced growth is the lack of market transparency within the organic sector. Up to now no official agricultural statistics are available on organic production, consumption, foreign trade and prices. Figures collected within the EU countries on a regular basis contain both the organic and the conventional amounts in most cases. The availability of separate organic market data is limited, and the comparability of existing data from different EU countries is low, since organic market data collection is not performed in a standardised way throughout the EU. The lack of market data has consequences for all market actors considering investments in the organic market. Investments in an intransparent market are assessed negatively by banks that will then be reluctant to granting credits. For agricultural policy makers it is difficult to frame reasonable support schemes for an enlargement of organic farming when they cannot base their decisions on detailed facts about the development of the sector.

The problem of intransparency of the organic sector was addressed earlier by some researchers; however, only few publications are available dealing with organic market data on

an EU level. Several studies on organic market research were performed on a national level, but the comparability of the results between those studies is low due to different methods of data collection and processing.

Market research for organic products on a European level was conducted in the framework of the EU-funded research project "Effects of the CAP-reform and possible further developments on organic farming in the EU" (OFCAP, FAIR3-CT96-1794). This was the first attempt to survey organic market data in a harmonised way on an EU level. The results were published by Michelsen et al. (1999). The data presented in this study refer to the years 1997 and 1998. Aspects discussed in this publication are production and consumption of important organic product groups, supply deficits and surpluses, sales channels and government support. Since at that time the data availability was even worse than today, organic production and consumption amounts were surveyed in a more qualitative way. The importance of different product groups in the individual EU countries was investigated. Organic market shares were estimated by market experts rather than the absolute amounts being surveyed. This was due to the fact that the consumed amounts were still small.

A few years later, a similar market survey was performed in the framework of the EU research project "Organic Marketing Initiatives and Rural Development" (OMIaRD, QLK5-2000-01124). Within this project two comprehensive data sets on the European organic market were collected, referring to the years 2000 and 2001. The results for the year 2000 were published in Hamm et al. (2002). The procedure of both surveys is based on the study of Michelsen et al. (1999). The survey instrument was improved in order to survey quantitative figures on organic production, consumption, foreign trade and prices for 19 European countries.

1.2 Aim and procedure of the study

The aim of the study is to find appropriate methods for organic market data collection, processing and analysis, to identify suitable data sources, to elaborate the special needs of an organic data collection as opposed to surveying data for the total (organic plus conventional) market, and to develop appropriate procedures for checking the plausibility of the recorded data. This knowledge will be gained by analysing a comprehensive set of national-economic data for the European organic market, which was collected in the framework of the EU research project "Organic Marketing Initiatives and Rural Development" (OMIaRD) in all EU countries plus the Czech Republic, Slovenia, Norway and Switzerland. The data originate from the second market survey performed within this project and refer to the year 2001.

Data analysis will be performed for ten important organic product groups: cereals, potatoes, vegetables, fruit, milk, beef, sheep and goat meat, pork, poultry and eggs. In order to obtain a complete overview of supply and demand for these product groups and to facilitate the quality check of the data, organic supply balances will be drawn up on the basis of the figures surveyed. In addition, the data on organic production and organic consumption will be related to the respective figures of the total (organic plus conventional) market in order to assess the importance of the organic sector within individual product groups throughout the countries surveyed.

On the basis of the surveyed market data, assumed relationships between relevant variables such as the market share of organic products and the importance of general food shops for

organic sales will be analysed. Several hypotheses can be found in literature regarding possible relationships between key variables. Correlation and regression analysis will be performed to test these hypotheses.

The lessons learned in the course of this study will be applied to draw conclusions with regard to future attempts at collecting European organic market data. The necessity of such data collection will be highlighted from the perspective of different market actors and recommendations will be given as to how the setup of an organic market data collection system should be coordinated.

In chapter 2, relevant survey methods of desk research and field research will be described. Advantages and disadvantages of the different methods are highlighted. The concrete methods used within this study will be presented in chapter 3 explaining in detail the survey instrument developed for this study. In chapter 4, the statistical methods used for the analysis of the data surveyed will be described. The analysis of the organic market data will be presented in chapter 5 according to the individual product groups. Each product chapter will start with a short overview of the total (organic plus conventional) market in the year 2001. Some data categories were surveyed throughout all product groups such as turnover of the organic food market, sales channels for organic food and common labels for organic food. This data will be presented in chapter 6, since it was used for the statistical analysis. Results of correlation and regression analysis will be presented in chapter 7, and in chapter 8, conclusions will be drawn for the setup of an EU-wide organic market data collection system.

2 Methods of data collection

Data can basically be obtained in two ways, as desk research (secondary data) or as field research (primary data). After having specified the piece of information needed, the market researcher starts by evaluating all available secondary sources as published market analyses and internet sources. If these secondary sources do not provide all necessary information, field research has to be conducted. This means that the researcher conducts a survey on the specific data of interest either by herself/himself or by mandating a market research institute with this task. For collecting all required market data within this study, desk research and field research were conducted.

This chapter starts in section 2.1 with an overview of the data categories investigated within this study. In section 2.2, the method of drawing up organic supply balances is explained. Although this is rather a method of processing the collected data, this procedure needs to be introduced at this early stage of the study, since the term "organic supply balance" will be used in all following chapters. Section 2.3 deals with the methods of desk research, and the methods of field research will be described in section 2.4.

2.1 Data categories investigated in this study

In the following sub-chapters 2.1.1 to 2.1.6 the data categories analysed within this study are explained. These are: organic production, organic sales, organic consumption, organic foreign trade, the balance between supply and demand of/for the investigated organic products as well as organic farmer and consumer prices. "Organic products" investigated in this study are products certified according to EC regulation 834/2007[1] (Council 2007).

2.1.1 Organic production

Reliable figures about the organic food production in Europe are of importance to national governments, who want to respond to the demand for organic products through appropriate measures of financial support, and for processors, wholesalers and retailers thinking about investing in this expanding market segment. The organic movement itself is interested in such data. For farm advisors, associations or co-operatives aiming to illustrate the desirability of a move to organic production amongst their peers, evidence of an increase in production often serves to give confidence to those farmers considering conversion.

Despite the interests of these parties in having a clearer picture of organic production there remains an absence of systematic data collection of organic production by government institutions. Many attempts have been made, especially by researchers, to document the development of organic production in Europe. However, most publications focus on the organic area and on the number of organic farms, which of course is an important basis for understanding the development over the past years (Foster and Lampkin 1999, Lampkin et al. 2007). Publications on hard facts regarding organic production amounts at an European level are still scarce.

[1] EC regulation 834/2007 took of effect on 01 January 2009 and replaced EC regulation 2092/91 and EC regulation 1804/1999.

To interpret figures on organic production it is important to have in mind that supply cannot react immediately to changes in demand as stated by Michelsen et al. (1999, p. 9). One reason for this is the conversion period in organic farming of 24 months for most plant products, and specific periods for livestock (compare EC regulation 834/2007, Council 2007). Even if farmers react promptly on supply deficits, the organic products will not be available on the market until two years later. Farmers also experience the problem of market transparency, identified by marketers as hindering their ability to provide analysis and forecasts. Thus, they may simply not perceive demand where it may actually exist. Hence, in explaining the production levels, one cannot simply draw direct links with demand.

Especially for organic products a regular reporting of production amounts is important because these figures are extremely changeable from year to year and, of course, from country to country. Thus, an annual report on organic market data should be produced from statistical offices which not only include data on the structure of organic farming as the agricultural area under organic production and the size of organic farms but also hard facts about the production amounts.

In countries with a federal system it appeared very difficult to conduct this data collection. For example in Spain, no organisation compiled the production data from the 17 regions in 2003. Thus, the market is less transparent than in countries where the actors of the organic market work closely together as, for example, in Denmark. This shows that much more effort has to be made by official offices to work together and establish a comprehensive data base for organic market data.

In work of a similar nature, undertaken as part of the previous OFCAP project[1], the absence of data for many product groups led to a focus on five "most important" product groups. However, even when focusing on these groups only, estimates were made of growth rates rather than raw figures provided (Michelsen et al. 1999, p. 17).

Within this project much effort has been made to compile data on organic production for the year 2001. These figures still have to be treated with some caution, given that they include some estimates; however, they provide a basis for comparison between and within countries. The **organic production volumes** surveyed in this study refer to the useable organic production in tonnes at farm level. Besides these absolute figures the **organic share of the total (conventional plus organic) production** was calculated as shown in the box below.

$$\text{Organic production share} = \frac{\text{Organic production}}{\text{Total (organic and conventional) production}} * 100$$

The presentation of organic production figures in relation to the total production figures is more meaningful than showing the absolute figures of organic production in tonnes. This is because the organic share of total production clearly shows the different development stages of the organic sector's supply side in the surveyed countries.

The contrast between absolute production figures and data on the organic share of total production helps to move beyond the sheer scale of production to work out the importance of

[1] EU funded project entitled 'Effects of the CAP-reform and possible further developments on organic farming in the EU'. See results published under series entitled 'Organic farming in Europe' by the University of Hohenheim.

individual organic product groups within a nation. What may appear as high levels of raw production may become less impressive when put into the context of the total production levels for a country. These organic shares provide a sense of the relative size of the sub-sectors within the agricultural sector of individual countries. The figures also give a rough indicator of the structure of production within a country. In turn this provides a basis for examining the relative importance of organic products between countries. To facilitate a more meaningful comparison amongst EU nations on a commodity by commodity basis, the EU average (weighted by organic production) has been used as a reference point for the discussion and analysis.

2.1.2 Organic sales

For analysing the marketable amounts it is of decisive importance to know how much of the production was **sold as organic** products. In most product groups some part of the production has to be sold on the conventional market. The smaller the percentage of products which has to be sold as a conventional product, the more successful is the organic market in this country. Analysing the share of the organic production which was sold as organic helps to explore the extent to which a strong market exists for organic production. Often there is a tendency to see production itself as an indicator of a strong market. After all, what rational farmer would pursue organic conversion in the absence of a strong market?

Data on the organic production which was sold as organic indicate if a well operating market, one that balances the forces of supply and demand, is in operation for each product type in the countries surveyed. In some countries almost all organically produced products were sold as organic, suggesting that demand was unlikely to be fully satisfied and/or that a functioning market existed in these countries. Conversely, some countries exhibited only a small percentage of total organic production sold as organic; suggesting that markets were either not operating effectively, that there was an oversupply on the domestic market or that the demand was rather poor.

2.1.3 Organic consumption

Consumption is a great deal harder to quantify than production. In this section consumption is considered in two ways. Firstly, the **total volume of consumption in tonnes** is considered. For a better understanding it is explained how one arrives at the figures on organic food consumption. The amounts were calculated by starting with the figure for the volume of organic sales that were sold as organic. To this figure the total quantity of organic imports was added and the total quantity of organic exports was subtracted. This calculation is summarised in the box below:

Domestic organic consumption = Organic sales sold as organic + organic imports - organic exports

It is important to note that the figures reported for cereals only refer to volumes that were used for human consumption. Much effort was necessary to survey consumption figures for human consumption and for animal feed separately. For all other organic plant products, including potatoes, other purposes than human consumption can be neglected. With respect to

meat, organic consumption as animal feed (for example for pets) does not play an important role.

Secondly, the share of total consumption that is made up of organic consumption is calculated. This **market share by volume** is more meaningful than absolute consumption figures in tonnes. To compute the quantitative market share, expressed as a percentage, the organic consumption figure in tonnes was divided by the total (organic and conventional) consumption in tonnes within a product group. This calculation is given in the box below.

$$\text{Market share by volume} = \frac{\text{Organic consumption}}{\text{Total (organic and conventional) consumption}} * 100$$

For being able to compare the performance of the different countries, an EU average was calculated which was weighted by the organic consumption of the respective product group. The EU average market share provides a basis of comparison for analysing how well each sub-sector within a country is doing with respect to the rest of Europe. It also gives a rough indicator of how the product sectors are doing in comparison to one another across the EU.

2.1.4 Foreign trade in organic products

The domestic organic produce does not only necessarily meet the domestic demand of a country. Some countries produce much more than their domestic market is able to absorb. Other countries are not able to meet the demand by their own production only, and they have to import significant volumes. The foreign trade is therewith a means for balancing supply and demand between countries.

Before proceeding, it is important to make it clear that some caution needs to be exercised in making sense of the figures that are reported. These figures are all based on the sale of goods as raw products or, in other words, as unprocessed commodities. Clearly, many of the organic products we purchase as individual consumers are processed goods such as yoghurts, fruit juices or breakfast cereals. This indicates that many countries in the EU import goods to combine with domestically produced commodities in order to export finished products. It is difficult to reflect this dynamic process; even so our experts have tried to take processed products into consideration when estimating import and export volumes. These processed products, as for example cheese or pasta, are included in the given figures as raw product equivalent (milk, cereals).

Most of the data for this section were collected via a survey of market experts in each country. These experts often had to resort to estimations because importers and exporters were reluctant to provide data on the grounds that such information was of a commercial nature. Given the variable nature of the data it was not always possible to reconcile flows of goods between countries. That is, to untangle a situation where country X reported it exported 1,000 tonnes of cereals to country Y, and country Y reported that it imported 2,000 tonnes from country X.

An additional note of caution must be taken when interpreting the figures for the Netherlands and Belgium. These two countries are transport hubs for the whole of Europe because of their sea and airfreight harbours. It is therefore likely that much of the volume of the exports and

imports of organic products from these countries, recorded in the tables below, simply refers to goods in transit.

Data on foreign trade with organic products are very difficult to survey. There are some international institutions publishing useful information on this subject as, for example, the International Trade Centre (ITC) or the Food and Agriculture Organization of the United Nations (FAO).

In this survey the **organic import volumes in tonnes** were recorded as well as the organic share of imports measured by the organic human consumption in a country. Again, for cereals this includes only amounts for human consumption. Imports and consumption for the use as animal feed have been recorded separately and are not presented in the following chapters. The figures were calculated as described in the box below.

$$\text{Import share of organic human consumption} = \frac{\text{Organic imports for human consumption}}{\text{Organic human consumption}} * 100$$

By identifying **imports as a share of organic consumption**, it is possible to get a sense of how important these imports are in covering any gaps in domestic production levels. However, some background information is necessary for interpreting these organic import shares correctly. At the first glance, the organic imports measured by the organic human consumption of a country seem to show exactly to which extent this country is dependent on imports for meeting its domestic demand. In some countries, however, as for example in Belgium, the Netherlands and - to a lower extent - also in other countries, the recorded import volumes partly include goods which are exported to other countries instead of being consumed in the respective country. In the Netherlands and Belgium most of the imported products are exported as raw product.

Therefore, it is important to have in mind that the presented import volumes often hide a certain amount which is not imported for meeting domestic demand but for meeting the demand in the receiver countries.

Exports of organic products were surveyed as **organic export volumes in tonnes** and also as the **organic share of exports measured by the sales as organic for human consumption**. The latter provides an indicator of what percentage of all organic sales were diverted into exports as opposed to being sold on the domestic market. This calculation is shown in the box below.

$$\text{Export share of the sales as organic} = \frac{\text{Organic exports for human consumption}}{\text{Organic sales as organic for human consumption}} * 100$$

For the organic export shares a similar interpretation problem appears as being discussed for the organic import share. The organic export volumes include in some countries large amounts of products which can only be exported because they were imported before from other countries. This means, the organic export volumes recorded within this study do not refer exclusively to that part of the organic domestic production which was exported, but it also includes products being imported from outside the country.

The reason for this is the way how these figures were collected. As no official data are available on the part of the organic domestic production which is exported - as it exists for the

total (organic plus conventional) agricultural markets being published in agricultural yearbooks - these data on organic exports were collected during interviews with market experts. The estimations of the experts included all exported organic products either originating from domestic production or those which were imported before. Thus, countries with high organic export shares in the meaning of this study are not necessarily large volume producers.

Comparing the organic import volumes of a product to the organic export volumes for all EU countries in the sum, it can be assessed if the EU is a net importer or a net exporter for the respective organic product. In the framework of this study it was also recorded which countries outside the EU have been the main countries of origin for imported products and which were the main receiver countries for the EU's organic exports.

Concerning organic imports and exports it is important to note that these figures contain both intra and extra-EU trade. Therefore the EU sums for organic imports as well as for exports have to be treated with caution. Countries which import organic beef from outside the EU might sell some of it to other EU countries. Thus, when summing up the individual import figures, a double recording might appear. In the official statistics published by Eurostat and referring to the total (organic plus conventional) market, the EU sum only includes those imports and exports which belong to third countries. Thus, by comparing the total imports to the total exports it is possible to assess if the EU is a net importer or a net exporter for a special product. For organic markets, however, this assessment is quite difficult at the moment as no official statistical agencies exist which record figures on foreign trade with organic products. From the estimations made during the OMIaRD project it is possible to assess which amounts were imported and exported in 2001 but it is not possible to trace which amounts came from EU countries and what was imported from outside the EU.

2.1.5 Balance between organic supply and demand

After analysing the situation of supply and demand separately, this chapter is going to describe the relation between the organic production and the organic consumption. This is of decisive importance for identifying supply deficits and sales difficulties. In a small and volatile market as the organic market is, this balance between supply and demand is very sensitive. Thus, it is necessary to observe the market constantly. In the framework of this study we are only able to make observations for one individual year, the year 2001. The lack of market data collected for all EU countries over several years according to the same data collection method still does not allow a reliable analysis over the time, not to mention a meaningful forecast for future developments[1].

Firstly, results about the **degree of self-sufficiency** are presented. This measures to what extent domestic organic production is able to meet domestic demand. The degree of self-sufficiency was measured by dividing the sales of organic as organic for human consumption by the organic human consumption. This calculation is described in the following box.

[1]The EU project EISfOM (European Information System for Organic Markets) was a concerted action for establishing such a data collection system on a European level. The project was conducted in collaboration with Eurostat, the European statistic agency, which makes efforts to build up a harmonised data collection for organic market data. For further information see http://www.eisfom.org/.

$$\text{Degree of self - sufficiency} = \frac{\text{Sales of organic as organic for human consumption}}{\text{Organic human consumption}} * 100$$

The degree of self-sufficiency is a useful measure for determining whether countries have an excess or an absence of domestic organic production relative to consumption. However, the weakness of such a measure is that where a country has no imports or exports, then demand simply equates with production. In our data, this is best illustrated with respect to organic animal products, especially poultry and pork, where many countries appeared self-sufficient. Yet in these cases, self-sufficiency more likely reflected the absence of the ability, for whatever reason, to meet demand by importing. As such, the measure of self-sufficiency can obscure some elements of demand.

The degree of self-sufficiency is a particularly important issue in organic farming, not least because of the organic movement's emphasis on the proximity of producers to consumers, which reduces the degree of transport required (Michelsen et al. 1999, p. 29). This notion is encapsulated in the concept of 'food miles'.

In interpreting a country's self-sufficiency, where it then equals 100 percent, at least theoretically, its domestic production can meet existing consumption. In many cases where a country reaches exactly 100 percent self-sufficiency it reflects the fact that it does not import or export goods. If a country does not import or export, it is simply unable to consume any more than it produces, hence forcing a balance between total domestic organic production and organic consumption. Where it exceeds 100 percent, it has more organic production than consumption and could possibly increase exports or reduce imports whilst still meeting domestic consumption requirements. Where the measure of self-sufficiency is less than 100 percent this suggests that there is a shortfall in the nation's capacity to satisfy its own consumption by its own production.

In addition to calculating the degree of self-sufficiency a more qualitative measure was used for assessing the balance between supply and demand, i.e. to identify those products where countries were unable to address demand via production plus imports. This was done for the supply deficits in 2001 and 2002 as well as for the expected supply deficits in 2003 and 2004. One should not be surprised to see countries, which were described as self-sufficient in respect to a certain product in the first part of the chapter, being subsequently identified as countries that experienced a lack of supply for the same product. In general, this type of indicator is useful as it clearly identifies those products where significant problems with securing supply exist. In interpreting this indicator, where only one country nominates a problem with supply, it is most likely that a problem on national level exists, such as poor distribution systems, or a preference amongst producers for export markets. Likewise, where a group of countries nominates the one product category as a problem, then there probably exists a more encompassing problem and trend in European-wide organic production.

The information given about the existing and likely future supply deficits is the result of experts identifying trends in terms of production shortfalls. In this study experts were asked to identify in which product groups there was a supply deficit for the years 2001 and 2002, and if there was likely to be a supply deficit for the years 2003 and 2004.

The relationship between supply and demand is circular in the sense that demand may rise as a consequence of an increase in production. In the context of organic agriculture this 'push' approach to demand is facilitated through support schemes for organic farming, with state

subsidies for farmers being the main instrument. Alternatively, there is the 'pull' approach to this relationship, where farmers are given signals from the market that they should change production and management patterns. These signals are communicated principally through price signals. The existing consensus in the literature is that enhancing organic market development is best achieved through meeting demand by better management of supply, rather than in simply creating supply by high conversion subsidies paid to farmers (Hamm and Michelsen 1999, p. 16).

2.1.6 Prices for organic products

Within the product chapters (5.1 to 5.10) a section on prices of the respective product was included. The aim of these price sections is to analyse farmer and consumer prices and price premiums for organic products in the surveyed countries. Knowledge about prices at different stages in the organic market as farm gate and consumer prices is crucial in making the organic market more transparent than it is at the moment. Prices give signals to all market actors, showing the relationship between demand and supply for, and between, products and countries. Of further interest is the relationship between prices for conventional and organic products given that organic farming is connected with higher production costs, and therefore, requires higher prices for its products.

A comparison between prices in different European countries needs much effort. One sizeable problem is that in most countries prices for organic products are not registered on a regular basis. There are some exceptions, such as price surveys in Denmark by Økologiens Hus and in Germany by the Zentrale Markt- und Preisberichtstelle (ZMP[1]). In Germany, prices for a number of organic vegetables, potatoes and fruit were registered weekly by the ZMP. These prices were published in the weekly journal "ÖKOMARKT Forum"[2]. In the UK some key organic prices are published quarterly in the Organic Farming Magazine. In most other countries prices for organic products are not published regularly. Therefore it is difficult to compare prices between countries.

Before the introduction of the Euro, all the different currencies in Europe were also a factor hampering an easy comparison of prices between countries. In this survey data on organic farmer and consumer prices were surveyed, as well as on prices for comparable conventional products. On this basis it was possible to calculate price premiums, i.e. the relative price difference between organic and conventional products.

The **farmer prices** reported in this study need to be seen in the context of governmental farm subsidies because the market is only one income stream for European farmers. The other stream of income is the various payments received from government, whether from production or agri-environment schemes. In the case of organic farmers, they may receive area-based payments for conversion to or maintenance of organic farming. In addition, they can receive payments for control costs, consulting, marketing and promotion. Therefore,

[1] The ZMP stopped its business on 30 April 2009, see Table 3-3.

[2] The prices were reported from farmers to the ZMP on a voluntary basis. The farmer prices were differentiated according to direct sales at farm gate, sales to retailers and sales to wholesalers. Once a month, cereal prices were published for spelt, barley, oats, rye and wheat. Consumer prices were published on a monthly basis as an average price from different kind of shops, excluding direct sales. Since 2005 the consumer prices published by the ZMP originated from panel data surveyed by the Gesellschaft für Konsumforschung (GfK).

whilst prices in country X may be lower than country Y, farmers may still be able to stay in business, or retain the same net income, because the subsidy levels are higher in country X than country Y.

Organic farmer prices - presented within the following chapters on the respective organic products - are the average prices which farmers received when they sold their products to wholesalers or processors in 2001. These prices were mainly collected during interviews with farmer associations and wholesalers. Data availability varied depending on the different product groups.

For farmer prices and farmer price premiums a weighted EU average for each product group on a commodity by commodity basis was calculated to provide a basis for comparison between countries. For each product group, and for each country, the figure for organic sales sold as organic in tonnes was obtained from the questionnaire. This was divided by the organic sales sold as organic for the entire EU (sum of the figures given in the questionnaire). This provided a factor by which the relevant national figures on prices and price premiums were multiplied. The sum of the results of this multiplication provided a weighted EU average for each product group. Where the figures for organic sales sold as organic or the figures for price or price premium were not available for a country, they were omitted from the calculation.

Farmer price premiums provide interesting comparisons between countries. Price premiums allow us to analyse the competitive situation between the organic and conventional sectors within a country and differences in production conditions between countries. The price premiums are shown as the additional charge of the organic price in percent above the conventional price and should be seen in the context of governmental farm subsidies for organic production.

Prices were taken from sales to wholesalers or processors. The additional premium paid for organic products was very different between the EU countries. Reasons for that have been discussed by Michelsen et al. (1999, pp. 64). Variations in price premiums can, for example, reflect differences in production conditions for the same product in different countries, different national support for the same product group, different market situations (surplus or deficit), or simply a lack of market transparency for actors in different countries.

An important aspect in explaining the level of farmer price premiums for organic products in different countries is the volume of organic production that cannot be sold as organic. Where large volumes are sold as conventional, one would expect relatively low price premiums for organic products because organic product buyers could push prices down.

In comparison to the data collection conducted for the year 2000 (Hamm et al. 2002) it can be stated that the availability of information on organic farmer prices has improved, but remains far from satisfying. A representative registration of organic farmer prices has to be based on average farmer prices, weighted according to regional differences, according to different qualities of a product within a country and surveyed on a monthly basis.

In most European countries, also no regular survey of **organic consumer prices** exists. National contractors or subcontractors in all 19 countries collected prices for this report at different shops during June and July 2001 in all countries. To get a nation-wide average for consumer prices of organic food at least ten shops were chosen in each country. The shops

were selected from different regions to reflect possible price differences. Different types of shops were also chosen according to the importance of sales channels in each country, to account for any price differences between them[1]. Prices that were used as the basis for calculating consumer price premiums can, therefore, be interpreted as a nation-wide average price over the different sales channels.

To calculate the weighted EU average the consumer prices and price premiums were weighted by the organic consumption of the different countries. The weighted EU average was calculated in the following way: For each product group and for each country the organic human consumption in tonnes (presented in the supply balance within the chapter of the respective product group) was divided by the organic consumption for the entire EU (sum of the consumption figures of all EU countries). This provided a factor by which the relevant national figures on prices and price premiums were multiplied. The sum of the results of this multiplication provided a weighted EU average for each product group. Where the figures on organic consumption or the figures on the price or the price premium were unavailable for a country, they were omitted from the calculation.

A comparison of **consumer price premiums** is much more meaningful than a comparison of absolute prices, which are influenced by different national VAT rates, the importance of different national sales channels and the competitive situation between the organic and the conventional sector. The data presented in the respective product chapter (5.1 to 5.10) show the consumer price premiums of organic over conventional products. The conventional prices were collected at the same time as the organic prices and in comparable sales channels. In large general food shops both the organic and conventional prices were collected for each product. Prices in specialised organic food shops were compared with those in small general food shops. Prices of products sold by organic farmers directly to consumers were compared with direct sales prices from conventional farmers.

[1] Where the relative importance of specialised organic food shops, general food shops and direct sales were 50, 30 and 20 percent, respectively, prices were collected in five specialised organic food shops, three general food shops, and in two farmers' shops.

2.2 Drawing up organic supply balances

Organic supply balances were built in this study for assuring the quality of the collected data and to provide a clear overview about supply and demand of the investigated product markets. The organic supply balances presented in this study were drawn up in accordance to the official supply balances published by statistical agencies for the total (organic plus conventional) agricultural sector. The up-to-date supply balances on the total agricultural sector are published by Eurostat and can be found on the internet within the Eurostat online database (Eurostat 2008, http://epp.eurostat.ec.europa.eu).

For retrieving information from this database, proceed in the following way: choose the heading Statistics > Agriculture > Database > Agricultural products > choose a product > supply balance sheets > select a supply balance sheet > select data: "Time" (year of interest), "Geo" (entire EU or individual countries), "Bal_Item" (balance item: production, imports, exports, consumption etc.) and "Prod_Bal" (for example common wheat, durum wheat etc.) > update > view table.

According to Weiler (2006, p. 182) a supply balance sheet (SBS) is "a method of comparing the resources and uses of a product. The SBS covers the product life from production to wholesale trade." The information compiled in an SBS is used by agricultural policy makers, for example, by DG Agri and DG Sanco (Health and Consumer Affairs). It is used by Eurostat for modelling tools, as well as by private users for analysing "the capacity of national markets and mak[ing] judicious investments. The balances provide valuable information on the saturation of national markets and indigenous production capacity" (Weiler 2006, p. 189).

For the total agricultural sector a large number of items is included in the SBSs. Detailed information is given on, for example, the kind of use of the individual product as industrial use, use as animal feed, human consumption as well as human consumption per capita. The foreign trade data for the individual countries are differentiated according to trade within the EU and with third countries. An important item within the official supply balances is the change of stocks, which has to be taken into consideration when calculating the actual consumption of a year. In Weiler (2006, pp. 196) an overview is given which items currently are included in the SBS for the total agricultural sector. The detailed statistical requirements followed by Eurostat are compiled in the "Statistical Requirements Compendium" published by Eurostat (2002). Here, the respective legal acts as well as information on the surveyed variables and the used methods for data collection are given (see pp. 158 and pp. 168 for supply balances on crop and animal products).

Even in the current SBS provided by Eurostat the data quality varies strongly between the different items. In addition, Eurostat is in the process of reducing the workload which occurs with drawing up supply balances. Weiler (2006, p. 191) points out that much more use could be made of existing information as, for example, data collected in the databases COMEXT on external trade or TRACES on movements of live animals. Much effort is made on an international level for improving and simplifying the collection and processing of official statistical data beyond the agricultural sector. The biennial "European Conference on Quality and Methodology in Official Statistics" is an important source of information on the current discussion among the international statistical agencies.

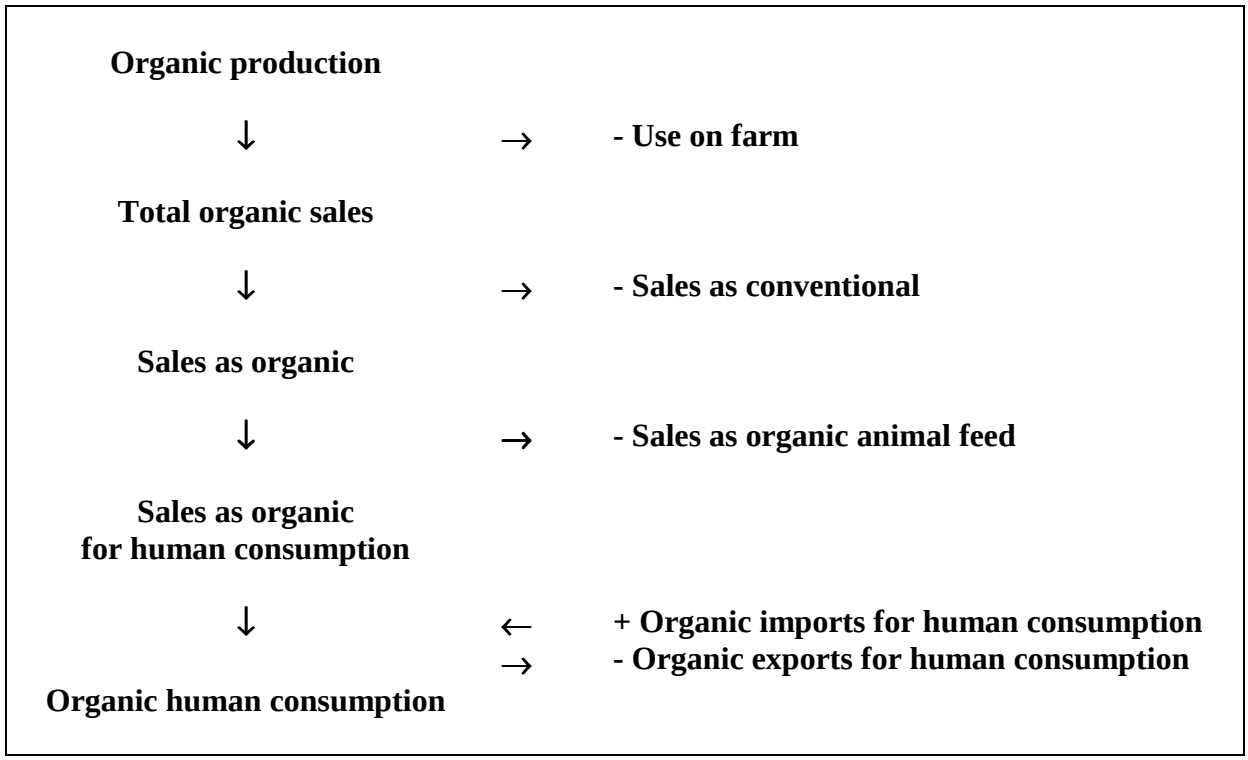
It has to be noted that, within the framework of this study, the supply balances drawn up especially for the organic sector are less detailed than the official SBS and focus on the organic production, organic consumption, organic imports and organic exports. To be able to present these data, a lot of pre-information was necessary as these basic statistical data were not recorded by statistical agencies and had therefore to be collected by the researchers of the project exclusively for this study. As the organic part of the "change in stocks" can be assumed to be very little, this variable has been omitted in this study. Furthermore, it would have been impossible to survey valid data on this aspect. Some additional facts had to be included, deviating from official supply balances. This refers mainly to that part of the organic production, which was not able to be sold on the organic market and had therefore to be omitted from the supply balance. Thus, the category "sales as organic" is of decisive importance for drawing up organic supply balances.

The structure of an organic supply balance is shown in Figure 2-1. Starting point of the supply balance is the useable organic production in tonnes. This is the produced amount of a product without losses. From this production amount the part which is used on farm for animal feed and for seed is subtracted. This leads to the total organic sales. In most cases, a certain part of the total organic sales has to be sold on the conventional market. Thus, this volume has to be subtracted from the total organic sales to obtain the amount which is sold as organic with a special organic price premium over the conventional price.

For cereals it has to be taken into consideration that a certain part of the organic sales is sold as organic animal feed. This amount has to be subtracted from the sales as organic to obtain the sales as organic for human consumption. To these sales as organic for human consumption the organic imports for human consumption have to be added and the organic exports for human consumption are subtracted. This results in the organic human consumption of a country. The degree of self-sufficiency for human consumption can now be calculated by dividing the organic sales for human consumption by the organic human consumption.

Another variable which is taken into account in supply balances for the total agricultural sector is the industrial use. This includes the processing into energy carriers as oil and ethanol, or into starch, and the use in the chemical industry. As the industrial use of organic products is still almost not existent, this variable has not been taken into consideration in the framework of this study. However, the industrial use might increase in the future, given that a market for organic industrial products develops.

Figure 2-1 Structure of the organic supply balance



2.3 Methods of desk research

As only few books deal with survey methods for national-economic market data, the methods used for data collection within this study originate from the field of empirical social research and marketing research. The collection and analysis of market data is either called "market research" or "marketing research". Both terms are used synonymously in the literature[1]. Within this study the term "market research" is used rather than "marketing research", as the study investigates the organic markets from a national-economic point of view and does not deal with concrete marketing questions of an individual company.

Desk research is based on secondary sources containing published research results in contrast to field research, which encompasses a new survey conducted specially to answer the current research question. In the beginning of a research project desk research is necessary for getting an overview on the research subject and for evaluating existing information which can be used for the study at hand. Secondary sources build a huge storage of collective knowledge containing the experiences and research results of a great number of people. Desk research, therefore, is a chance for the researcher to get access to the thoughts and ideas of other persons working on similar subjects, which builds a basis for the development of own ideas and research questions.

After the concrete research question of the study has been defined, the aim of desk research is to use as much of existing information as possible and, therewith, to reduce the amount of field research because desk research has economical advantages. It is much cheaper to use

[1] The parallel use of both terms has three reasons: **(1) Different use of the terms in the USA and in Europe:** Most American textbook authors use exclusively the term marketing research (see Shao 2002; Burns and Bush 2003; Churchill 2001), whereas European textbook authors often use the term market research. However, all these books deal with the same matter of fact: the "goal-oriented gathering of information for solving marketing problems" (Gabler-Wirtschafts-Lexikon 1997, p. 2545). Most German authors try to differentiate between both terms. In Gabler-Wirtschafts-Lexikon (1997) a hierarchical order of the terms market research and marketing research is stated, i.e. market research is seen as a part of marketing research. For market research only external sources are used. Marketing research, as a more comprehensive field, uses additionally "the marketing relevant information of the accountancy as a company internal source of information" (pp. 2552). Another way to differentiate between both terms can be found in Meffert (1992, p. 15) and in Schäfer and Knoblich (1978, p. 14). The authors state that marketing research focuses on the selling markets, whereas market research also investigates the buying markets. Despite various efforts made by German authors to differentiate between both terms, they state that they are mostly used synonymously (see Meffert 1992, p. 15; Nieschlag et al. 2002, p. 377). **(2) Historical reasons because of the developments within the discipline:** The term market research was the common name for this discipline for many years. The term "marketing" is a relatively new term, which has its origins in the USA. In the beginning of the 1950ies the importance of marketing - as a customer-focused style of leading a company - increased in Europe as a consequence of the economic growth. The supply of goods became larger than demand and, therefore, the necessity rose to investigate the selling markets for placing products successfully on the markets. The customer became more and more the focus of the companies' activities. Thus, a change can be observed within the discipline of market research: from investigating markets as prospective selling markets for already produced goods, to a customer-oriented way of gathering information on customers' needs and wishes and a production based on these results of marketing research. Although the discipline developed, the term market research has been used further on in the German literature (see for example Schäfer and Knoblich 1978; Weis and Steinmetz 2002; Hüttner and Schwarting 2002), whereas English textbooks started to use the term marketing research (see for example Webb 2002). **(3) Semantic differences of the term "marketing" in English and German:** In addition to "customer-driven concept of leading a company" it also has the meaning "selling products on the market" in the English language, for which in German the term "Vermarktung" is used.

existing data than to survey new data, and usually secondary data can be obtained faster than primary data (Berekoven et al. 2004, p. 42). Some data can only be obtained as secondary data as, for example, data from the census of population surveyed regularly by governments.

Table 2-1 gives an overview on important data source categories for desk research on organic markets. Lists with the concrete sources used within this study are given in chapter 3.1 "Proceeding of desk research".

Table 2-1 Data source categories for desk research on organic markets

Data source	**Relevant types of publication**
Agricultural ministries	Official statistics on the total agricultural sector
Statistical agencies	Official statistics on the total agricultural sector, databases (online or offline)
Partwise governmental institutes	Official statistics on organic markets
International organisations	Data on organic market segments
Organic producer organisations	Statistics on the organisation's member farms, publications on organic farming
University institutes	Scientific books, research papers on organic markets
Academic publishers	Scientific journals on agricultural economics
Market research institutes	Surveys on organic markets

Source: based on Berekoven et al. 2004, pp. 43; Hammann and Erichson 2000, pp. 77; Henze 1994, p. 58; Nieschlag et al. 2002, pp. 388

The internet plays an important role for desk research. Most institutions listed above publish some market information on their homepages. The publications of the listed institutions are available as printed publication and/or in electronic databases (online or offline). The latter are of decisive importance for the market researcher because they often contain more current information of a better quality and quantity compared to information of other sources. The information recorded in databases encompasses figures as statistical time series or texts as, for example, articles or abstracts from journals or books. Many databases of international organisations can be used online as, for example, the databases of Eurostat, the Food and Agriculture Organisation (FAO), the Organisation for Economic Cooperation and Development (OECD), or the United Nations (UN). The information in electronic databases also encompasses back-data information. These are data from terminated surveys which were conducted for a special customer and are made open to the public after a certain period of time (Nieschlag et al. 2002, p. 387).

Electronic databases are superior to printed sources because of their quantity of recorded data and the rapidness of data availability. Another decisive advantage of electronic databases compared to printed sources is the possibility to search after logically linked criteria as for example "product + land + price" (Berekoven et al. 2004, p. 47).

Desk research opens additional possibilities compared to an exclusive concentration on field research. In special circumstances it can, for example, be useful to analyse existing studies under a new question. If, for example, several studies exist concerning the same question, but the data are surveyed at different points of time, an overall time-series analysis can be conducted, provided that the data of the studies are comparable concerning their data collection methods. Another example for an overall analysis of different data sets is an analysis of comparable national studies under an international question. Especially for the interdisciplinary research is desk research of importance as approaches from different disciplines can be integrated (Friedrichs 1990, pp. 354). It is obvious that the comparability of different data sets from studies which have been conceived independently from each other will always be limited. Nevertheless, desk research is a useful preparatory work when planning comprehensive interdisciplinary and cross-cultural research projects because the strengths and weaknesses of the various research approaches can be identified and mistakes made in earlier research projects can be avoided.

The disadvantage of desk research is, however, that secondary data often do not go with the requested information (Hammann and Erichson 2000, p. 77). This can have several reasons. Often the given information is too old. Especially in fast changing markets it is important to use up-to-date data as basis for decisions. Another reason for a reduced value of secondary data can be a lack of comparability because of different structure, units of measurement or level of aggregation of the given data (Henze 1994, p. 57). Concerning the structure of organic market data it is, for example, important to know if the figures only refer to the certified organic production or if they also include the data of in conversion farms. Different units of measurement have to be noticed carefully, especially in cross-cultural studies. In countries with a large total agricultural production, volumes are mostly given in 1000 tonnes, whereas smaller countries indicate figures in tonnes. Organic production and consumption volumes are always given in tonnes, as these volumes are still very small in relation to the total production or consumption. The level of aggregation of organic market data differs between countries as well. In southern European countries the category “oilseeds” is often listed under “cereals”, and “potatoes” are indicated under “vegetables”, whereas most other European countries list these products separately. Thus, for a comparison of one of these product groups between all EU countries, additional effort is necessary to survey the separate figures from southern European countries.

A third disadvantage of secondary sources is the quality of the data, which is not always in accordance with the current question (Henze 1994, p. 57). Sometimes it is not easy to assess the excellence of the given data because detailed information on the method of data collection is missing (Berekoven et al. 2004, p. 47).

For the agricultural market research the publication of the agricultural yearbooks plays an important role. These publications contain a huge number of official statistical data as, for example, data on the general significance of the agricultural sector as agricultural land use, animal numbers, information on plant and animal production volumes and prices. Henze (1994, pp. 60) describes in detail how this information is surveyed in Germany. The procedure of official statistical data collection at the European level is described in Eurostat ’s “Statistical Requirements Compendium” (2002).

2.4 Methods of field research

Empirical data are surveyed either in a quantitative or in a qualitative way. A quantitative survey aims to obtain measurable information as, for example, market shares, whereas a qualitative survey gains information which has to be interpreted as, for example, attitudes of consumers towards a specific product (Atteslander 2003, p. 159). In this study, the main focus is set on the quantitative methods, as mainly hard market data were collected. Another classification of the field research methods is the way of gathering the information, either as a survey or as an observation. The characteristic of a survey is that people are asked questions and their answers are recorded and interpreted. An observation is conducted without direct contact to persons but by observing and interpreting, for example, their behaviour in a specific situation, or simply, matters of fact as consumer prices of organic products observed directly in shops.

The most common methods of the empirical data survey are (1) the mail survey, (2) the telephone interview (3) the face-to-face interview and (4) the web survey. Each of these methods has specific advantages and disadvantages, presented in Table 2-2. In some cases it is not possible and not sensible to assess unambiguously if a certain criterion is an advantage or a disadvantage of a survey method, as this can depend strongly on the requirements of the respective research project and on the concrete application of the survey method. Thus, in Table 2-2 the various criteria have been marked with “+” or “-” when several authors assessed this criterion to be a key advantage or a key disadvantage of a survey method. In cases where this assessment is dependent on the respective research project, the criterion has been marked with “0” and is discussed below.

Table 2-2 Key advantages and key disadvantages of the main types of survey methods

Criteria	**Mail survey**	**Telephone interview**	**Face-to-face interview**	**Web survey**
Conduction of the survey				
Low costs	+	0	-	0
High response rate	-	+	+	0
Short data collection period	-	+	-	0
No interviewers necessary	+	-	-	+
Large sample can be investigated	+	+	-	+
Large number of questions possible	-	-	+	0
Complex questions possible	-	-	+	0
Aid of computers possible	-	+	+	+
Easy to reach busy respondents	+	-	-	+
Large survey area can be covered	+	+	-	+
Possible use of visual aids	-	-	+	+
Observation of facial expressions	-	-	+	-
Little effort for respondents	-	+	+	-
Anonymity of the respondents	+	+	-	+
Data quality				
Clarification of questions possible	-	+	+	-
Quality control during the interview	-	+	+	+
No risk of interviewer bias	+	-	-	+
Low risk of inconsiderate answers	+	-	-	+
Representativeness of respondents	-	+	+	-
Coverage of the total market	+	+	+	-
Automatic compilation of answers	-	0	0	+

Source: On the basis of Aaker et al. 2004, Burns and Bush 2003, Churchill 2001, Kinnear and Taylor 1996, Shao 2002, Hüttner and Schwarting 2002

+ = yes, key advantage
- = no, key disadvantage
0 = depends on the respective research project and the concrete application of the method

Mail surveys are one of the most common methods to gain information from respondents. The questionnaire is sent to the respondents by post or by electronic mail and the answered questions are sent back to the researcher. This procedure does not require any interviewers and is therefore one of the low cost methods. This is especially important in surveys with a large number of respondents (Schnell et al. 1995, p. 333). Even respondents living far away from the researcher's office can be reached easily without travelling costs for the interviewers, and busy respondents can decide themselves when they are going to fill in the questionnaire. In studies on sensitive topics as, for example, bank loans or income, mail surveys are superior to other survey methods, as the respondents remain anonymous (Churchill 2001, p. 275; Aaker et al. 2004, p. 252; Kinnear and Taylor 1996, p. 338).

The most important disadvantage of mail surveys, however, is their low response rate. According to Hüttner and Schwarting (2002, p. 71) the average response rate of mail surveys is below 50 percent. The willingness to cooperate can be increased by phoning the respondents before sending the questionnaire, by writing an invitation letter to explain in a few sentences the background of the survey and by inserting an addressed and postage-paid envelope. Shao (2002, p. 196) states that the most important factor for a high response rate is the content of the survey. Obviously, respondents are more motivated to answer questions concerning a subject they are emotionally involved in. Non-respondents are reminded either by mail or by phone a few weeks after the questionnaire has been sent out. A problem connected with a low response rate is the possibility of self-selection bias, also called non-response error by some authors. These occur when the group of respondents differs strongly from the group of non-respondents. The actually investigated sample is then no longer representative for the entire population, or for the original sample of the study, respectively (Burns and Bush 2003, p. 257).

Another disadvantage of mail surveys is the risk of misunderstandings. If the respondent does not understand a question correctly, she/he will either leave it out or give an inaccurate answer. Complex questions, therefore, have to be avoided when conducting a mail survey (Aaker et al. 2004, p. 253; Atteslander 2003, p. 175). Mail surveys can only be used if the respondents' reading and writing ability is good, i.e. that they are able to understand the questionnaire and to write down reasonable answers (Churchill 2001, p. 275; Burns and Bush 2003, p. 258). Mail surveys are therefore most useful on respondents with a higher education which guarantees a higher response rate (Friedrichs 1990, p. 241).

Hüttner and Schwarting (2002, pp. 73) state that it can either be a disadvantage or an advantage of mail surveys that the interviewees have more time for their answer because this can influence the result. It is a disadvantage if the survey is about investigating, for example, personal opinions or attitudes of consumers. Here it is the aim to record spontaneous answers. When surveying hard facts as production amounts or market shares it is an advantage to give the respondents enough time to think about their answers. Even the influence of third persons, judged as a disadvantage by Hüttner and Schwarting (2002, p. 73), is a clear advantage in the latter case to make results more precise and reliable.

Telephone interviews have become a frequently used survey method in countries with a high coverage of households with telephones. Results can be obtained much faster than by mail survey, and therefore this method goes well with the nowadays fast-moving zeitgeist. The most important advantage of telephone interviews compared to mail surveys is the contact of the interviewer to the respondent. Even if this contact is not as direct as in face-to-face interviews, the interviewer has the possibility to induce the willingness of the respondent to cooperate and to answer the questions by a convincing conversation style, given that she/he has a pleasant telephone voice (Aaker et al. 2004, p. 249). Therefore, the response rate is higher than in mail surveys. Difficult questions can be explained and a quality control of the answers during the interview process is possible.

The costs for telephone interviews are still relatively low compared to face-to-face interviews. This aspect, however, differs very much between research projects. In comparison to face-to-face interviews the lower costs are especially striking. Although for both survey methods interviewers have to be employed, trained and controlled, telephone interviews offer the opportunity for conducting several interviews per hour without the need for the interviewer to travel from one respondent to the next. In comparison to mail surveys, however, telephone interviews are more expensive (Shao 2002, p. 190). For many market research projects it is,

however, of decisive importance to obtain results in a very fast way. If, in addition, a large sample should be interviewed within a short time period, telephone interviews are very efficient due to their rapidness. Results are at hand directly after finishing the phone call instead of waiting weeks to months until most of the completed questionnaires have been returned by post.

An especially time-saving version of telephone interviews is the computer-assisted telephone interview (CATI). Instead of the traditional recording of the respondents' answers by paper-and-pencil, here, the questions are shown on a computer screen and the interviewer types the answers directly in the computer. This allows, for example, that inappropriate questions are skipped automatically, which makes the interviewing process faster, and which helps avoiding interviewer errors to a certain extent (Burns and Bush 2003, p. 251). Another advantage of computer-assisted interviews is the option to compile answers automatically, which in traditional telephone interviews has to be done manually by the researcher. Thus, computer-assisted telephone interviews increase the quality of survey results and decrease the costs per interview.

Kinnear and Taylor (1996, p. 336) emphasise on the problem of insufficient representativeness of samples interviewed by telephone, as "telephone directories are often poor sampling frames". They state that in some areas of the United States the percentage of unlisted telephone numbers is around 30 percent. This fact will be even more striking in the future, as many people will forbear from having a land line but using mobile phones without listing their phone numbers in a directory. For solving this problem, randomly generated telephone numbers can be called instead of numbers of a directory, a procedure called random-digit dialing (Aaker et al. 2004, p. 248).

In contrast to mail surveys, the questionnaire design does not play a key role for telephone interviews, as the questions are not visible for the interviewees. This incorporates, however, the fact that it is not possible with this survey method to show any pictures or videos to the respondents (Burns and Bush 2003, p. 248). Telephone interviews are preferred for obtaining information on attitudes and preferences of consumers because answers are given spontaneously on the phone, which is important for surveying qualitative information.

Hüttner and Schwarting (2002, p. 76) state that the influence of the interviewer is low in telephone interviews. The influence is certainly lower than in personal interviews, but even in telephone interviews there is a risk of influencing the survey result by some aspects of the interviewer. Berekoven et al. (2004, pp. 106) describe the influence factors of the interviewer more detailed. The interaction between interviewer and interviewee in telephone interviews can be influenced by the following aspects of the interviewer: gender, age - in cases where the voice indicates the age of the interviewer - , class attributes and education - this is represented by the word choice of the interviewer - , nationality or regional origin of the interviewer - indicated by her/his dialect.

The **face-to-face interview** signifies more effort and costs to the interviewer than other survey methods (Shao 2002, p. 186) because she/he has to travel around - with the exception of, for example, shopping mall intercept surveys where a large number of potential interviewees can be met at the same place - , but this effort also shows the respondent how important her/his opinion is assessed for the survey. This fact is important to have in mind because often the most important and valuable experts are at the same time the persons who are very busy. Especially with people who are difficult to contact, the arrangement of a personal interview is often the best possibility to get access to their answers.

The response rate with face-to-face interviews is higher than with other survey methods, as it is easier to build up confidence to the respondent because of the direct personal contact (Aaker et al. 2004, p. 245; Shao 2002, p. 185). With this direct contact it is much easier to motivate respondents to cooperate, as their facial expressions and their body language can be observed, and therefore the interviewer can react adequately. Because of that, in face-to-face interviews the largest quantity of information can be obtained compared to all other survey methods (Kinnear and Taylor 1996, p. 337). The risk of inaccurate answers because of misunderstandings is low in face-to-face interviews, as it is possible to clarify questions the respondent does not understand. Therefore, more complex questions can be asked than with mail surveys and telephone interviews (Aaker et al. 2004, p. 245).

The influence of the interviewer, and therewith the danger of interviewer bias, is stronger in face-to-face interviews than in telephone interviews (Churchill 2001, p. 275). In addition to the aspects discussed for telephone interviews, the outer appearance as well as the behaviour, facial expressions and gesture of the interviewer can influence the interview situation.

As with telephone interviews, the conduction of face-to-face interviews can be supported by computers, called computer-assisted personal interview (CAPI), having the same advantages as described above for computer-assisted telephone interviews.

The most comfortable survey method for the researcher and the respondent is the **web survey**. However, much effort is necessary before the survey can start. A careful questionnaire design is obligatory, as the whole survey process is automated and the questions have to be self-explanatory. The technical preconditions cause the most costs, and the effort of a web survey is therefore only worthwhile if a large sample is to be surveyed. Then, a web survey can be "fast, easy and inexpensive" (Burns and Bush 2003, p. 254).

As shown in Table 2-2 several criteria cannot be judged clearly as an advantage or a disadvantage of this survey method. For example, the length of the data collection period is difficult to forecast. As with mail surveys, this depends very much on the content of the survey and the motivation of potential respondents to participate. It is more difficult to assess the method "web survey" than other survey methods, as the use of the internet for market research is not as well established and explored as the use of the traditional survey methods.

An advantage of web surveys is the possibility to ask batteries of similar questions which can easily be answered by mouse click. The data entry occurs directly through the respondent, which avoids possible errors done by interviewers when entering the data of traditional surveys (Kinnear and Taylor 1996, p. 333). This automated data collection and compilation saves time and costs, and increases at the same time the data quality. Another decisive advantage of web surveys compared to mail or telephone surveys is the possibility to show pictures or videos to the respondents (Burns and Bush 2003, p. 253). This is, for example, used when the impact of a new brand logo or an advertisement is to be tested.

An important disadvantage of web surveys is that still only a relatively small percentage of the population has access to the internet (Kinnear and Taylor 1996, p. 333). Thus, the coverage of the total market will be low when conducting a web survey, and the representativeness of the sample will also be low, as the group of persons having access to the internet differs from the group without internet. Burns and Bush (2003, p. 254), however, underpin the importance of web surveys and state that "online data collection will continue to

profoundly change the marketing research landscape". The authors forecast that web surveys will be the most important survey method in the future (p. 255).

3 Proceeding of data collection

The collection of organic market data needs much effort, as most official agricultural statistics of the European countries do not differentiate between conventional and organic figures. However, a number of secondary sources can be used to find puzzle pieces which have to be compiled to a complete picture of the organic market. In chapter 3.1, the relevant secondary sources used within this study are given. Despite all effort which has been made to survey organic market data by desk research, a large part of the required figures had to be obtained by the group of researchers itself. This proceeding of field research is described in chapter 3.2.

3.1 Proceeding of desk research

The easiest and fastest way of conducting desk research on organic markets is to search the internet for useful data and analyses. For that, it is advantageous to have an overview on the relevant homepages delivering such information. In Table 3-1, useful internet links are listed according to the countries investigated in this study. Some of the listed homepages do not offer their information in English but only in the national language. Even if an English version is given, it is in most cases more helpful to search the homepage in the original language, as it delivers the most complete information. The translated versions often give abstracts of the original homepage only.

Table 3-1 Internet sources on European organic markets

Country	**Description/ URL**	**Responsible organisation**
AT	Producer organisation, www.ernte.at > Statistik	Bio Ernte Austria
AT	Internet portal about food in Austria, www.lebensmittelnet.at > Landnet > Bioland Österreich > Zahlen und Fakten; and > Lebensmittelnet > Biolebensmittel	Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft
AT	Agricultural ministry, www.lebensministerium.at > Landwirtschaft > Bioland Nr. 1 and Lebensmittel > Bioland Nr. 1	Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft
AT	Agricultural yearbook, www.gruener-bericht.at	Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft
BE	Umbrella organisation of the organic sector in Belgium, www.bioforum.be > de Biotheek > Landbouwer > Bio in cijfers > portaalsite > Biologische landbouw	BioForum Vlaanderen
DE	Internetportal on organic farming, www.oekolandbau.de > Händler > Marktinformationen	Federal Ministry of Consumer Protection, Food and Agriculture
DE	Umbrella organisation of the organic sector in Germany, www.boelw.de > Themen > Branchenentwicklung	BÖLW, Bund Ökologische Lebensmittelwirtschaft
DE	BioFach - World Organic Trade Fair, www.biofach.de > BioFach Newsletter	IFOAM, International Federation of Organic Agriculture Movements and NürnbergMesse
DK	Non-profit association of organic farmers, manufactures and consumers, www.organic-denmark.dk > Danish organics	Organic Denmark
DK	Association of organic farmers, manufactures and consumers, www.okologi.dk > Alt om økologi > Økologi i tal	Økologisk Landsforening
DK	Danish statistical agency, www.statistikbanken.dk > Landbrug > Økologi	Danmarks Statistik

Country	Description/ URL	Responsible organisation
DK	Department of the Agricultural Ministry which controls all Danish organic farms, www.plantedir.dk > Økologi > Jordbrug > Økologi I tal	Plantedirektoratet; Ministry of Food, Agriculture and Fisheries
DK	Free database on publications within the organic sector, http://orgprints.org	DARCOF, Danish Research Centre for Organic Farming FiBL, Research Institute of Organic Agriculture
ES	Agricultural Ministry of Spain, www.mapya.es > Agriculture > Organic farming; and > Food > Ecological Agriculture in Spain > Más información > Datos	Ministry of Agriculture, Fisheries and Food
FI	Governmental marketing organisation for organic food, www.finfood.fi/finfood/luomu.nsf > Organic production; and > Research	Finfood Luomu
FR	Independent information provider on agricultural markets, www.snm.agriculture.gouv.fr > Marchés Bio	Ministère de l'Agriculture, de l'Alimentation, de la Pêche et des Affaires Rurales, Service des Nouvelles des Marchés (SNM)
FR	Wholesaler for organic fruit and vegetables, www.pronatura.com > Pro Natura Magazine > organic news > facts and figures	Pronatura
GR	Organic farming in Greece, www.organic-europe.net > country reports > Greece	FiBL, Research Institute of Organic Agriculture
GR	Organic producer organisation, www.dionet.gr (in Greek only) Contact person for Greek data on organic farming in English and German: Nicolette van der Smissen, inspector of organic products nicoletav@axd.forthnet.gr	DIO
IE	Agricultural Ministry of Ireland, www.agriculture.gov.ie > organic food and farming	The Department of Agriculture & Food
IE	Semi-state organisation for agricultural research, advisory and training, www.teagasc.ie > Agri Info > Organic Farming	Teagasc, Irish Agriculture and Food Development Authority
IT	Sinab, Sistema d'informazione nazionale sull' agricoltura biologica, www.sinab.it > biostatistiche	MiPAT, Ministero delle Politiche, Agricole e Forestali
IT	Provider of information on the organic sector , www.biobank.it > Dati Bio Bank	Distilleria EcoEditoria

Country	Description/ URL	Responsible organisation
LU	Organic producer organisation, www.biolandbau.lu > Statistische Angaben zur Biolandwirtschaft in Luxemburg	bioLabel, Verenegung fir biologesche Landbau Lëtzebuerg
LU	Organic trade and service centre; own homepage will soon be available, see www.naturata.lu	Ökologisches Handels- und Dienstleistungszentrum Oikopolis in Luxemburg
NL	Umbrella organisation for the organic sector in the Netherlands, www.platformbiologica.nl > Ontwikkelingen & cijfers > Ekomonitor > Jaarrapport	Biologica
NL	Agricultural Economics Research Institute, www.lei.dlo.nl > Publicaties > Rapporten > search for "biologisch"	LEI, Landbouw Economisch Instituut, Wageningen University
PT	Overview on organic farming in Portugal, www.organic-europe.net > country reports > Portugal	FiBL, Research institute of organic agriculture
PT	Producer organisation, www.agrobio.pt	Agrobio
SE	Control organisation for organic products, www.krav.se > Företaget > Statistik; and > Trycksaker > Rapporter	Krav Ekonomisk Förening
SE	Organic producer organisation, www.ekolantbruk.se > Marknad > Skrifter & broschyrer	Ekologiska Lantbrukarna
SE	Research Institute for Organic Farming, www.cul.slu.se/information/publik	CUL, Centrum för uthålligt lantbruk
SE	Portal for the Swedish food sector, www.livsmedelssverige.org > Ekologisk mat > Litteratur	SLU, Sveriges lantbruksuniversitet
SE	Swedish Dairy Association (represents 99% of the conventional and organic Swedish milk production), www.svenskmjolk.se > Branschfakta > Statistikwebben > Mejeristatistik	Svenskmjölk
SE	Swedish Board of Agriculture, government's expert authority, www.sjv.se > Växt, Miljö & Vatten > Ekologiskt lantbruk > Publikationer > Publikationer utgivna av organisationer > Ekonomi och marknad	Jordbruksverket
UK	Private market research institute for the international organic products industry, www.organicmonitor.com	Organic Monitor

Country	Description/ URL	Responsible organisation
UK	UK's leading organic certification organisation, www.soilassociation.org > Library > search for "market"	Soil Association
UK	Agricultural Ministry of the UK, www.defra.gov.uk > Farming > Farming sectors > Organic production	Department for Environment, Food and Rural Affairs
UK	Organic Industry Portal worldwide, www.organicts.com > News/Analysis > World News; and > Organic Info > Organic by country	Organic Trade Services
CZ	Control organisation, www.kez.cz > Results of inspections and certification	KEZ, Kontrola Ekologického Zemêdêlství
SI	Union of Slovenian Organic Farmers' Associations, www.zveza-ekokmet.si	Zveza združenj ekoloških kmetov Slovenije
CH	Umbrella organisation of the organic farmers in Switzerland, www.bio-suisse.ch > Market and product information	Bio Suisse
CH	Platform for the organic sector in Switzerland, www.bionetz.ch > Handel > News	Organisation Bionetz.ch
NO	Control organisation for organic producers, www.debio.no > Statistikk	Debio
NO	Governmental Institute for Consumer Research, www.sifo.no > Publications > search for "organic"	SIFO, National Institute for Consumer Research
NO	Governmental Institute for Food Safety, www.mattilsynet.no > Økologisk Landbruk	Mattilsynet, Norwegian Food Safety Authority
Europe	European Concerted Action "European Information System for Organic Markets" (EISfOM), www.eisfom.org	Commission of the European Communities
Europe/ Worldwide	Food and Agriculture Organisation of the United Nations, www.fao.org > Agriculture > Organic agriculture > FAO documents	FAO
Europe/ Worldwide	Organisation for Economic Co-operation and Development, www.oecd.org > search for "organic farming"	OECD
Europe/ Worldwide	International Trade Centre, www.intracen.org > Products & Services > Organic products	ITC
USA/ Worldwide	Business association for the organic industry in North America, www.ota.com > Organic Facts > Market Trends	Organic Trade Association

Important sources for reliable information on organic market research are the international scientific journals listed in Table 3-2. Unfortunately, in most of these journals articles on organic subjects are still scarce. However, publishing in these international journals is the best means for dissemination of organic research results, as this makes sure that the information reaches researchers all over the world. As the articles in these journals are reviewed by a number of independent researchers, these publications are seen by the scientific community as a more reliable source than, for example, publications in a magazine issued by an organic producer organisation or results which are published on the internet. Another positive effect of publications in international journals is that organic research results are spread over the frontiers of the small and closed "organic community".

Avoiding scientific inbreeding is very important for the development of the organic sector in the future. Thus, an increase of articles on organic market research within these journals will establish organic farming as a serious field of research. In Table 3-2, such journals have been included, in which at least one article from the field of organic market research during the years 2000 until 2004 has been published.

Table 3-2 International scientific journals

Title/ URL	**Place of publication/ publisher**	**ISSN**
Journals published in Europe:		
Agricultural Economics, the Journal of the International Association of Agricultural Economists www.elsevier.com/locate/agecon	Amsterdam/Elsevier (of 2005 published by Blackwell Publishing)	0169-5150
Economie rurale www.sfer.asso.fr	Paris/Société Française d'Economie Rurale, SFER	0013-0559
European Review of Agricultural Economics www.erae.oupjournals.org	Oxford/University Press	0165-1587
Food Policy www.elsevier.com/locate/foodpol	Amsterdam/Elsevier	0306-9192
Journal of Agricultural Economics www.aes.ac.uk	Aberdeen/Agricultural Economics Societey	0021-857X
Quarterly Journal of International Agriculture www.agrar.hu-berlin.de/struktur/institute/wisola/publ/qjia	Frankfurt a.M./DLG-Verlag	0049-8599
Journals published on other continents:		
Amber Waves, the Economics of Food, Farming, Natural Resources and Rural America (of 2003; former title: "Food Review", ISSN 1056-327X) www.ers.usda.gov/AmberWaves	United States Department of Agriculture, USDA; Economic Research Service, ERS	1545-875X
Canadian Journal of Agricultural Economics, Revue canadienne d'agroéconomie www.blackwellpublishing.com > Journals > Journals A-Z	Oxford/Blackwell Publishing	0008-3976

Title/ URL	Place of publication/ publisher	ISSN
Renewable Agriculture and Food Systems (of 2002; former title: "American Journal of Alternative Agriculture", ISSN 0889-1893) http://journals.cambridge.org/action/displayJournal?jid=RAF	New York/Cambridge University Press	1742-1705
The Australian Journal of Agricultural and Resource Economics www.blackwellpublishing.com > Journals > Journals A-Z	Oxford/Blackwell Publishing	1364-985X

Besides the international scientific journals many national printed sources are available which are useful for organic market research. These are, for example: national journals on the organic market, journals of the national organic producer organisations, national journals on organic farming, national sources about the total food sector and national scientific journals.

A few market research institutes exist in Europe which specialise on organic market research. Their publications are important sources of information on organic markets. The most well known institutes are listed in Table 3-3.

Table 3-3 Organic market research institutes

Country	Name of the market research institute	Financed by
DE	Zentrale Markt- und Preisberichtstelle, ZMP[1]	Semi-governmental
DE	Synergie	Private
UK	Organic Monitor	Private
CH	Research Institute of Organic Agriculture, FiBL	Private, partly supported by government

3.2 Proceeding of field research

Most parts of the organic market data collected within this study originate from field research. Because of the lack of official organic market data, the idea of gathering the needed information was to conduct interviews with a certain number of national experts for the organic market in each surveyed country. These national experts represented all important groups within the organic sector of a country. These are: wholesalers, processors, representatives of farmer organisations, certification bodies, farmers marketing associations, ministries and market research institutes.

[1] The Zentrale Markt- und Preisberichtstelle (ZMP) had to stop its business on 30 April 2009. The ZMP had been financed by the Promotion Fund. This fund had collected levies from farmers in accordance to the Agricultural Marketing Fund Act, and had organised central sales promotion of the German agri-food industry. On 03 February 2009, the Federal Constitutional Court declared the Agricultural Marketing Fund Act to be unconstitutional and void (www.bmelv.de/Press, 03 February 2009). A new founded corporation, the Agrarmarkt Informations-Gesellschaft mbH (AMI) took over the function as provider of market information for the agricultural sector on 26 February 2009. The information provided by the AMI covers the organic markets (www.marktundpreis.de).

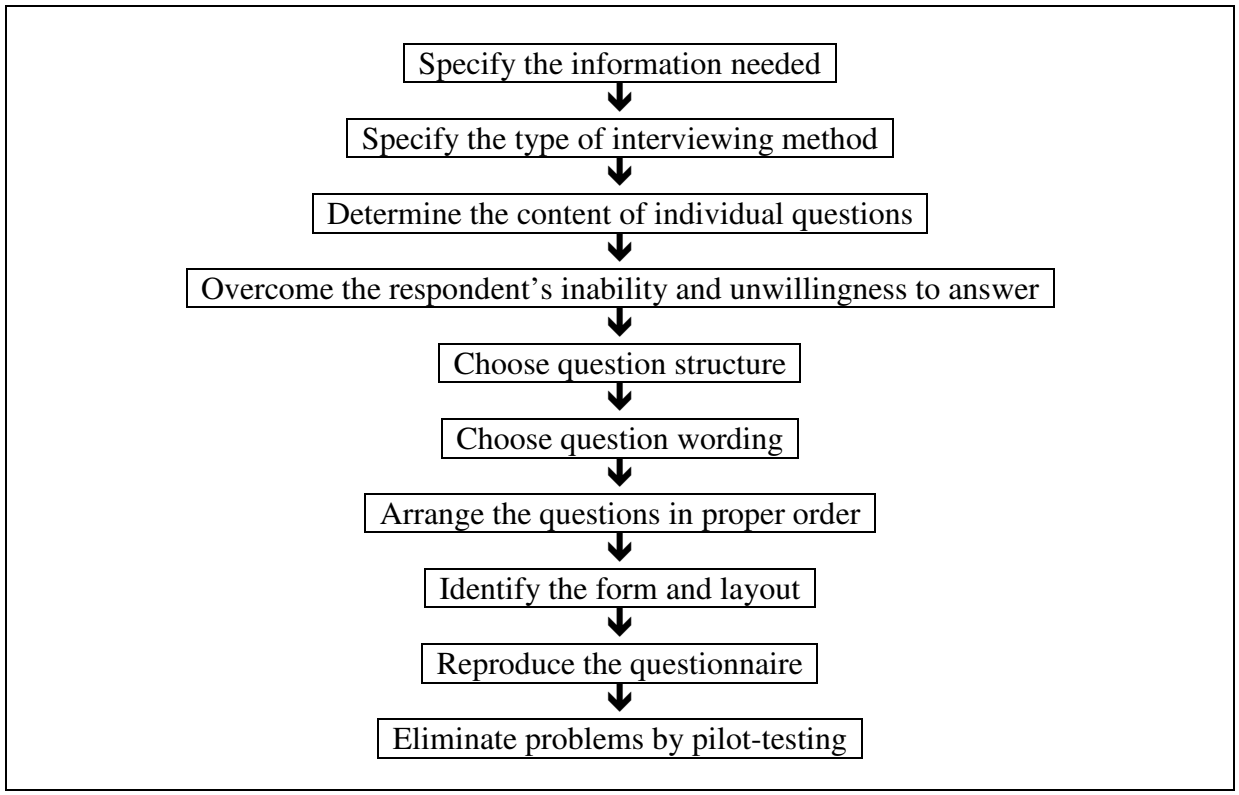
Additional information was collected at the organic trade fair BioFach in Nuremberg in February 2002 and 2003. Representatives of farmer organisations, especially from southern European countries, were interviewed concerning the structure and amounts of organic production in their countries. Wholesalers were asked to estimate the amount of the organic consumption of the surveyed products.

In chapter 3.2.1 the process of developing an adequate questionnaire is described in general. After that, the questionnaire which was used for this study is described in chapter 3.2.2. A number of steps were conducted to assure the quality of the collected data. These are presented in chapter 3.2.3.

3.2.1 Questionnaire design process

In Malhotra and Birks (2003, pp. 324) the procedure of designing a questionnaire is described in detail. The authors define three important goals a questionnaire has to fulfil: (1) The questions have to be posed in a way that the respondent is able and willing to answer them. (2) They must induce a feeling of involvement of the respondent in the survey which motivates her/him to be cooperative. (3) When designing the questionnaire, the minimising of the response error has to be taken into consideration. According to Malhotra and Birks (2003, p. 326) the response error encompasses "inaccurate answers" or answers which are "mis-recorded or mis-analysed". Atteslander (2003, p. 7) complements that the survey instrument has to be "reliable" and "valid". It is reliable if the measurement always leads to the same results when the survey is repeated under consistent conditions. The questionnaire is valid if it really measures that piece of information which the survey aims to obtain. The whole questionnaire design process is summarised in Figure 3-1.

Figure 3-1 Questionnaire design process



Source: Malhotra and Birks 2003, p. 330

The first step of producing a questionnaire is to focus on the concrete information which is to be obtained by the survey. In this study the required information can be divided into nine different subject areas. These are:

1. Land use for total production and for organic production
2. Amounts in tonnes of organic production, sales for animal feed, sales for human consumption, imports, exports, domestic human consumption
3. Total (organic plus conventional) supply balance including production and consumption amounts for being able to calculate organic production and consumption shares.
4. Supply deficits for organic products
5. Organic turnover share of the total food market
6. Importance of different sales channels for the turnover with organic products
7. Area-based subsidies for conversion to and for maintenance of organic farming
8. Promotion for organic products: Existence of a nation-wide label for organic products and its degree of recognition
9. Prices and price premiums for organic products (on farmer and consumer level).

In the second step, the appropriate interviewing method has to be chosen. As discussed before the interviewing method has a big influence on the questionnaire design concerning length of the questionnaire and the wording of the questions.

Step three is to build concrete questions for obtaining the information aimed at. An important aspect to have in mind when determining the content of the questions is to avoid double-barrelled questions. These are questions which deal with two issues at the same time. This can be confusing for the respondent and can lead to inaccurate answers. However, there are questions where the answering of two issues in one question is appropriate. This is the case if some detail aspects are asked which, only in their combination, lead to the required information. A good example for this is Question 2 of Part B of the questionnaire (see chapter 3.2.2.2). Here, the organic production in tonnes of several plant products is asked. As in many countries no statistics on these volumes exist, the figure is surveyed by the help of the certified organic area in ha and the organic yield per ha in the respective country. Multiplication of these figures leads to the information of the organic production volume. As the different aspects of the question are directly linked to each other, the combined question seems logical to the respondent, even more logical than splitting the information in three questions without highlighting the connection between the different figures.

It is of decisive importance for the survey to overcome the respondent's inability and unwillingness to answer, which is step four within the questionnaire design process of Malhotra and Birks (2003). Concerning the inability of answering it is important to think carefully about which questions are addressed to which respondents. In this study not all questions were posed to all respondents, as the interviewees were chosen from different areas of the organic market, such as wholesalers, processors or members of farmer organisations. Another fact is that the effort for the respondent to answer the questions has to be as little as possible. It was the aim to record estimations concerning the organic market which experts were able to give spontaneously and without needing to conduct a drawn-out data search. They would not be willing to invest time for collecting data for a survey they did not initiate by themselves. Therefore, it is important to know the field of work of each contacted expert to be able to pose the right questions to the right expert.

Many experts are unwilling to give information about their company, as they fear that competitors could get access to these sensitive data. It was therefore important in this study to make clear in each question that the surveyed figures do not refer to economic data of an individual company but to a nation-wide average of, for example, import or export volumes of a product. Malhotra and Birks (2003) recommend starting with easy questions to create rapport between interviewer and respondent and to place sensitive and more difficult questions rather at the end of the questionnaire.

After these first considerations the structure of the questions has to be chosen. Questions are divided into open-ended (unstructured) and closed-ended (structured) questions. Open-ended questions are, for example, used in studies on consumer attitudes. The respondent does not answer according to given answer categories but answers in her/his own words. These answers are afterwards categorised by the researchers. According to Atteslander (2003, p. 165) open-ended questions are necessary to investigate a subject area during the period of planning a survey and to identify relevant answer categories. Closed-ended questions, however, are used for testing hypotheses. Details on unstructured questions as well as their advantages and disadvantages are discussed in Malhotra and Birks (2003, p. 35), Atteslander (2003, pp. 161) and in Hüttner and Schwarting (2002, pp. 101).

As in this study mainly quantitative data on the organic market were surveyed, the questionnaire needed to be very structured, and therefore only closed-ended questions were posed. The only exception is the use of a "rest-category" (Hüttner and Schwarting 2002, p. 104) called "Others" in some of the questions where the respondents were able to give answers which were not covered by the given categories (see Q 5 Part A: buying motives, chapter 3.2.2.1, Q 8 Part B: supply deficits and Q 10 Part B: sales channels, chapter 3.2.2.2).

This means that for all questions concrete answer categories were given. These can be designed in different ways, for example as "identifying question" (Atteslander 2003, p. 162), multiple choice questions, dichotomous questions or as scales. The "identifying question" asks for persons, places, figures etc. It starts with the interrogative pronouns "who, where, when, how many or which". Most questions in this study are composed in this way as market data in the form of figures are asked. An example for a multiple choice question is Q 8 Part B: supply deficits (see chapter 3.2.2.2). A set of answers is given and the respondent can select one or more of them by ticking a box. An example for a dichotomous question is Q 11 Part B (see chapter 3.2.2.2): "Was there a nation-wide government label for organic products in 2001?" Only the alternatives "yes" or "no" can be the answer. The third possibility of posing closed-ended questions is to give answer categories in the style of a scale. A limited number of answers is given and the respondent has to choose the one which she/he agrees to most. According to Atteslander (2003, p. 164) "values, opinions, feelings or activities" are measured by scales concerning their "intensity and frequency". Important kinds of scales are discussed by Hüttner and Schwarting (2002, pp. 107). An example for a rating-scale is Q 5 Part A: buying motives (see chapter 3.2.2.1).

Concerning the wording of a question Malhotra and Birks (2003, p. 338) give some important guidelines. Most relevant for this study is: (1) the use of ordinary words, and (2) the use of unambiguous words. Posing the question as simple as possible increases the likelihood that the respondent understands the content of the question exactly in the same way as it is intended by the researchers. If the chosen words are ambiguous, there is also a risk for response errors. This was especially important in this study as the questionnaire was translated into several European languages. Here it was, for example, necessary that the translators were aware of the exact meaning and difference of and between the terms "organic

food shop" and "whole food shop" (Q 10 Part B, see chapter 3.2.2.2). Craig and Douglas (2000, pp. 200) emphasise on the importance of careful question formulation in cross-cultural studies. The market researcher should have a comprehensive knowledge of cultural specific behaviour and lifestyle in the investigated countries for minimising response bias. Wording and translation of the questions has to be done in a way "so that they are clearly understood and correctly interpreted in different linguistic and cultural contexts".

The order of the questions is also of some importance for this study. However, it is a task which is much more important in studies on consumer behaviour, as they deal with aspects as, for example, hiding a sensitive personal question within a group of neutral questions. In the context of this study it was important to group the questions according to the above mentioned subject areas of the survey. It is, for example, logical that first the organic production volumes are asked and after that the organic sales and not the other way round as the sales are a subset of the organic production.

The layout of the questionnaire can clearly influence the survey result. An appealing questionnaire motivates the respondent to spend time with it. In cases where the questionnaire is sent out by ordinary mail, the quality of the paper used for reproducing the questionnaire has to be taken into account additionally, as high-quality paper looks professional and symbolises therewith the importance of the survey. The last step of the questionnaire design process is the pilot-testing of the questionnaire; this is to test the questionnaire on a small number of respondents to find out weaknesses of the questionnaire and to eliminate them before the survey starts. Pilot-testing of the questionnaire was, however, not necessary in the framework of the study at hand as the survey instrument was based on very similar questionnaires used in two earlier studies (Michelsen et al. 1999; Hamm et al. 2002).

3.2.2 Questionnaire of the study

In each of the 19 investigated countries, around 20 national experts were interviewed. This would have been a demanding task for a single researcher. Therefore, the work was divided among 30 researchers within the EU project "Organic Marketing Initiatives and Rural Development (OMIaRD)". The responsibilities for the 19 surveyed countries are shown in Table 3-4. Each project partner was responsible for her/his country plus one or two neighbouring countries. In neighbouring countries, the survey was conducted by subcontractors supervised by the project partners.

Table 3-4 Responsibilities in the OMIaRD project

Project partners in:	**Subcontracting countries:**
AT Austria	SI Slovenia
CH Switzerland	-
DE Germany, Hamburg	BE Belgium, NL The Netherlands
DE Germany, Kassel	CZ Czech Republic, LU Luxembourg
DK Denmark	NO Norway, SE Sweden
FI Finland	-
FR France	ES Spain
UK United Kingdom	IE Ireland
IT Italy	GR Greece, PT Portugal

Questionnaires were sent by project partners/subcontractors to the national experts in the second half of the year 2002. If necessary, the questionnaire was translated into the respective national language. The national experts answered the questions on the basis of their knowledge on the national organic market of their own country. Each national expert filled in those portions of the questionnaire that related to her/his special field of expertise (for example, milk, cereals). The completed questionnaires were returned to the project partner/subcontractor for the respective country, and this person compiled all national market experts' answers into one final version. This was done in a way that project partners/subcontractors were responsible for deciding which answers were the most reliable, if the experts' answers varied very much. The arithmetic mean was calculated when experts' answers differed little. These final versions of the answered questionnaires were sent to the German project partner at the University of Kassel for a final check of the answers, for the compilation of all 19 country data sets and for the statistical analysis of the data.

The questionnaire sent to project partners/subcontractors consisted of five parts (A-E). By using the same questionnaire in each country, it was ensured that the results were comparable on a European level. Table 3-5 gives an overview on the content of the different parts of the questionnaire. All questions are described in detail in chapter 3.2.2.

Table 3-5 Content of the questionnaire

Parts of the questionnaire/ Addressed to	**Content**
A To be filled in by project partners/subcontractors:	Government support, buying motives, supply balance for the total market, calculations on the basis of the collected data of part B.
B To be filled in by national experts:	Land use, production amounts, sales, organic and conventional farmer prices, animal feed, imports and exports, supply deficits, turnover, sales channels, promotion.
C To be filled in by project partners/subcontractors:	Selection of shops for the consumer price survey.
D To be filled in by project partners/subcontractors:	Template for observation of organic and conventional consumer prices in shops.
E To be filled in by project partners/subcontractors:	Excel-Table for compiling surveyed consumer prices and for calculating the price premium of organic over conventional prices.

For the field research different survey methods were used: mail survey, telephone interview, face-to-face interview and observation (see chapter 2.4). Parts A-E of the questionnaire were sent to project partners/subcontractors by E-Mail. Part A was a typical mail survey. This method was chosen because collecting of the requested information needed some time for desk research by the respondents. The advantage of the mail survey was that the risk of inaccurate answers was low, which was most important for the survey. As the project partners/subcontractors were scattered over all Europe, sending questionnaires to each other by E-Mail was a clear cost advantage. A high response rate was guaranteed, as all project partners had a common interest in conducting this survey. The relatively long questionnaire

was discussed with project partners beforehand which also minimised the risk of misunderstandings.

For Part B of the questionnaires - questions for national experts - a combination of mail survey and telephone survey was used (see Aaker et al. 2004, pp. 232). The needs of the survey were: (1) a high response rate, (2) answering a relatively long questionnaire, (3) a low risk of misunderstandings and (4) the access to experts scattered all over the country. The advantages of telephone interviews were used to meet these needs. For inducing the national experts' willingness for co-operation they were phoned and asked to support the study. The aim of the survey was explained in a few sentences and a date for a telephone interview was fixed. After that the questionnaire was sent to the national expert to give her/him enough time to think about the questions and therewith to avoid inconsiderate answers.

The experience from earlier studies showed that it is more successful to write down the experts' answers during a telephone conversation than to wait for them sending back the filled in questionnaire by mail. Another important advantage of this way of proceeding is that a quality control of the answers is possible during the interview. If the interviewer has the opinion that the respondent misunderstands a question, she/he can ask again and therewith increase the quality of the surveyed data. This combination of mail survey and telephone interview was most successful when a personal contact between the project partner/subcontractor and the national experts existed. This personal contact was the most important motivation for the national experts to co-operate in the study.

In some countries, national experts were asked in a face-to-face interview instead of a telephone interview. This had different reasons. As, for example, in Luxembourg no personal contact existed between the project partner and the national experts, it was more successful to travel to Luxembourg and to visit all important experts personally. In other countries, the willingness to co-operate was too low for conducting successful telephone interviews. National experts were, however, motivated to answer the questionnaire when they knew that the interviewer came especially for this survey to their country.

Mixing the methods telephone interview and face-to-face interview was not problematic in the framework of this study, as mostly hard market data were surveyed and the appearance of the interviewer, therefore, did not influence the results decisively.

In addition to the information gathered with the help of Parts A and B of the questionnaire, a comprehensive consumer price survey was conducted in all 19 countries by project partners/subcontractors (Parts C-E of the questionnaire). For this, organic and conventional consumer prices of comparable products were observed in different kind of shops for calculating the price premium of organic products over conventional products. This price survey was conducted in all 19 countries within the same week (18-23 November 2002) to guarantee that prices were comparable between countries (see chapter 3.2.2).

The questionnaire designed for this study had two goals: (1) to obtain all information necessary for building supply balances for the investigated organic products and (2) to obtain some additional market information necessary for finding key factors influencing organic market development and explaining the different size of the organic market in the various countries.

The idea behind drawing up organic supply balances was to obtain a complete picture of organic production and consumption amounts in the investigated countries including organic

imports and exports. As production plus imports minus exports leads to the consumed amount of a product, surveying the entire supply balance also showed if the surveyed figures are reliable when seen in relation to each other (see chapter 3.2.3). The standard for building organic supply balances was the structure of the supply balances for the total agricultural sector published regularly by Eurostat and by national statistical offices within agricultural yearbooks for the respective countries. The organic supply balances drawn up within this study focus on the organic production, organic consumption, organic imports and organic exports. The necessary statistical data were collected by the researchers of the OMIaRD project. A detailed description on the procedure of drawing up supply balances is given in chapter 2.2.

In the following, the questionnaire which was used for this survey is described in detail to explain why the questions were posed in this way (see original questionnaire in the annex, chapter 13). As still no official statistics about the surveyed organic market data exist, it seems to be especially important to emphasise on the method of gathering these data as well as on aspects which have to be taken into consideration to make an organic data collection work successfully.

Part A had to be filled in directly by project partners/subcontractors (see Table 3-4). In this part, information was requested which was obtained mainly by desk research, from official statistical publications or research reports of the respective country. The questionnaire starts with explaining in short the aim of the study and gives guidelines for filling in the questionnaire.

Part B of the questionnaire contains the questions posed to national experts in telephone interviews or in a face-to-face interview. These interviews were conducted by project partners/subcontractors.

Parts C, D and E of the questionnaire were designed for the consumer price survey. Part C contains guidelines for the conduction of the price survey as well as a list where detailed information on the surveyed shops should be listed by project partners/subcontractors. It was asked what kind of shops was chosen, the estimated sales area in m^2 as well as the name and the address of the shop. The information on the kind of the shops was necessary as the composition of surveyed shops had to be chosen according to the importance of the different sales channels in a country. In countries with, for example, 80 percent of organic sales done in supermarkets and 20 percent via direct sales, eight supermarkets and two farmers' shops were chosen for recording prices. For each organic shop a conventional shop for comparison was chosen to be able to survey organic and conventional prices. These conventional shops for comparison had to be similar to the organic sales channel. Prices of an organic food shop were, for example, compared to prices of a small conventional supermarket not far away from each other to assure that the prospective customers of the two shops do not differ too much.

In Part D of the questionnaire the products investigated in the consumer price survey are listed. The organic prices as well as the price for the conventional product had to be given in the national currency per litre, per kg or per piece. The calculation of the prices in Euro was done by the German project partner at the University of Kassel for all investigated countries. In Part E of the questionnaire an Excel table was prepared. Here, all individual prices recorded in the 20 shops were inserted by project partners/subcontractors. The first table contains all organic prices, the second table was for the conventional prices and in the third table the price premiums of organic over conventional consumer prices were calculated. The

preparation of these tables had the advantage that the data entry was conducted by all project partners/subcontractors in the same style which facilitated the evaluation of the price survey.

3.2.2.1 Part A of the questionnaire

In this sub-chapter all questions asked in Part A of the questionnaire are listed and described. Questions 1 and 2 were asked to know in detail what kind of desk research was conducted by partners/subcontractors in each country.

Q1: Which studies/official statistics of your national market for organic food did you use for completing the questionnaire?
In Question 1 (Q1) all printed sources had to be listed such as studies and official statistics. It was important for the German project partner, who compiled all country data sets, to get to know all used references for being able to cross check the surveyed data and to get an impression how the data availability differs between countries.

Q2: Which internet sources did you use for completing the questionnaire?
Useful internet sources had to be given in Q2. The information available from the internet is of decisive importance as its use is very comfortable. As data from 19 countries were collected, good internet sources helped a lot to get access to statistical data in a fast way (see chapter 3.1) .

Q3: What telephone interviews have you done with national key informants on the organic market?
In Q3 all national experts were listed who have been contacted for field research. This information was important to the authors to assess whether the number of contacted national experts was sufficient and to know if different kinds of national experts have been interviewed as, for example, producers, traders and leaders of organic organisations. This was important because data had to be collected from all kind of market actors.

Q4: What were the area-based subsidies for conversion to or maintenance of organic agriculture per ha in 2001?
In Q4 it was asked how much government support for organic farming was paid in the respective country in Euros per ha for the most important land use categories. This question was divided in “financial support for conversion to organic agriculture” and in “financial support for maintenance of organic agriculture”. First of all, this question was asked because it is important to know how the government support differs between countries. This shows the different significance of this production method from the point of view of various governments. Another reason for this question is that, later in the survey, farmer prices for organic products have been collected. These absolute prices have to be analysed on the basis of the financial support paid in the respective country, because it is assumed that in countries with low government support the farmer prices have to be higher to cover the production costs in an appropriate way. A third reason for asking this question was to gain knowledge about the relation of the financial support between the different land use categories. As in many countries the financial support for organic farming differs between regions, it was the task of the responsible persons to calculate a weighted average over the government support in the different regions for obtaining a nation-wide average.

Q5: What were the most important buying motives of consumers for organic food in 2001?
In Q5 the most important buying motives for organic products were surveyed. This information had to be taken from national studies and adapted to the needs of the question by the person responsible. Six common buying motives were given and had to be rated with numbers from 1 = low importance up to 7 = high importance. After that, other buying motives should be listed which were of decisive importance in the respective country.

Q6: Which were the total (organic and conventional) production, imports, exports and consumption in 2001?
In Q6, all figures necessary for building the complete supply balance for organic plus conventional amounts of the surveyed product groups had to be listed. These are: (1) useable production in 1000 tonnes, (2) total imports in 1000 tonnes, (3) total exports in 1000 tonnes, (4) change in stocks in 1000 tonnes, (5) gross consumption in 1000 tonnes, and (6) degree of self-sufficiency in percent. These figures had to be taken from national statistics according to the systematics of Eurostat to assure the data comparability between countries. Although only the production and the consumption amounts were used directly for the analysis and for the comparison with the respective organic data, experiences from earlier studies showed that it is useful to survey the complete supply balance as, therewith, the reliability of the given data can be checked (see chapter 3.2.3).

The surveyed useable production was, later in the study, analysed in relation to the organic production and the gross consumption in relation with the organic consumption. The calculation of the organic production and consumption share shows the importance of individual product groups within and between countries. For cereals and oilseeds the gross consumption had to be given for human consumption as well as for animal feed as the latter is of great importance in these two product groups.

Q7 to 10 build the calculation section. Here, the responsible persons were asked to fill in some of the surveyed figures for conducting important calculations which at the same time showed if the collected data were reliable (see chapter 3.2.3).

Q7: What was the level of organic production expressed as a percent of total (organic and conventional) production for the year 2001?
In Q7 the organic production was divided by the total production to obtain the organic production as a percent of the total production.

Q8: What was the level of organic sales for <u>human</u> consumption of cereals and oilseeds in 2001?
Q8 refers to information collected in Part B of the questionnaire. In this table, the organic sales of cereals and oilseeds for human consumption were calculated. For this, the organic production sold as organic animal feed was subtracted from the organic sales sold as organic. This calculation was necessary for being able to analyse the organic human consumption separately from the organic animal feed consumption.

Q9: What was the <u>human</u> consumption of organic products sold as organic in 2001?
In Q9 the organic imports are added to the organic sales for human consumption. Then the organic exports are subtracted to obtain the organic human consumption of a country for the surveyed product groups.

Q10: What was the level of organic human consumption expressed as a percent of gross human (organic and conventional) consumption in 2001?
In Q10 the organic human consumption, calculated in Q9, was divided by the gross human consumption. This organic human consumption share shows the importance of the organic consumption of different product groups measured by total - organic plus conventional - consumption.

3.2.2.2 Part B of the questionnaire

In this sub-chapter the questions posed in Part B are presented. The first question asks for the total utilisable agricultural area, the certified organic area and the area in conversion of a country.

Q1: What was the total utilisable agricultural area (UAA) and the organic area in 2001?
This was asked for calculating the organic share of the total UAA and therewith to assess the spread of the organic production method in the respective country.

Q2: What were the certified organic area and average yields of organic plant products in 2001?
In Q2 and Q3 the organic production amounts were investigated. Q2 deals with the seven surveyed plant product groups. As most national experts have difficulties with estimating absolute production amounts, the certified organic area and the organic yield for the respective product were asked. By multiplying the area with the average yield the production amount was calculated.

Q3: What were the number of animals on certified organic farms and the average yields of organic milk and egg production for the year 2001?
In Q3 the production amounts of six animal product groups had to be listed. To make the estimation of the production amount easier, the animal numbers as well as the average yield (milk, meat in slaughter weight, eggs) was asked, too. Multiplication of these figures leads to the needed production amounts.

Q4: What were the organic production and organic sales in 2001?
The aim of Q4 was to obtain the amounts of organic sales. For this, the organic production, given in Q2 and Q3 was listed in column A. As a certain amount of the production is used on farm for seed or feed, this amount was asked in column B. The total organic sales were then calculated in column C by subtracting the use on farm from the organic production. As in most cases not the total organic sales can be sold as organic products, in column D the sales of organic as organic had to be listed. Many national experts had difficulties in estimating these sales in absolute figures. Therefore it was also possible to estimate the percentage of organic products which were sold as organic. With the help of this percentage it was possible to calculate the sales of organic as organic in tonnes on the basis of the total organic sales in column C.

Q5: What were the organic and conventional farmer prices in 2001?
In Q5 organic and conventional farmer prices were surveyed. Prices were given in the national currency per 100 kg or 100 l. With the help of these prices the price premium of organic over conventional farmer prices was calculated. Prices surveyed in this question were prices which farmers obtained by selling their products to wholesalers or processors.

Q6: What was the quantity of organic production sold as animal feed in 2001?
In Q6 the quantity of organic production sold as animal feed was surveyed. Investigated products used as animal feed are cereals, oilseeds and dried pulses. In a first step the national experts should estimate the total organic production which was sold as animal feed. The basis for this figure was the total organic sales listed in column C of Q4. In a second step it was asked how much of the total organic production was sold as organic animal feed. Again it was difficult to obtain estimations in absolute figures. Therefore, national experts were asked to estimate how many percent of the total organic sales were sold as animal feed, and how many percent of the sold animal feed was sold as organic animal feed. The absolute figures in tonnes were then calculated on the basis of these percentages.

Q7: What were the import and export levels for organic food and where were they imported from or exported to in 2001?
Information on foreign trade with organic products was surveyed in Q7. First the total quantity of imports and exports in tonnes was asked and in addition the main countries of origin as well as the export countries had to be listed. For cereals and oilseeds, this information was requested for human consumption and for animal feed separately. As it is often difficult to find absolute amounts of imports and exports, the national experts were also asked to estimate the import share of the organic consumption and the export share of the organic production in a country. Absolute import and export amounts were then calculated with the help of these percentages.

Q8: Have there been any organic products for which the amount of national production plus imports have been insufficient to meet consumer demand in 2001 and 2002 and for which supply deficits are expected for 2003 and 2004?
In Q8 supply deficits of organic products were surveyed in a qualitative way. It was asked for which of the surveyed product groups a supply deficit was noticed in the years 2001 and 2002 in spite of imports. The same question was asked for the expected supply deficits in the years 2003 and 2004. National experts were asked to tick the box of these product groups which they considered were in short supply. An additional row was given for indicating supply deficits of other products.

Q9: What was the organic share of the total turnover in the food market in 2001?
In Q9 the value of the organic market in the respective country should be estimated. For this, the turnover of the total food market was surveyed as well as the turnover of the organic food market. With these figures the organic share of the total food market was calculated. Sometimes it was easier for the national experts to estimate the organic share of the total food market and then to calculate the turnover of the organic food market on the basis of this percentage.

Q10: How many percent of the organic turnover accounted for the different sales channels in 2001?
The importance of the different sales channels for the organic sales in a country was asked in Q10. Six common sales channels were given: general food shops, bakers and butchers, organic food shops, whole food shops, direct sales of farmers and restaurants. A seventh box was given for other important sales channels in the respective country. The aim of the question was to survey how the turnover of the organic food market, surveyed in Q9, was spread over the different sales channels. The respective percentages of the total organic sales had to build 100 percent in the final sum.

Q11: Was there a nation-wide government label for organic products in 2001?
Q11 and Q12 were about promotion for organic products. In Q11 it was surveyed whether a nation-wide government label for organic products existed. If such a label was in use in a country, the name should be given, the percentage of all consumers knowing this label and the percentage of all organic products signified with this label.

Q12: Was there one nation-wide label for organic products run by an umbrella organisation for organic agriculture in 2001?
In Q12 the same information was asked for a nation-wide label run by an umbrella organisation for organic agriculture.

3.2.3 Quality assurance of the surveyed data

All filled in questionnaires were sent back to the German project partner at the University of Kassel[1] for compilation and data analysis. Before that, it was necessary to check the reliability of the surveyed data carefully. Many mistakes became visible when compiling the individual country answers of a certain question for all investigated countries. In comparison with other countries' results, mavericks can easily be found. The supply balance for total food (Part A, Q6) of most countries was cross checked with official statistics. The aim by asking for complete supply balances was to be able to check the reliability of the given figures. The reported data are consistent if the useable production plus imports minus exports lead to the indicated gross consumption. If this calculation gave a very different figure than the indicated gross consumption, this was a hint that the figures were taken from different sources and were not the final official version. In most countries, one institution is responsible for compiling the supply balances and to deliver them to Eurostat. It was the task of the project partners/subcontractors to find the most reliable figures and to deliver a coherent supply balance. Another method for checking the supply balances was to compare the reported figures with the figures from the year 2000 as they were reported in an earlier study of the same style (Hamm et al. 2002). When the figures were very different between these two years, the project partners/subcontractors were contacted to look over the data once again.

The figures on the total UAA and the organic area (Part B, Q1) are easy to check as these data are available from official agencies for almost all investigated countries. More difficult is the quality check for the figures on organic production and consumption. As in Q2 (Part B) the certified area as well as the organic yield for the respective product had to be listed, the production amount was checked by multiplying these basic figures. Inconsistencies were announced to the responsible persons for clarification. The data on organic animal production (Part B, Q3) were checked in the same way. For checking the reliability of the organic production and consumption amounts it is necessary to have experience with this kind of data of different countries and to have knowledge of the development of the different organic markets over the last few years, because official data for comparison do not exist. Only with this experience is it possible to assess the quality of these data.

Usually the organic production share measured by total production is very low and for most product groups and countries below one percent. A very high percentage was therefore a signal that the collected data had to be checked again. Many inconsistencies had their reason simply in wrong decimal places. Another possibility to check the indicated organic production

[1] The German project team moved from Neubrandenburg University of Applied Sciences to the University of Kassel in the course of the project. Therefore, Neubrandenburg is indicated as project partner on the questionnaires.

is to compare the organic production share measured by total production to the organic area used for the respective product group, for example organic cereals, with the total agricultural area of this product group. The figures are reliable if the organic production share is not higher than the organic share of the total agricultural area for the respective product group, given that the organic yields are usually somewhat lower than the conventional yields. In addition, the organic production share (Part A, Q7) as well as the organic consumption share (Part A, Q10) were compared with the respective figures from the earlier study (Hamm et al. 2002).

For checking the information on "organic production used on farm" and "sales of organic as organic" much experience is necessary. The amount used on farm includes the part of the production which is used directly by the farmers for food consumption, for seed or for animal feed. For assessing these figures, the share of the on-farm use measured by the organic production was calculated for all countries and for all products. In countries with very small farm sizes, it is logical that the percentage used on-farm is relatively high measured by the small production amount. Concerning milk production it has to be taken into consideration that quite a large part of the produced milk is used for feeding the calves.

Concerning the sales of organic as organic it was also important to calculate the share of organic products sold as organic measured by total organic sales. These percentages show a similar pattern for the respective products. For vegetables and fruit, for example, the sales as organic were in most cases around 100 percent as these products were in short supply over all Europe. Therefore it was not necessary to sell organic products of these categories as conventional products. The same could be observed for organic pork and poultry. In some countries, however, large amounts of organic milk had to be sold as conventional milk[1]. Therefore the sales as organic milk were often far below 100 percent.

The most difficult part of the quality check concerns the data on organic imports and exports (Part B, Q5). First of all the organic import and export amounts were compared to the total (organic and conventional) import and export amounts which are given in the agricultural yearbooks and which were surveyed by asking for complete supply balances (Part A, Q6). It is obvious that the organic amounts must be much lower than the total amounts. Then, the share of the organic imports/exports measured by the total imports/exports was calculated and assessed on the basis of market experience. In addition, the organic data on foreign trade were compared to the data of the year 2000 (Hamm et al. 2002). Whenever possible, the data were compared to organic foreign trade data published by market research institutes, especially to data published in the journal "Ökomarkt Forum" by the Zentrale Markt- und Preisberichtstelle (ZMP[2]). As an additional quality check the imported amounts of a country were compared with the exports to this country reported by all surveyed countries. This means that importing countries had to report from which countries they imported organic products. This information has been cross-checked with the exporting countries, which stated to which countries they had sold their products. When inconsistencies occurred, project partners/subcontractors have been contacted again for clarification.

Organic farmer prices were checked with conventional farmer prices which are usually lower. Comparison of the organic farmer prices between countries shows if individual prices are completely impossible. Sometimes incorrect prices are caused by wrong units or wrong

[1] This oversupply situation lasted until the year 2005. From then on the organic market was characterised by a strong rise in demand and considerable supply deficits for many product groups.

[2] The ZMP stopped its business on 30 April 2009. See Table 3-3.

decimal places. If an individual price differed significantly from all countries' average price, the responsible project partner/subcontractor was contacted for clarification. The consumer prices were checked in the same way by comparison with the conventional prices and by comparison with other countries' consumer prices. Concerning the consumer prices it was also carefully checked if units were used in the correct way. All prices had to be given for one kg/litre/piece. In some cases, it was obvious that wrong units were the reason for completely impossible prices which was clarified together with project partners/subcontractors. In addition, it was very important to check carefully if the calculation of the organic price premium over conventional prices was calculated correctly.

After having checked the individual figures, organic supply balances were drawn up. This procedure was explained in chapter 2.2. The organic consumption was calculated given that reliable data on organic imports and exports had been provided. This calculated organic consumption was compared to the organic consumption reported by project partners. If this revealed a discrepancy, all items of the organic supply balance were reviewed again and discussed with project partners.

4 Methods of data analysis

In the previous chapters the collection of data has been described. After having obtained and compiled all figures, there are several ways for further proceeding with these data. The simplest method is to just to list all figures in tables and describe them. In this study, for example, all obtained market data have been listed according to individual products and according to countries. Therewith, it is possible to compare the collected data between countries and to assess countries differences by checking the figures and then to interpret why these differences exist.

After this first step of describing the data set it is interesting to get a deeper insight into relationships between several variables and their explaining influence on key variables as, for example, the organic share of total food sales in a country. For this, statistical methods have to be used, allowing for investigating several objects and several variables at the same time on the basis of mathematic algorithms. Hypotheses on the variables' relationships drawn up before can either be confirmed or refuted by statistical analysis. In this chapter, a number of methods for statistical data analysis are presented which have been used for investigating the collected data. All calculations were performed with the programme SPSS Statistics 17.0.

The statistical analysis of the collected data refers to the EU-15 countries plus four additional European countries. The main unit of the investigation are all national economies comparable to those of the EU countries. Thus, the 19 investigated countries can be seen as a sample drawn from the entirety of countries showing similar conditions for organic farming as the EU countries.

4.1 Method of correlation analysis

Correlation analysis is used for finding out if a statistical relationship between two variables exists. In cases where a relationship between two variables is assumed by the researcher, finding a statistical relationship is used to underpin the truth of this assumption. However, the interpretation of the result remains at the researcher's assessment as a high correlation coefficient only shows a strong statistical relationship between the tested variables. It is no final proof for the relation also being causally determined (Aaker et al. 2004, p. 513). It is also possible that the result only shows a "spurious correlation" which is caused by a third invisible influencing factor.

By computing the correlation coefficient (1) it can be measured if a statistical relationship exists and (2) it can be calculated how strong the association between the two variables is. This method can either be used as "structure-proving procedure" (Backhaus et al. 2000, pp. XXII), but also for detecting statistical relationships the researcher did not think about before. In this study, correlation analysis is used as "structure-proving procedure". This means that hypotheses were drawn up beforehand which were then tested by correlation analysis. The latter application of correlation analysis as "structure-finding procedure" is used by researchers during the process of building new hypotheses as starting point for a new research project. On the basis of the found associations hypotheses are constructed, a new survey is planned and the necessary data are collected. After that the previously drawn up hypotheses are tested, now using correlation analysis as "structure-proving procedure".

The organic share of total food sales in a country, for example, is assumed to be related to several factors. One of these factors is the importance of general food shops as sales channel for organic food. The hypothesis could therefore be: "There exists a positive statistical relationship between the organic share of total food sales and the importance of general food shops as sales channel for organic food in a country."

The first step of analysing the correlation between the two variables is to draw a scatter diagramme of the measured values. The scatter plot makes visible if there is a relationship between the two variables, and it also shows if this relationship is linear or not. The narrower the scatter plot, the stronger is the association between the variables. Correlation analysis can therefore be called as "quantification of a scatter plot's slenderness" (Voß 2000, p. 147). The correlation coefficient offers a measure for this slenderness.

The correlation coefficient is a figure between -1 and +1. The closer the computed correlation coefficient is to -1 or to +1, the stronger is the relationship between the investigated variables. A result of exactly -1 or +1 appears if all measured values are situated directly on an imaginary line which best fits the average run of the scatter plot. -1 is a perfect negative relation and +1 is a perfect positive relation. If no straight line is visible in the scatter plot, the correlation coefficient will be around 0 and probably no relationship exists between the two variables.

The way of computing the correlation coefficient differs according to the characteristics of the surveyed data. It depends on (1) the scales level, (2) the distribution and (3) the sample size n. For metric variables which are normally distributed, the Pearson correlation coefficient is chosen given that a sample with a large n can be analysed. This is, for example, the case in studies investigating consumer behaviour and being based on a large number of questionnaires. In the present study, however, n is rather small (19 cases) and most variables are metric but not normally distributed. Therefore, it is necessary to use a method which does not require these preconditions. Because of this reason the correlation coefficient of Spearman was computed which can be used for variables with a small n and which are not normally distributed.

The problem of using the Pearson correlation coefficient for analyses of data with small n is that the occurrence of one single extreme value is able to strongly influence the result. As the Spearman correlation coefficient is computed by using the ranks of the values, the influence of extreme values is less strong.

Correlation analysis combines investigating the spread of the measured values in horizontal direction (variance of x-values) and the spread of the measured values in vertical direction (variance of y-values). The correlation coefficient of Pearson is computed by dividing the covariance of the x- and y-values by the product of the standard deviation of the x-values and the standard deviation of the y-values. The corresponding formula is shown below (based on Aaker et al. 2004, pp. 512):

$$\text{Pearson correlation coefficient } (r) = \frac{cov_{xy}}{s_x \cdot s_y}$$

Where:

$$cov_{x\,y} = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})$$

$$s_x = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

$$s_y = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(y_i - \bar{y})^2}$$

r	=	Pearson correlation coefficient
cov	=	covariance
s	=	standard deviation
n	=	sample size
x_i	=	x-values
y_i	=	y-values
i	=	placeholder for the elements 1-n of the sample
$\bar{x}$	=	arithmetic mean of all x-values
$\bar{y}$	=	arithmetic mean of all y-values

Whereas the Pearson correlation coefficient is calculated with the concrete x-values and y-values of the observations, the correlation coefficient of Spearman is calculated by using the ranks of the x-values and the ranks of the respective y-values. Therefore, the Spearman correlation coefficient shows if a monotone association exists between the variables, whereas the Pearson correlation coefficient points up if a linear relationship exists. The formula for the correlation coefficient of Spearman has been developed on the basis of that for the Pearson correlation coefficient. It is shown below (Fahrmeir et al. 2004, p. 142):

$$\rho = \frac{\sum\left(rk_{xi} - \overline{rk}_x\right)\cdot\left(rk_{yi} - \overline{rk}_y\right)}{\sqrt{\sum\left(rk_{xi} - \overline{rk}_x\right)^2 \cdot \sum\left(rk_{yi} - \overline{rk}_y\right)^2}}$$

Where:

$$\overline{rk}_x = \boxed{\frac{1}{n}\sum_{i=1}^{n} rk_{xi}}$$

$$\overline{rk}_y = \boxed{\frac{1}{n}\sum_{i=1}^{n} rk_{yi}}$$

ρ	=	rank correlation coefficient of Spearman
rk	=	rank of the value
n	=	number of observations
xi	=	rank of the x-value
yi	=	rank of the y-value
i	=	placeholder for the observations 1-n

In most research approaches a sample is drawn from the main unit and after investigating the sample statistically, the researcher wants to know if the conditions found within the sample are transferable to the main unit. This is meant by testing the significance of the result. For

this, a certain accepted probability of error is defined as, for example, 5 percent in this study. Thus, a significant result can be correctly transferred to the main unit with a probability of 95 percent. In correlation analysis, the significance of the result is tested by the T-test. The null hypothesis for this test is formulated as (Aaker et al. 2004, p. 513):

$$H_0 : \rho = 0$$

Where:

ρ = rank correlation coefficient of Spearman

Thus, the null hypothesis can be refused if the Spearman correlation coefficient differs significantly from 0. As explained by Köhler et al. (1996, p. 104) the T-value for the Spearman correlation coefficient can be calculated in the same way as for the Pearson correlation coefficient, given that the sample size is ≥ 12. The formula for the empirical T-value reads as follows (Aaker et al. 2004, p. 514):

$$T_{emp} = \rho \cdot \sqrt{\frac{n-2}{1-\rho^2}}$$

Where:

T_{emp} = empirical T-value
ρ = rank correlation coefficient of Spearman
n = number of observations

The calculated empirical T-value is compared to the critical T-value given in the table of the t-distribution ("student distribution"). The null hypothesis can be refused when the empirical T-value is higher than the respective critical T-value. For reading off the critical T-value from the table, the determined level of significance is needed as well as the degrees of freedom which are n-2.

4.2 Method of regression analysis

Whilst the correlation analysis aims to measure the possible existence and the strength of the association between two variables, the regression analysis, moreover, is able to relate two or more variables. According to Gujarati (2003, pp. 23) the difference between correlation and regression analysis is found in the way how the variables are treated. In regression analysis the dependent variable is seen as being stochastic, whereas the independent variable is fixed. In correlation analysis, however, the direction of the association does not play any role. The two variables are treated "symmetrically" without implying a special cause-effect relationship. Thus, for regression analysis it is necessary that the researcher determines the direction of the relationship before proceeding with the calculation.

The regression model is used "to describe, predict, and control the variable of interest on the basis of the independent variables" (Aaker et al. 2004, pp. 514). Variables tested with regression analysis have to be metrically scaled. Regression analysis has two main goals: (1) measuring the strength of influence of one or more independent variable(s) on one dependent variable, and (2) to measure how strong the dependent variable changes after a change of the independent variable. The latter aim is used for forecasting developments as, for example, the

increase of sales in dependence of a decreased price and/or other factors influencing the amount of sales (Hair et al. 1998, pp. 141).

The researcher must have a clear view which of the variables is the dependent and which are the independent variables. An example for a hypothesis to be tested by simple regression analysis would be: “The sold amount of a product can be explained by the price for this product”. If more than one explaining variable is included into the model, the hypothesis for a multiple regression analysis could be formulated as: “The sold amount of a product can be explained by the price for the product and by the costs for advertisement”. If the researcher is familiar enough with the variables she/he can, in addition, assume which of the variables will be the more important influencing factor.

In the following the focus is on linear regression analysis. This method assumes that all investigated associations between variables have a linear run. Backhaus et al. (2000, pp. 6) explain that with regression analysis two problems are solved. (1) The first is to compute the association of dependent and independent variable within the sample. The linear relationship between the variables is described by the following regression equation (based on Hair et al. 1998, pp. 153), given that only one explaining variable has been included in the calculation:

$$\hat{y} = a + bx + e$$

Where:

$\hat{y}$	=	estimated value of the dependent variable
a	=	intercept; constant; point of intersection of the regression line with the y-axis
b	=	regression coefficient; gradient of the regression line
x	=	independent variable
e	=	residual; prediction error

For multiple regression analysis the regression equation is enlarged by n additional independent variables and their regression coefficients:

$$\hat{y} = a + b_1x_1 + b_2x_2 + b_nx_n + e$$

The regression analysis aims to calculate the point of intersection of the regression line with the y-axis and the regression coefficient(s) which describe the gradient of the regression line. Once these values are determined, statements can be made in the style of: “When the x-value increases by one unit, the y-value will change by the value of the regression coefficient” (see Voß 2000, p. 130). With regression analysis the weight of the independent variables’ contribution to explaining the dependent variable is investigated (Hair et al. 1998, pp. 148).

The regression line is computed in a way that the distance between the measured values and the estimated values, located on the regression line, is as small as possible. Thus, each measured value has a corresponding theoretical value, which is located on the estimated regression line. a and b have to be computed with the aim to minimise the sum of the squared deviations of all measured values and their corresponding theoretical values. This procedure is called least-square-method (Aaker et al. 2004, pp. 517).

(2) The second problem to be solved by regression analysis is to prove if the association which has been determined in the sample can be regarded as valid for the main unit. This is to find out the quality of the estimated regression equation. This is conducted by several steps.

First, for the entire regression equation it is checked to which extent the dependent variable is explained by the regression model. This is shown by the coefficient of determination, r^2, and by the result of the F-test.

The coefficient of determination, r^2, shows the relation between the squared and summed up deviations of the estimated y-values from the arithmetic mean of the observed y-values ("explained variance") and the total deviation of the individual observed y-values from the arithmetic mean of all observed y-values ("total variance"). This can be expressed by the following formula (Backhaus et al. 2000, p. 22):

$$r^2 = \frac{\sum_{i=1}^{n} (\hat{y}_i - \bar{y})^2}{\sum_{i=1}^{n} (y_i - \bar{y})^2} = \frac{\text{explained variance}}{\text{total variance}}$$

Where:

r^2	=	coefficient of determination
i	=	placeholder for the y-values 1-n
$\bar{y}$	=	arithmetic mean of all observed values of the dependent variable
$\hat{y}$	=	estimated value of the dependent variable

R^2 can reach values between 0 and 1. The higher the explained variance, the nearer r^2 will be to 1. If it was exactly 1, the regression model would be able to completely explain the value of the dependent variable.

As Backhaus et al. (2000, p. 24) state, the value of r^2 is influenced by the number of the regression coefficients within the regression model. With each independent variable which is added to the model the value of r^2 will increase even if the influence of the added variable is only random. Therefore, in multiple regression analysis r^2 is corrected by the degrees of freedom, taking into account the number of observations as well as the number of included independent variables. The result is called "adjusted coefficient of determination". It is calculated according to the following formula (Backhaus et al. 2000, p. 24):

$$r^2_{\text{adjusted}} = r^2 - \frac{n_x (1 - r^2)}{n_y - n_x - 1}$$

Where:

r^2_{adjusted}	=	adjusted coefficient of determination
r^2	=	coefficient of determination
n_x	=	number of independent variables
n_y	=	number of observations
$n_y - n_x - 1$	=	degrees of freedom

By calculating r^2, it can be assessed how well the regression line fits to the observed values of the dependent variable. This is the descriptive side of the regression analysis. In addition, the researcher usually is interested in assessing if the estimated model is also valid for the main unit, i.e. if the conditions found within the sample can be used to make a generalised

statement concerning the influence of the independent variables on the dependent variable. This is investigated by the F-statistic.

The F-test is based on the hypothesis that the "true" regression coefficients - these are the coefficients which exist in the "true" regression equation showing the cause-effect relationship of the variables in the main unit - have to be different from 0 to guarantee that they influence the dependent variable (Backhaus et al. 2000, p. 25). Thus, H_0 is formulated as follows (based on Backhaus et al. 2000, p. 25):

$$H_0 : \beta_{1-n} = 0$$

The null hypothesis indicates that no influence of the independent variables would exist if all regression coefficients were 0. This is proved by the F-test for which an empirical F-value is calculated which is then compared to a theoretical F-value given in tables of the F-distribution. If the empirical F-value exceeds a critical value of the theoretical F-value, H_0 has to be refused. The conclusion is that not all values of β_{1-n} are 0, and that therefore an influence of the independent variables exists in the main unit.

Before looking up the theoretical F-value in the table, a level of significance has to be determined by the researcher. In this study, a probability of error α of 5 percent is required. This means that the probability of refusing the null hypothesis although it is valid for the main unit has to be lower than 5 percent for getting a significant result. In addition to the probability of error the degrees of freedom of the explained variance, n_x, as well as the degrees of freedom of the not explained variance, $n_y - n_x - 1$, are needed for reading off the critical F-value from the table.

The empirical F-value is calculated according to the following formula (on the basis of Backhaus et al. 2000, p. 26):

$$F_{emp} = \frac{\sum_{i=1}^{n} (\hat{y}_i - \bar{y})^2 / n_x}{\sum_{i=1}^{n} (y_i - \hat{y}_i)^2 / (n_y - n_x - 1)} = \frac{\text{explained variance} / n_x}{\text{not explained variance} / (n_y - n_x - 1)}$$

Where:

F_{emp}	=	empirical F-value
y	=	observed value of the dependent variable
$\hat{y}$	=	estimated value of the dependent variable
$\bar{y}$	=	arithmetic mean of all observed values of the dependent variable
i	=	placeholder for the y-values 1-n
n_x	=	number of independent variables; degrees of freedom of the explained variance
n_y	=	number of observations
$n_y - n_x - 1$	=	degrees of freedom of the not explained variance

After having assessed the goodness of fit of the entire regression model and given that a significant influence of the variables was found out - i.e. not all regression coefficients are zero - , the calculated values of the individual regression coefficients are checked concerning their respective significance of influencing the value of the dependent variable. This is investigated by the T-test. H_0 is again formulated as follows (Backhaus et al. 2000, p. 29):

$$H_0 : \beta_i = 0$$

The empirical T-value is computed according to the following formula (Backhaus et al. 2000, p. 30):

$$T_{emp} = \frac{b_i}{s_{bi}}$$

Where:

T_{emp}	=	empirical T-value for the regression coefficient of the independent variable i
b_i	=	regression coefficient of the independent variable i
s_{bi}	=	standard error of the regression coefficient of the independent variable i
i	=	placeholder for the independent variables 1-n

The empirical T-value is compared to the theoretical T-value shown in the table of the t-distribution. Here, the determined probability of error α, in this study 5 percent, and the degrees of freedom of the not explained variance, n_y - n_x -1, have to be taken into consideration for finding the needed critical T-value.

As the t-distribution varies around the arithmetic mean zero, the T-value can become both negative and positive. Therefore, the absolute value of the empirical T-value is compared to the theoretical T-value taken from the table. If the absolute value of the empirical T-value is higher than the respective theoretical T-value, H_0 is refused, which means that the regression coefficient of the main unit differs significantly from zero and therewith has a clear influence on the dependent variable.

5 Analysis of ten organic product markets in Europe in 2001

In this chapter the organic market data collected within the framework of the OMIaRD project in 19 European countries in the year 2001 will be analysed. For this, it is possible to proceed in different ways. In Hamm and Gronefeld (2004) the data were analysed with the intention to show the performance of the European organic market in its entirety. Therefore, the market data of the individual product groups were sorted according to the important market categories production, consumption, foreign trade and prices; i.e. in the chapter on organic production all collected production figures concerning the different product groups were presented. The advantage of this way of proceeding is that the individual product groups can be compared directly between each other concerning their current importance within the organic market segment. This comparison is, for example, interesting concerning organic production and consumption shares measured by total production or consumption of different investigated product groups. Questions come up why some product groups are represented more strongly in the organic market segment than others.

In the following, however, the market data will be presented according to individual product groups because of practical reasons. Most market actors are interested in special product groups which are important for their work. Many quests for information were answered during the work on this study posed by people looking for information regarding a special field of the organic market. The advantage of grouping the market data according to products is simply that somebody interested in hard facts on the organic cereal market can easily find all cereal related figures in the respective chapter.

Up to now the data collected within this study are still unique concerning their comprehension and because they were collected for 19 European countries according to the same survey method, at the same time, and compiled by the same persons. All this maximised the comparability of the same variables' values between different countries. As official statistics on the organic market are almost not existent at a European level, the collected data of this study are based on experts' knowledge and estimations.

The following chapters 5.1 to 5.10 show concrete examples of product specific market analyses based on the data collected during the EU research project OMIaRD. Thanks to the big effort of the involved researchers and a number of subcontractors it was possible to create a data basis for the European organic market in the year 2001. These figures represent the only data set of harmonisd organic market data at the European level so far. Therefore, the following analyses were based on this data collection. Several aims were reached with the help of these data:

1. The comparison of production volumes of different countries shows which are the main players regarding, for example, organic cereal production within the EU. This information on the supply situation is important for all market actors, especially for wholesalers and importers who need to know where the volumes exist they want to purchase.

2. The organic production share, representing the relation between organic and conventional production, allows understanding how developed the respective product sectors are in the different EU countries as well as in the entire EU. These organic production shares help us to detect that in some countries the organic market is much more developed than in other countries regarding the respective product group. This information is the basis for further analysis on the reasons why individual countries are more successful than others.

3. Reliable data on organic imports and exports help, for example, wholesalers to identify countries which have already established foreign trade relationships. With the help of these figures those countries can be easily identified having the ability to export larger amounts of organic products to foreign countries. However, these import and export data are the most difficult data to obtain. Concerning foreign trade with organic products much more effort is necessary until a reliable data basis is established.

4. Comparing prices, especially price premiums, of organic products between the EU countries shows that the production conditions for organic farming strongly vary between the different countries. Low farmer price premiums can, for example, be caused by different reasons: (1) high government support for organic production, (2) similar production costs for organic and conventional production - this can be observed in countries with extensive conventional production -, and (3) low demand for the organic product, i.e. wholesalers would not buy organic products at all if prices were much higher than the respective conventional products.

The following product specific chapters follow a common structure. First, a short overview about the total (conventional plus organic) market characteristics for the individual product in the year 2001 will be given. After that, the supply balance with key market data of the respective organic product in 2001 is presented with focus on the summarised results for the whole EU. Then, important data categories are analysed in comparison between countries.

5.1 The organic cereal market

5.1.1 General notes about the total cereal market in 2001

Before analysing the organic cereal market for the marketing year 2001/02, a short overview shall be given how this year was characterised regarding the total (organic plus conventional) cereal market. Aspects influencing the total cereal market are mainly the weather conditions in the producing countries as well as regulating measures of the agricultural policy. This chapter serves as a basis for understanding the relationships between the conventional and the organic cereal sector in the EU countries.

How much cereal (organic plus conventional) was produced in the EU in 2001? In terms of total grain production in the EU, the year 2001 was a rather weak year with 199 million tonnes useable production and a low degree of self-sufficiency for organic plus conventional cereals of 104 percent (Eurostat 2009[1]). The main reason for this was the unfavourable weather in most EU countries at the sowing times. In many regions of the EU it was not possible to sow winter grain which reduced the production to spring grain (Stratmann 2003, p. 200). Heavy rainfalls in autumn 2000 reduced the wheat and barley area especially in northern France, the United Kingdom and in Spain. In the latter country, dryness during the vegetation period reduced the production additionally (Uhlmann 2002, pp. 24). This led to a low harvest in these countries whereas in Germany a bumper crop of 49 million tonnes of cereals was yielded. In Scandinavia, rainfalls delayed the harvest time and decreased both volumes and quality of the cereal production. Regarding the individual types of harvested grain in the EU, the wheat production in 2001 did not reach the amount of the five years before (Stratmann 2002, p. 194). The barley production was in short supply, too, in 2001, whereas the maize production exceeded the level of the years before. The large cereal production in Germany increased the problem of rye surpluses as most part of the EU's rye was grown in Germany.

The producer prices for cereals in 2001 were influenced by the production volumes in the different countries. Especially high producer prices for cereals were reached in France and Spain, whereas the producer prices in Germany were lower than in the year before (Stratmann 2002, p. 194).

The main cereal producers in volume terms in 2001, as in the years before, were France and Germany. The production of these countries accounted for more than 50 percent of the total EU cereal production. Other countries with high production volumes were the United Kingdom, Italy and Spain, each producing around 18 million tonnes of cereals (Eurostat 2009).

How was the production structure for cereals characterised in 2001? Looking at the figures within the supply balance sheet for cereals in the EU from 2001, the wheat production amounted to almost 50 percent of the total cereal production. A good 90 percent of the total wheat production accounted for common wheat, whereas around 10 percent were durum wheat. Other cereals produced were barley and maize, each with around 40 percent of the category "cereals other than wheat". The rest of the production consisted mainly of rye, oats and triticale (Eurostat 2006).

[1] When looking up figures in the Eurostat database regarding the total (organic plus conventional) cereal market in 2001, it is important to note that figures related to the marketing year 2001/2002 are listed under the heading "2002". These figures include all cereals which were harvested within the calendar year 2001.

The countries with the largest human consumption of cereals in 2001 were Italy, Germany, the United Kingdom and France, all reaching a consumption above 6 million tonnes (Eurostat 2009). The total EU consumption of cereals increased in 2001 as more cereals were used as animal fodder. This was caused by the ban of meat-and-bone meal in animal fodder as a consequence of BSE. Another reason was the outbreak of the foot and mouth disease in the United Kingdom. As animal transports were not allowed at that time, animals had to be fed further on instead of being slaughtered (Uhlmann 2002, p. 28).

Concerning foreign trade with cereals it is not astonishing that the both largest volume producers of cereals, France and Germany, were at the same time the countries with the most significant cereal exports. Comparing the export volumes of the year 2001 with those of the year before, it is striking that France exported around 6 million tonnes less than in the year 2000 due to the above mentioned crop losses. Spain, Italy and the Netherlands were the countries importing the largest volumes of cereals in 2001. As Spain yielded a clearly lower cereal production in 2001, it relayed to a much higher extent on imports than in the year 2000. In volume terms it imported around 4 million tonnes more than in the year before.

In general, the largest part of the EU's imports and exports of cereals refer to intra-EU trade (Eurostat 2009). The extra-EU trade with grain in 2001/02 was characterised by a high price pressure caused by cheap grain imports from eastern European countries such as Russia, the Ukraine and Kazakhstan (Uhlmann 2002, p. 19). This increased the total grain imports of the EU significantly. On the other hand, the exports of EU grain into the main receiver countries of Northern Africa and Asia were lower than usual as the EU production had to compete with cheap grain from Eastern Europe there as well. In addition, the import tariffs for grain from Eastern Europe were cancelled in 2001, which increased the import volumes even more. The reason for this was the fact that the world market price for grain, influenced mainly by the US markets, rose in 2001 due to statistics showing an increasing grain consumption opposite to a decreasing grain production. However, the price level in the eastern European countries was very low and not influenced by the US market prices (Stratmann 2003, p. 200). In the year 2001/02 the EU grain imports exceeded the EU grain exports (without processed products) which happened for the first time since the middle of the 1980s (Stratmann 2002, p. 194).

Besides weather conditions and the situation at the world markets for cereals, the Common Agricultural Policy of the EU was an important factor influencing the EU cereal market in 2001. One general goal of the Common Agricultural Policy in the EU since the beginning of the 1990s was to strengthen the competitive position of the European agricultural production because of an increasing pressure from other continents for liberalisation of the agricultural world markets. In the frame of the action programme Agenda 2000 measures for implementing this goal were defined (Tangermann 1998, p. 443). One important aspect was to start the alignment of prices for agricultural products from the EU to world market prices. According to the Agenda 2000 the intervention price for cereals produced in the EU was decreased by 7.5 percent in the year 2000 (Uhlmann 2000, p. 26). This led to the fact that in 2001 EU wheat and barley were sold on the world markets without any export subsidies, which was assessed as a success of the Agenda 2000 by agricultural politicians. However, the EU exports to the world markets have also to be seen against the background of a weak Euro compared to the US Dollar in the year 2001 (Uhlmann 2002, p. 30).

5.1.2 Supply balance for organic cereals

In chapter 3.2 it was described how the data presented here were collected and processed. On the basis of the key market data, the supply balance for the organic cereal market in 2001 was drawn up. In Table 5-1 this supply balance is shown for all investigated countries. The row "EU-15" shows the EU sum for the different data categories. In 2001, 1.8 million tonnes of organic cereals were produced in the EU. Compared to the total cereal production, this corresponds to an organic share below one percent. In order to calculate the amount which was sold, it is necessary to know which part of the production is used directly on farm as animal feed or as seed. On average, 31 percent of the EU production were used on farm. Only 92 percent of the complete sales were really sold as organic product. Taking into account the use on farm as well as the part sold on the conventional market, the sales as organic cereals remain as 1.2 million tonnes.

A large part of the total organic cereal sales was cereals for the use as animal feed. In 2001, 49 percent of the total EU sales of organic cereals were sold as animal feed. As shown in Table 5-1 almost the complete part of it - or 97 percent - were sold as organic animal feed. These sales as organic animal feed accounted for almost 600,000 tonnes which have to be subtracted from the "sales as organic" given in column F to obtain that part of the sales which was sold for human consumption.

The main goal of a supply balance is to point out the relationship between supply and demand. In statistics for the total agricultural markets the supply is represented by the useable production. However, in this study, the structure of the supply balance has been adapted to the needs of the organic markets. Therefore, for supply the "sales as organic for human consumption" were used rather than the useable production. This is because of the fact that a part of the production cannot be sold on the organic market. Thus, focusing on the useable production would signalise a much larger supply than exists in reality.

In 2001, the organic cereal sales which were sold for human consumption reached 578,000 tonnes in the EU. Adding the import volumes and subtracting the exports, an organic human consumption for cereals of 810,000 tonnes remains. This leads to a degree of self-sufficiency for the EU of 71 percent.

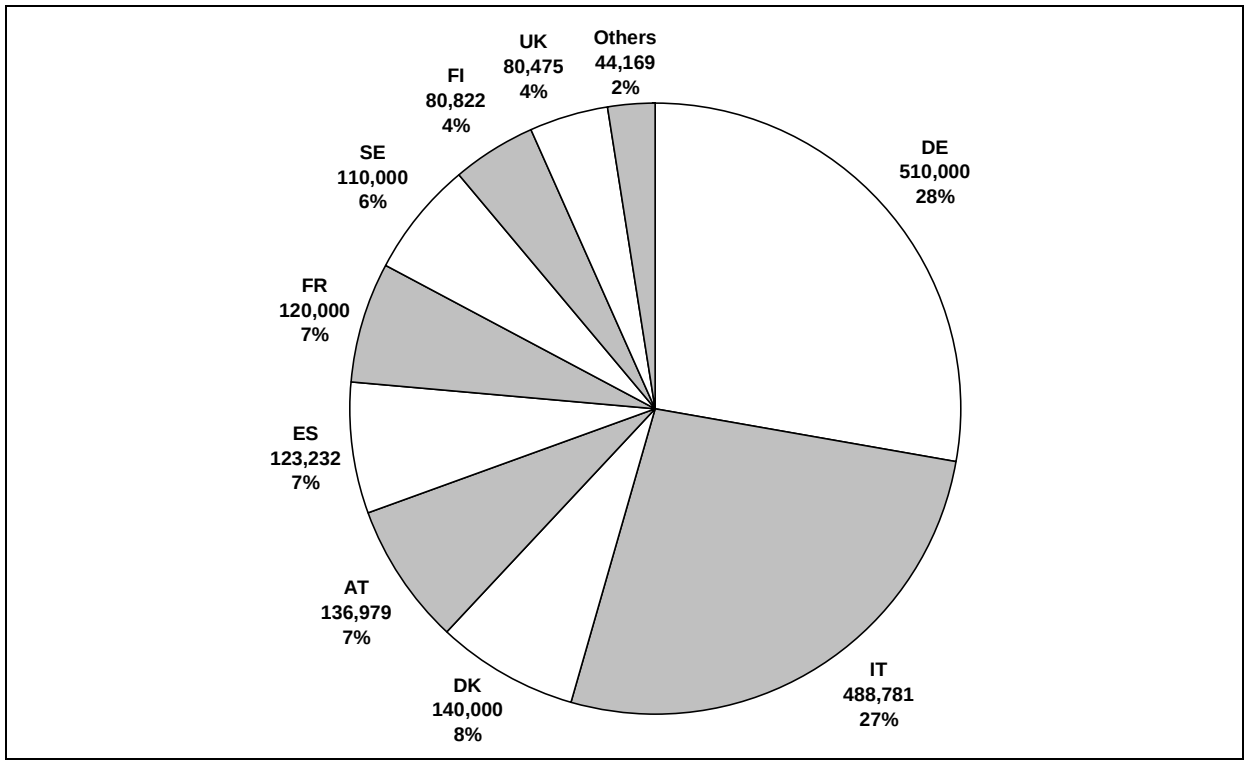
Table 5-1 Supply balance for organic cereals in 2001

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Sales as animal feed in % of total org. sales	Sales as animal feed tonnes	Sales as organic animal feed in % of total sales as animal feed	Sales as organic animal feed tonnes	Sales as organic for human consumption tonnes	Organic imports for human consumption tonnes	Organic exports for human consumption tonnes	Organic human consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**		**H/D*100**		**J/H*100**		**F-J**			**K+L-M**	**K/N*100**	**Calculation**
AT	136,979	25	34,245	102,734	86	88,351	53	54,000	100	54,000	34,351	2,800	5,000	32,151	107	AT
BE	7,000	61	4,300	2,700	100	2,700	89	2,400	100	2,400	300	21,342	9,104	12,538	2	BE
DE	510,000	33	168,300	341,700	97	331,900	29	100,000	95	95,000	236,900	120,000	50,000	306,900	77	DE
DK	140,000	20	28,000	112,000	100	112,000	87	97,300	100	97,300	14,700	12,000	1,000	25,700	57	DK
ES	123,232	30	36,970	86,262	80	69,010	24	20,703	100	20,703	48,307	2,000	35,000	15,307	316	ES
FI	80,822	30	24,247	56,575	80	45,260	39	22,000	50	11,000	34,260	100	14,340	20,020	171	FI
FR	120,000	55	66,300	53,700	100	53,700	61	33,000	100	33,000	20,700	48,000	10,000	58,700	35	FR
GR	3,397	4	135	3,262	97	3,165	46	1,500	100	1,500	1,665	1,000	0	2,665	62	GR
IE	2,147	48	1,030	1,117	100	1,117	63	700	100	700	417	400	/	817	51	IE
IT	488,781	20	100,000	388,781	90	350,000	57	220,150	100	220,150	129,850	200,000	120,000	209,850	62	IT
LU	486	50	243	243	100	243	10	24	100	24	219	550	/	769	28	LU
NL	20,000	0	0	20,000	100	20,000	70	14,000	100	14,000	6,000	100,000	70,000	36,000	17	NL
PT	11,139	34	3,787	7,352	10	735	75	5,514	10	551	184	100	0	284	65	PT
SE	110,000	64	70,000	40,000	100	40,000	15	6,000	100	6,000	34,000	3,000	4,000	33,000	103	SE
UK	80,475	28	22,475	58,000	100	58,000	73	42,330	100	42,330	15,670	40,000	/	55,670	28	UK
EU-15	**1,834,458**	**31**	**560,032**	**1,274,426**	**92**	**1,176,181**	**49**	**619,621**	**97**	**598,658**	**577,523**	**551,292**	**318,444**	**810,371**	**71**	**EU-15**
CZ	11,147	5	557	10,590	90	9,531	nd	nd	nd	nd	nd	0	3,000	nd	nd	CZ
SI	675	59	400	275	76	210	0	0	/	0	210	nd	/	210	100	SI
CH	11,832	15	1,775	10,057	100	10,057	63	6,328	100	6,328	3,729	67,667	/	71,396	5	CH
NO	5,000	40	2,000	3,000	100	3,000	87	2,610	100	2,610	390	1,650	/	2,040	19	NO

5.1.3 Organic cereal production

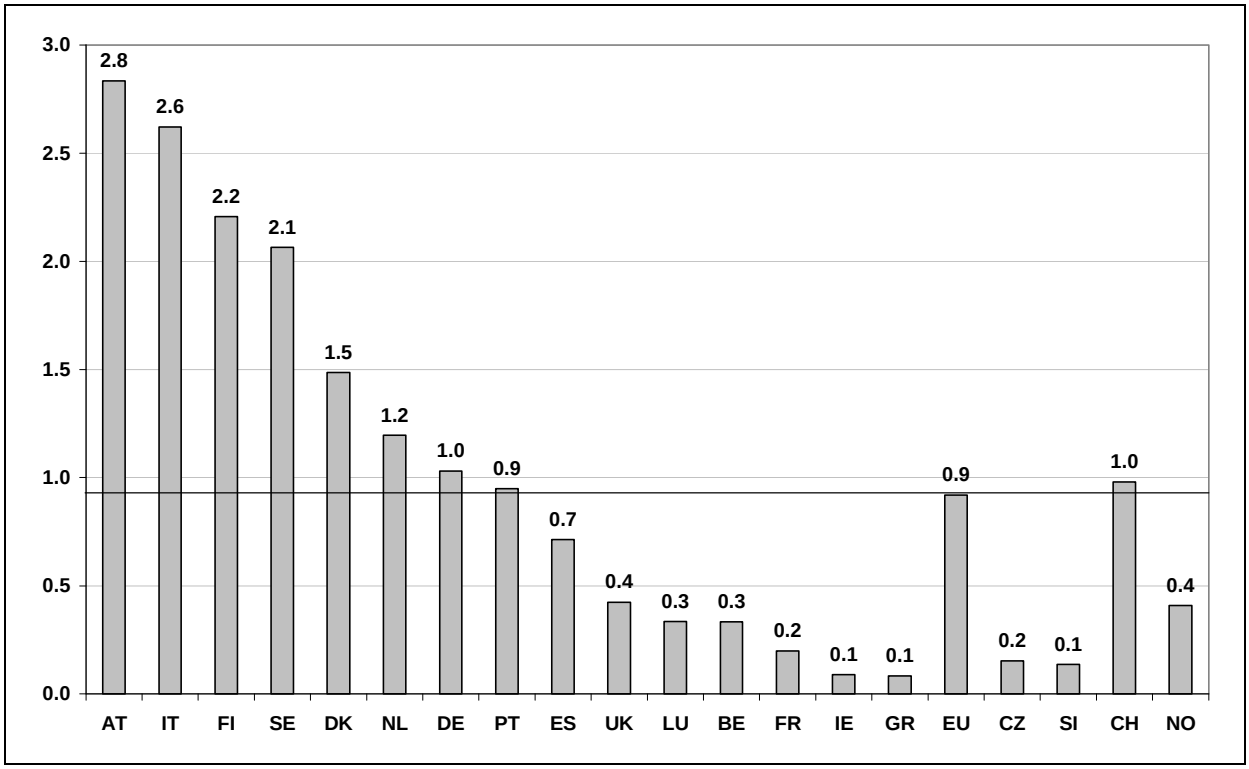
The production volumes for organic cereals differed strongly among the investigated countries (see Figure 5-1). The largest producers within the EU were Germany and Italy both with around 500,000 tonnes. Beneath this group were Denmark, Austria, Spain, France and Sweden who all produced more than 100,000 tonnes of cereals in 2001. Compared to the data on the total cereal production in the EU (see Eurostat 2009) it is striking that France did not have the same dominating role concerning organic cereal production compared to its role in total (organic plus conventional) cereal production. France was the largest volume producer of organic plus conventional cereals in the EU in 2001. Concerning its organic cereal production it ranked only on the sixth place. A similar situation was observed for the United Kingdom being the third largest producer in the total cereal sector but only on place nine regarding its organic cereal production. On the other hand, Denmark and Austria showed an astonishing large organic cereal production compared to its rank among the total cereals producers in the EU.

Figure 5-1 Organic cereal production of the EU countries in tonnes in 2001



This shows that it is important to analyse the absolute figures on the organic cereal production against the background of the total cereal production for getting a deeper insight into the importance of the organic cereal sector in a country. For getting an impression about this relationship, the organic cereal production was divided by the total cereal production of each country. These organic production shares are presented in Figure 5-2. The figures on total (conventional plus organic) useable production of cereals were taken from the official supply balances published by Eurostat (2009). As for Luxembourg, Switzerland and Norway no figures on the gross human consumption of cereals were published by Eurostat, here the data were used which were surveyed by the partners within the OMIaRD project.

Figure 5-2 Organic share of total cereal production in percent in 2001



Of the EU countries, Austria had the highest percentage of its total cereals produced according to organic standards followed by Italy. Other countries above the EU average were Finland, Sweden, Denmark, the Netherlands and Germany. The lowest were Ireland and Greece. The Accession and EFTA countries were all low-level producers of cereals with the exception of Switzerland reporting an organic cereal production of 1.0 percent measured by its total cereal production.

Even if it is obvious that the organic production share was still low in all countries, not exceeding three percent, there are big differences between the countries. Which are the reasons that in some countries the importance of the organic cereal sector measured by the total cereal production was higher than in others? As one reason it was suggested that the government payments for maintenance of organic production were the driving force. When comparing the organic production shares for cereals with the government payments for maintenance of organic production on arable land in the year 2001 (see Hamm and Gronefeld 2004, p. 15) it is striking that these payments were highest in Austria with more than 300 €/ha. Austria was at the same time the country with the highest organic production share for cereals. On the other hand, France and the United Kingdom, which are both large producers of conventional cereals, did not pay anything for maintenance of organic cereal production. This might be the reason why in these countries the organic cereal production was very low compared to the important role of their conventional cereal sector.

In order to investigate if there was a general pattern for all investigated countries concerning the relationship of government payments and organic production share, a correlation analysis was conducted. The hypothesis was: There is a positive relationship between the variables “organic production share for cereals” and “payment in Euro per hectare for arable land in the year 2001”. The result of this correlation analysis revealed the assumed positive but weak relationship between these variables with a Spearman correlation coefficient of 0.2, however, without being significant. Thus, it does not seem to be sufficient to reduce the extent of the

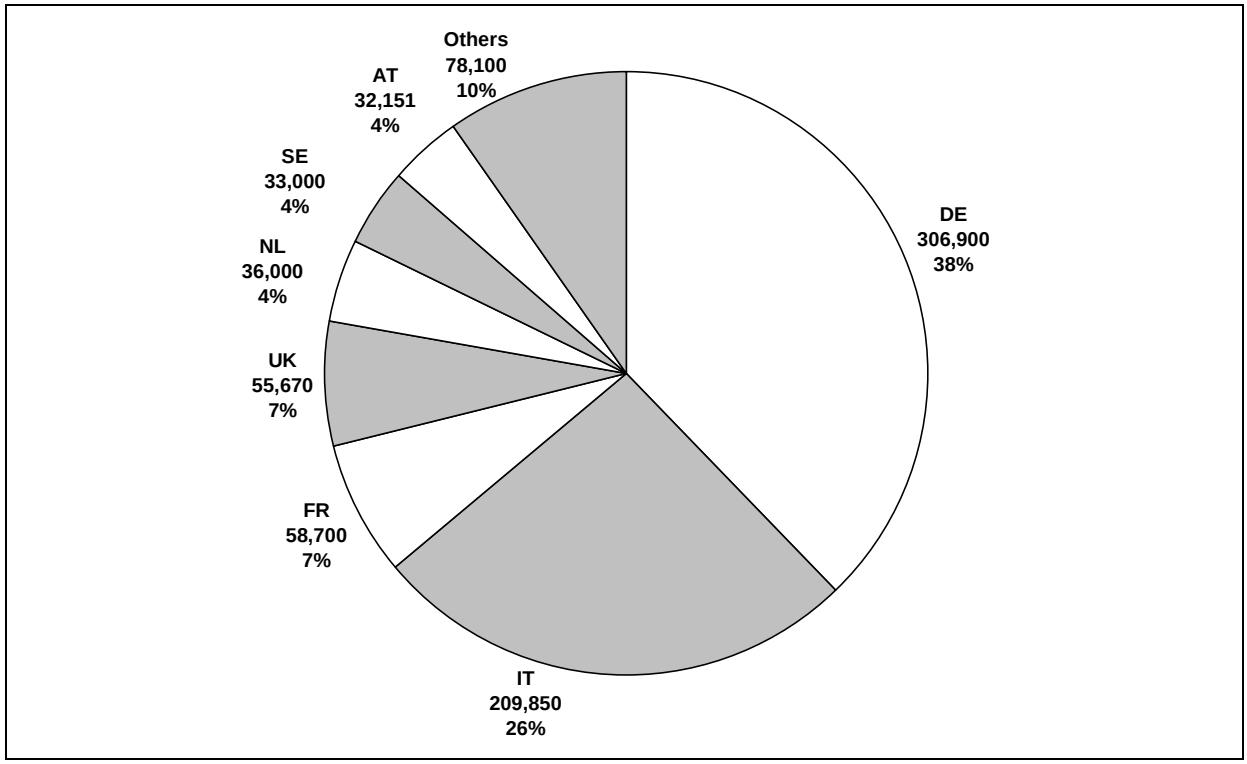
organic production share to the influence of government payments only. There must be other explanations for the heterogeneous organic production shares for cereals.

Another important feature characterising the supply side of an organic market is the share of the organic production which is sold as organic product. As shown in Table 5-1, column E, in most countries a share of 90 to 100 percent of the organically produced cereals was sold as organic product. The most significant exception was Portugal with only 10 percent sales as organic. The reason for this is to be found in the little developed domestic market for organic products in Portugal. Other countries having problems to sell all their organic cereal production as organic were Austria, Spain, Finland and Slovenia.

5.1.4 Organic cereal consumption

The demand for organic cereals was dominated by Germany and Italy in 2001, shown in Figure 5-3. Their consumption accounted for 64 percent of the whole EU's organic cereal consumption. As shown in the chapter before, these two countries also had the highest volumes of organic cereal production among the surveyed countries. 14 percent of the EU consumption accounted in equal shares for France and the United Kingdom. Of the non-EU countries, Switzerland is situated behind Italy with its large organic cereal consumption of 71,000 tonnes.

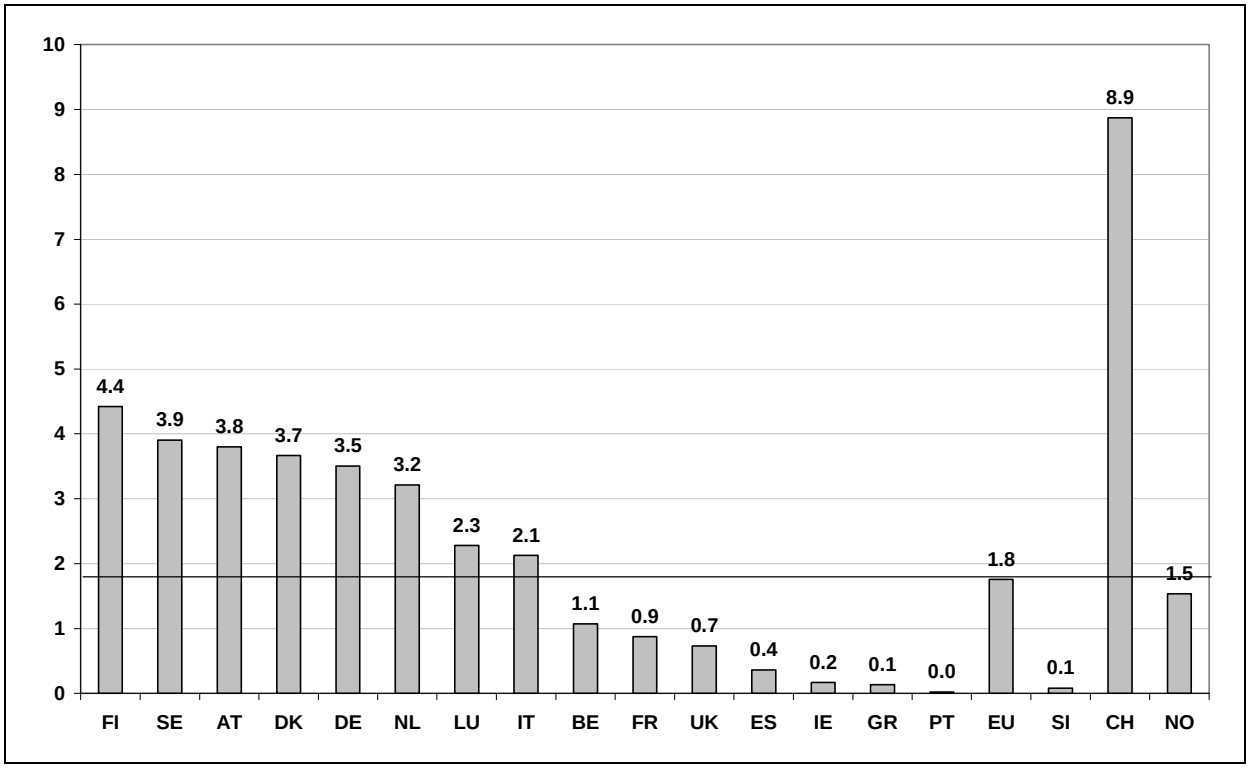
Figure 5-3 Organic cereal consumption of the EU countries in tonnes in 2001



In Figure 5-4 the consumption of organic cereals in each country is related to the total (conventional plus organic) cereal consumption. This market share by volume reached 1.8 percent at an EU-wide level. This figure seems to be very low measured by all the effort which has been made from the government side as well as by farmers' associations to make organic products more popular. Looking at the leading countries, the picture appears a bit

more optimistic. Switzerland was the clear leader with 8.9 percent. Other countries exceeding the EU average for cereals were Sweden, Austria, Finland, Denmark, Germany, the Netherlands and Italy. As Italy was the second largest consumer of organic cereals behind Germany, its organic consumption share seems to be quite low with 2.1 percent. The reason for this, however, is found in the large amount of conventional cereal products used especially for pizzas and pasta in Italy. Twenty-one percent of the total cereal consumption (organic and conventional) of the EU accounted for Italy in 2001.

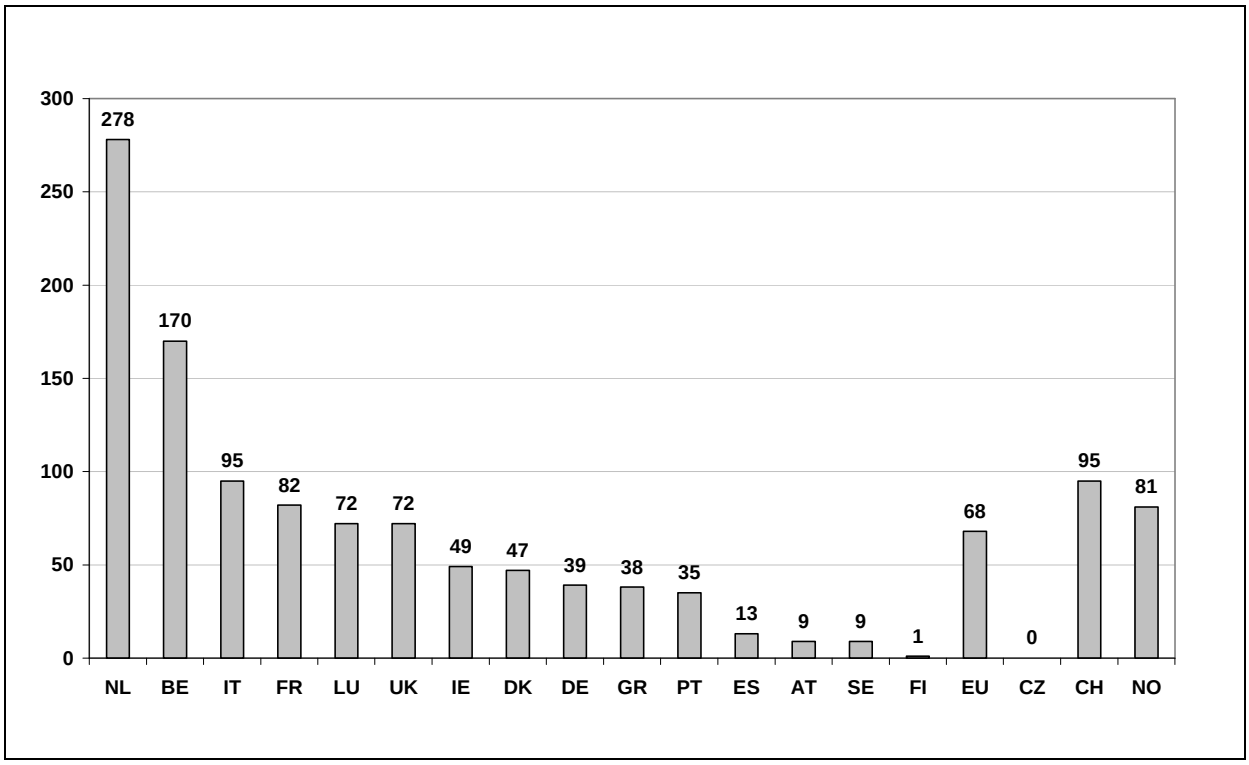
Figure 5-4 Organic share of total cereal consumption in percent in 2001



5.1.5 Foreign trade with organic cereals

The absolute import and export volumes for organic cereals are given in Table 5-1, columns L and M. The main importing countries for organic cereals in 2001 were Germany, Italy and the Netherlands. However, the Netherlands as well as Belgium import large volumes which are then to a great extent exported to other European countries. The importance of the organic cereal imports measured by the organic human consumption within the investigated countries is presented in Figure 5-5.

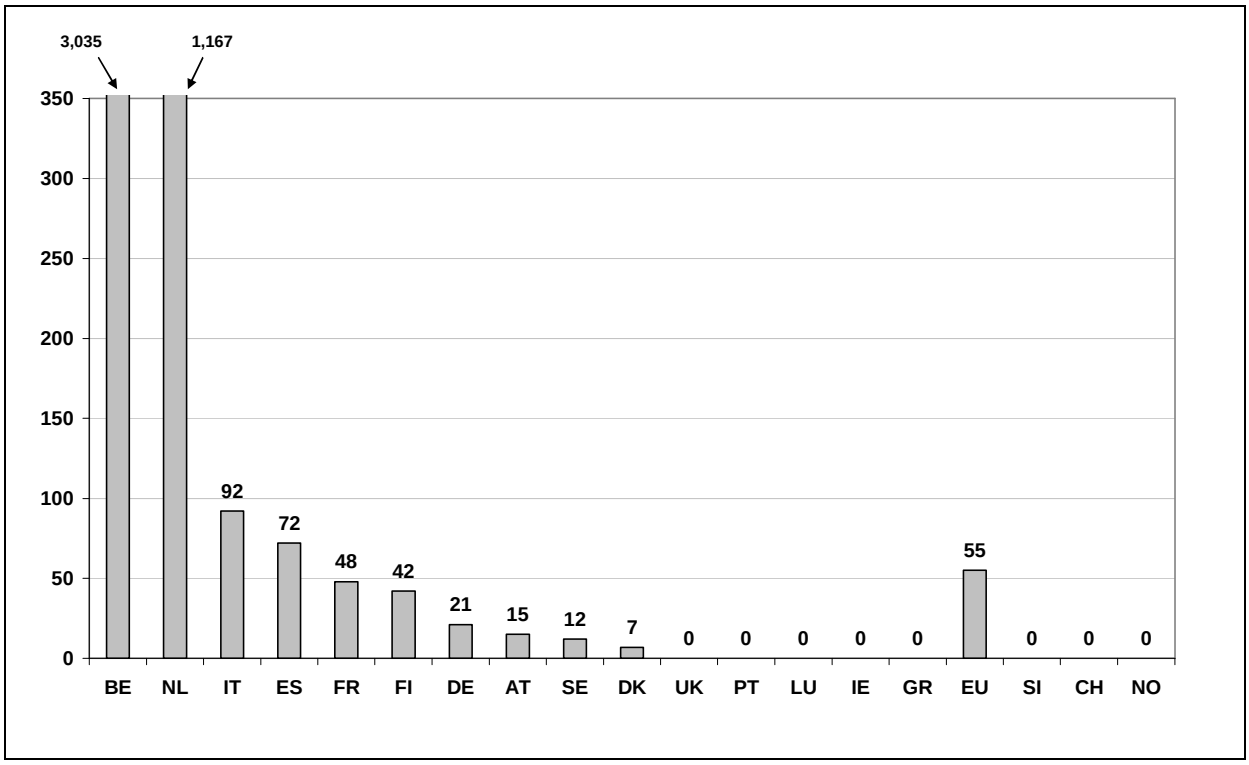
Figure 5-5 Imports of organic cereals as a share of the organic human cereal consumption in percent in 2001



Countries which had to import large parts of their organic human consumption were Italy, France, Luxembourg and the United Kingdom, as well as the EFTA countries Switzerland and Norway.

In Figure 5-6 the organic exports are related to the sales as organic for human consumption. As Belgium and the Netherlands had a special status as transport hubs, their organic export shares were extremely high at 3,035 percent and 1,167 percent. Most parts of their organic exports, however, referred to goods which had been imported from countries outside the EU before.

Figure 5-6 Exports of organic cereals as a share of the sales as organic cereals for human consumption in percent in 2001



Countries which were large exporters of organic cereals measured by their sales as organic for human consumption were Italy, Spain, France and Finland. As shown above, Italy has both very high import and export shares for organic cereals. Here it is important to know that the organic imports of Italy consisted mainly of organic common wheat whereas most parts of the exports referred to processed organic durum wheat in the form of organic pasta.

Assessing the foreign trade with organic cereals from an EU-wide point of view, in 2001, the EU was a net importer. Most of the EU's organic cereals were imported from countries such as Australia, Canada, the United States, Argentina, Eastern Europe (Hungary, Romania, Ukraine and Kazakhstan) and China. Compared to the total (organic plus conventional) cereal sector it is obvious that the main exporting countries for conventional cereals, the United States, Australia, Canada and Argentina (Uhlmann 2002, p. 17), play an important role for exporting organic cereals as well.

5.1.6 Balance between supply and demand of organic cereals

With respect to cereals perhaps the most interesting figure is that Spain was able to meet its domestic consumption of organic cereals threefold, expressed in a degree of self-sufficiency

of 316 percent (see Table 5-1). The reason for this is the large organic wheat production. The climate in Spain is advantageous for the production of wheat with a high content of gluten which leads to a good baking quality of the wheat. Thus, Spanish wheat is a product which can be easily exported. The domestic market for organic cereals, however, is still underdeveloped. When comparing the degree of self-sufficiency of organic and of conventional cereals in Spain, it is striking that the latter was much lower with around 60 percent (Eurostat 2009).

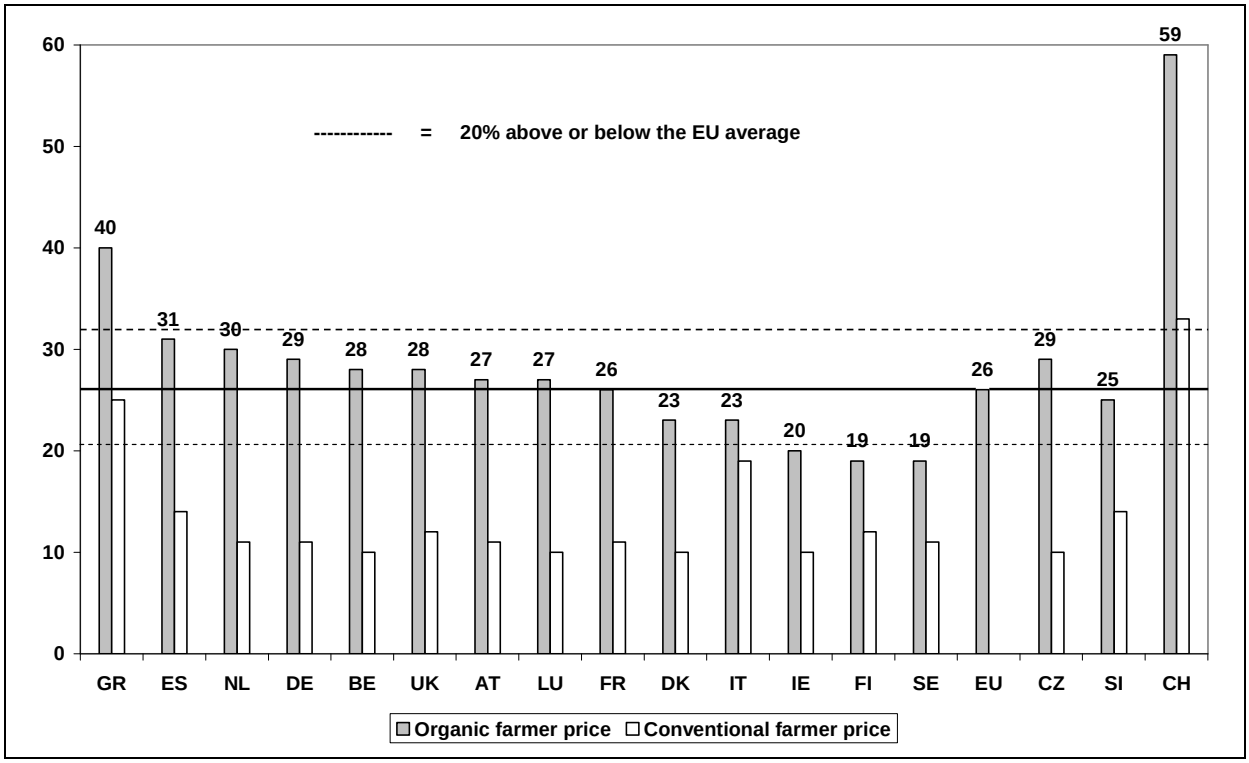
The second country with a high degree of self-sufficiency for cereals was Finland. The 171 percent can mainly be explained with the large organic oat production. A big part of the production was exported. Looking back to the organic export shares, it is not astonishing that Spain and Finland are also among the countries with high export shares for organic cereals. Interestingly, Italy and France had high export shares, too, but they had rather low degrees of self-sufficiency with 62 and 35 percent, respectively. In Italy, this can best be explained with the good processing facilities for organic cereals and with a high import share. In France, the low degree of self-sufficiency for organic cereals was contrary to the 181 percent for conventional cereals. The explanation is found in the low share of organic production measured by total production of 0.2 percent. The EU countries with the lowest degrees of self-sufficiency for organic cereals were Luxembourg, the Netherlands and the United Kingdom.

In addition to calculating the degree of self-sufficiency, experts were asked within this study to nominate significant supply deficits in spite of imports. Shortfalls for organic cereals in the years 2001 and 2002 were reported by experts from Austria, France, Sweden, Finland and Germany. Expected supply deficits for the years 2003 and 2004 were only nominated by Germany and Finland.

5.1.7 Prices for organic cereals

Looking at the farmer prices in Figure 5-7 it appears that the absolute price for organic cereals in 2001 was highest in Greece with 40 €/100 kg. This price was 150 percent higher than the EU average of 26 €/100 kg. Besides Greece most countries which were net importers for organic cereals had farmer prices above the EU average. This was the case in Belgium, in Germany, Luxembourg, the Netherlands and the United Kingdom. Farmer prices in these countries were high because demand was larger than supply, and the formation of the price for the domestic product is influenced by the price of the imported product which includes the transport costs. As the domestic product is not sold for a lower price than the imported product, the high price for the domestic product mainly reflects the additional transport costs for the imported product. In some countries, as for example in Germany, domestic farmer associations as Bioland and Demeter were able to charge a good price for their cereals because they have convinced their customers that they need higher prices due to their strict standards for organic production.

Figure 5-7 Farmer prices for organic and conventional cereals in €/100 kg in 2001

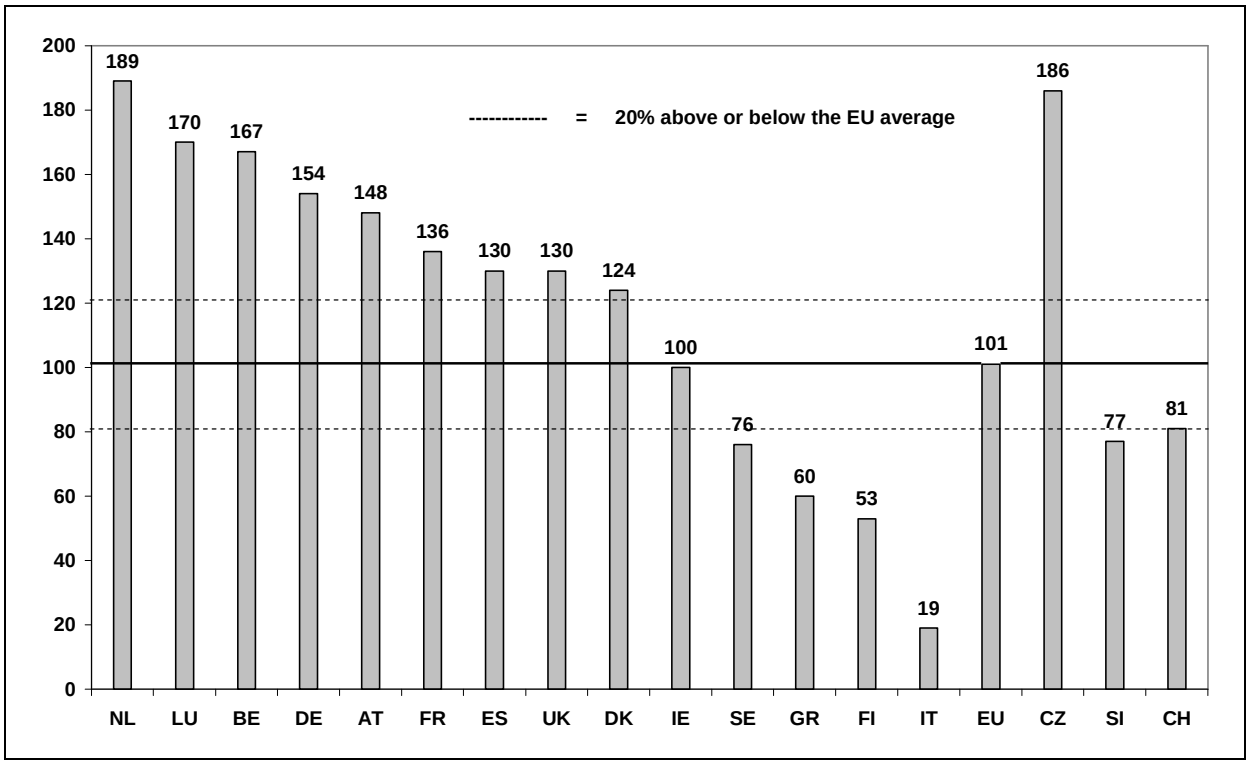


In Finland, Ireland and Sweden the farmer prices for organic cereals were more than 20 percent below the EU average. In Sweden, and even more so in Finland, the yields of organic and conventional cereal production were clearly lower than the EU average. However, conventional cereal production is also quite extensive in these countries; therefore it is likely that production costs for organic cereals are similar to conventional production. Together with area-based subsidies for organic farming there was a high incentive to produce organically, even though the prices for organic cereals were relatively low. Compared to the farmer prices in the year 2000 (see Hamm et al. 2002, p. 85), it is striking that price differences for organic cereals between neighbouring countries have somewhat declined. The organic cereal market seems to have become more transparent over the years. However, price differences within a country as well as between countries is not only to be explained by the degree of market

transparency but can also be based on different products (for example wheat and rye), on different qualities (for example high protein and low protein wheat), or on special preferences of buyers for domestically produced cereals. The difference between the average farmer prices for cereals in Denmark and Sweden can, for example, be explained by the different structure of cereal production in these countries. For organic wheat, which is more important in Denmark than in Sweden, higher prices were achieved than for organic oats which have a high importance in Sweden.

In Figure 5-8 the organic farmer price premiums for cereals are shown for 2001. The EU average price premium for organic cereals was 101 percent but it varied considerably from 19 percent in Italy to 189 in the Netherlands. Compared with the organic farmer prices for cereals (see Figure 5-7), where nine of the fifteen EU countries were within the range of 20 percent above or below the EU average, Figure 5-8 shows that the variation of the farmer price premiums was much larger due to a larger variation of conventional cereal prices between countries.

Figure 5-8 Farmer price premiums for organic over conventional cereal prices in percent in 2001



Huge differences of price premiums for organic cereals existed even between neighbouring countries, for example, Denmark and Sweden. The reasons for this are the above mentioned differences in the structure of cereal production and the competitive advantages of organic cereal cultivation in Sweden compared with Denmark. The cereal production in Denmark is more intensive than in Sweden due to better soil and climatic conditions. Therefore, the difference in yields between organic and conventional cereal production is stronger in Denmark than in Sweden. This means that on the one hand Swedish farmers do not have much higher production costs when they convert their cereal production from extensive production to certified organic production, and in addition they get government support. Thus, they have competitive advantages for a conversion to organic cereal production to Danish farmers leading to lower price premiums for Swedish organic cereals.

It is striking that the price premium for organic cereals in Italy was reported with very low 19 percent. The reason for this simply was that organic durum wheat did not "offer the same technological performance features as its conventional counterpart", i.e. it was characterised by a lower protein and gluten content (Pinton 2004, p. 2). As the largest part of the Italian organic cereal production consisted of organic durum wheat, it is not astonishing that only a low average price premium was achieved. This shows that more research is necessary how to increase the quality of organic durum wheat. As for conventional durum wheat higher prices are achieved than for conventional common wheat, an increase of the organic durum wheat quality could strongly improve the income situation of the organic producers.

Why did the farmer price premiums for organic cereals in 2001 differ that much between the investigated countries? In order to find an explanation, the percentage of cereals which had to be sold on the conventional market was studied. The hypothesis was: The farmer price premium for organic cereals is influenced negatively by a high percentage of organic cereals sold on the conventional market. This was assumed as for organic cereals which are not labelled as organic in the shops, no price premium is obtained. The hypothesis was tested by simple regression analysis. The result was a low r^2 of 0.08 with the F- and T-value not being significant at the 0.1 level. However, the standard coefficient for "cereals sold on the conventional market" was negative (-0.29) supporting the assumed negative association between the two variables.

In order to analyse **consumer prices**, three main cereal products were investigated. As Table 5-2 illustrates, prices were collected for wheat flour, muesli and wheat bread. Looking at the prices for wheat flour, it is obvious that this product is much cheaper than the two other cereal products which have a higher degree of processing. It is a general rule that a product becomes more expensive, the more it is processed.

Table 5-2 Consumer prices for organic cereal products in €/kg in 2001

Country	Wheat flour	Muesli	Wheat bread
EU countries			
AT	1.27	4.80 ▼	3.67 ▲
BE	1.39	5.08 ▼	2.59
DE	1.25 [1]	4.85 ▼	3.27 ▲
DK	1.01	4.00 ▼	3.22 ▲
ES	nd	nd	nd
FI	1.30	5.21	4.88 ▲
FR	1.40	6.00	2.40
GR	2.05 ▲	8.80 ▲	1.61 ▼
IE	1.40	7.59	4.32 ▲
IT	1.27	8.96 ▲	1.69 ▼
LU	1.96 ▲	5.75	3.52 ▲
NL	nd	3.15 ▼	2.11
PT	1.35	7.92 ▲	2.12
SE	0.73 ▼	3.44 ▼	3.33 ▲
UK	1.22	5.45	2.18
Weighted EU average[2]	**1.23**	**6.38**	**2.55**
Accession countries			
CZ	0.50	2.95	1.18
SI	0.53	nd	1.59
EFTA countries			
CH	2.47	5.25	3.51
NO	1.89	7.69	4.31

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Muesli was disproportionately expensive in countries in Southern Europe, such as Greece, Italy and Portugal. In contrast, in countries where more muesli is usually consumed, such as Austria, Belgium, Germany, Denmark, the Netherlands and Sweden, the muesli price was low. The highest price for wheat bread was in Finland at 4.88 €/kg, although the Finnish price for wheat flour was average when compared to other EU countries. The Greek price for wheat bread was suspiciously low at just 1.61 €/kg. As one would expect, the consumer prices for wheat bread were relatively high in countries with high labour costs, such as in all Scandinavian countries, Luxembourg, Austria and Germany. It comes as no surprise to note that the prices in the Accession countries were much lower than the EU average because of lower levels of farmer prices for organic cereals, and lower incomes compared to the EU average. The price level of the EFTA countries is usually higher than the EU average, which

aligns with the data collected. However, the muesli price in Switzerland, the home country of mueslis, was lower than the EU average.

Table 5-3 shows the **consumer price premiums** of the three investigated cereal products. The price premium for these cereal products was around 60 percent in the EU. What can be seen at a quick glance is that price premiums differed in a wide range for all cereal products between the countries.

Table 5-3 Consumer price premiums for organic cereal products in percent in 2001

Country	Wheat flour	Muesli	Wheat bread
EU			
AT	72	0 ▼	62
BE	61	97 ▲	37 ▼
DE	102 [1] ▲	95 ▲	33 ▼
DK	48 [2] ▼	154 ▲	47 [2] ▼
ES	nd	nd	nd
FI	54 ▼	63	53
FR	50 ▼	19 ▼	33 ▼
GR	180 ▲	9 ▼	83 ▲
IE	127 ▲	122 ▲	26 ▼
IT	82	39 ▼	98 ▲
LU	182 ▲	16 ▼	84 ▲
NL	nd	102 ▲	45 ▼
PT	108 ▲	15 ▼	79 ▲
SE	68	17 ▼	6 ▼
UK	33 ▼	43 ▼	60
Weighted EU average[3]	**75**	**57**	**61**
Accession countries			
CZ	99	43	185
SI	30	nd	33
EFTA countries			
CH	115	46	80
NO	100	109	140

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Organic Today, figure from 1999
[3] Weighted by organic consumption

Concerning the weighted EU averages for the different products it was expected that the farmer price premium for cereals (see Figure 5-8, EU average, 101 percent) would be higher than the consumer price premium for processed cereal products. This was confirmed by the results. The consumer price premium for the low processed product wheat flour was 75 percent and for the both more processed products muesli and wheat bread it was even lower with around 60 percent. This supports the general rule that for highly processed products, such as wheat bread, the costs for the organic raw material (wheat) do not play as dominating a role as for the less processed good (wheat flour).

5.2 The organic potato market

5.2.1 General notes about the total potato market in 2001

In this chapter the total (organic plus conventional) potato sector in the EU in the year 2001 is characterised, focusing on the main facts concerning production, consumption and foreign trade. The figures on the total potato market are taken from the Eurostat online database (Eurostat 2007)[1].

The year 2001 was characterised by a below average potato production in the EU. The useable production in the EU countries amounted to 44 million tonnes, which was 8.6 percent less than in the year 2000. The marketing years 1999/00 as well as 2000/01 were both affected by a large EU production of potatoes. In these years the useable production in the EU accounted for around 48 million tonnes. Because of the surplus situation - and therewith low producer prices - in these two years, the production area decreased, which partwise explains the lower supply in the year 2001. In addition, unfavourable weather conditions in some parts of the EU - with wet soil and low temperatures at the plantation period - led to low yields. Especially affected were the Netherlands, Belgium and Germany with yields up to 10 percent below those of the year 2000 (Uhlmann 2002, p. 33).

As in the years before, the main potato producing countries in 2001 were Germany, the Netherlands, the United Kingdom and France. In 2001 the German potato production accounted for 25 percent of the total EU potato production. The three other countries each produced around 15 percent of the entire EU production. Thus, 70 percent of the total useable potato production of the EU came from these four countries. Therefore, the above mentioned yield cuts in Germany and the Netherlands in 2001 had a strong influence on the total EU production. As a consequence of the low production, the producer price level in the EU in 2001 was higher than in the year 2000 (Uhlmann 2002, p.33).

The EU countries with the largest gross human consumption of potatoes in 2001 were the United Kingdom, Germany and Spain, followed by France and Italy (Eurostat 2007). Compared to the most important potato producing countries in the EU, Spain and Italy stood out because of their high potato consumption which is not covered by their domestic production. In both countries the climate is too dry during summer for growing potatoes successfully. Their potato production is mainly limited to early potatoes.

In some countries, the conventional domestic consumption of potatoes resulted not only from human consumption. Large quantities were used in industry or as animal fodder. Industrial use was especially high in Denmark and the Netherlands with more than 50 percent of the domestic consumption (calculation based on: BMVEL 2005, p. 479).

Big differences exist concerning the per capita consumption of potatoes among the EU countries. In 2001, each EU inhabitant ate on average 71 kg of potatoes (Eurostat 2007). The leading countries were Ireland and the United Kingdom with 126 and 102 kg potato consumption per capita, respectively. The lowest potato consumption was surveyed in Italy

[1] When looking up figures in the Eurostat database regarding the total (organic plus conventional) potato market in 2001, it is important to note that figures related to the marketing year 2001/2002 are listed under the heading "2002". These figures include all potatoes which were harvested within the calendar year 2001.

and in France, each with around 45 kg per capita. Comparing the southern European countries, two groups exist. Italy and France with their low potato consumption; and in contrast, the countries Greece, Spain and Portugal with an above average potato consumption, each with around 90 kg per capita. The high potato consumption in Spain and Portugal does not astonish as the potato plant was first brought to these countries from South America - where potatoes originally came from - by Spanish sailors in the 16th century. However, a second way of dissemination through Ireland and the United Kingdom existed in the 17th century. Thus, a long tradition of potato eating habits exists in Ireland and in the United Kingdom, as well, and may explain the extraordinary high per capita consumption in those countries. The gross human potato consumption in the EU in 2001 was 27 million tonnes, about one million tonnes lower than in the year before. The per capita consumption decreased from 75 kg in the year 2000 to 71 kg in 2001. One explanation may be found in the increased awareness for the acrylamide content of some potato products (see Uhlmann 2003, p. 41)[1].

Foreign trade with potatoes in general is limited, since potatoes are heavy and transportation is rather expensive. When potatoes are traded between countries, this concerns mostly early potatoes which are in short supply in northern European countries. The main countries of origin for early potatoes are the southern European countries as well as some third countries as Morocco and Egypt. In summer, certain amounts of potatoes are exported from northern European countries to southern European countries as, for example, to Spain, Portugal and Italy. In these countries the climate in summer is too dry for growing potatoes.

5.2.2 Supply balance for organic potatoes

As shown in Table 5-1 in the EU well 300,000 tonnes of organic potatoes were harvested in the year 2001. Eight percent of this produce was used on farm, for example as seed potatoes. 96 percent of the total organic sales were sold on the organic market with a price premium over the conventional price. These sales as organic amounted to 280,000 tonnes. As potatoes are rather heavy, their transport is expensive and, therefore, the foreign trade is limited. Thus, only 40,000 tonnes of organic potatoes were imported and 30,000 tonnes were exported, which led to an organic consumption of 290,000 tonnes. By dividing the sales as organic by the organic consumption, a degree of self-sufficiency of 97 percent was calculated for the EU in the year 2001.

[1] In spring 2002 high concentrations of acrylamide were discovered by Swedish scientists in French fries as well as in chips. It was found out during animal experiments that acrylamide acts carcinogenically. This might be a reason for the surplus situation of potatoes for processing at the end of the marketing year 2001/02.

Table 5-4 Supply balance for organic potatoes in 2001

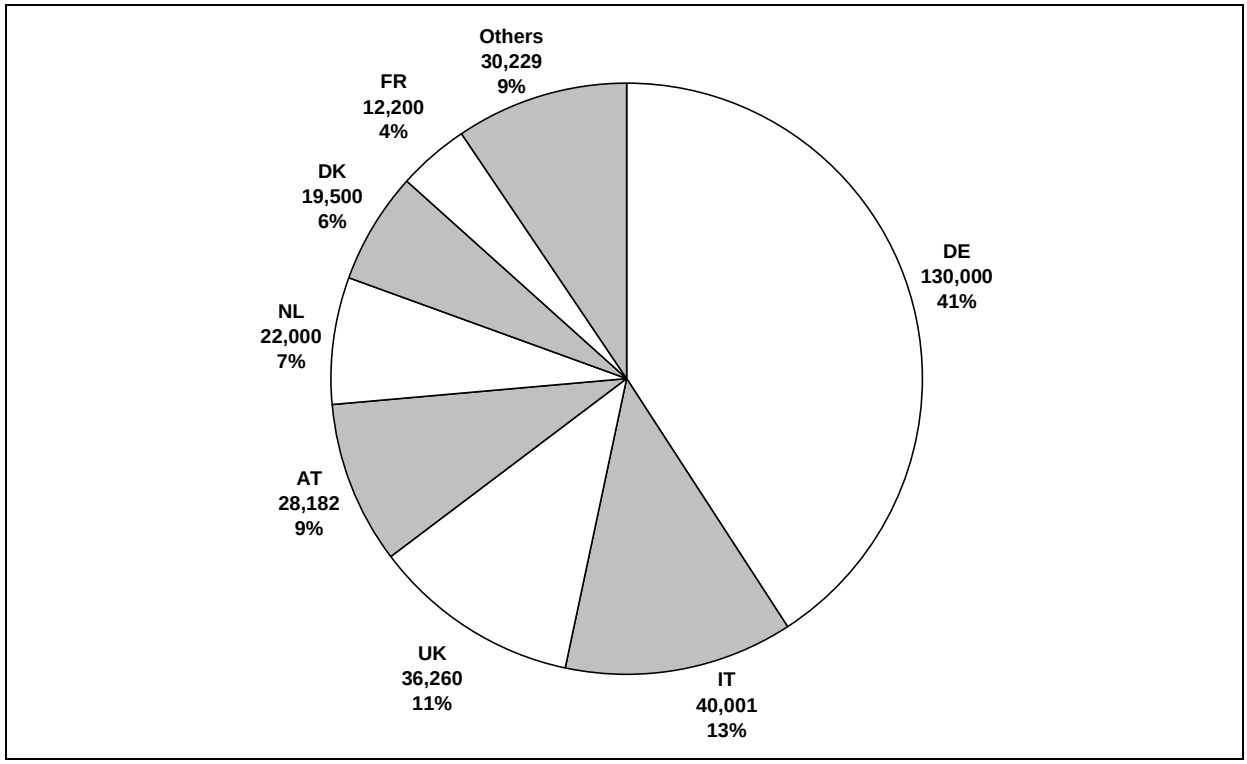
	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	28,182	3	845	27,337	93	25,423	800	5,000	21,223	120	AT
BE	4,250	4	180	4,070	100	4,070	4,090	930	7,230	56	BE
DE	130,000	8	10,400	119,600	97	116,012	10,000	15,000	111,012	105	DE
DK	19,500	2	300	19,200	100	19,200	1,000	2,000	18,200	105	DK
ES	3,947	10	395	3,552	100	3,552	2,000	2,000	3,552	100	ES
FI	8,798	20	1,760	7,038	99	6,968	1,000	0	7,968	87	FI
FR	12,200	0	0	12,200	100	12,200	2,500	0	14,700	83	FR
GR	134	1	1	133	98	131	0	0	131	100	GR
IE	1,640	5	82	1,558	100	1,558	1,000	-	2,558	61	IE
IT	40,001	7	2,800	37,201	94	35,150	1,000	5,000	31,150	113	IT
LU	325	10	32	293	100	293	77	-	370	79	LU
NL	22,000	23	5,133	16,867	100	16,867	1,000	1,000	16,867	100	NL
PT	2,635	11	290	2,345	100	2,345	0	700	1,645	143	PT
SE	8,500	0	0	8,500	100	8,500	143	128	8,515	100	SE
UK	36,260	5	1,750	34,510	85	29,500	15,083	-	44,583	66	UK
EU-15	**318,372**	**8**	**23,968**	**294,404**	**96**	**281,769**	**39,693**	**31,758**	**289,704**	**97**	**EU-15**
CZ	1,900	10	190	1,710	100	1,710	0	/	1,710	100	CZ
SI	700	66	460	240	100	240	nd	/	240	100	SI
CH	11,000	15	1,650	9,350	100	9,350	198	/	9,548	98	CH
NO	2,880	31	882	1,998	100	1,998	800	/	2,798	71	NO

5.2.3 Organic potato production

In the chapter before, the organic potato production in the year 2001 was indicated with well-over 300,000 tonnes. Which countries were dominating the organic potato production in the EU? As shown in Figure 5-9, in Germany more than 40 percent of all organic potatoes of the EU were grown in 2001. Other countries with a considerable production of organic potatoes were Italy, the United Kingdom and Austria.

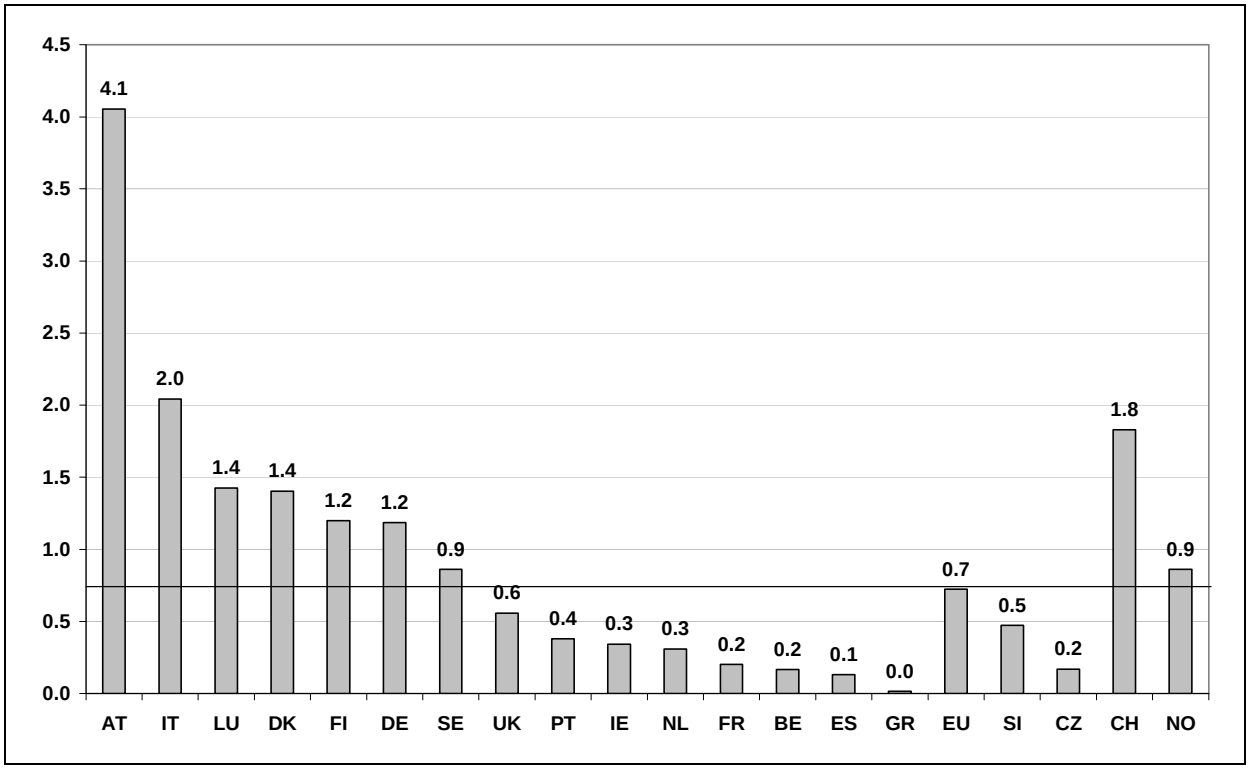
Compared to the total (organic plus conventional) potato sector, it is striking that the Netherlands and France, both large volume producers of conventional potatoes, did not play the same important role concerning their organic potato sectors (compare Eurostat 2007). The Netherlands were the second largest producer of total potatoes in 2001, but regarding their organic potato production, they only reached place five. In Austria, more organic potatoes were produced than in the Netherlands, although the total potato production of the Netherlands exceeded that of Austria by almost 12 times. This shows that a strong conventional sector for a product does not seem to be the necessary precondition for a large organic supply of the same product in that country. This phenomenon was already observed concerning the different importance of the organic cereal sector compared to the conventional cereal sector in France (see chapter 5.1).

Figure 5-9 Organic potato production of the EU countries in tonnes in 2001



In order to show the importance of the organic potato production in the individual countries, the organic production was related to the respective total potato production. These organic production shares are presented in Figure 5-10. The data for the total potato production were taken from the Eurostat online database (Eurostat 2007). As in this database no data on the potato production of Switzerland and Norway were available, figures from OMIaRD partners were used.

Figure 5-10 Organic share of total potato production in percent in 2001



Whereas Germany was the leading country concerning its absolute production volume of organic potatoes, its organic share of total potato production was less impressive in 2001. With an organic production share of 1.2 percent it is, however, one of the countries with an above average organic production share. Regarding the total potato market, Germany was responsible for 25 percent of the total potato production in the EU. Thus, even if Germany was the largest producer of organic potatoes among all EU countries, its organic production amount appears relatively low measured by the dominating role of Germany's conventional potato sector.

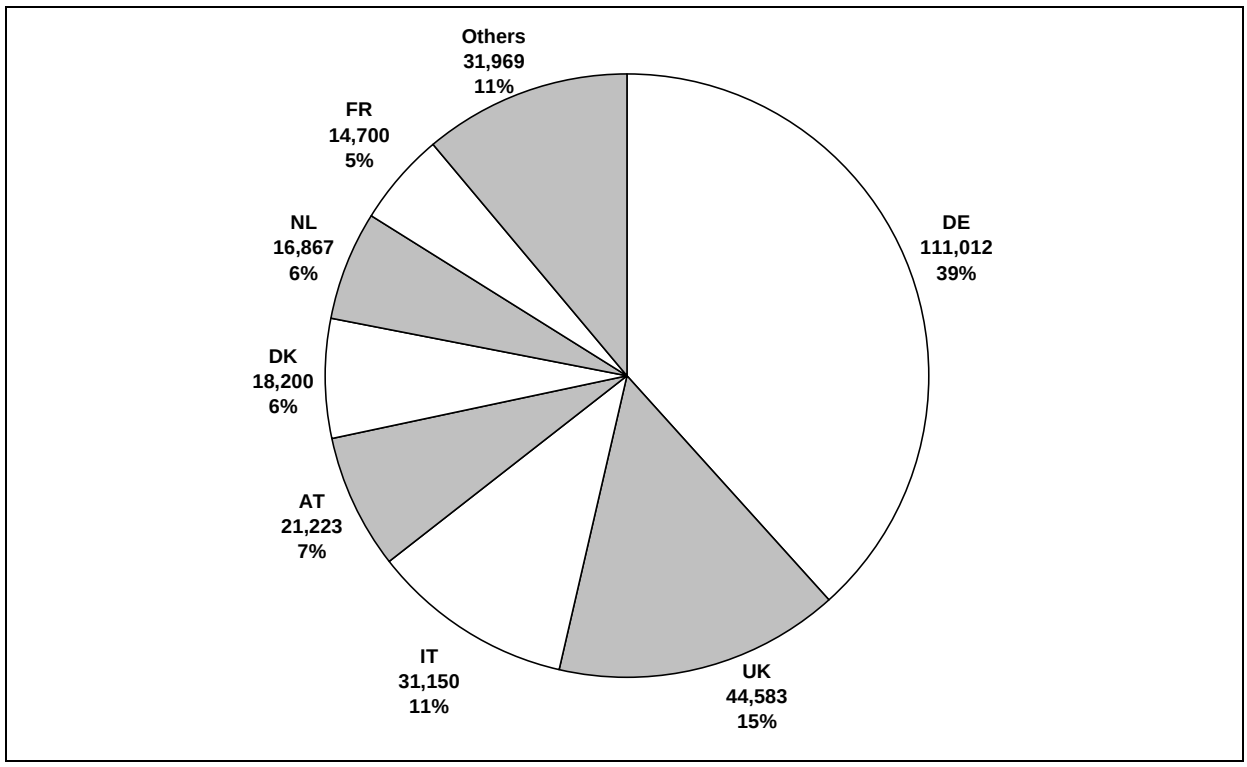
Austria was the country with the highest importance of its organic potato production measured by the country's total potato production. With 4.1 percent the organic production share exceeded the EU average by almost six times. Other countries with relatively high organic production shares were Italy and the EFTA country Switzerland.

5.2.4 Organic potato consumption

Most organic potatoes were consumed in Germany, the United Kingdom and Italy in 2001 (see Figure 5-11). The volumes of the organic potato consumption reflected in most countries the pattern of organic production levels. The reason for this is to be found in the limited foreign trade with organic potatoes. One exception was the United Kingdom which reported a clearly larger organic consumption than organic production of potatoes. This was due to significant imports. In 2001, demand was much higher in the United Kingdom than supply.

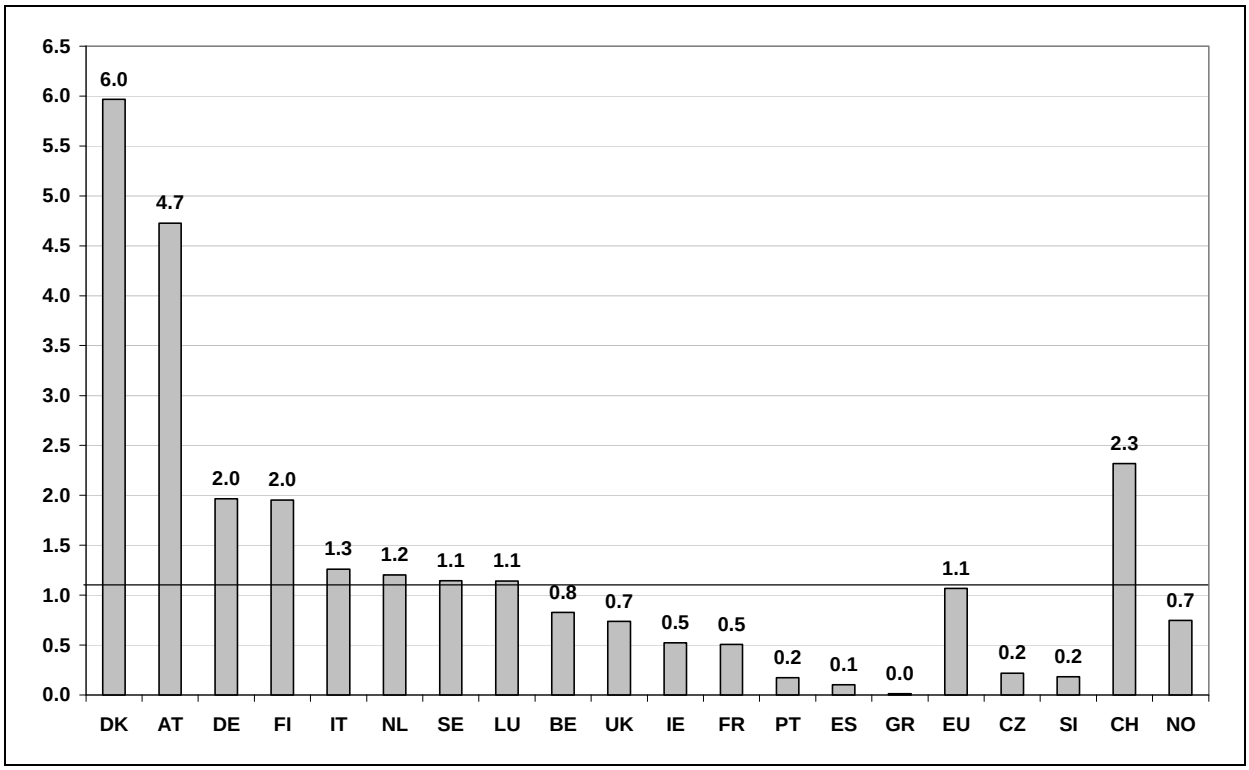
Regarding the total potato market, most potatoes were consumed in the United Kingdom in 2001, followed by Germany. Spain and France were also large volume consumers of (organic plus conventional) potatoes, which was not reflected to the same extent by their organic potato consumption.

Figure 5-11 Organic potato consumption of the EU countries in tonnes in 2001



As presented in Figure 5-12, Denmark and Austria reported by far the highest organic shares of their total potato consumption. In Denmark, this percentage exceeded the EU average six times. Both countries were characterised by a low total potato consumption measured by their total potato production. Thus, the organic consumption volumes carried more weight than in countries with high total potato consumption. In Denmark a strong discrepancy between the organic production share and the organic consumption share for potatoes was observed. As shown in Figure 5-10, the organic production share was only 1.4 percent but the organic consumption share was reported with high 6.0 percent. This was because of the large total potato production, which was 4.5 times higher than the total potato consumption in Denmark. As in the Danish organic potato sector foreign trade did not take place as much as in the conventional sector, there was no big difference in organic production and organic consumption. Thus, most of the organic potatoes grown in Denmark were also consumed in Denmark. Other countries clearly exceeding the EU average of 1.1 percent were Switzerland, Germany and Finland.

Figure 5-12 Organic share of total potato consumption in percent in 2001



In general, big differences between the EU countries were observed concerning their amounts of consumed potatoes. This can best be studied by comparing the gross human consumption per capita of the individual countries. For the total (organic plus conventional) potato consumption these figures are published by Eurostat (2007). The total potato consumption amounted for 71 kg per capita in 2001. Ireland with 126 kg/head and the United Kingdom with 102 kg/head were the leading countries concerning their total potato consumption per capita. For comparison, the organic human consumption per capita was calculated by dividing the organic human potato consumption of the 15 EU countries by the number of inhabitants of these countries in 2001. This led to a weighted EU average organic potato consumption of 0.8 kg/head. It is striking that in Ireland and in the United Kingdom the per capita consumption of organic potatoes was only 0.7 and 0.8 kg/head, respectively, although these countries reported the highest total potato consumption per capita in the EU (Eurostat 2007).

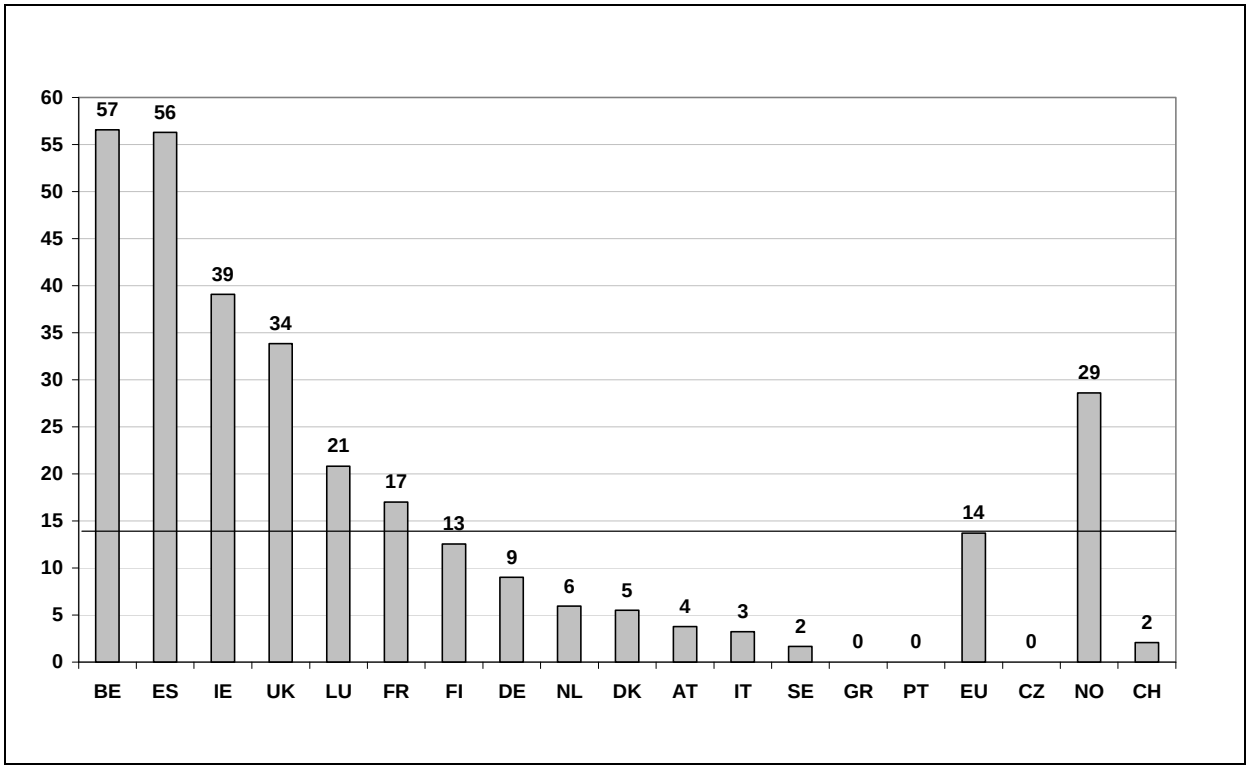
Another interesting fact is that Denmark and Austria, which were the leading countries concerning their per capita consumption of organic potatoes in 2001, with 3.4 and 2.6 kg/head, respectively, both reported a rather low total (organic plus conventional) potato consumption per capita with around 55 kg/head. These examples show that the extent of the organic potato consumption in a country is not necessarily influenced by the general eating habits regarding potatoes in the same country.

5.2.5 Foreign trade with organic potatoes

With respect to imports of organic potatoes, it is striking that the volumes which were sold between countries were rather low. The main reason for this is that potatoes have an unfavourable weight/value relation. As they are heavy, transport costs are relatively high compared to the relative low price which is achieved for potatoes. The only two countries which reported considerable import amounts of organic potatoes were the United Kingdom with around 15,000 tonnes, followed by Germany with 10,000 tonnes. These imports referred mainly to early potatoes from southern European countries.

In Figure 5-13 the imports of organic potatoes are presented as a share of the organic potato consumption in 2001. Compared to other plant product categories, imports did not make up as large a share of potato consumption. This trend was similar to patterns of trade in conventional potatoes.

Figure 5-13 Imports of organic potatoes as a share of the organic potato consumption in percent in 2001

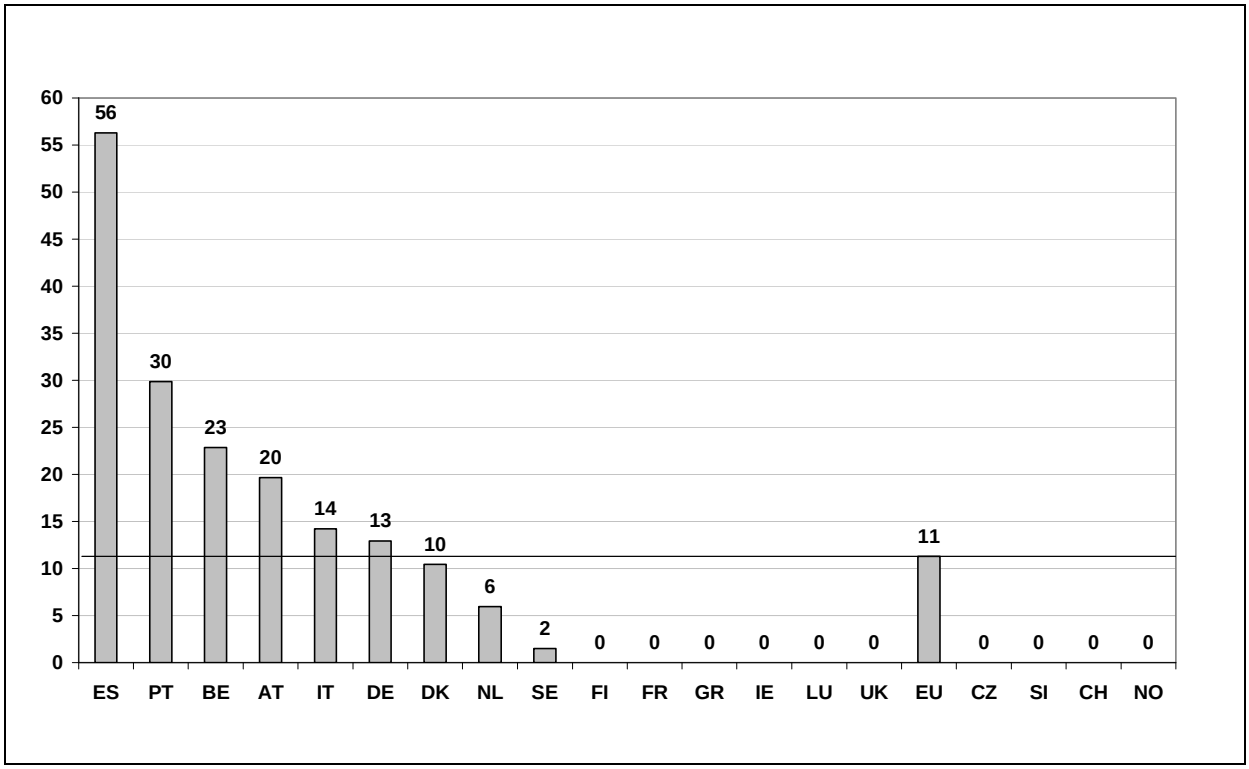


The quite high import share for Spain is based upon a lack of production of late potatoes due to low rainfall in summer in this country. Besides Belgium, Ireland and the United Kingdom were the countries importing the largest percentages of potatoes measured by organic

consumption. Countries characterised by a high organic share of their potato consumption, as Denmark and Austria (see Figure 5-12), reported very low import shares measured by their organic potato consumption. Thus, they were able to produce enough organic potatoes themselves to meet the domestic demand.

Germany was, in volume terms, the country exporting the largest amount of organic potatoes in 2001, followed by Austria and Italy. Analysing the organic exports measured by the domestic sales as organic, given in Figure 5-14, it is interesting that in Spain the organic export share is the same as the organic import share or 56 percent. What looks strange at a first glance is explained by the fact that the organic exports of Spain mainly refer to early potatoes sold to countries where potatoes are harvested later than in the warm Spanish climate. A similar trend was observed for Portugal which took second place with its organic export share of 30 percent.

Figure 5-14 Exports of organic potatoes as a share of the sales as organic potatoes in percent in 2001



In ten of the 19 surveyed countries almost no organic potatoes were exported. This underpins the fact that foreign trade with potatoes is rather uneconomic.

The entire EU was a net importer of organic potatoes in the year 2001. The imports from outside the EU came mainly from Israel, Egypt and Cyprus.

5.2.6 Balance between supply and demand of organic potatoes

For organic potatoes three countries had degrees of self-sufficiency clearly above 100 percent. These were Austria, Italy and Portugal. The two latter countries are important export countries for organic early potatoes. Spain, which had an even higher export share for organic

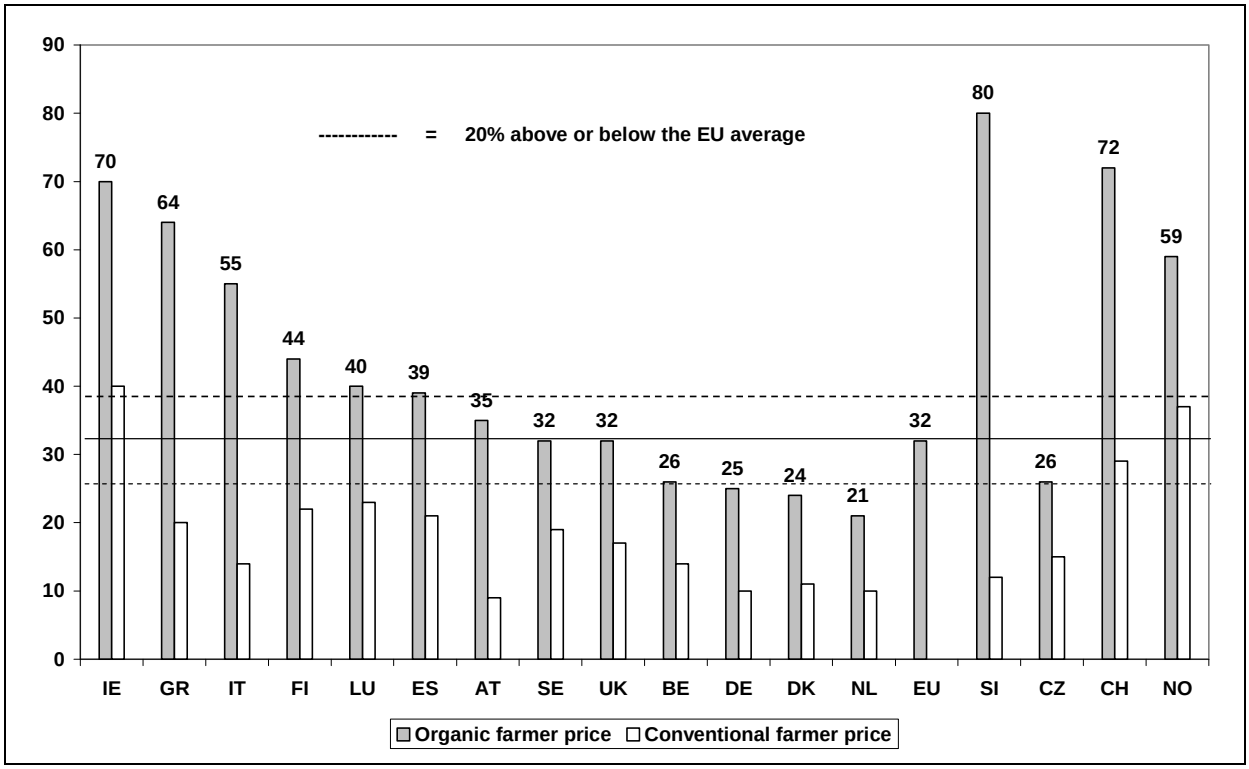
potatoes, reported a degree of self-sufficiency of exactly 100 percent. Behind this figure, however, is an import share which is exactly the same as the export share, that is to say 56 percent. Due to this, the degree of self-sufficiency pretends that Spain is self-sufficient with organic potatoes the whole year round. However, in late summer, Spain has to import potatoes from other countries because its climate is too dry then for growing potatoes. Comparing the degrees of self-sufficiency for organic potatoes between the investigated countries, it is obvious that eleven of the 19 surveyed countries were self-sufficient for organic potatoes in 2001 (see Table 5-4). This was also reflected in a high weighted EU average of 97 percent. Only few countries reported very low degrees of self-sufficiency. These were Belgium, Ireland and the United Kingdom with around 60 percent.

In addition to the degree of self-sufficiency, it was surveyed if there were shortfalls for organic potatoes in the years 2001 and 2002. Supply deficits were reported by experts from France, Greece, Sweden, Slovenia and Norway. Interestingly, in Greece, Sweden and Slovenia degrees of self-sufficiency of 100 percent were reported. This can be explained by seasonal shortfalls. Expected supply deficits for the years 2003 and 2004 were named by experts from Germany, Sweden and Slovenia. In Germany, organic potatoes were started to be sold in general food shops which may explain a stronger demand than in the years before.

5.2.7 Prices for organic potatoes

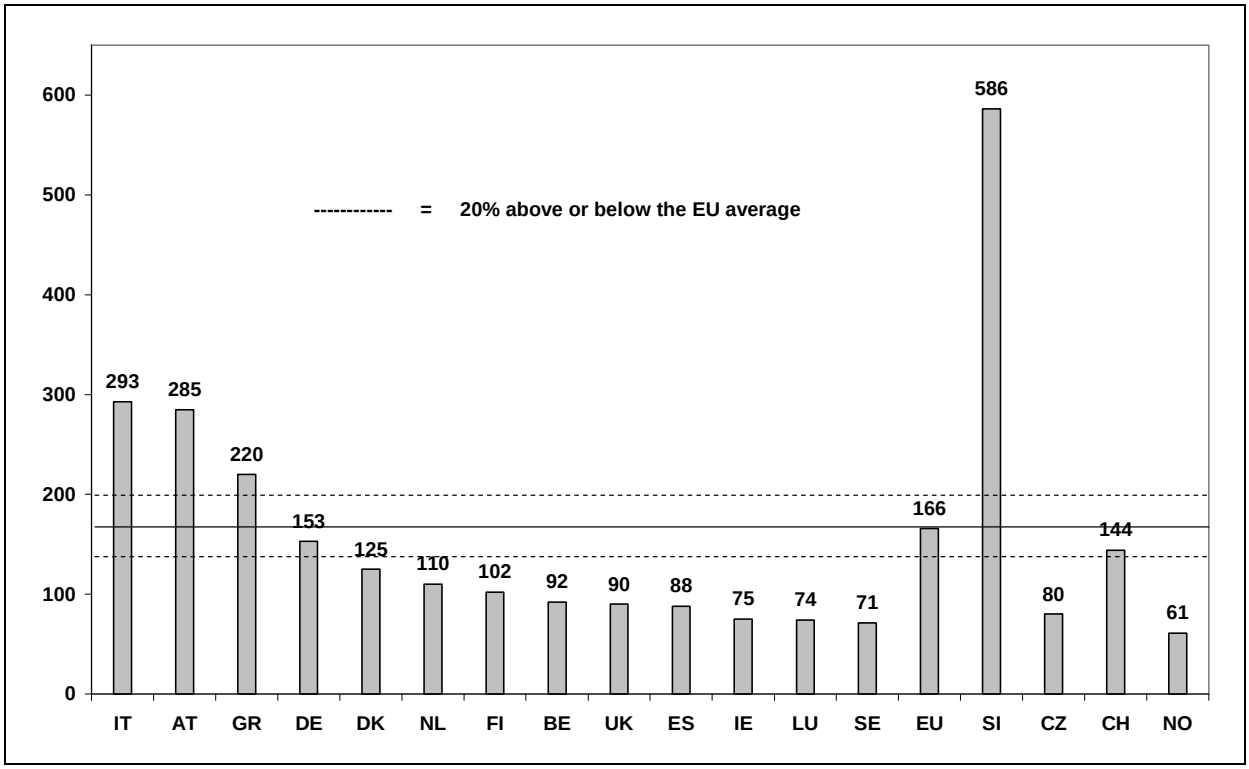
Farmer prices for organic potatoes are presented in Figure 5-15. All investigated countries reported farmer prices with the exception of France and Portugal. Ireland was the EU country with the highest farmer price. This might be explained by the fact that Ireland strongly relies on imports of organic potatoes. The degree of self-sufficiency for organic potatoes was only 61 percent in 2001. However, in the United Kingdom the degree of self-sufficiency was similarly low; nevertheless the farmer price reported from this country was much lower than that surveyed in Ireland. It is striking that the southern European countries Spain, Greece and Italy reported farmer prices more than 20 percent above the EU average of 32 €/100 kg. In these countries, a broad part of potato production was early potatoes which were sold at higher prices than late potatoes. Farmer prices more than 20 percent below the EU average were reported from Germany, Denmark and the Netherlands which are typical potato producing and consuming countries. Germany and Denmark were net exporters for organic potatoes in 2001.

Figure 5-15 Farmer prices for organic and conventional potatoes in €/100 kg in 2001



The **farmer price premiums** for organic potatoes are shown in Figure 5-16. The lowest price premiums were obtained by Sweden, Luxembourg and Ireland with 71 to 75 percent, whereas the highest price premiums were registered in Slovenia, where 100 percent of the domestic organic potato production was sold directly to consumers, and in Italy and Austria with nearly 300 percent. In 2001, the same EU average farmer price for organic potatoes, 32 €/100kg, was obtained as in the year 2000. However, in the year 2000 there was an above average harvest of potatoes and therefore the conventional potato prices were extremely low. This led to a high price premium for organic potatoes over conventional potatoes of 257 percent. In contrast to the conventional price for potatoes, the organic price does not vary much from year to year, regardless of whether it was an extremely good or bad harvest. In 2001 the total potato harvest of the EU was only 88 percent of the EU harvest in 2000. Therefore farmer prices for conventional potatoes were clearly higher than in 2000 and this translated into the lower price premium for organic potatoes in 2001 in comparison to 2000.

Figure 5-16 Farmer price premiums for organic over conventional potato prices in percent in 2001



In Table 5-5 the **consumer prices** for organic potatoes in the year 2001 are presented. The EU average price for potatoes was 1.44 €/kg. Organic potatoes were the most expensive in Denmark and the United Kingdom. In Finland, the Netherlands and Sweden potatoes were more than 20 percent cheaper than the EU average price. Comparing organic farmer and consumer prices, it does not necessarily follow that in a country with high farmer prices the consumer price would also be above the EU average price. In Finland, for example, the opposite occurred. Finnish organic potatoes were the cheapest in the entire EU in 2001 despite high organic producer prices.

Table 5-5 Consumer prices for organic potatoes in €/kg in 2001

Country	**Potatoes**
EU countries	
AT	1.28
BE	1.56
DE	1.27 [1]
DK	1.74 ▲
ES	nd
FI	0.91 ▼
FR	1.60
GR	1.17
IE	1.69
IT	1.58
LU	1.39
NL	1.13 ▼
PT	1.46
SE	0.97 ▼
UK	1.87 ▲
Weighted EU average[2]	**1.44**
Accession countries	
CZ	0.44
SI	0.18
EFTA countries	
CH	2.42
NO	2.46

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Table 5-6 shows the **consumer price premiums** for organic over conventional potato prices. On average, organic potatoes were almost twice as expensive as conventional potatoes in the fifteen EU countries in 2001. However, the surveyed values for the individual countries showed a large variation from one percent in the United Kingdom up to 273 percent in the Netherlands.

Table 5-6 Consumer price premiums for organic potatoes in percent in 2001

Country	Potatoes
EU countries	
AT	34 ▼
BE	105
DE	143 [1] ▲
DK	13 ▼
ES	nd
FI	99
FR	61 ▼
GR	122 ▲
IE	11 ▼
IT	54 ▼
LU	64 ▼
NL	273 ▲
PT	124 ▲
SE	71 ▼
UK	1 ▼
Weighted EU average[2]	**91**
Accession countries	
CZ	26
SI	33
EFTA countries	
CH	104
NO	39

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Especially low consumer price premiums for organic potatoes were surveyed in the United Kingdom, Ireland and Denmark. In the United Kingdom and in Ireland the import shares for both organic and conventional potatoes were high (see chapter 5.2.5 and BMVEL 2005, p. 479). Imported conventional potatoes were expensive due to the transport costs, and therefore it was not possible to sell organic potatoes with a high price premium. A large difference between the conventional and the organic consumer price of such a mass product would not have been accepted by consumers. A third reason influencing the price premiums of organic over conventional potato prices is the importance of different sales channels. In the United Kingdom, more than 70 percent of the organic potato sales refer to general food shops, where the price difference between organic and conventional products are in general lower than in other sales channels. Especially high consumer price premiums were reported from the

Netherlands, Germany, Portugal and Greece. In Germany, this can be explained by the fact that less than 40 percent of all organic potato sales fell upon general food shops, whereas the largest part was sold in organic food shops or directly from farmers. In Portugal and Greece the domestic sales of organic products were still very limited in 2001.

Looking at the consumer price premium for organic potatoes in Finland, this was slightly above the EU average price premium. In Table 5-5 a very low consumer price for Finnish organic potatoes was presented. Although this price was the lowest among all EU countries, it was still twice as high as the price for conventional potatoes in Finland. Therefore, the low consumer price for organic potatoes in Finland can be seen as a consequence of very low consumer prices for conventional potatoes in this country. If Finnish organic potatoes were more expensive, the difference to the conventional potato price would have been too large. The high organic price premium over the conventional price would have acted as a deterrent to consumers.

5.3 The organic vegetable market

5.3.1 General notes about the total vegetable market in 2001

The data about the total (organic plus conventional) vegetable market published by Eurostat (2009) are rather incomplete. Where data were not available from the Eurostat online database, those figures were used which were collected by partners within the OMIaRD project. The useable production of vegetables amounted to 49 million tonnes in the EU countries in the year 2001. By far the largest vegetable producers were Spain and Italy. Both countries together produced 50 percent of all vegetables in the EU. Other large volume producers were France, Greece, the Netherlands and Germany. Compared to the years before, the vegetable production was strongly reduced in 2001. From former years, especially the year 1999 was characterised by an extremely good vegetable harvest. In 2001, heavy rainfalls and low temperatures in spring hampered the sowings. In addition, September was rainy and cold. These unfavourable weather conditions particularly applied for the countries Belgium, the Netherlands and northern France. As a consequence of the low production volume, prices for vegetables were high in 2001 (ZMP 2002a, p. 193).

The gross human consumption in the EU in 2001 added up to almost 46 million tonnes. The countries with the largest vegetable consumption were Italy, Germany, Spain and France. The demand for deep frozen vegetables was higher in 2001 than in the year before. This was caused by the reduced supply of fresh vegetables, which led to high consumer prices. Therefore, many consumers preferred cheaper deep frozen vegetables (ZMP 2002a, p. 193). In general, an increasing vegetable consumption was reported compared to former years. In contrast to other food sectors, no scandals about the vegetable production were discussed in the media, whereas the positive image of vegetables was highlighted (Behr 2002, p. 87).

5.3.2 Supply balance for organic vegetables

In Table 5-7 the key data for the organic vegetable market in 2001 are presented. The EU production of organic vegetables added up to 740,000 tonnes. Only five percent of the production was used on farm. The market for organic vegetables was working well in the sense that most of the sales or 95 percent were sold as organic. In volume terms these sales amounted to 670,000 tonnes.

In 2001 the EU was a net importer for organic vegetables. The EU countries imported together 170,000 tonnes and they exported 130,000 tonnes. This led to an organic consumption in the EU of about 700,000 tonnes. From this, a weighted EU average degree of self-sufficiency of 95 percent was calculated for organic vegetables.

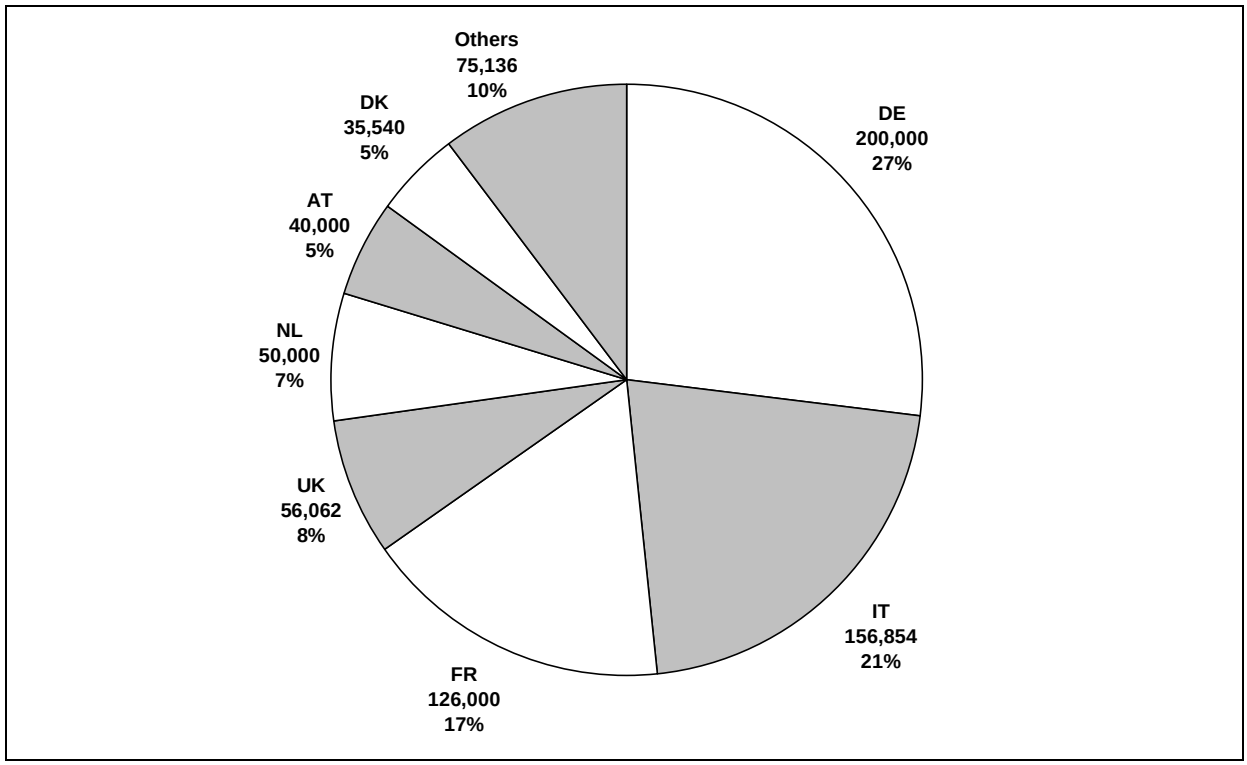
Table 5-7 Supply balance for organic vegetables in 2001

	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	40,000	0	0	40,000	100	40,000	12,000	2,000	50,000	80	AT
BE	10,300	0	0	10,300	97	9,991	13,000	14,400	8,591	116	BE
DE	200,000	3	6,000	194,000	95	184,300	40,000	10,000	214,300	86	DE
DK	35,540	0	0	35,540	100	35,540	1,100	1,700	34,940	102	DK
ES	22,365	2	447	21,918	90	19,726	1,000	15,000	5,726	344	ES
FI	5,572	10	557	5,015	99	4,965	60	/	5,025	99	FI
FR	126,000	0	0	126,000	100	126,000	30,000	10,000	146,000	86	FR
GR	6,150	1	62	6,088	98	5,967	400	2,000	4,367	137	GR
IE	6,609	30	1,983	4,626	100	4,626	1,200	/	5,826	79	IE
IT	156,854	6	10,000	146,854	89	130,000	15,000	31,000	114,000	114	IT
LU	275	5	14	261	100	261	1,247	/	1,508	17	LU
NL	50,000	0	0	50,000	100	50,000	23,000	46,750	26,250	190	NL
PT	5,865	11	645	5,220	100	5,220	155	30	5,345	98	PT
SE	18,000	0	0	18,000	100	18,000	1,142	43	19,099	94	SE
UK	56,062	30	16,819	39,243	90	35,280	29,351	/	64,631	55	UK
EU-15	**739,592**	**5**	**36,527**	**703,065**	**95**	**669,876**	**168,655**	**132,923**	**705,608**	**95**	**EU-15**
CZ	1,220	3	37	1,183	100	1,183	0	188	995	119	CZ
SI	268	45	120	148	78	115	nd	/	115	100	SI
CH	19,730	1	197	19,533	100	19,533	5,253	/	24,786	79	CH
NO	2,360	3	71	2,289	100	2,289	2,600	/	4,889	47	NO

5.3.3 Organic vegetable production

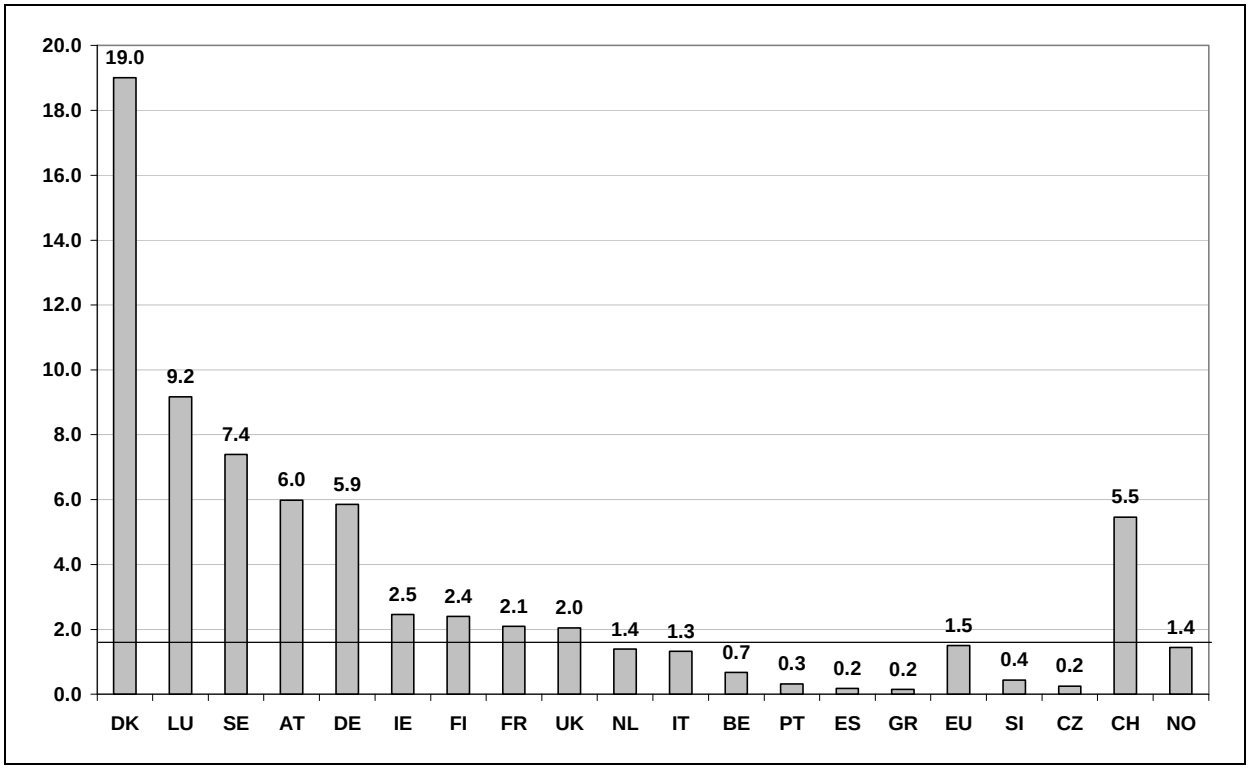
The organic vegetable production of the EU countries amounted to 740,000 tonnes in 2001. As illustrated in Figure 5-17 Germany, Italy and France were the main producers. Their production accounted for 65 percent of the total EU production. It is astonishing that Spain did not play the same dominating role within the organic vegetable sector as it played on the conventional vegetable market. As described in chapter 5.3.1, Spain was the main conventional vegetable producer together with Italy in 2001.

Figure 5-17 Organic vegetable production of the EU countries in tonnes in 2001



Several countries had quite a high percentage of their total vegetable production produced organically (see Figure 5-18). Denmark was the most significant with a high 19.0 percent of its vegetable production being organic, followed by Luxembourg, which reported 9.2 percent. These high percentages can in both cases be explained with the structure of the conventional production of the countries. Luxembourg and Denmark were countries with a comparatively low conventional vegetable production. Therefore the organic production carried much more weight than in countries with a large total vegetable production. Other countries with above five percent organic share of total vegetable production were Sweden, Austria and Germany, as well as Switzerland. As organic vegetables are one of the most important products in terms of consumers' demand, the comparatively high shares of total production are not amazing. Again, the extremely low organic production share of Spain is striking. Compared to the large conventional vegetable production, the organic production still seemed to have a very low importance in this country in 2001.

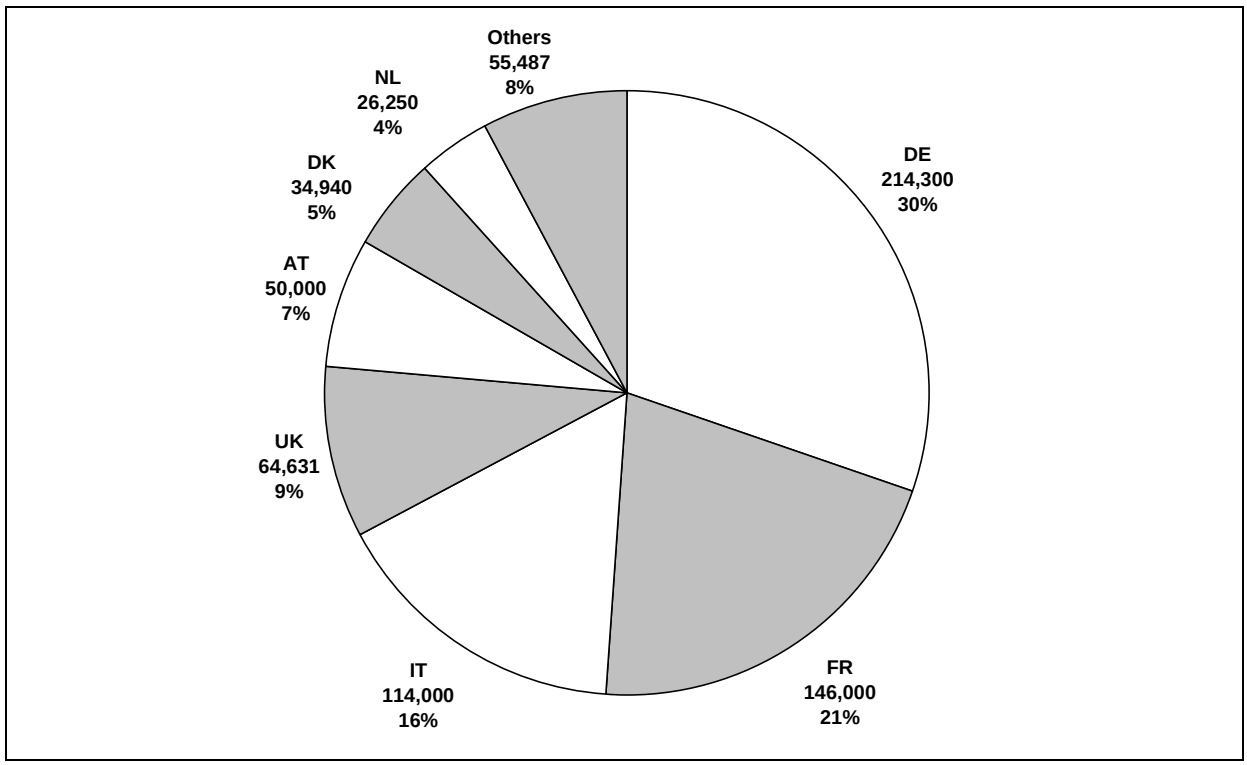
Figure 5-18 Organic share of total vegetable production in percent in 2001



5.3.4 Organic vegetable consumption

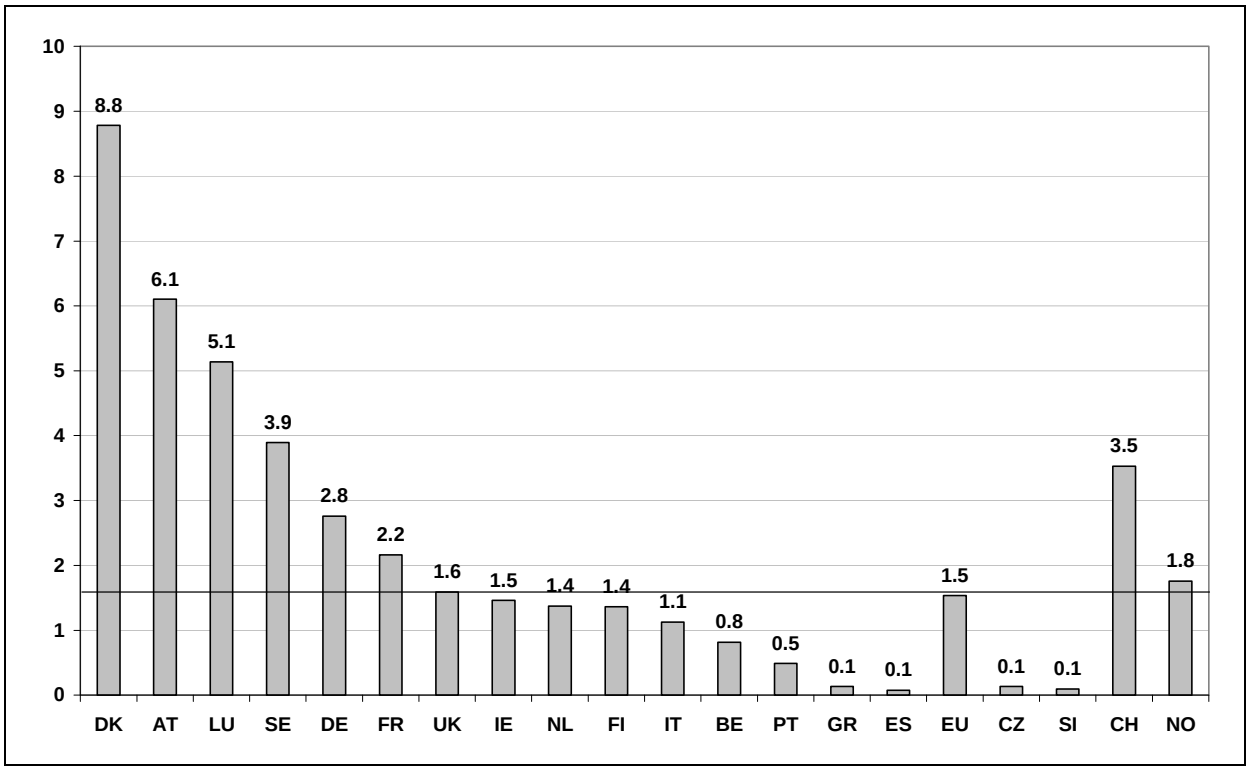
With respect to organic vegetable consumption, the three clear leaders were Germany, France and Italy, representing 67 percent of the organic consumption of vegetables in the EU (see Figure 5-19). These three countries were at the same time the main producers of organic vegetables in the EU in 2001. Other countries with large consumption volumes were the United Kingdom and Austria.

Figure 5-19 Organic vegetable consumption of the EU countries in tonnes in 2001



Concerning vegetables, Denmark, Austria and Luxembourg had the highest organic market shares by volume, all above five percent shown in Figure 5-20. These figures were significantly above the EU average of 1.5 percent.

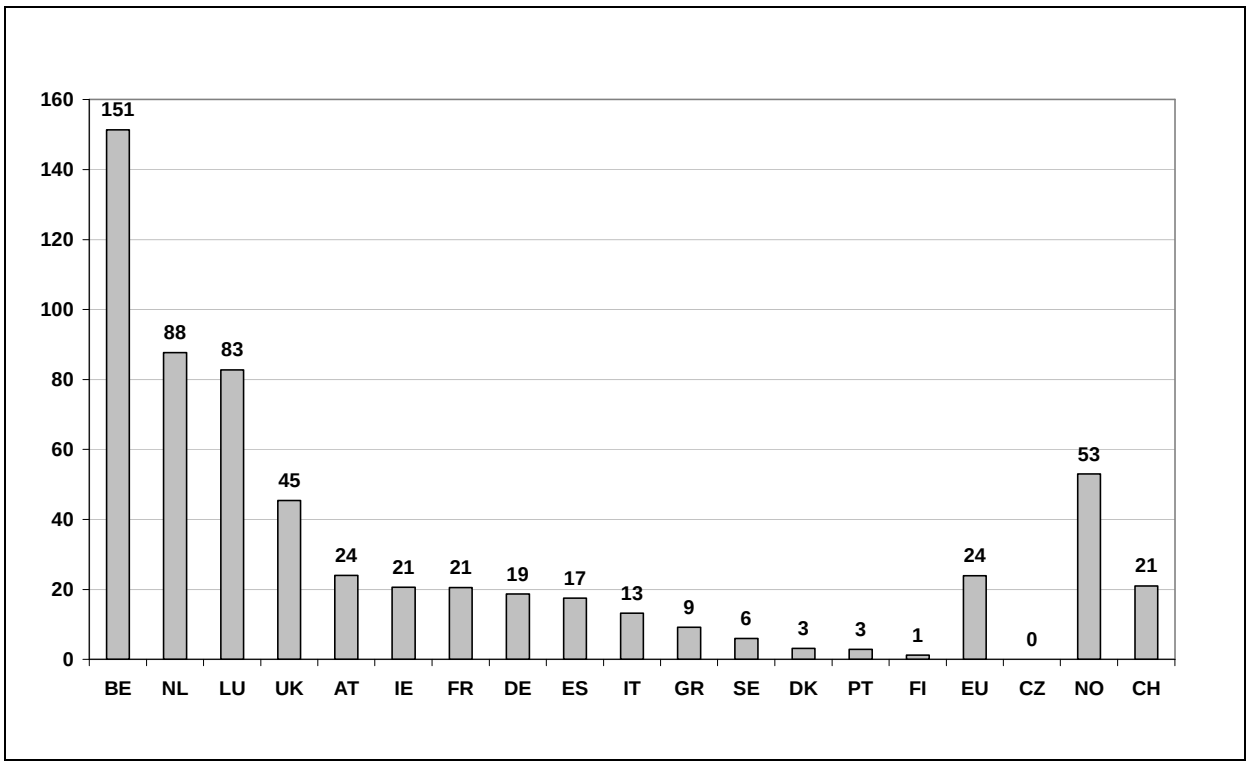
Figure 5-20 Organic share of total vegetable consumption in percent in 2001



5.3.5 Foreign trade with organic vegetables

The main importing countries for organic vegetables in 2001 in volume terms were Germany, France and the United Kingdom (see Table 5-7). In Figure 5-21 the organic vegetable imports are related to the organic human consumption of vegetables. Countries with a high share of organic imports necessary for satisfying domestic consumption were (besides Belgium and the Netherlands) Luxembourg, the United Kingdom and Norway.

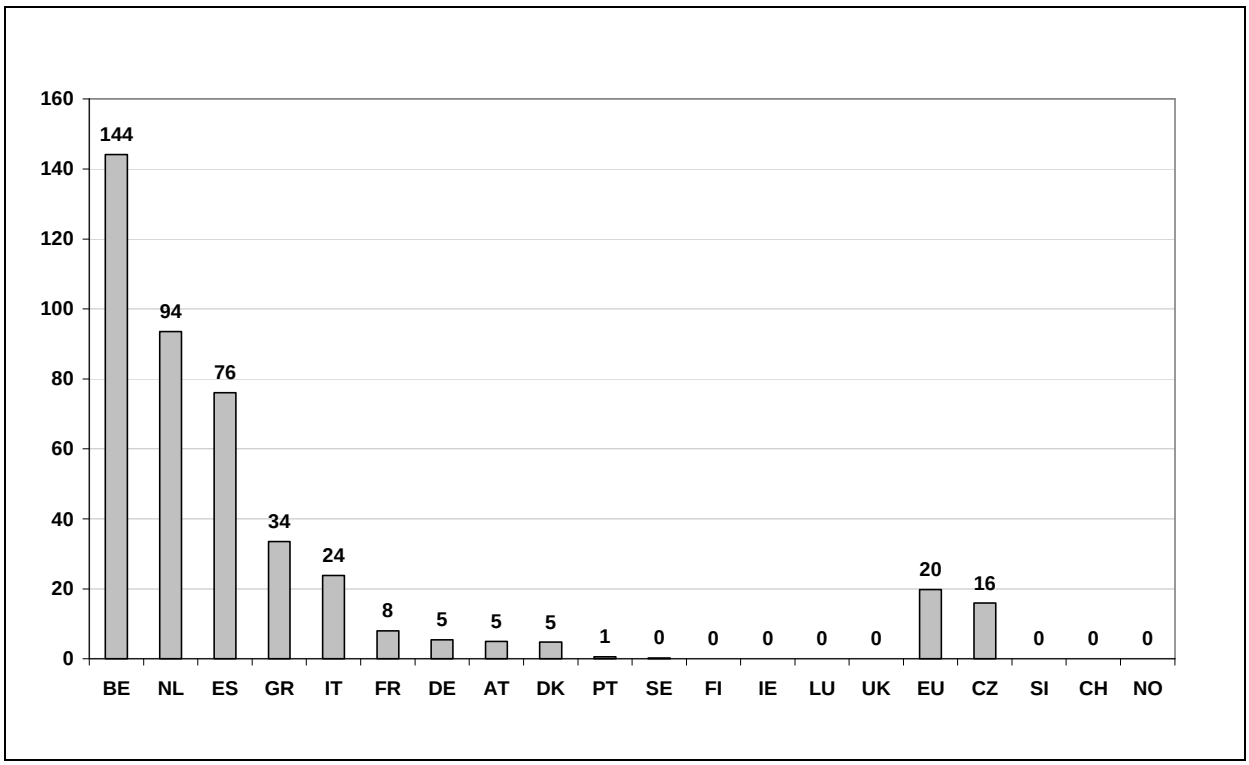
Figure 5-21 Imports of organic vegetables as a share of the organic vegetable consumption in percent in 2001



The organic vegetable exports are shown in Table 5-7. The main players concerning organic vegetable exports were the Netherlands, Italy, Spain, Belgium, Germany and France. However, the exports of the Netherlands and Belgium were mainly re-exports of imported goods from outside the EU.

In Figure 5-22 the exports of organic vegetables are presented as a share of the sales as organic for human consumption. Spain exported 76 percent of its sales as organic. Greece and Italy were also countries with high organic export shares. From the Accession countries the Czech Republic was outstanding for its high organic export share of 16 percent. It is interesting that the two other large volume producers, besides Italy, Germany and France just exported small parts of their organic sales. Thus, their domestic market absorbed most part of their production which is underpinned by the above EU average organic consumption shares of these two countries shown in Figure 5-20.

Figure 5-22 Exports of organic vegetables as a share of the sales as organic vegetables in percent in 2001



In 2001, the EU was a net importer of organic vegetables. Imports came from all over the world, especially from New Zealand, Australia, the United States, Argentina, Brazil, Honduras, the Dominican Republic, Hungary, Turkey, Israel, Morocco, Egypt, Rwanda, Burundi, Zimbabwe and South Africa.

5.3.6 Balance between supply and demand of organic vegetables

Spain was by far the country with the highest degree of self-sufficiency for organic vegetables, exceeding its own needs three times. The EU countries with the lowest degrees of self-sufficiency for organic vegetables were Luxembourg and the United Kingdom.

In addition to the degree of self-sufficiency, it was surveyed, if there were shortfalls for organic vegetables in the years 2001 and 2002. Nine countries mentioned a supply deficit for organic vegetables in 2001 and 2002. These were Germany, Finland, France, Greece, Italy,

the Netherlands, Portugal, Sweden and Slovenia. Apparently it was not attractive enough for farmers to convert vegetable production into organic cultivation. For this product group the difference between conventional and organic production methods is very high. Organic vegetable production is labour intensive, since the use of chemical pesticides is forbidden. On the other hand a strong demand for organic vegetables seemed to exist as so many countries reported a shortfall.

For the years 2003 and 2004 supply deficits for organic vegetables were expected from seven countries. These were Germany, Finland, Italy, the Netherlands, Portugal, Sweden and Slovenia.

5.3.7 Prices for organic vegetables

Exemplarily for the product group "vegetables", **farmer prices** for organic tomatoes, onions, cucumbers and carrots were surveyed (see Table 5-8). From the EU-wide point of view these products were insufficiently supplied in most countries explaining high prices. However, the variation of prices between the countries was extremely wide.

Table 5-8 Farmer prices for organic vegetables in €/100 kg in 2001

Country	Tomatoes	Onions	Cucumbers (each)	Carrots
EU countries				
AT	▼80	▼25	▼0.35	▼35
BE	111	56	0.45	54
DE	150	67	0.61▲	69▲
DK	215▲	47	▼0.34	▼34
ES	▼75	▼36	▼0.17	45
FI	242▲	88▲	0.62▲	78▲
FR	nd	nd	nd	60
GR	140	60	0.50	90▲
IE	nd	nd	nd	nd
IT	123	75▲	▼0.36	▼35
LU	-[1]	80▲	-[1]	80▲
NL	110	▼42	0.40	▼30
PT	nd	nd	nd	nd
SE	▼108	61	1.40▲	61
UK	193▲	▼40	nd	▼40
Weighted EU average[2]	**138**	**59**	**0.46**	**51**
Accession countries				
CZ	117	37	nd	44
SI	92	184	0.28	138
EFTA countries				
CH	139	86	1.00	89
NO	251	nd	0.93	106

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Only direct sales
[2] Weighted by organic consumption

For organic tomatoes the surveyed farmer prices varied from 75 €/100 kg in Spain to 242 €/100 kg in Finland. This is, of course, for the most part explained by the different climatic conditions in these countries. The vegetation period in Finland accounts only for three months whereas in Spain tomatoes can be grown almost all the year round. Austria and astonishingly Sweden were also countries with farmer prices more than 20 percent below the EU average. Denmark and the United Kingdom were, together with Finland, the countries with a farmer price for organic tomatoes more than 20 percent above the EU average.

Concerning organic onions Finland, Italy and Luxembourg were the countries with farmer prices more than 20 percent above the EU average of 59 €/100 kg. There was a big price difference between Spain and Italy regarding organic onions although these countries have similar climatic conditions. The Italian price is probably somewhat overestimated. Austria, Spain, the Netherlands and the United Kingdom were the countries with farmer prices more than 20 percent below the EU average. The EU average farmer price for cucumbers was 0.46 €/piece. The price variation ranged from 0.17 €/piece in Spain to a high 1.40 €/piece in Sweden. For carrots the surveyed farmer prices scattered far around the EU average of 51 €/100 kg. Countries with farmer prices more than 20 percent below the EU average were Austria, Denmark, Italy, the Netherlands and the United Kingdom. Farmer prices more than 20 percent above the EU average were reported by Germany, Finland, Greece and Luxembourg.

Looking at the surveyed farmer prices for vegetables on a country basis it is obvious that in some countries a trend for either a very high or a very low price level can be stated for several products. In Austria, for example, farmer prices for all four surveyed vegetables were more than 20 percent below the EU average. In Spain this was the case for three vegetables. In Italy, the Netherlands and the United Kingdom two of four vegetables had prices more than 20 percent below the EU average. For the United Kingdom this result is especially interesting because this country is known for its high import share for fresh organic products. Much effort is made both by the organic sector and the government to raise the domestic organic production. The low farmer prices for onions and carrots may be a result of increased domestic supply, whereas for tomatoes, domestically in short supply, prices remain high. High farmer prices for several of the surveyed vegetables were reported for Germany, Finland and Luxembourg.

The **farmer price premiums** for organic tomatoes, onions, cucumbers and carrots are shown in Table 5-9. As remarked for the organic farmer prices (Table 5-8) the variation between countries was very high. In Denmark and the Netherlands high price premiums for organic tomatoes exceeded the EU average of 132 percent by more than 20 percent.

Especially the price premium reported by the Netherlands was extremely high (358 percent) which has to be seen in the context of extremely low conventional prices for vegetables in this country. For organic onions Italy and the Netherlands reported the highest price premiums with 400 and 425 percent, respectively, whereas the EU average was 242 percent. Looking at the price premiums for organic cucumbers and carrots no clear pattern can be found between countries. However, Austria, Spain and Finland all had price premiums of more than 20 percent below the EU average for all four surveyed vegetables.

Table 5-9 Farmer price premiums for organic vegetables in percent in 2001

Country	Tomatoes	Onions	Cucumbers (each)	Carrots
EU countries				
AT	▼45	▼79	▼46	▼67
BE	▼54	▼191	▼57	298▲
DE	▼103	▼179	110▲	187▲
DK	163▲	▼133	100	150
ES	▼52	▼133	▼0	▼101
FI	▼28	▼99	▼41	▼77
FR	nd	nd	nd	▼82
GR	▼56	▼100	150▲	200▲
IE	nd	nd	nd	nd
IT	145	400▲	80	133
LU	-[1]	▼36	-[1]	▼29
NL	358▲	425▲	▼33	362▲
PT	nd	nd	nd	nd
SE	▼15	▼88	333▲	▼14
UK	▼85	▼155	nd	▼68
Weighted EU average[2]	**132**	**242**	**83**	**151**
Accession countries				
CZ	60	257	nd	200
SI	89	514	85	298
EFTA countries				
CH	0	13	41	50
NO	36	nd	42	36

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Only direct sales
[2] Weighted by organic consumption

Consumer prices were surveyed for the same set of organic vegetables as chosen for investigating farmer prices: tomatoes, onions, cucumbers and carrots. These prices are presented in Table 5-10. As expected, tomatoes were much cheaper in the southern European countries than in the North because of climatic reasons. Onions were the most expensive in Ireland at 3.78 €/kg. They were cheapest in Belgium at 1.12 €/kg. The EU average for cucumbers was 1.45 €/piece. In Belgium, the Netherlands, Portugal and Sweden the cucumber price was more than 20 percent below the EU average. In Finland, Italy and Luxembourg cucumbers were much more expensive than the EU average price. Organic carrots were the cheapest in Sweden at 1.38 €/kg. Four countries had prices more than 20 percent above the EU average of 1.77 €/kg. These were Denmark, Finland, Ireland and Luxembourg. Comparing the consumer prices for all vegetables between countries there were some interesting results. The consumer prices for all four investigated vegetables, listed in table 37, were only below the EU average in Belgium. Belgium was a main export nation for vegetables (see Table 5-7). Other export nations, such as the Netherlands, Germany, Greece and Portugal had three vegetable products for which consumer prices were below the EU average. It is interesting to note that in Sweden three of the organic vegetables were relatively

cheap. In contrast, the other two Scandinavian EU members, Denmark and Finland reported high consumer prices for all four vegetable products.

Table 5-10 Consumer prices for organic vegetables in €/kg in 2001

Country	Tomatoes	Onions	Cucumbers (each)	Carrots
EU countries				
AT	5.00 ▲	1.63	1.59	1.60
BE	3.46	1.12 ▼	0.98 ▼	1.51
DE	4.19 [1]	1.86 [1]	1.33 [1]	1.62 [1]
DK	5.37 ▲	2.90 ▲	1.61	2.19 ▲
ES	nd	nd	nd	nd
FI	4.17	2.69 ▲	2.93 ▲	2.14 ▲
FR	2.52 ▼	2.73 ▲	nd	1.74
GR	1.76 ▼	1.17 ▼	1.47	1.47
IE	3.36	3.78 ▲	nd	2.18 ▲
IT	2.24 ▼	1.92	2.07 ▲	1.77
LU	3.92	2.16	2.55 ▲	2.50 ▲
NL	3.90	1.96	1.14 ▼	1.86
PT	2.04 ▼	1.91	0.71 ▼	2.02
SE	4.77	1.24 ▼	1.14 ▼	1.38 ▼
UK	5.40 ▲	1.69	nd	1.94
Weighted EU average[2]	**4.07**	**2.01**	**1.45**	**1.77**
Accession countries				
CZ	1.77	0.44	0.88	1.03
SI	1.15	1.48	0.70	1.26
EFTA countries				
CH	4.54	3.81	1.98	2.81
NO	7.87	3.02	3.07	3.18

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Table 5-11 shows the **consumer price premiums** for organic over conventional vegetable prices in 2001. Due to a high variation between price premiums only a few countries met the weighted EU average price premiums. It is astonishing that there was such a big difference in consumer price premiums between Belgium and the Netherlands as these are neighbouring countries and they even have a comparable structure of large scale conventional vegetable production. However, in Belgium three of the four surveyed organic vegetables showed price premiums which were more than 20 percent below the EU average, whereas in the Netherlands for three of the investigated products consumer price premiums more than 20 percent above the EU average were reported.

Table 5-11 Consumer price premiums for organic vegetables in percent in 2001

Country	Tomatoes	Onions	Cucumbers (each)	Carrots
EU countries				
AT	137 ▲	83	67	82 ▲
BE	57 ▼	50 ▼	47 ▼	65 ▲
DE	123 [1] ▲	59 [1] ▼	88 [1] ▲	30 [1] ▼
DK	74	128 ▲	71	38 ▼
ES	nd	nd	nd	nd
FI	76	207 ▲	17 ▼	160 ▲
FR	10 ▼	80	nd	64 ▲
GR	71	128 ▲	25 ▼	69 ▲
IE	35 ▼	176 ▲	nd	45
IT	45 ▼	122 ▲	1 ▼	38 ▼
LU	85	64 ▼	202 ▲	119 ▲
NL	225 ▲	155 ▲	62	71 ▲
PT	88	175 ▲	168 ▲	145 ▲
SE	35 ▼	148 ▲	43 ▼	87 ▲
UK	88	51 ▼	nd	38 ▼
Weighted EU average[2]	**89**	**82**	**70**	**51**
Accession countries				
CZ	20	25	20	25
SI	26	20	20	20
EFTA countries				
CH	113	119	79	93
NO	81	111	82	84

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

As was expected, consumer price premiums for organic vegetables were relatively low in the surveyed Accession Countries, mainly because of the lower income levels of consumers, whereas most consumer price premiums reported from the two EFTA countries were above the EU averages.

When comparing farmer price premiums (Table 5-9) with organic consumer price premiums (Table 5-11), it is obvious that the latter were clearly lower. The reason might be found in the fact that vegetables have to be cleaned and packed before they are sold to consumers. The more cost-intensive steps are performed, the less important is the price for the raw product. This reduces the difference between consumer prices for organic and conventional vegetables.

5.4 The organic fruit market

5.4.1 General notes about the total fruit market in 2001

The Eurostat data on the total fruit market are differentiated according to the categories fresh fruit, nuts, citrus and dried fruit. However, the data availability for the EU fruit market is rather poor as quite a large number of member states does not deliver their national fruit statistics to Eurostat. In some countries, for example in Denmark, statistics on the fruit market do not even exist. In addition, the supply balances for fruit drawn up by the individual member countries are not completely comparable although much effort is made for harmonising data collection and processing within the EU. The main bottlenecks are: the consumption of fruit is not differentiated according to fresh and processed products, for only a few products own supply balances exist, the changes in stocks are not always taken into account and even the harvested volumes are often estimated rather poorly (ZMP 2002b, p. 217). The latter applies especially for the amounts harvested in small holdings. The supply balance for fruit in general and for organic fruit in particular should therefore be interpreted with caution.

Whenever data within the Eurostat statistics (Eurostat 2009) were missing, those figures collected by project partners of the OMIaRD project were used. The total fruit production of the EU amounted to 32 million tonnes in the year 2001. The production volume in 2001 was lower than in 2000 and in 1999. The latter year was characterised by a very good fruit harvest in the EU. In 2001, losses were reported for a large variety of fruits. This applied for most EU countries with the exception of Spain and the United Kingdom (Behr 2002, p. 80).

The fruit production of the EU is limited to a relatively small number of different types of fruit. During the years 1996 to 2001, the structure of production remained mainly the same with apples and oranges being the most important types in terms of production volumes followed by peaches. These main products were complemented by tangerines, grapes, and pears. Other fruit types played a subordinated role concerning their production volumes. The apple production in 2001 was on average with 7.6 million tonnes. This was, however, clearly less than in the two years before with apple harvests over 8 million tonnes in the EU. In 2001, unfavourable weather conditions at the period of flourishing as well as late frosts were the main reasons reducing the harvest. The pear harvest was low in 2001 compared to the three years before, with the exception of above-average pear harvests in Spain and Portugal (Behr 2002, p. 81).

The main fruit producing countries in the EU in 2001 were Spain and Italy, each producing around 10 million tonnes. The two other large volume producers were France and Greece, each producing around 3 million tonnes of fruit in 2001. Even if the agricultural fruit area has decreased, as a consequence of reforming the market regulation for fruit in 1996, the production levels were still too high for being absorbed by the market (ZMP 2003a, p. 217). Thus, an average amount of one million tonnes were taken out of the market by intervention support in the years 1999 to 2002. Increasing fruit imports from third countries tightened the market situation additionally.

In 2001, almost 40 million tonnes of fruit were consumed in the EU. The country with the largest fruit consumption in the EU was Germany with 9.1 million tonnes, followed by Italy consuming 8.8 million tonnes of fruit in 2001. Most part of the consumption in volume terms

referred to apples, oranges and bananas. These were at the same time the cheapest products from all types of fruit. However, as analysed by the ZMP (2002b, p. 218), the share of these three fruits measured by the total fruit consumption differs significantly between EU countries. Especially in northern and middle European countries this percentage is very high. In the Netherlands, for example, it is about 80 percent. Thus, the consumers do not spend much money on other, more expensive fruit, whereas consumers in southern European countries prefer a much larger variety of fruit products and they are willing to pay more for them.

5.4.2 Supply balance for organic fruit

Table 5-12 shows the supply balance for organic fruit in 2001. The EU production reached almost 650,000 tonnes. Thereof only a small part of four percent remained at the farms. However, a significant volume had to be sold on the conventional market indicated by the EU average of 84 percent for the sales of organic fruit as organic. In volume terms, these sales as organic referred to 523,000 tonnes. Organic imports as well as exports amounted to around 300,000 tonnes with imports exceeding the exports by 30,000 tonnes. The organic consumption of organic fruit accounted for 554,000 tonnes in the whole EU. Dividing the sales as organic by the organic consumption led to a degree of self-sufficiency of 94 percent.

Table 5-12 Supply balance for organic fruit in 2001

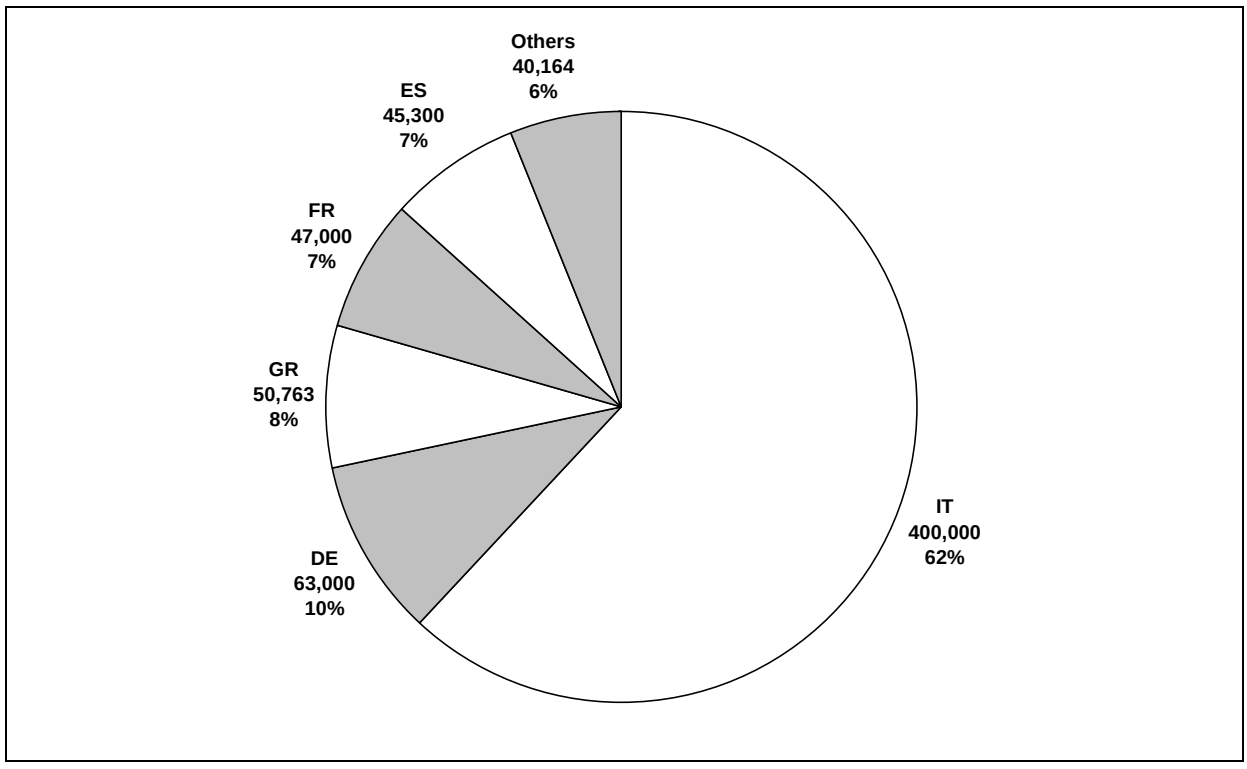
	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	8,000	7	560	7,440	85	6,300	9,800	300	15,800	40	AT
BE	4,015	0	0	4,015	97	3,895	11,090	7,160	7,825	50	BE
DE	63,000	3	1,890	61,110	90	54,999	80,000	8,000	126,999	43	DE
DK	1,019	0	0	1,019	100	1,019	9,700	20	10,699	10	DK
ES	45,300	0	0	45,300	80	36,240	1,000	29,000	8,240	440	ES
FI	870	10	87	783	100	783	390	2	1,171	67	FI
FR	47,000	0	0	47,000	95	44,650	40,000	15,000	69,650	64	FR
GR	50,763	1	600	50,163	97	48,450	400	24,225	24,625	197	GR
IE	114	2	2	112	100	112	100	/	212	53	IE
IT	400,000	5	20,000	380,000	80	304,000	18,000	150,000	172,000	177	IT
LU	24	0	0	24	100	24	1,000	/	1,024	2	LU
NL	3,700	0	0	3,700	100	3,700	68,100	58,000	13,800	27	NL
PT	16,000	11	1,760	14,240	100	14,240	6,500	7	20,733	69	PT
SE	1,000	0	0	1,000	100	1,000	3,857	15	4,842	21	SE
UK	5,422	40	2,169	3,253	100	3,253	73,300	1	76,552	4	UK
EU-15	**646,227**	**4**	**27,068**	**619,159**	**84**	**522,665**	**323,237**	**291,730**	**554,172**	**94**	**EU-15**
CZ	767	3	23	744	100	744	0	53	691	108	CZ
SI	2,087	17	350	1,737	55	960	nd	/	960	100	SI
CH	3,570	9	324	3,246	100	3,246	10,995	/	14,241	23	CH
NO	444	3	13	431	100	431	2,900	/	3,331	13	NO

5.4.3 Organic fruit production

All figures on organic fruit presented in this study contain the categories fresh fruit, nuts, citrus and dried fruit. This corresponds to the way of data collection as it is conducted by Eurostat for the total (organic plus conventional) fruit market.

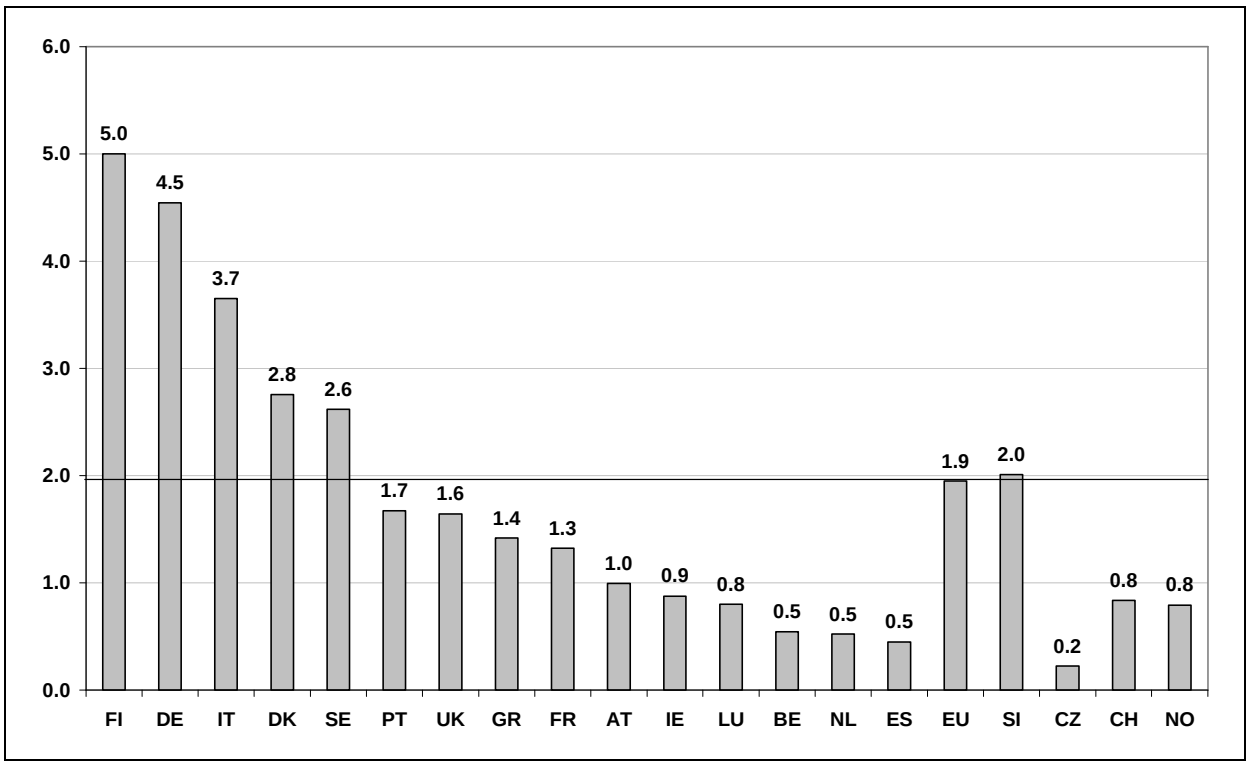
As presented in Figure 5-23 the production of organic fruit was overwhelmingly dominated by Italy, where 62 percent of all the EU's organic fruit was produced in 2001. Germany was the second largest fruit producer in the EU with around 63,000 tonnes. The three other countries with a considerable organic fruit production were Greece, France and Spain. Although Portugal also has a very favourable climate for fruit production, just a small volume of 16,000 tonnes originated from there. Regarding Spain, the same can be observed as mentioned in chapter 5.3 regarding organic vegetables: whilst this country was - together with Italy - the main player on the total (organic plus conventional) fruit market, its role on the organic fruit market was not as dominating. This shows that Spain did not start to use its potential sufficiently as an important player on the organic fruit market in 2001, yet.

Figure 5-23 Organic fruit production of the EU countries in tonnes in 2001



In Figure 5-24 the organic fruit production was related to the total (organic plus conventional) fruit production within the surveyed countries. The figures for the total fruit production (as well as for the total fruit consumption used in chapter 5.4.4) originate for most countries from the Eurostat online database (Eurostat 2009). Where the final data on fruit for the year 2001 were not available in this database, those figures were used which were surveyed by partners within the OMIaRD project.

Figure 5-24 Organic share of total fruit production in percent in 2001



Looking at the organic shares of total fruit production in the surveyed countries, an EU average for fruit of 1.9 percent in 2001 was reached. This has been exceeded by six of the surveyed countries: Finland, Germany, Italy, Denmark, Sweden and Slovenia. The high organic production share reported from Finland must not be over-interpreted as the figure for the organic fruit production contains a large amount of wild berries which are certified organic. In Italy, the high organic percentage reflects that Italy was by far the largest organic fruit producer in the EU. Italy, together with Spain, is also the largest fruit producer regarding the total (organic plus conventional) fruit production in the EU. In both countries the total fruit production accounted for more than 10 million tonnes. However, the organic share of total fruit production in Spain was still very low with 0.5 percent. When analysing the other southern European countries concerning their organic shares of total fruit production, it is interesting that also Portugal and Greece reported relatively low organic production shares with 1.7 and 1.4 percent, respectively. Due to the favourable climate in southern European countries a much larger organic fruit production was expected for these countries. It is very likely that this potential will be used more strongly in the future.

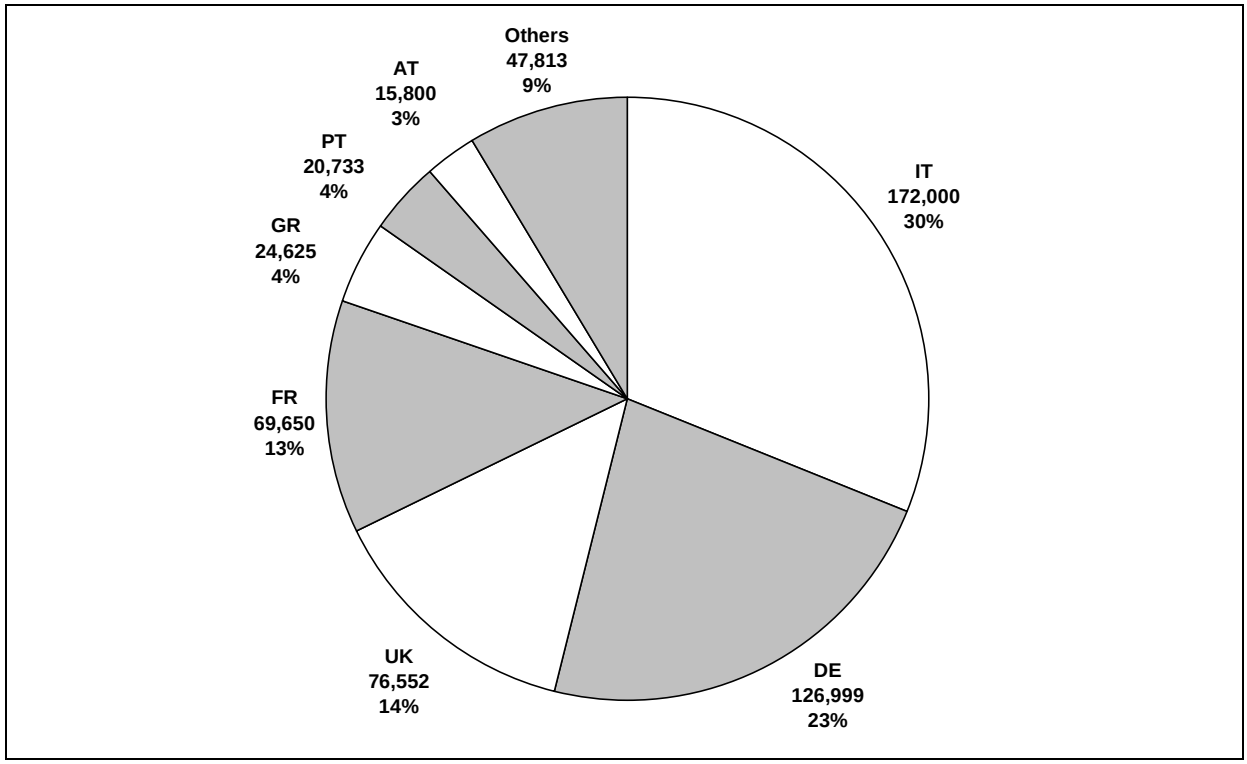
The above-average shares of organic fruit production in Sweden and Denmark can be explained by the low conventional production as with vegetables in Denmark and Luxembourg (see chapter 5.3). Among the surveyed Accession countries Slovenia reported a remarkable organic share of its total fruit production of 2.0 percent. To ensure the reliability of the reported market data it is useful to compare the organic production share with the

organic share of total production area. Concerning the organic fruit production in Slovenia, for example, the organic share of the total fruit production area was 2.4 percent in 2001. Taking into consideration that organic yields are somewhat lower than conventional yields, this percentage shows that an organic production share of 2.0 percent is reliable.

5.4.4 Organic fruit consumption

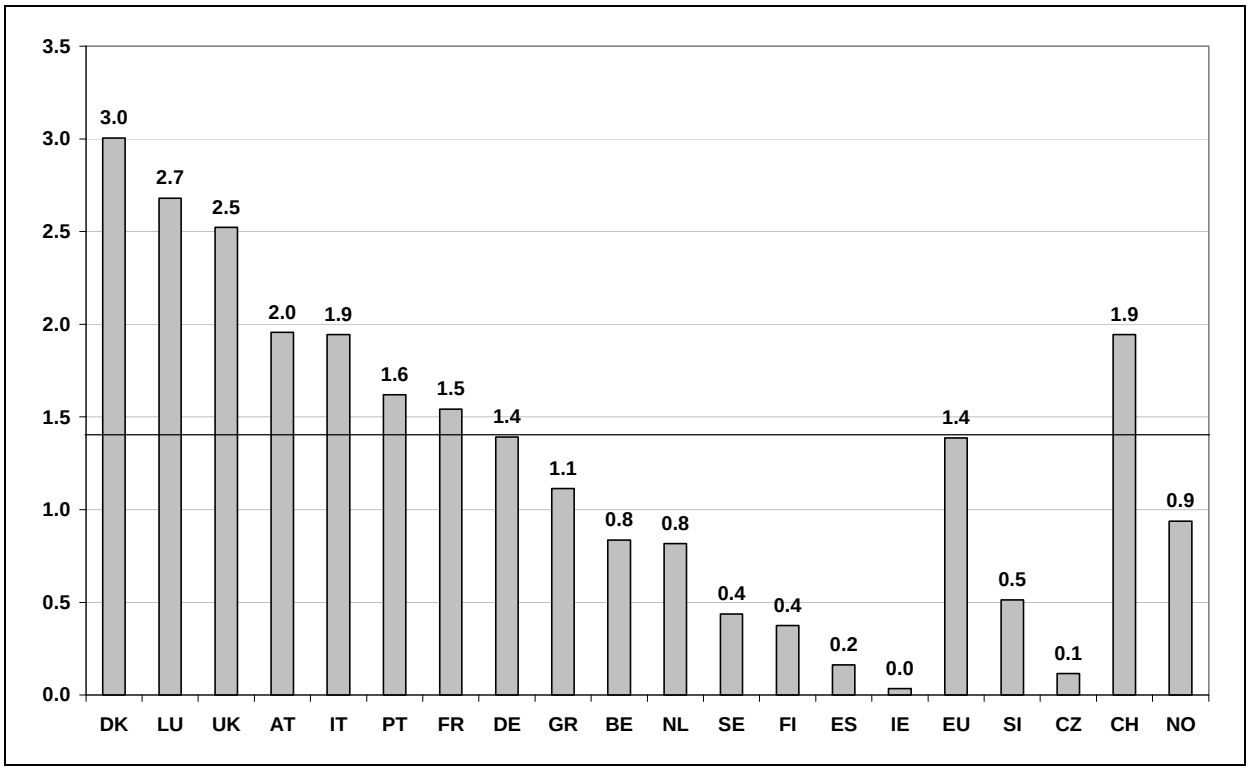
As indicated in Figure 5-25 Italy, Germany, the United Kingdom and France were the countries with the highest organic fruit consumption. For all four countries together, their consumption accounted for 80 percent of the entire organic fruit consumption within the EU in 2001. Due to the dependence of these absolute figures on the number of inhabitants of a country, the organic shares of total fruit consumption, which are discussed below, are more meaningful.

Figure 5-25 Organic fruit consumption of the EU countries in tonnes in 2001



With regard to fruit, Denmark had the highest organic share of the total consumption, followed by Luxembourg and the United Kingdom (see Figure 5-26). Whereas the EU average organic production share for fruit was 1.9 percent, the organic consumption share is clearly lower with only 1.4 percent. The high production share was mainly caused by the influence of Italy and Germany, both large volume producers of organic fruit. However, in both countries the organic consumption share is much lower than the organic production share. In Italy, this can easily be explained by its high export share for organic fruit. In Germany, however, the relatively low organic consumption share compared to its organic production share must be seen against the background that Germany is the country with the largest total (organic plus conventional) fruit consumption in the EU and that large parts of the consumption are imported. Although the organic consumption share reported by Germany is only average, its organic fruit consumption in absolute volumes is second place after Italy. As shown in the next chapter Germany has to cover more than half of its enormous organic fruit consumption by imports.

Figure 5-26 Organic share of total fruit consumption in percent in 2001



In general, the lower organic consumption share compared to the higher organic production share of organic fruit can be explained by the fact that a large amount of the consumed fruit (organic plus conventional) referred to tropical fruit. Since only a small amount of these tropical fruits was organically grown, this led to a lower share of organic fruit consumption measured by total fruit consumption.

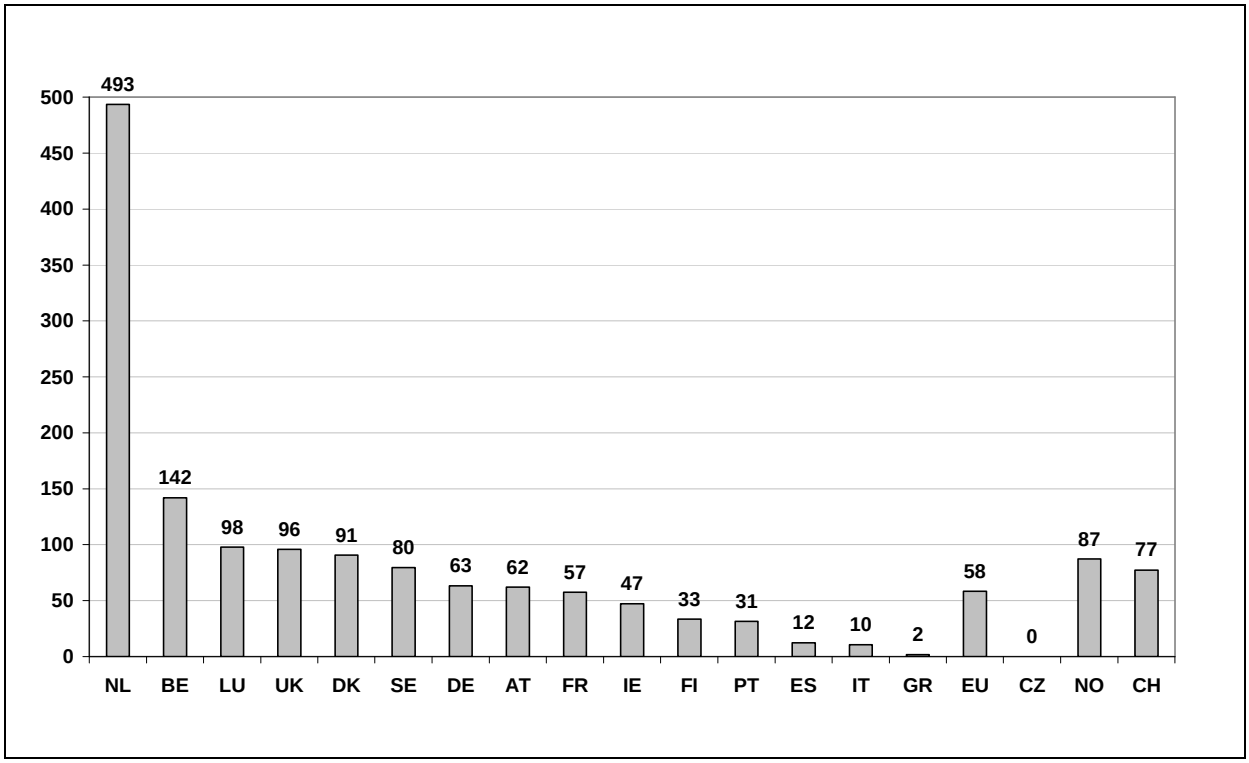
5.4.5 Foreign trade with organic fruit

The figures on foreign trade with organic fruit include both intra- and extra-EU trade. The highest import levels for organic fruit in 2001 were recorded for Germany, the United Kingdom and for the Netherlands (see Table 5-12), whereby the imports of the Netherlands

and Belgium included a large amount which was re-exported to other European countries. The large organic fruit imports of the Netherlands have two main reasons. A huge part of all organic fruit imports from outside the EU reach the European continent through the seaport in Rotterdam. In addition, one of the largest wholesalers for organic fruit and vegetables in Europe, EOSTA, is situated in the Netherlands. In Belgium, large amounts of organic fruit reach Europe through the cargo airport in Maastricht. Especially fruit is often transported by air because of its higher value per weight unit compared to, for example, vegetables.

As indicated in Figure 5-27 organic fruit imports constituted a particularly high share of total domestic consumption in most northern European nations because production is limited in these countries due to the climate. Apart from the Netherlands and Belgium, the import shares reached more than 90 percent in Luxembourg, the United Kingdom and Denmark. The high EU average for organic imports measured by organic fruit consumption of 58 percent is caused by the fact that large amounts of organic fruit are imported from tropical countries and the southern hemisphere. These are tropical fruits which cannot be grown in Europe as well as off-season products.

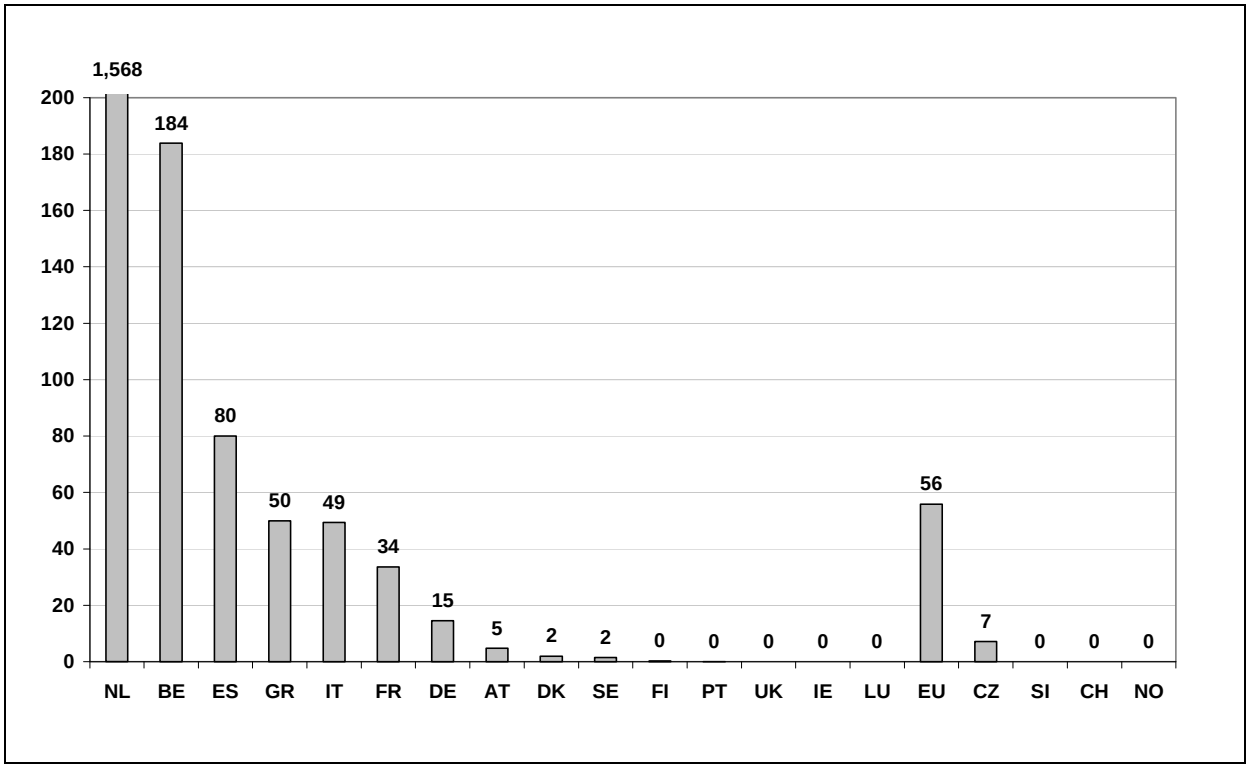
Figure 5-27 Imports of organic fruits as a share of the organic fruit consumption in percent in 2001



The organic fruit exports are presented in Table 5-12. Apart from the Netherlands, Italy, Spain and Greece were the main exporters for organic fruit in 2001. Analysing the organic exports measured by the domestic sales as organic, given in Figure 5-28, these three countries also reported the highest export shares besides Belgium and the Netherlands. In Spain, the organic exports accounted for 80 percent of their organic fruit sales. The reason for this huge percentage is that the Spanish domestic organic market has still not been established. Greece and Italy reported export shares around 50 percent measured by their domestic organic fruit sales.

At an EU-wide level the surveyed amounts for the fruit imports show that the EU was a net importer for organic fruit. However, as the import and export sum for the EU do not differ that much, it is safe to say that the import amounts are strongly underestimated. In reality a much bigger amount of organic fruit is imported as, for example, bananas, pineapples and other tropical fruit which are not able to be produced within the EU countries. Larger quantities of organic fruit were also imported from tropical countries and from the southern hemisphere to supply the EU with fresh apples, pears, strawberries, grapes etc. at those times when there is no harvesting season in Europe. The organic fruit imports originated from New Zealand, USA (California), Costa Rica, Argentina, Chile, Columbia, Dominican Republic, Brazil, Poland, Romania, Serbia, Moldova, Israel, Turkey, Tunisia, Morocco, Rwanda, Burundi, Ghana and South Africa.

Figure 5-28 Exports of organic fruits as a share of the sales as organic fruits in percent in 2001



5.4.6 Balance between supply and demand of organic fruit

Spain was by far the country with the highest degree of self-sufficiency for organic fruit, exceeding its own needs more than four times (see Table 5-12). It is not surprising that Greece and Italy, the two other countries with very high organic export shares (compare Figure 5-28) also had high degrees of self-sufficiency with 197 and 177 percent, respectively. The EU countries with the lowest degrees of self-sufficiency for organic fruit were Luxembourg and the United Kingdom. For organic fruit all northern European countries had degrees of self-sufficiency far below 100 percent.

In comparison to the degrees of self-sufficiency for organic vegetables (see chapter 5.3) most countries reached quite low levels of self-sufficiency for organic fruit. The production of

organic fruit is strongly concentrated on the southern European countries as this product group has higher requirements concerning a warm climate, whereas most vegetables grow in all EU countries.

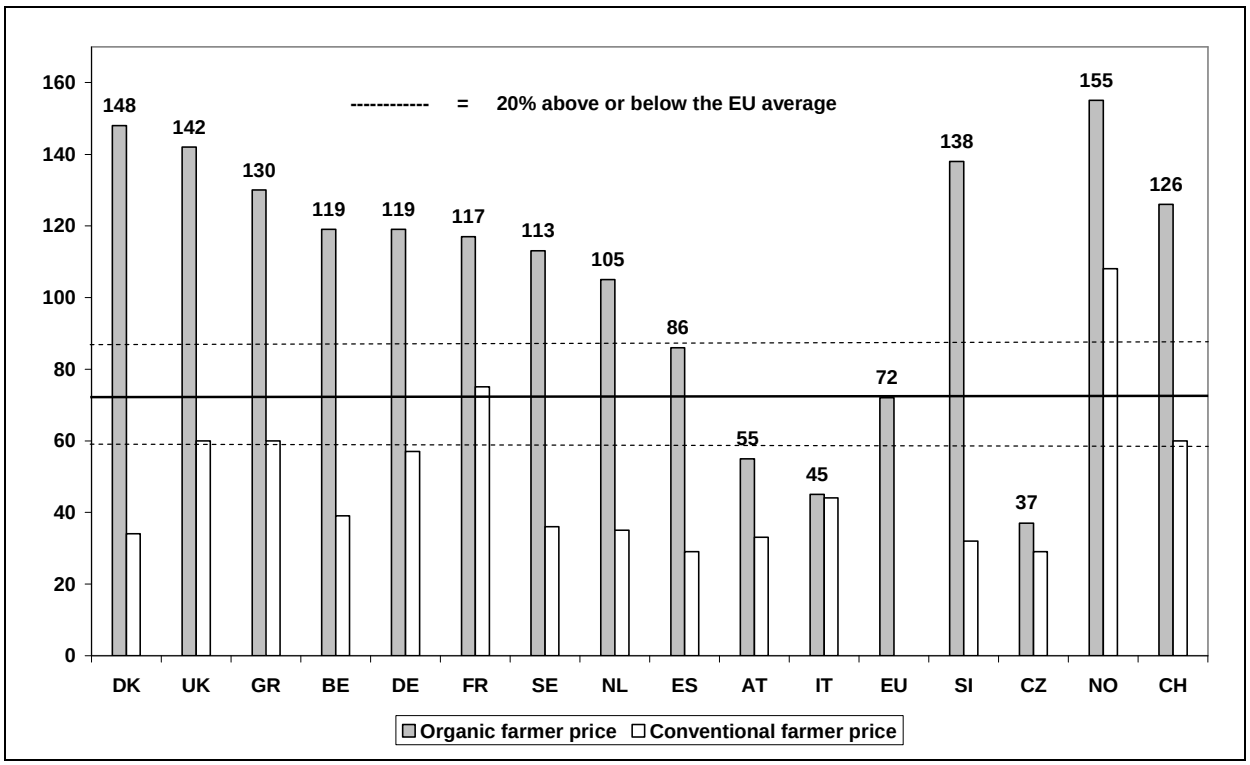
In addition to the degree of self-sufficiency, it was surveyed whether there were shortfalls for organic fruit in the years 2001 and 2002. Supply deficits were reported by experts from Germany, Finland, France, Greece, the Netherlands, Sweden, the United Kingdom and from Slovenia. It is surprising that even Greece reported a supply deficit for this product as it reached a degree of self-sufficiency of 197 percent in 2001. The shortfall applies either to tropical fruit which does not grow in Greece or it reflects that domestic distribution channels did not start to market organic fruit. Thus, most part of the production is exported as many European countries have a strong demand for organic fruit. Expected supply deficits for the years 2003 and 2004 were named by experts from the same countries as listed for 2001 and 2002 without France and Greece.

As the product group organic fruit was mentioned by several mainly northern European countries as supply deficit, it is surprising that on the other hand farmers in southern European countries, especially in Spain and Italy, had problems selling fruit as organic (see Table 5-12). This seems to be mainly a problem of collecting organic fruit in the producer countries and organising the trade links between Mediterranean countries and northern European countries. Thus, there is a lack of a functioning network of wholesalers and distributors as well as a lack of information about the existing demand. These organisational problems are not only a specific problem of the organic fruit market; they are known from the total (organic plus conventional) fruit market in the EU as well. One aspect hampering the trade might be the low level of cooperation between fruit producers. As reported by the ZMP (2001, p. 219) only 40 percent of the total fruit and vegetable production in the EU is marketed through farmer organisations. In Spain and Italy, the main (organic plus conventional) fruit producers in the EU, only 50 and 30 percent of the fruit production were sold via farmer organisations. The organisational structure is not better within the organic sector.

5.4.7 Prices for organic fruit

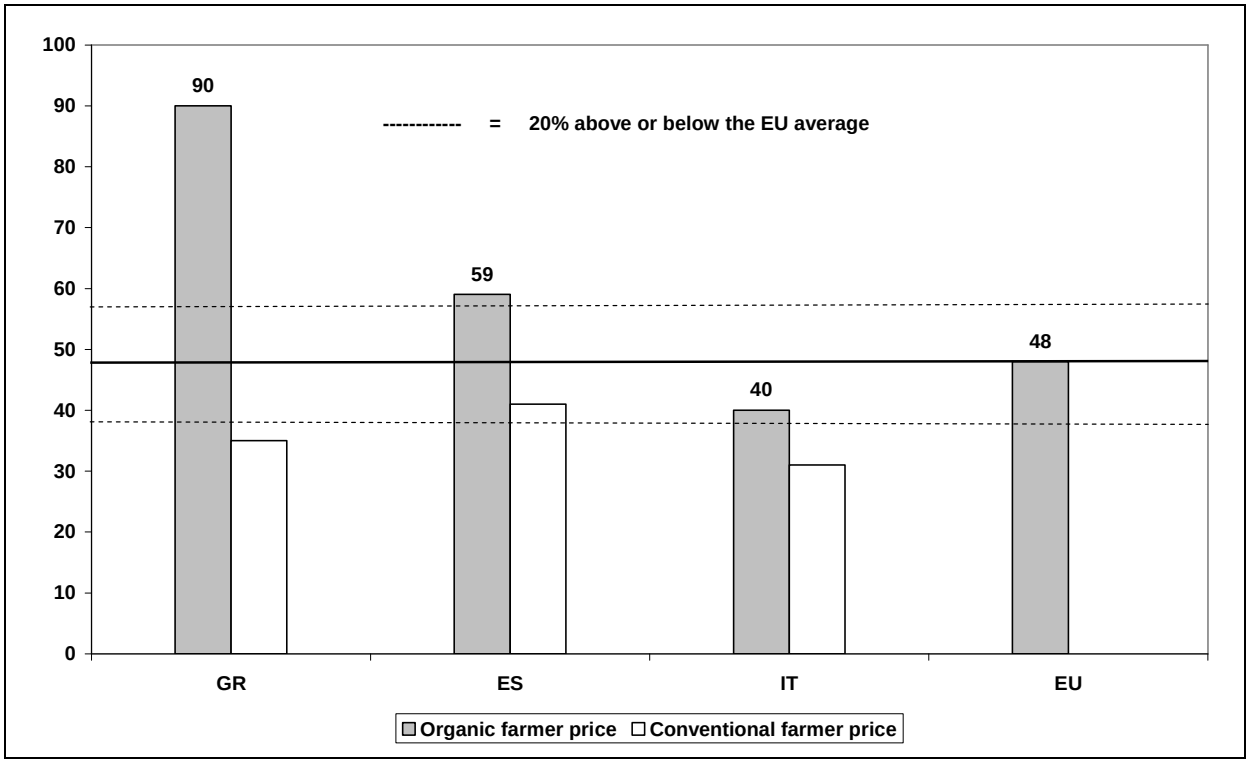
Exemplarily for the product group "fruit", **farmer prices** for organic apples and oranges were surveyed (see Figure 5-29). Austria and Italy, two large suppliers of organic apples, reported the lowest farmer prices for organic apples with 55 and 45 €/100 kg. Due to the large fruit production of Italy, its price was significant for the calculation of the weighted EU average. The apple prices, as well as the prices for oranges, were weighted by the total organic fruit sales of the EU. Thus, the farmer price of Italy influences the EU average by 60 percent. Therefore a high number of eight countries exceeded the EU average price for apples by more than 20 percent.

Figure 5-29 Farmer prices for organic and conventional apples in €/100 kg in 2001



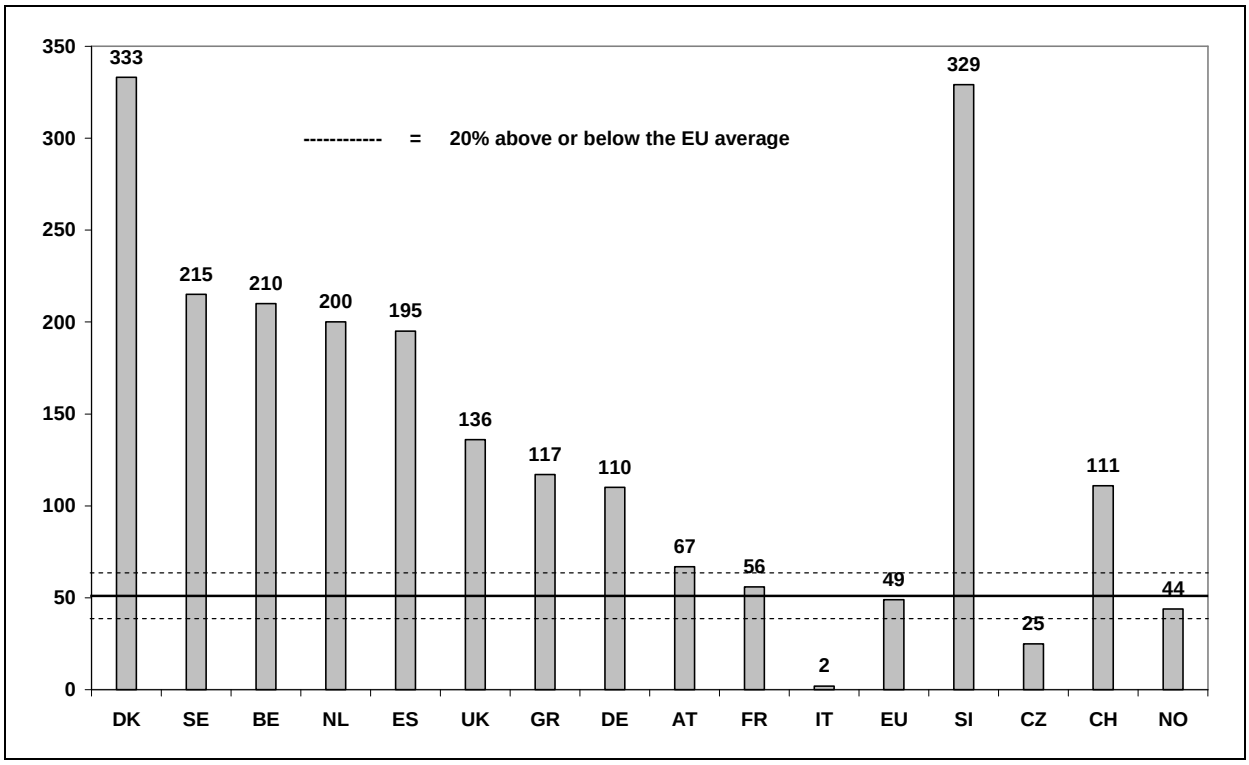
Concerning organic oranges, only three of the five oranges producing EU countries reported farmer prices. The EU average price was 48 €/100 kg and was again mostly made by the Italian price which was lowest with 40 €/100 kg.

Figure 5-30 Farmer prices for organic and conventional oranges in €/100 kg in 2001



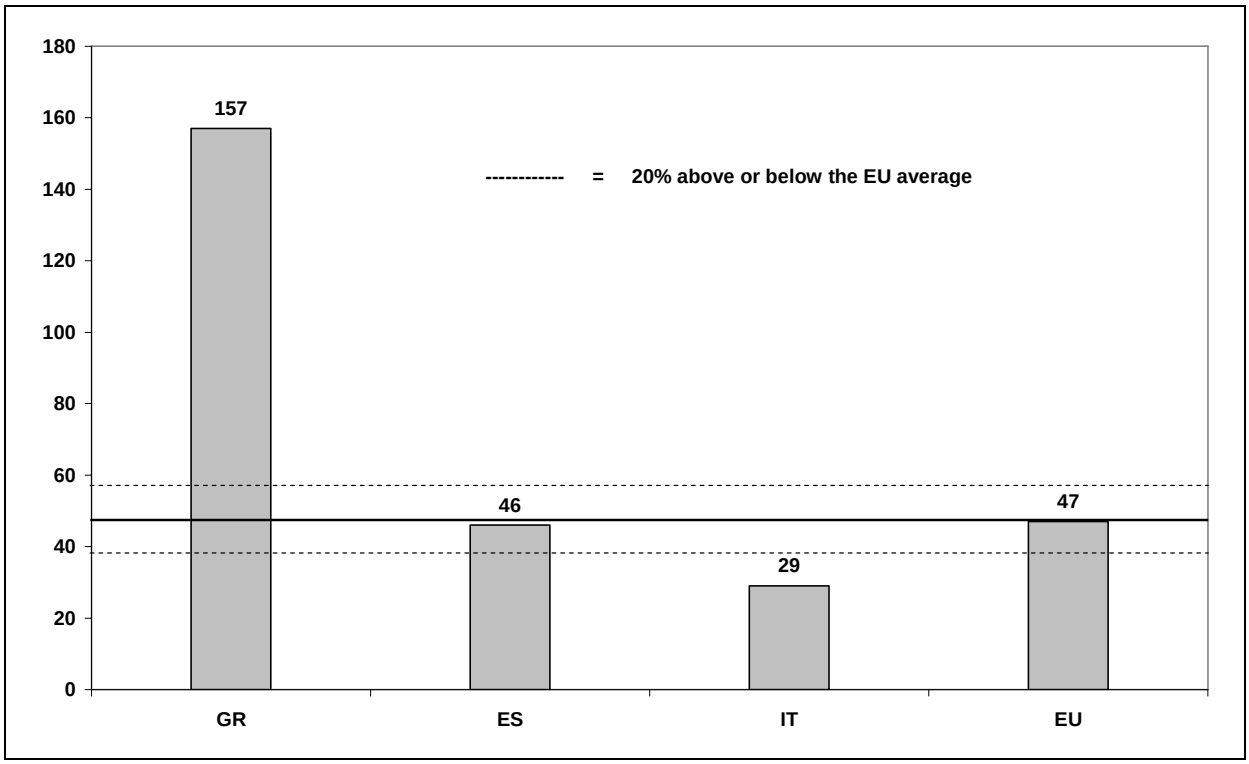
The **farmer price premiums** for organic apples and oranges are shown in Figure 5-31 and Figure 5-32. Concerning organic apples Italy again influenced the weighted EU average significantly with around 60 percent of the EU sales originating from this country. As the price premium for organic apples from Italy was reported with a low 2 percent, the weighted EU average reached only 49 percent. However, there were many countries with price premiums more than 20 percent above this EU average. In Denmark and Sweden the highest price premiums for organic apples were reached with 333 and 215 percent, respectively.

Figure 5-31 Farmer price premiums for organic over conventional apple prices in percent in 2001



The farmer price premiums for organic oranges were very heterogeneous. It was highest in Greece with 157 percent and lowest in Italy with 29 percent.

Figure 5-32 Farmer price premiums for organic over conventional oranges prices in percent in 2001



As examples of the product group fruit, Table 5-13 presents the **consumer prices** for organic apples and oranges surveyed in the year 2001. Organic apples were cheapest in Portugal. It is also surprising to note that the Finnish apple price was more than 20 percent below the EU average of 2.61 €/kg. In Luxembourg and the United Kingdom the price for apples was, at 3.72 €/kg and 3.88 €/kg, respectively, more than 20 percent higher than the EU average price. Prices for organic oranges varied tremendously between countries. They were cheapest in Greece at 1.12 €/kg and most expensive in Denmark at 4.43 €/kg. The EU average for organic oranges was 2.10 €/kg. In general, fruit prices were comparatively high in Luxembourg and the United Kingdom. Both countries relied mainly on imports of fruit (see chapter 5.4.5).

Table 5-13 Consumer prices for organic apples and oranges in €/kg in 2001

Country	**Apples**	**Oranges**
EU countries		
AT	2.18	1.54 ▼
BE	2.34	nd
DE	2.53 [1]	1.96
DK	2.62	4.43 ▲
ES	nd	nd
FI	2.02 ▼	3.70 ▲
FR	2.63	2.71 ▲
GR	2.64	1.12 ▼
IE	nd	3.16 ▲
IT	2.46	1.61 ▼
LU	3.72 ▲	2.85 ▲
NL	2.89	2.24
PT	1.75 ▼	nd
SE	2.82	2.12
UK	3.88 ▲	3.56 ▲
Weighted EU average[2]	**2.61**	**2.10**
Accession countries		
CZ	1.18	nd
SI	1.46	nd
EFTA countries		
CH	3.72	3.17
NO	5.74	5.16

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Table 5-14 shows the **consumer price premiums** for organic over conventional apples and oranges prices. Italy is the main producer of organic fruit in the EU and farmer prices for these products were comparatively low. The EU average consumer price premium for organic apples was 45 percent and for organic oranges it reached 65 percent. As was expected, consumer price premiums for organic fruit were relatively low in the surveyed Accession countries, mainly because of the lower income levels of consumers. The opposite was true for the two EFTA countries. Especially from Norway, very high consumer price premiums were reported for fruit.

Table 5-14 Consumer price premiums for organic apples and oranges in percent in 2001

Country	**Apples**	**Oranges**
EU countries		
AT	49	39 ▼
BE	107 ▲	nd
DE	57 [1] ▲	125 ▲
DK	56 ▲	65
ES	nd	nd
FI	71 ▲	144 ▲
FR	57 ▲	78
GR	60 ▲	17 ▼
IE	nd	89 ▲
IT	29 ▼	39 ▼
LU	111 ▲	47 ▼
NL	74 ▲	43 ▼
PT	21 ▼	nd
SE	37	11 ▼
UK	63 ▲	58
Weighted EU average[2]	**45**	**65**
Accession countries		
CZ	20	nd
SI	20	nd
EFTA countries		
CH	46	44
NO	102	128

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

5.5 The organic milk market

5.5.1 General notes about the total milk market in 2001

According to Eurostat 2009 the total (organic plus conventional) milk production at farm level of the EU countries reached almost 122 million tonnes in 2001. This was slightly more than in the year 2000 and in the year 2002 with 121 million tonnes, respectively. The lower production volume in the year 2000 was mainly caused by the decreased milk production in the United Kingdom. As farmer prices in the UK were very low in 1999, a lot of farmers laid down milk production. However, from the end of the year 2000 on, farmer prices were increasing and British farmers expanded milk production again (ZMP 2001b, p. 91). As in other years, Germany and France were the main milk producers in the EU in 2001, followed by the United Kingdom, Ireland and the Netherlands. The milk production of both Germany and France amounted to 44 percent of the entire milk production in the EU.

From the production at farm level almost 115 million tonnes were delivered to dairies in 2001 (BMVEL 2005, p. 463). In the beginning of the quota year 2001/2002 (01 April 2001-31 March 2002) the milk delivery to dairies was low due to a hampered milk collection as a consequence of the outbreak of FMD in the United Kingdom and in the Netherlands. In addition, unfavourable weather conditions led to a delayed start of the period of pasture. The low milk delivery in the beginning of the quota year was then compensated by a good fodder supply in late spring and summer (Roth and Salamon 2002, p. 48). The milk quota of the EU countries was slightly exceeded in the quota year 2001/2002 with a use of 100.5 percent (Kurzweil and Salamon 2003, p. 53).

The demand for milk and milk products increased in the years 2000 and 2001 due to a reduced demand for meat products as a consequence of the BSE-outbreaks. The increased demand referred especially to fresh milk products and to cheese. Particularly in Germany the reduced meat consumption was compensated by higher cheese consumption in 2001 (Roth and Salamon 2002, pp. 51). In addition, the demand on the world markets was high in 2001 leading to high producer prices for milk. The average EU farmer price in 2001 was with 31.6 €/100 kg more than 2 € higher than in the year 2000 (Kurzweil and Salamon 2003, p. 54). This favourable market situation, however, did not last for a long time as farmer prices for milk were significantly decreasing in the following years (see ZMP 2003b, p. 88).

5.5.2 Supply balance for organic milk and milk products

The supply balance drawn up for organic milk and milk products is shown in Table 5-15. In 2001, 2.2 million tonnes of organic milk were produced in the EU at farm level. A part of this produce or nine percent was directly used on farm. Most part of it refers to the milk used for feeding the calves. The use on farm was subtracted from the organic production, which leads to the total organic sales. As indicated in column F, a large amount of these sales had to be sold on the conventional market. Only 67 percent were sold as organic, i.e. with an additional premium over the conventional milk price. Thus, an amount of 1.3 million tonnes was sold as organic milk in 2001 in the EU. As milk is a perishable product, the foreign trade with milk and milk products is limited. The figures on foreign trade include processed products, as for example cheese, on the basis of raw milk equivalents. Both organic imports and exports were

around 100,000 tonnes in 2001. The organic milk consumption was therefore similar to the figure of the sales as organic with 1.3 million tonnes. The EU was more than self-sufficient with organic milk and milk products in 2001 indicated by a degree of self-sufficiency of 102 percent.

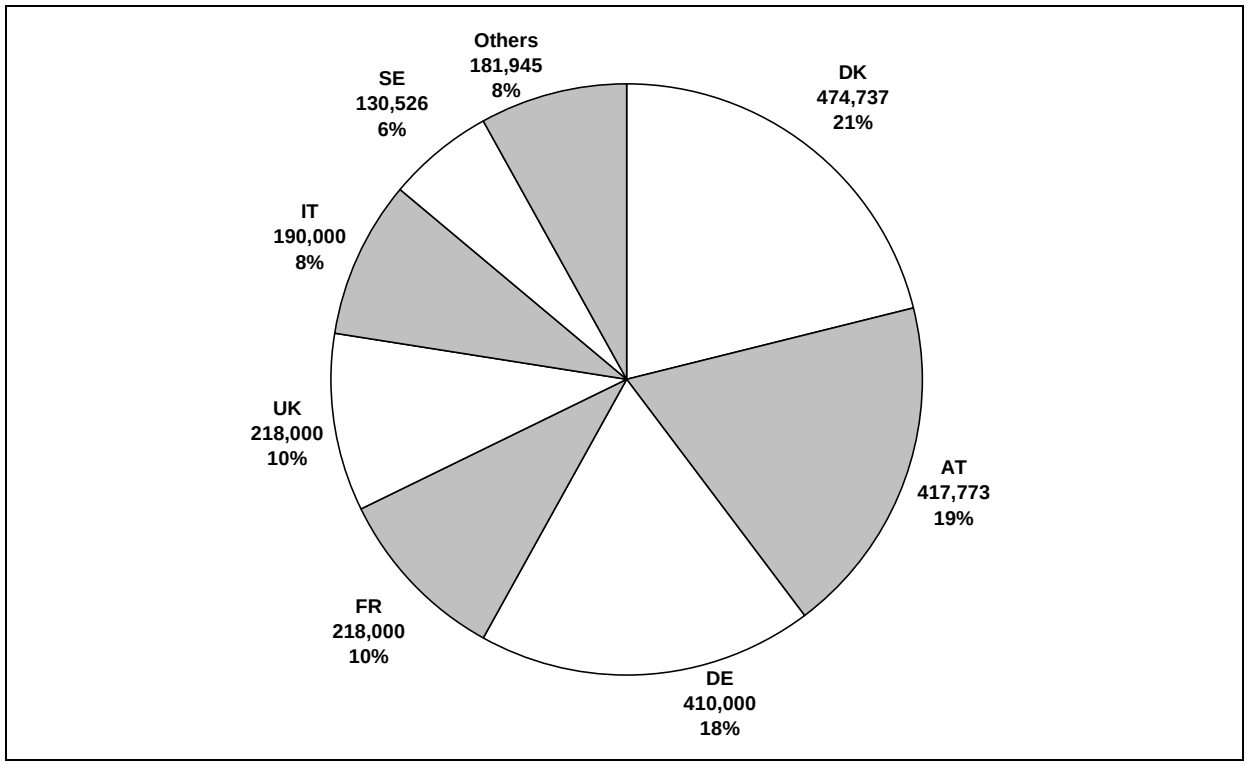
Table 5-15 Supply balance for organic milk and milk products in 2001

	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	417,773	14	60,000	357,773	54	193,000	1,500	45,000	149,500	129	AT
BE	30,000	15	4,470	25,530	100	25,530	15,000	10,000	30,530	84	BE
DE	410,000	4	15,000	395,000	82	324,000	20,000	25,000	319,000	102	DE
DK	474,737	5	23,737	451,000	31	139,810	0	14,000	125,810	111	DK
ES	3,125	5	156	2,969	60	1,781	200	0	1,981	90	ES
FI	24,899	9	2,134	22,765	100	22,765	0	/	22,765	100	FI
FR	218,000	27	58,000	160,000	87	139,200	27,000	2,000	164,200	85	FR
GR	9,300	5	465	8,835	40	3,534	0	0	3,534	100	GR
IE	3,196	5	168	3,028	100	3,028	1,758	0	4,786	63	IE
IT	190,000	9	16,340	173,660	100	173,660	25,000	5,000	193,660	90	IT
LU	1,425	3	43	1,382	65	898	2,095	/	2,993	30	LU
NL	108,500	8	8,500	100,000	100	100,000	7,500	27,500	80,000	125	NL
PT	1,500	10	150	1,350	30	405	30	/	435	93	PT
SE	130,526	5	6,526	124,000	75	93,000	0	/	93,000	100	SE
UK	218,000	4	8,000	210,000	65	137,300	4,900	/	142,200	97	UK
EU-15	**2,240,981**	**9**	**203,689**	**2,037,292**	**67**	**1,357,911**	**104,983**	**128,500**	**1,334,394**	**102**	**EU-15**
CZ	1,296	5	65	1,231	nd	nd	nd	/	nd	nd	CZ
SI	6,000	20	1,200	4,800	19	900	nd	/	900	100	SI
CH	191,000	12	23,000	168,000	88	147,840	/	1,400	146,440	101	CH
NO	16,674	11	1,856	14,818	42	6,283	400	/	6,683	94	NO

5.5.3 Organic milk production

Organic milk production was dominated by Denmark, Austria and Germany (see Figure 5-33). These three nations produced 58 percent of the organic milk in the EU in 2001. In France and the United Kingdom, both high volume producers of conventional milk, the organic milk production increased significantly from the year 2000 to 2001 (see Hamm et al. 2002, p. 13). Other countries with large volumes of organic milk production above 100,000 tonnes were Italy, Sweden and the Netherlands. From the investigated non-EU countries Switzerland dominated the organic milk production with 191,000 tonnes which is comparable to the organic milk production of Italy.

Figure 5-33 Organic milk production of the EU countries in tonnes in 2001

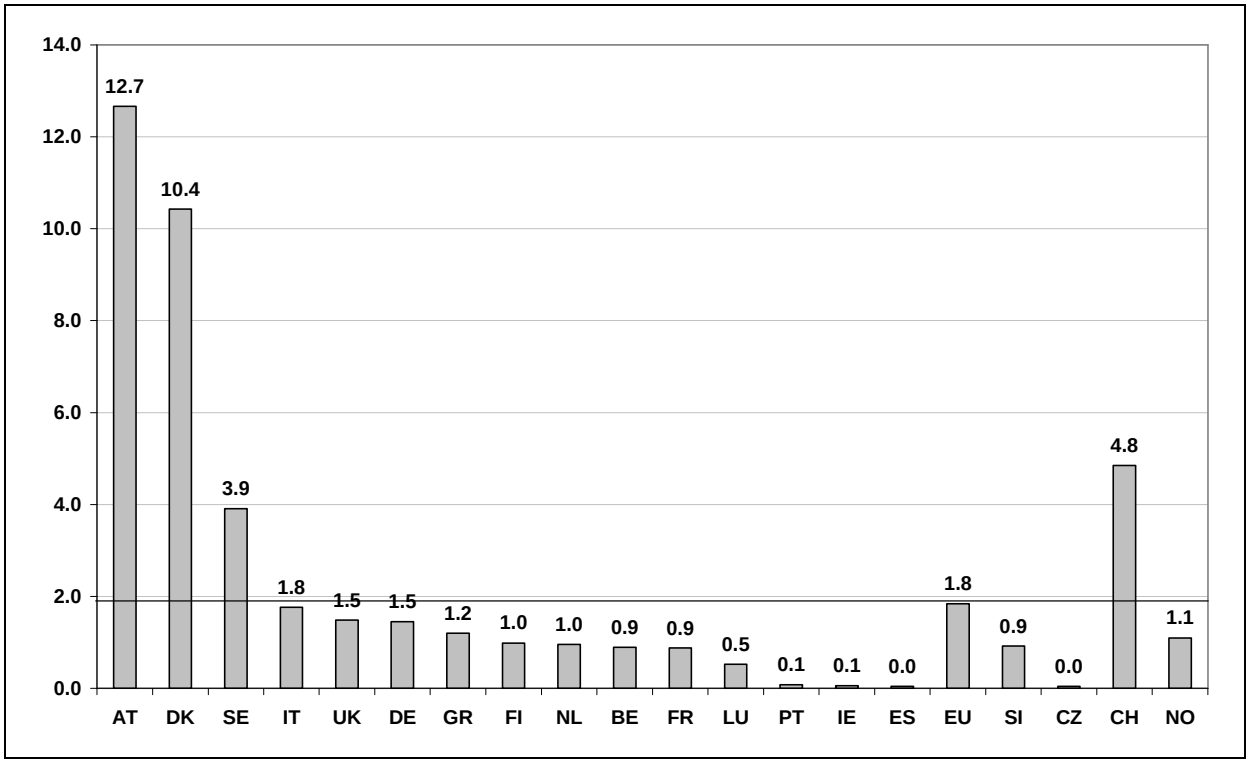


In Figure 5-34 the organic milk production is related to the total milk production at farm level in the surveyed countries (Eurostat 2009). These figures clearly display those countries in which the dairy sector played an important role in organic farming. Primarily, these were the countries Austria and Denmark, both with a two-digit organic share of total production of 12.7 and 10.4 percent, respectively. Sweden also, however with 3.9 percent, was responsible for the high EU average in the organic share of total milk production of 1.8 percent. All other surveyed countries reported organic production shares below the EU average, besides Switzerland with 4.8 percent and Italy which reached the EU average exactly. Whilst Germany, France and the United Kingdom had sizeable production volumes they did not match the organic percentages of total production of the aforementioned nations.

In Austria and Switzerland, the topographical and climatic conditions contribute to high organic production shares for milk. Due to the Alpine topography of these countries, the traditional milk production is rather extensive. Therefore, conversion to organic milk

production is relatively easy. In Denmark it reflects the key role played by Danish dairy companies (Hamm and Michelsen 1996, p. 216). Following several years in which demand exceeded supply, Danish dairies started providing high incentives to dairy farmers to convert to organic production. In the mid 1990s, the biggest dairy company, MD Foods (now ARLA) paid high premiums to farmers even in the conversion period (Wehland 1996, p. 25). In 2001, ARLA demonstrated once again that companies have a strong position of power concerning developments within the organic sector. ARLA was the first dairy making arrangements with organic farmers about the use of 100 percent organic animal feed for cows whereas the EU regulation for organic farming still allowed a 10 percent purchase of conventional animal feed.

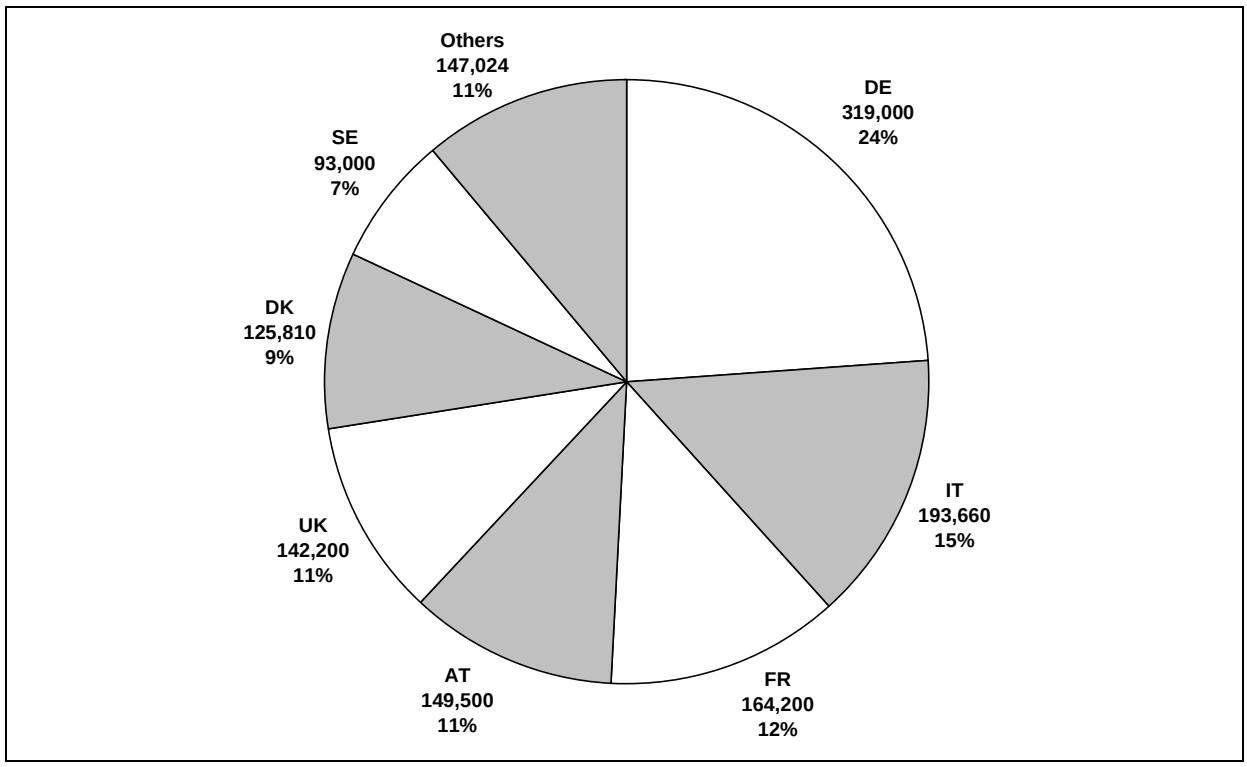
Figure 5-34 Organic share of total milk production in percent in 2001



5.5.4 Organic milk consumption

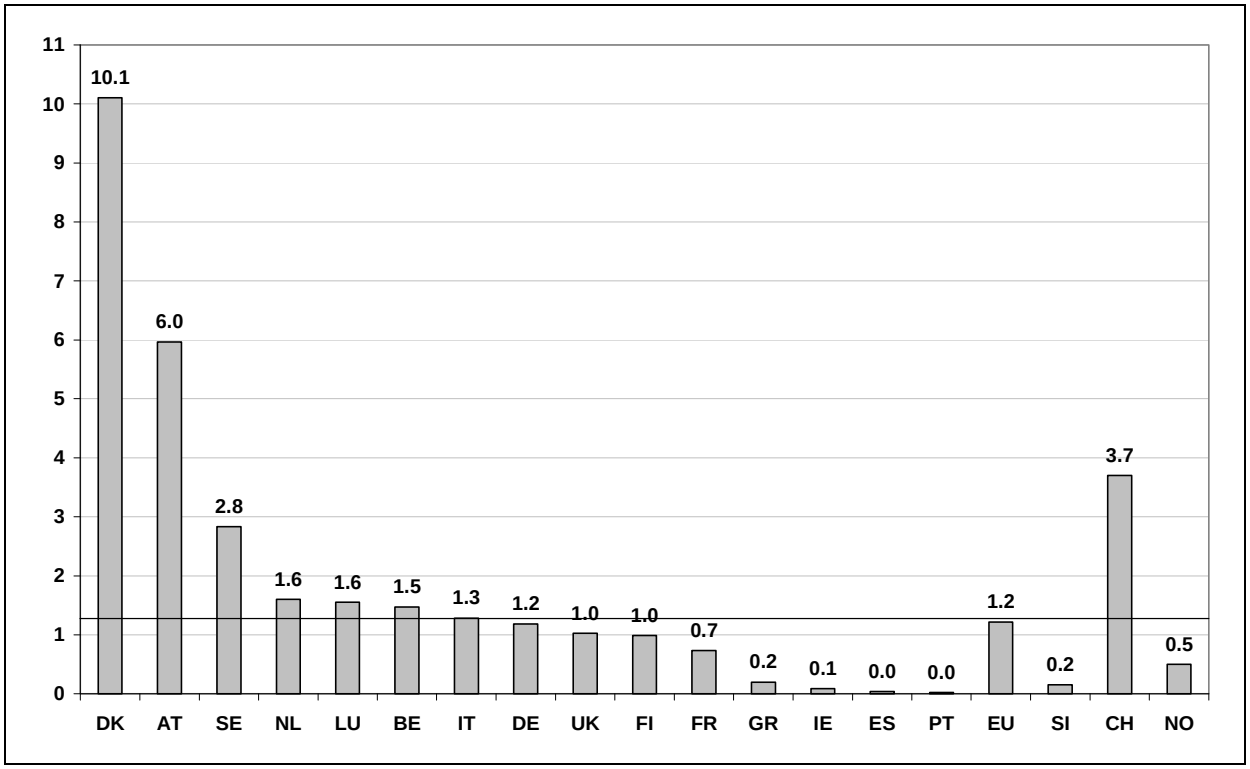
As shown by Figure 5-35 in Germany, Italy and France together more than 650,000 tonnes of organic milk and milk products were consumed in 2001. The organic milk consumption of these three countries corresponded to more than 50 percent of the total EU consumption of organic milk and milk products. Other countries with a large organic milk consumption were Austria, the United Kingdom, Denmark and Sweden.

Figure 5-35 Organic milk and milk product consumption of the EU countries in tonnes in 2001



The organic market shares measured by the total milk consumption are presented in Figure 5-36. The highest market share for organic milk was reported in Denmark with 10.1 percent, followed by Austria with 6.0 percent. The share of Switzerland with 3.7 percent was also quite high. These three countries had organic market shares that exceeded the EU average of 1.2 percent by far. The organic milk consumption consisted in all countries mainly on liquid milk. In Denmark and Switzerland the share of liquid milk measured by total organic consumption was above 20 percent in 2001. The share of butter and cheese was, however, very low.

Figure 5-36 Organic share of total milk and milk product consumption in percent in 2001

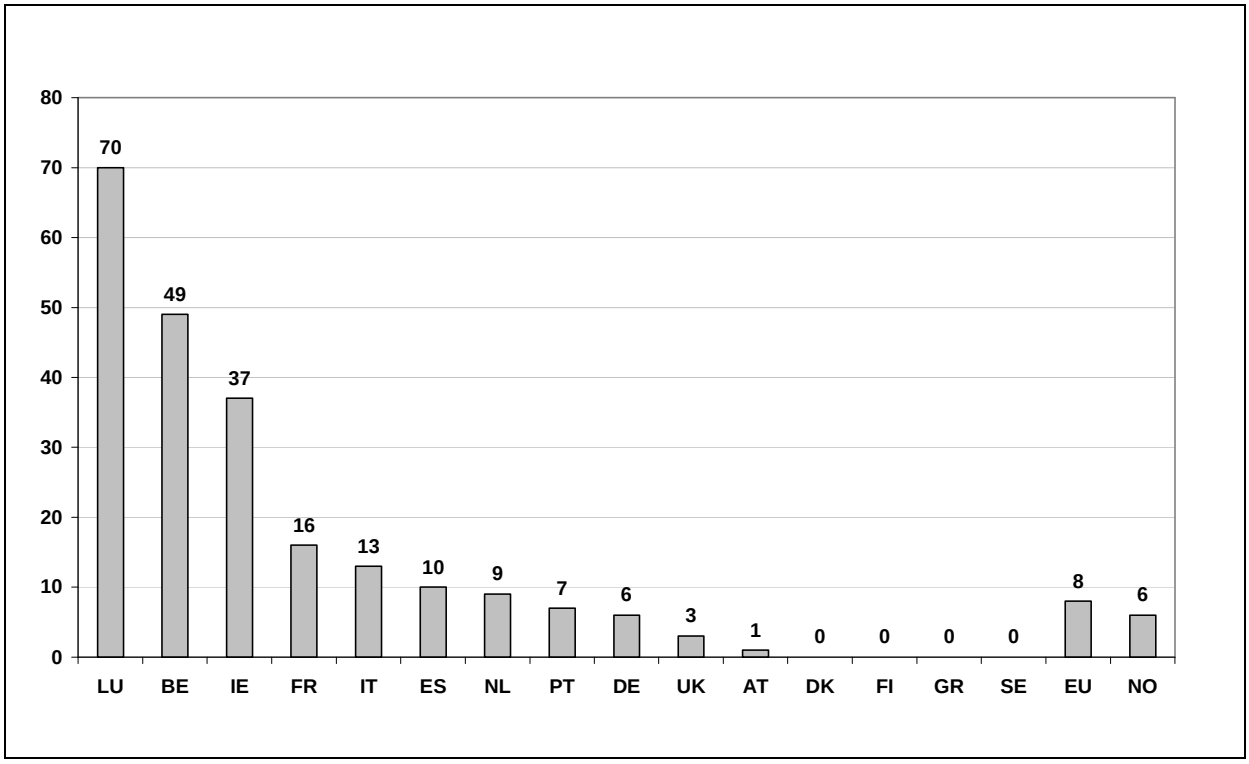


5.5.5 Foreign trade with organic milk and milk products

From all investigated animal products organic milk was the only one with relatively large levels of imports in 2001. The main importers of milk products were France, Italy and Germany (see Table 5-15). Even where countries reported that they import 0 tonnes it is very likely that they did import a certain amount of processed organic milk products; but as stated earlier it is not easy to survey foreign trade figures, especially on organic animal products for which the market is still very small.

Looking at the organic milk imports as a share of organic consumption, presented in Figure 5-37, it was Luxembourg which reported the highest import share for organic milk and milk products of 70 percent. Most processed organic milk products available in shops in Luxembourg are imported from neighbouring countries.

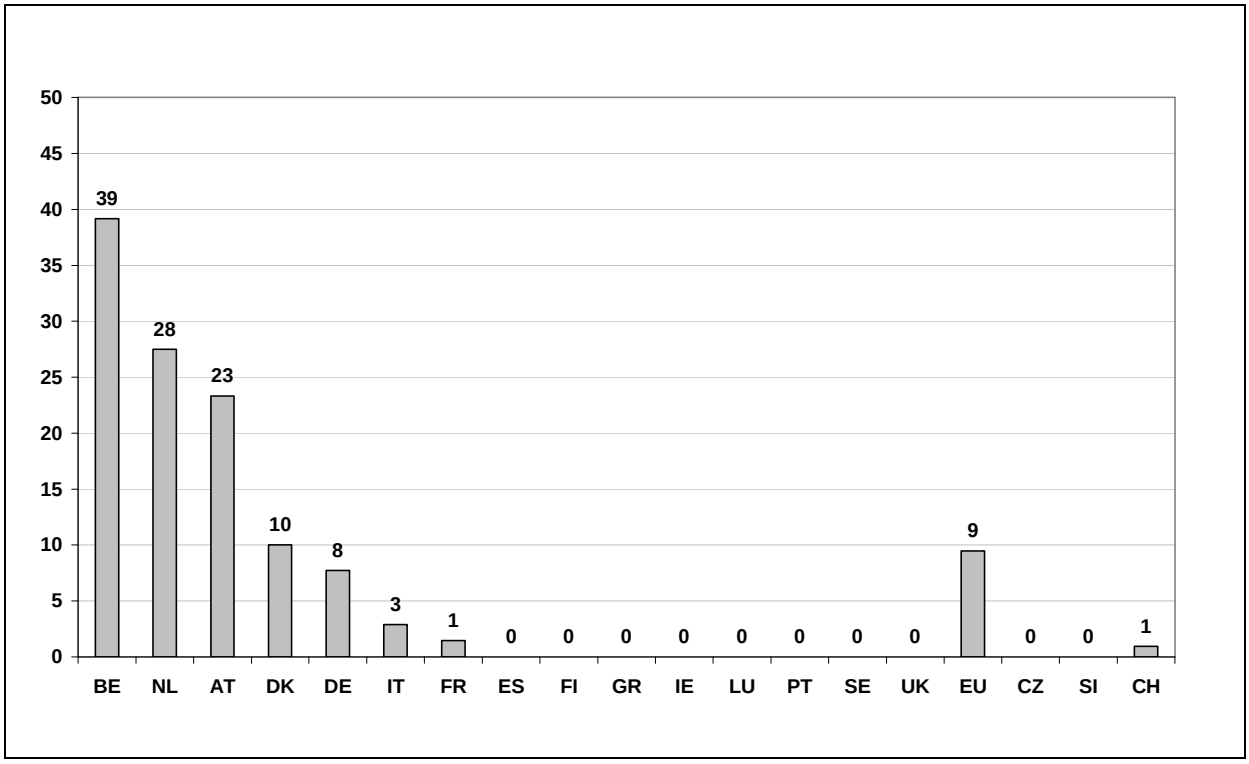
Figure 5-37 Imports of organic milk and milk products as a share of the organic milk and milk product consumption in percent in 2001



Austria, the Netherlands and Germany were the main milk exporting countries in 2001 in volume terms. For Austria and the Netherlands milk exports were mainly in form of organic cheese, whereas milk exports of Germany were mainly raw milk to France and Italy. Processed milk products were even exported to some extent to countries outside the EU.

Organic milk exports measured by the sales as organic are given in Figure 5-38. In the countries Belgium, the Netherlands, Austria and Denmark two-digit export shares of organic milk products as, for example, cheese were surveyed.

Figure 5-38 Exports of organic milk and milk products as a share of the sales as organic milk and milk products in percent in 2001



Comparing the organic imports and exports at an EU-wide level it can be stated that the EU was a net exporter for organic milk and milk products in 2001. Organic milk products, especially in the form of cheese, were mainly exported to the United States.

5.5.6 Balance between supply and demand of organic milk and milk products

In 2001, self-sufficiency levels for organic milk were particularly high (see Table 5-15). As could be anticipated, Austria, the Netherlands and Denmark had high self-sufficiency levels, reflecting their high levels of domestic production. All surveyed countries reported degrees of self-sufficiency for organic milk of above 80 percent with the exception of Luxembourg and Ireland with 30 and 63 percent, respectively. It is significant that traditional importers, such as the United Kingdom, registered a degree of self-sufficiency of 97 percent. These were 17 percentage points more than in the year 2000 (see Hamm et al. 2002, p. 71). The fact that the

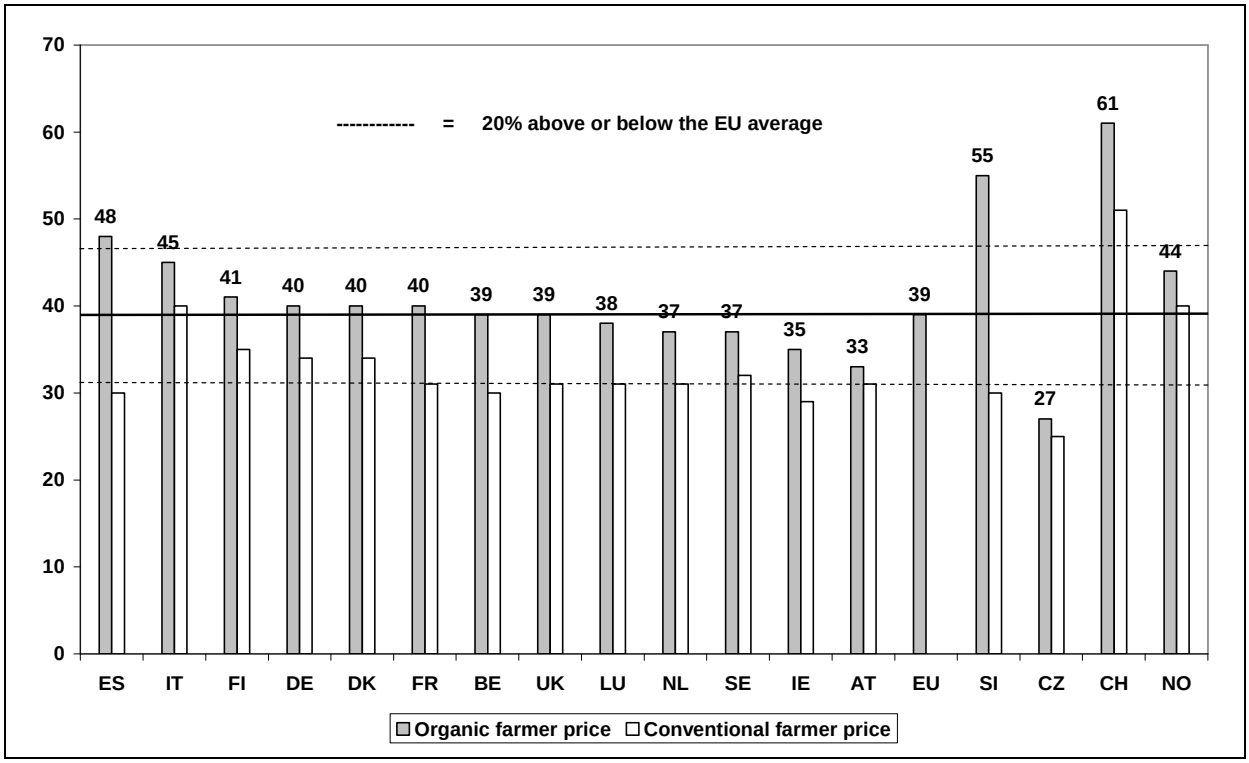
EU is a net exporter of organic milk and milk products, especially cheese, suggests that as internal EU markets increase their self-sufficiency, more emphasis will be placed on exports outside the EU in the future.

In addition to the degree of self-sufficiency, it was surveyed whether shortfalls for organic milk and milk products occurred in the years 2001 and 2002. Supply deficits were reported by experts from Spain, Finland, France, Greece, Slovenia and Norway. In the latter country, however, significant amounts of organic milk were produced; but the distances to dairies processing organic milk separately from conventional milk were in most cases very long. Thus, most part of the organically produced milk was processed together with conventional milk in Norway. Expected supply deficits for the years 2003 and 2004 were only named by experts from Spain, Finland and Slovenia.

5.5.7 Prices for organic milk and milk products

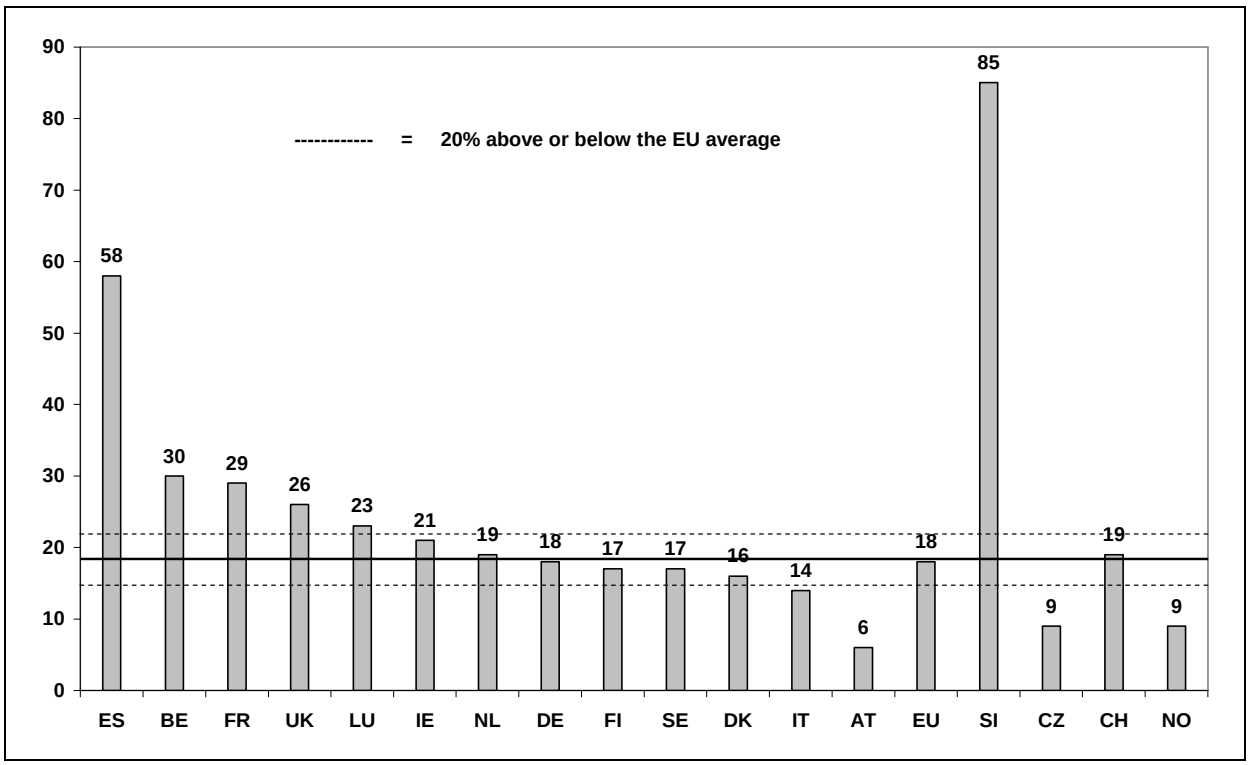
The EU average **farmer price** for organic milk was 39 €/100 l (see Figure 5-39). The reported prices were quite similar in most EU countries, with the exception of Spain, where the price was more than 20 percent higher than the EU average. The development of the organic milk price in the United Kingdom from 2000 to 2001 is striking. In 2000 the farmers received 48 €/100 l but in 2001 only 39 €/100 l. The high price in the year 2000 was paid by dairies to support the conversion of milk farms to organic production. However, in 2001 the price decreased as a result of a substantial increase in production from 86,000 tonnes to 218,000 tonnes.

Figure 5-39 Farmer prices for organic and conventional milk in €/100 l in 2001



The weighted EU average **price premium for milk** was 18 percent. Austria was the country with the lowest price premium of only 6 percent. A high government support influences farmers to produce organic milk. Most part of the Austrian milk production takes place in mountainous areas where even the conventional production is very extensive. Not much difference exists between conventional and organic production which is one reason for low price premiums for organic milk. Another reason is the above mentioned supply surplus of organic milk.

Figure 5-40 Farmer price premiums for organic over conventional milk prices in percent in 2001



As Table 5-16 illustrates, five milk products were chosen for analysing **consumer prices**. These were milk, butter, natural yoghurt, fruit yoghurt and cheese. Milk and milk products were the most important in northern European countries. Due to low turnovers, prices were usually much higher in Southern Europe. Exceptions to the rule were Ireland and the United Kingdom, which were net importers of organic milk. In these countries milk products were expensive. In Southern Europe milk was twice as expensive as in Northern Europe. The same trend was reflected for butter and yoghurt. Cheese was also cheaper in Northern Europe, but the difference was not that striking. The EU average for organic milk was 1.04 €/l. In Greece, Ireland, Italy, Portugal and the United Kingdom the price was more than 20 percent above the EU average.

The countries with the highest prices for butter were France, Greece, Italy, Luxembourg and Portugal. With respect to organic yoghurt, it is not surprising that fruit yoghurt was more expensive than natural yoghurt. This is because of high price premiums for fruit. The EU average prices for natural yoghurt and fruit yoghurt were 2.60 €/kg and 3.28 €/kg, respectively. The consumer prices for yoghurt, however, varied greatly between countries. Prices for natural yoghurt ranged from 1.13 €/l in the Netherlands up to 7.81 €/l in Portugal,

and for fruit yoghurt, prices ranged from 1.88 €/l in Denmark up to 4.94 €/l in the United Kingdom. Only six of the fourteen EU countries were within a span of 20 percent plus or minus on the average price for natural yoghurt. Concerning fruit yoghurt, only four countries were within this range. Organic cheese was cheap in Finland, the Netherlands and in Sweden compared with the EU average of 10.89 €/kg. In Greece, Italy and Luxembourg the price was more than 20 percent higher than the EU average price. This can be explained by the large variation in qualities between different yoghurts and cheeses.

It is not surprising that the consumer prices for most organic milk products exceeded the EU average in Luxembourg, Ireland, France and Italy. These four countries were among the countries having two-digit import shares for organic milk and milk products (see Figure 5-37). As a consequence of this domestic supply deficit one would expect higher organic farmer prices in these countries. However, only in Italy above average farmer prices for organic milk were reported in 2001. In Luxembourg, Ireland and France farmers obviously did not profit from the shortfalls, since farmer prices for milk were only average in these countries.

Table 5-16 Consumer prices for organic milk products in €/kg in 2001

Country	Milk	Butter	Natural yoghurt	Fruit yoghurt	Cheese
EU countries					
AT	0.97	6.49	2.20	2.81	9.97
BE	1.17	6.40	3.25 ▲	4.59 ▲	10.04
DE	0.95 [1]	6.73 [1]	3.00 [1]	3.11	10.80 [1]
DK	0.91	7.38	1.64 ▼	1.88 ▼	10.73
ES	nd	nd	nd	nd	nd
FI	0.89	-	2.14	2.45 ▼	7.84 ▼
FR	1.21	10.00 ▲	3.09	4.13 ▲	12.42
GR	1.91 ▲	11.74 ▲	4.11 ▲	4.11 ▲	14.67 ▲
IE	1.26 ▲	6.55	3.02	3.92	11.00
IT	1.57 ▲	11.79 ▲	4.26 ▲	4.71 ▲	15.11 ▲
LU	1.12	9.82 ▲	2.85	4.14 ▲	13.66 ▲
NL	0.93	7.32	1.13 ▼	3.11	8.55 ▼
PT	2.22 ▲	12.28 ▲	7.81 ▲	4.34 ▲	10.18
SE	0.79 ▼	7.45	1.25 ▼	2.13 ▼	8.32 ▼
UK	1.30 ▲	8.49	3.78 ▲	4.94 ▲	12.35
Weighted EU average [2]	**1.04**	**7.74**	**2.60**	**3.28**	**10.89**
Accession countries					
CZ	0.53	2.95	nd	nd	5.42
SI	0.66	nd	nd	nd	6.42
EFTA countries					
CH	1.16	13.78	2.54	3.38	15.47
NO	1.39	14.14 [3]	3.65 [3]	9.45 [3]	11.81

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption
[3] Imported products, only available in organic food shops

Table 5-3 shows the **consumer price premiums** of the five investigated milk products. In Austria, Denmark and Sweden price premiums for milk and all investigated milk products were more than 20 percent lower than the EU average. These are typical milk production countries.

Table 5-17 Consumer price premiums for organic milk products in percent in 2001

Country	Milk	Butter	Natural yoghurt	Fruit yoghurt	Cheese
EU countries					
AT	27 ▼	15 ▼	46 ▼	11 ▼	15 ▼
BE	69 ▲	38	76	55	51
DE	56 [1] ▲	72 [1] ▲	176 [1] ▲	152 ▲	111 [1] ▲
DK	18 ▼	20 ▼	19 ▼	33 ▼	23 ▼
ES	nd	nd	nd	nd	nd
FI	48 ▲	-	23 ▼	128 ▲	33 ▼
FR	35	74 ▲	91 ▲	61	82 ▲
GR	85 ▲	42	81	16 ▼	212 ▲
IE	18 ▼	89 ▲	9 ▼	42 ▼	24 ▼
IT	31	77 ▲	15 ▼	-2 ▼	47
LU	45	109 ▲	15 ▼	36 ▼	84 ▲
NL	33	60 ▲	38 ▼	127 ▲	41 ▼
PT	186 ▲	129 ▲	243 ▲	90 ▲	29 ▼
SE	22 ▼	30 ▼	10 ▼	26 ▼	43 ▼
UK	59 ▲	37 ▼	8 ▼	32 ▼	43 ▼
Weighted EU average[2]	**39**	**48**	**73**	**69**	**58**
Accession countries					
CZ	13	12	nd	nd	43
SI	0	nd	nd	nd	5
EFTA countries					
CH	21	65	61	48	41
NO	36	191	62	235	27

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

In Austria, Denmark, Sweden and Switzerland low price premiums for organic milk are used by general food shops as a marketing strategy to increase organic sales. This is because many consumers know the price for liquid milk and butter, as these are frequently bought products. A high price premium for milk would therefore act as a deterrent. A general trend from the surveyed data shows that price premiums for liquid milk and butter were lower in the EU than those for yoghurts and cheese. The higher price premiums for organic yoghurts and cheese are accepted by consumers because they come in a large variety of products and package units, which makes it more difficult for consumers to compare prices with similar conventional items, and between shops.

Looking at the consumer price premiums for milk products, Germany is an interesting case. Although the farmer price premium for milk only reached the EU average, all consumer price premiums for milk products in Germany were more than 20 percent higher than the EU average. Obviously, the organic milk market does not work well in Germany. High collection costs for dairies, caused by many different farmer organisations (each with its own label) operating in one region, high processing costs in small dairies, and high distribution costs to a large number of small organic food shops, result in high marketing costs in Germany (see Hamm and Michelsen 1996).

5.6 The organic beef market

5.6.1 General notes about the total beef market in 2001

In this chapter, a short overview will be given about the total beef sector in the year 2001, including both organic and conventional cattle. Concerning meat markets the year 2001 was extraordinary as it was strongly influenced by the outbreak of two severe animal diseases. In the winter 2000/2001 in many European countries the bovine spongiform encephalopathy (BSE) was diagnosed. As a consequence the consumption of beef as well as beef prices decreased dramatically. In February 2001, the foot and mouth disease (FMD) broke out in the United Kingdom leading to comprehensive slaughtering of suspicious stocks (Probst 2002, p. 53).

However, the gross indigenous production of beef in 2001 was not significantly lower than in the year before. In the EU, 7.4 million tonnes of beef (carcass weight) were produced in 2001; in 2000 the production amounted to 7.5 million tonnes (Eurostat 2009). Both years were characterised by a low beef production compared to the year 1999 with 7.7 million tonnes of beef. In 2002, beef production increased again up to 7.6 million tonnes. The relatively low reduction of the beef production in 2001 can be explained by the inconvenient structure of slaughtering. Due to the decrease of demand in spring 2001, many animals were not slaughtered but kept until autumn when the market was more relaxed again. Thus, many animals were slaughtered at a higher slaughter weight than usual. This led to the fact that the total production amount was similar to that in the year before despite a smaller number of slaughtered animals (Probst 2002, p. 61). In 2001 - as in other years - the main beef producing countries were France and Germany with 1.8 and 1.4 million tonnes, respectively.

The data on the total domestic use for cattle (Eurostat 2009) document the decrease of beef consumption in the year 2001. The total domestic use of the EU countries amounted to 6.8 million tonnes (1999: 7.5, 2000: 7.2, 2002: 7.5 million tonnes). Most obvious was the reduction in Germany, where the total domestic consumption of beef decreased by 29 percent from 2000 to 2001. Interestingly, in some countries as, for example, the Netherlands and the United Kingdom, beef consumption showed an increase from 2000 to 2001. This is surprising especially with regard to the latter country, since the United Kingdom was strongly affected by BSE and FMD in 2001. As an explanation Probst (2002, p. 61) states that the United Kingdom was already used to BSE outbreaks. Thus, the British people obviously reacted more relaxed than, for example, German, French or Spanish consumers. In the United Kingdom, BSE was recognised in 1986 the first time and in 1992 the epidemic reached its peak with almost 37,000 confirmed cases all over the country (DEFRA 2009).

As shown in the statistics of foreign trade (Eurostat 2009), the imports of beef recorded for the United Kingdom were clearly higher than in the years before 2001. The same applies for the Netherlands. However, in Italy, France and Germany - the other main importing countries - beef imports were lower than in normal years. The most obvious increase of beef exports was reported from Germany. In the United Kingdom exports were slightly above those of the year 2000, whereas in most other countries exports were reduced in 2001. In Ireland, which usually is the main exporting country for beef among the EU countries, the exports were strongly reduced in 2001. The degree of self-sufficiency in the EU reached 109 percent in 2001, which was around five percentage points higher than in other years. This was caused by

a relatively stable production volume measured by a clearly reduced beef consumption.

The gross human consumption per capita decreased from 19 kg/head in the year 2000 to 17.9 kg/head in 2001. The per capita consumption was highest in Luxembourg and France with over 25 kg/head. Germany was outstanding because of its low beef consumption with 10 kg/head. Even in normal years Germany reports the lowest per capita consumption of beef. In 2001, it was 4 kg lower than in the year 2000 with 14 kg/head.

5.6.2 Supply balance for organic beef

In Table 5-18 important key data for the organic beef market in the year 2001 are presented. The organic beef production in the EU countries amounted to 150,000 tonnes with Germany and France being the main producers. In contrast to other product groups, the amounts which were used on farm were negligible. Only three out of 19 countries reported an appreciable amount of beef that was directly consumed on farm. All reported figures for the use on farm were below 10 percent. Thus, the organic production was in most cases identical with the amount which was sold at the market. Much more relevant than the use on farm was the percentage of sales which was sold with an organic label at the market in contrast to that part of the production which had to be sold as conventional product. On average only 68 percent of the organically produced beef was sold as organic beef in 2001. Spain and Denmark were the countries with the lowest share of sales as organic beef with 20 and 33 percent, respectively.

For calculating the organic consumption of organic beef in the individual countries, the figures on the sales as organic were used as starting point. The imported volumes of organic beef were added and the organic exports were subtracted which resulted in that amount which was consumed within each country. As with all organic meat products, foreign trade with organic beef was limited, and the imported and exported amounts were rather similar. Dividing the EU sum of the sales as organic by the EU's organic consumption led to a degree of self-sufficiency of 99 percent for the entire EU.

Looking at the four non-EU countries, considerable amounts of organic beef were produced in the Czech Republic, Slovenia and Switzerland. However, in all theses countries only a below EU average part was able to sell as an organic product. The share of sales which was sold as organic was especially low in Slovenia, with only two percent. Reasons might be a lack of slaughter houses, slaughtering organic animals separately from conventional cattle, or simply the still absent domestic demand for organic beef.

Table 5-18 Supply balance for organic beef in 2001

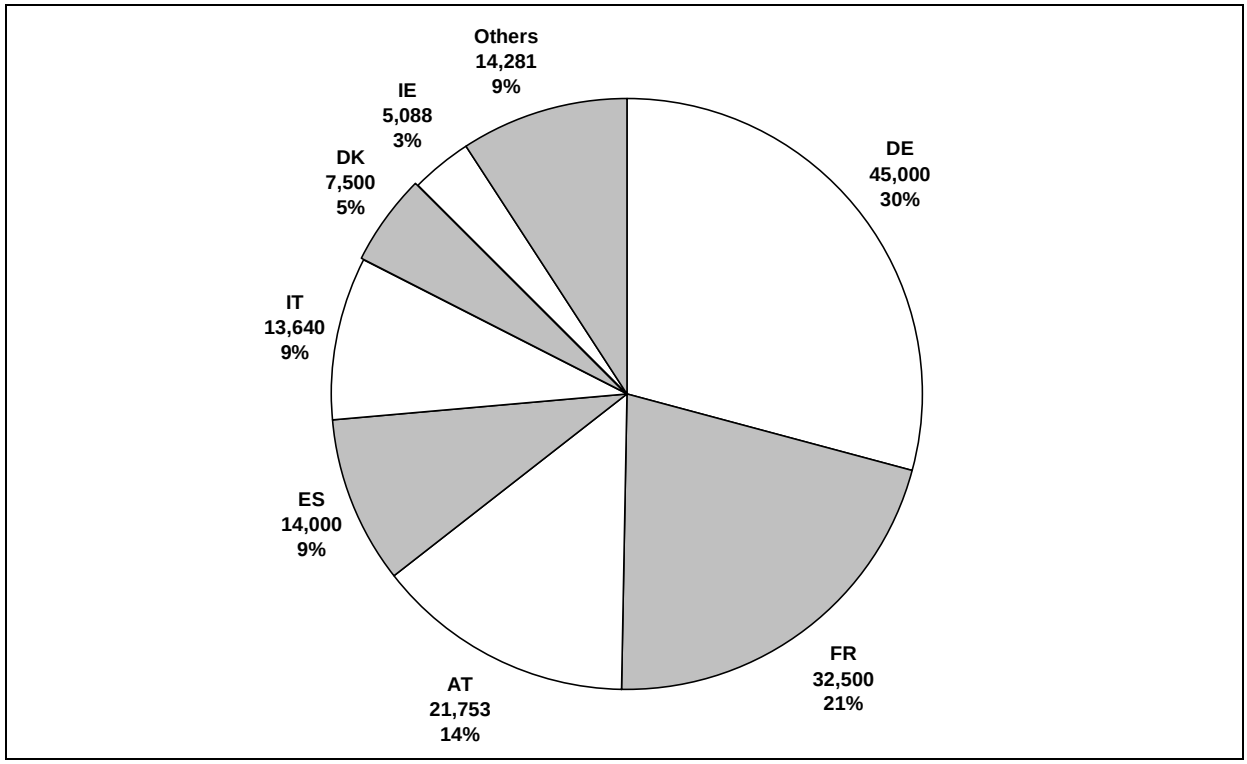
	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	21,753	0	0	21,753	60	12,982	0	2,500	10,482	124	AT
BE	3,000	0	0	3,000	75	2,250	735	0	2,985	75	BE
DE	45,000	0	0	45,000	70	31,500	500	4,000	28,000	113	DE
DK	7,500	0	0	7,500	33	2,500	/	/	2,500	100	DK
ES	14,000	0	0	14,000	20	2,800	0	/	2,800	100	ES
FI	714	0	0	714	65	464	0	/	464	100	FI
FR	32,500	0	0	32,500	100	32,500	1,000	500	33,000	98	FR
GR	649	0	0	649	50	325	200	0	525	62	GR
IE	5,088	0	0	5,088	50	2,544	0	1,500	1,044	244	IE
IT	13,640	3	477	13,163	60	7,898	2,800	/	10,698	74	IT
LU	71	0	0	71	100	71	18	/	89	80	LU
NL	975	0	0	975	100	975	915	0	1,890	52	NL
PT	300	0	0	300	80	240	0	0	240	100	PT
SE	3,912	0	0	3,912	90	3,521	0	0	3,521	100	SE
UK	4,660	0	0	4,660	95	4,427	3,000	/	7,427	60	UK
EU-15	**153,762**	**0**	**477**	**153,285**	**68**	**104,997**	**9,168**	**8,500**	**105,665**	**99**	**EU-15**
CZ	1,066	0	0	1,066	nd	nd	0	nd	nd	nd	CZ
SI	1,525	6	90	1,435	2	30	0	/	30	100	SI
CH	4,000	3	133	3,867	43	1,647	/	/	1,647	100	CH
NO	472	0	0	472	25	118	/	/	118	100	NO

5.6.3 Organic beef production

All figures presented on the organic beef market contain veal meat. This corresponds to the way of data collection as it is conducted by Eurostat for the total (organic plus conventional) beef market, making sure that the figures collected in the framework of this study are comparable to the official data for the total market.

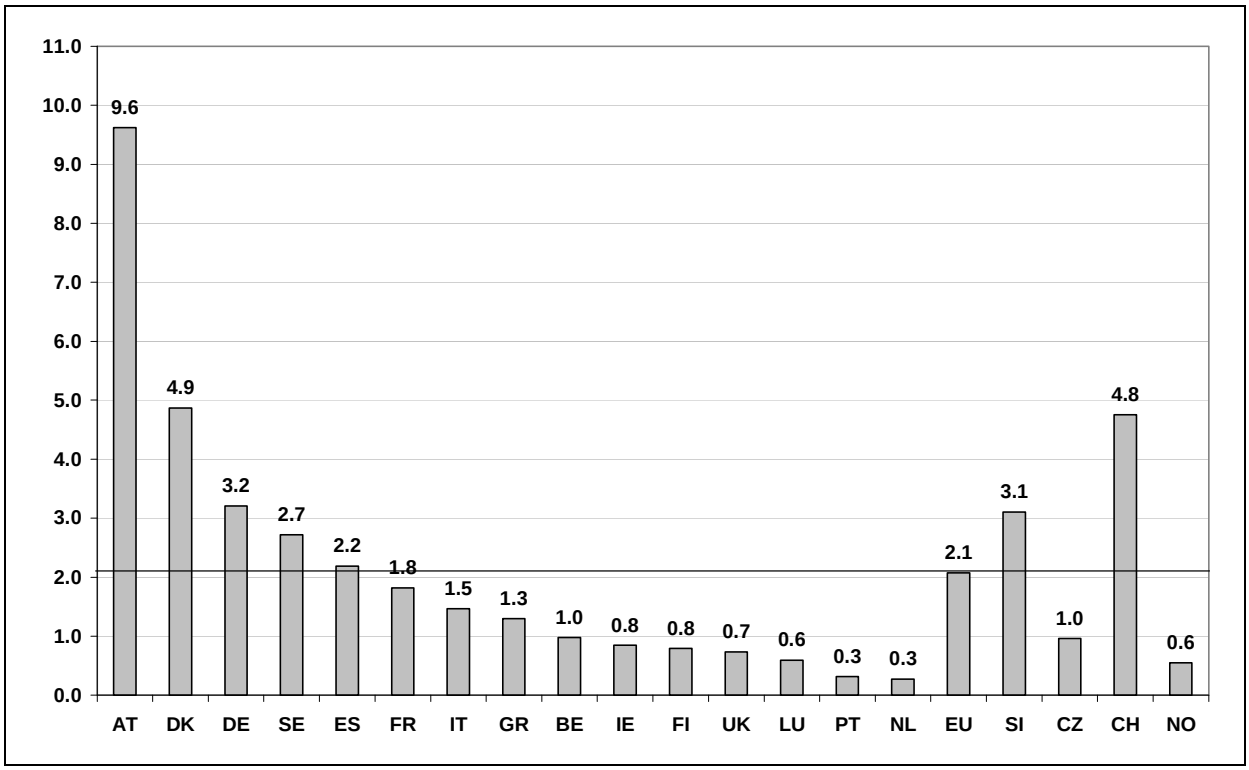
In Figure 5-41 an overview is given about the main organic beef producing countries in the EU. In 2001, the organic beef production was dominated by Germany, France and Austria which produced together 66 percent of the total organic beef production in the EU. Germany was the leading country with 30 percent. The significant role of France in conventional beef production also translated into organic production which was the second largest production by volume within the countries in the investigation. The large production volume of Austria can best be explained by its high share of organic grassland measured by the total agricultural area under organic cultivation. Government payments for the conversion of grassland to organic grassland were very high in Austria, which motivated many farmers to start organic farming. The consequence was a high production volume of all grassland based products as organic beef and organic milk (see chapter 5.5). The three large volume producers were followed by Spain and Italy each producing nine percent of the EU organic beef production.

Figure 5-41 Organic beef production of the EU countries in tonnes in 2001



In Figure 5-42 the organic beef production was related to the total (organic plus conventional) beef production within the surveyed countries. The figures for the total beef production (as well as for the total beef consumption used in chapter 5.6.4) originate for most countries from the Eurostat online database (Eurostat 2009). Where the final data on beef for the year 2001 were not available from Eurostat, those figures were used which were surveyed by partners within the OMIaRD project. All production figures presented in this study indicate the gross indigenous production, which is given in tonnes of carcass weight. This is the weight of the slaughtered animal without intestines but including the bones.

Figure 5-42 Organic share of total beef production in percent in 2001



Austria and Denmark, the leading organic milk producers among the EU countries (see chapter 5.5), were also the countries with the highest organic share of total beef production, far above the EU average of 2.1 percent. Other countries exceeding the EU average were Germany, Sweden and Spain. Importantly, Slovenia had a high percentage score of 3.1 percent. This can be easily explained by the high importance of grassland within the different organic land use categories. Organic grassland had a share of 93 percent of the total organic area in Slovenia (Bavec and Bavec 2003). Of the EFTA countries, Switzerland, with a score of 4.8 percent, had the third highest score of all surveyed nations.

At least in the case of Switzerland, conversion to pasture-based beef production, as part of an Alp-based farming system, is being advocated by scientists on the basis of economic modelling (see Richter et al. 2001)[1], and by advisory officers and general food shops who wish to market pasture fed beef[2]. A role has also been played by generous government

[1] There was a broader project, called 'ETH Primalp', being undertaken at Eidgenössische Technische Hochschule (ETH) Zürich.

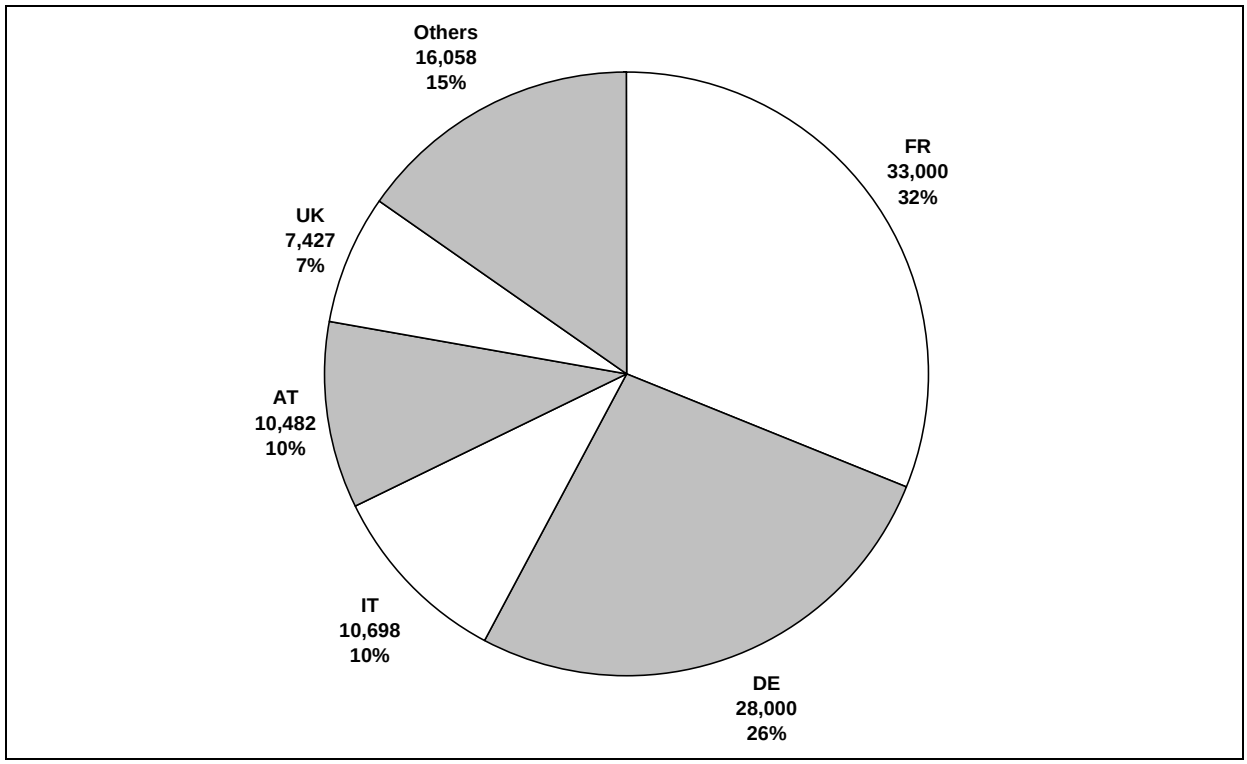
[2] Organic pasture-based beef is being marketed by Migros Ostschweiz under the label 'Bioweidebeef'. In 2000 this product line accounted for 16 percent of beef sales in Migros Ostschweiz stores.

incentives for extensive grassland conversion to organic production (Hamm and Michelsen 1999, p. 16). Clearly where large-scale conversion occurs in milk production a similar trend results in beef production. However, the organic beef production has, up till now, often not been of as high a quality as the conventional competitor, given that it has been viewed largely as an adjunct to milk production. There are exceptions. In some regions of Germany (in particular Mecklenburg-Western Pomerania and Brandenburg) and in the United Kingdom (Scotland), specialised organic beef production has developed, involving large herds of mother cows, and is of great importance to the organic meat market.

5.6.4 Organic beef consumption

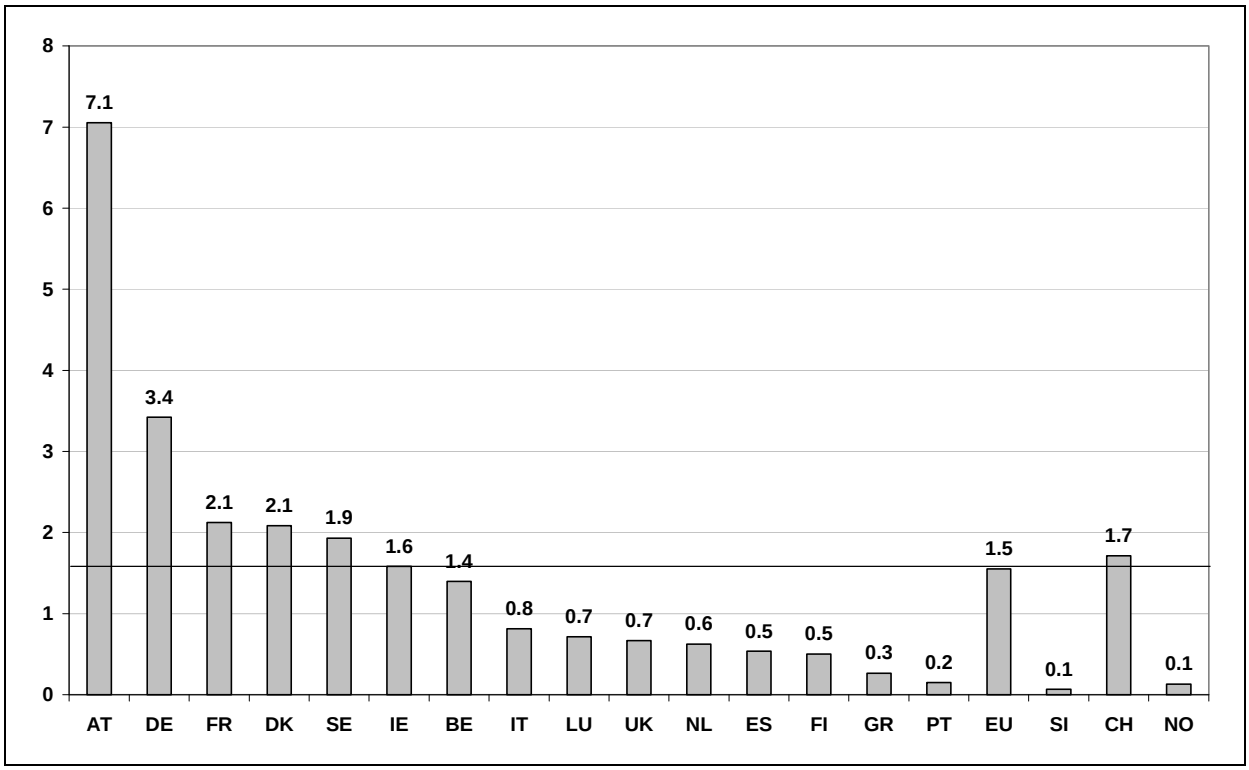
The market for organic meat is still very small in the EU. In 2001, organic beef was the meat product group with the highest consumption in the EU with around 100,000 tonnes. As shown in Figure 5-43, 78 percent of the organic beef consumption fell upon the countries France, Germany, Italy and Austria. The only non-EU country investigated in this study and reporting a considerable consumption volume of organic beef was Switzerland with 1,600 tonnes.

Figure 5-43 Organic beef consumption of the EU countries in tonnes in 2001



Due to the dependence of these absolute figures on the number of inhabitants of a country, it is important to relate the organic consumption to the total beef consumption within the individual countries for being able to compare the markets between countries. These organic shares of total beef consumption have been compiled in Figure 5-44.

Figure 5-44 Organic share of total beef consumption in percent in 2001

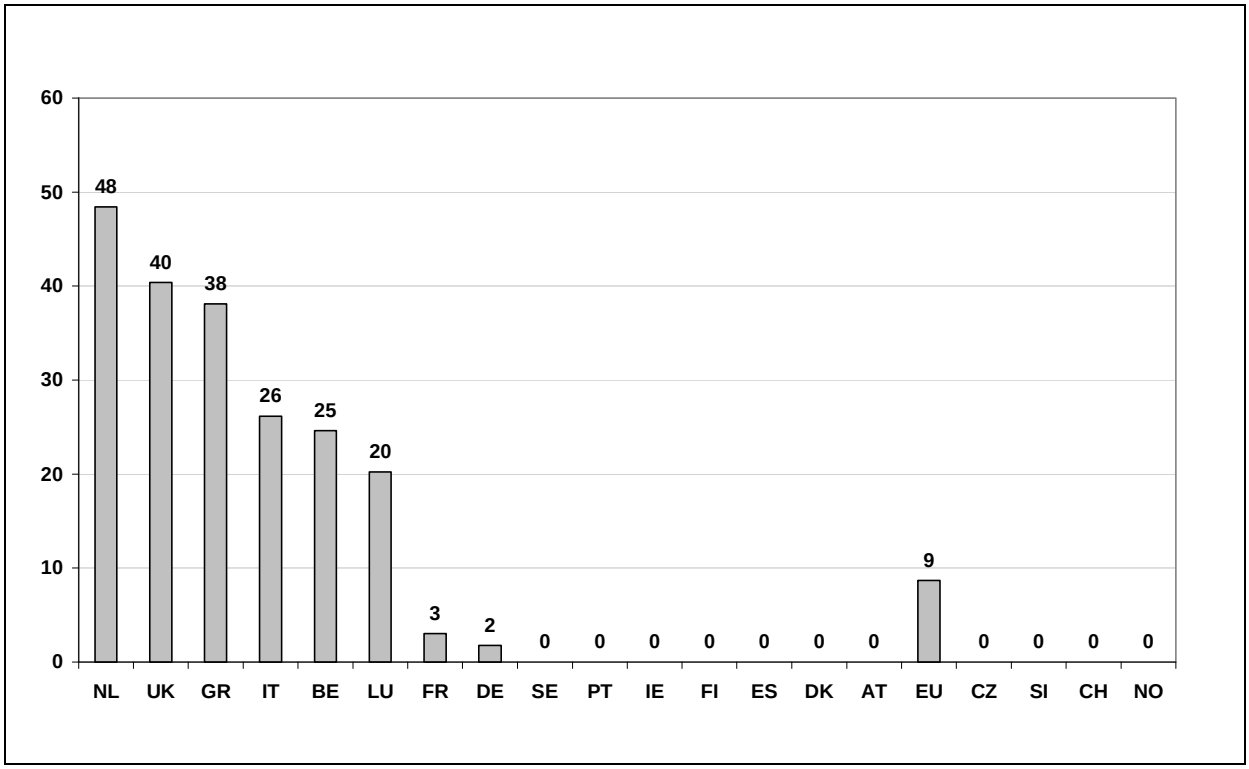


Austria and Germany were the countries with the highest shares of organic beef consumption measured by their total beef consumption. Their organic consumption shares exceeded by far the EU average of 1.5 percent. From the non-EU countries, only Switzerland reported a considerable organic consumption share of 1.7 percent.

5.6.5 Foreign trade with organic beef

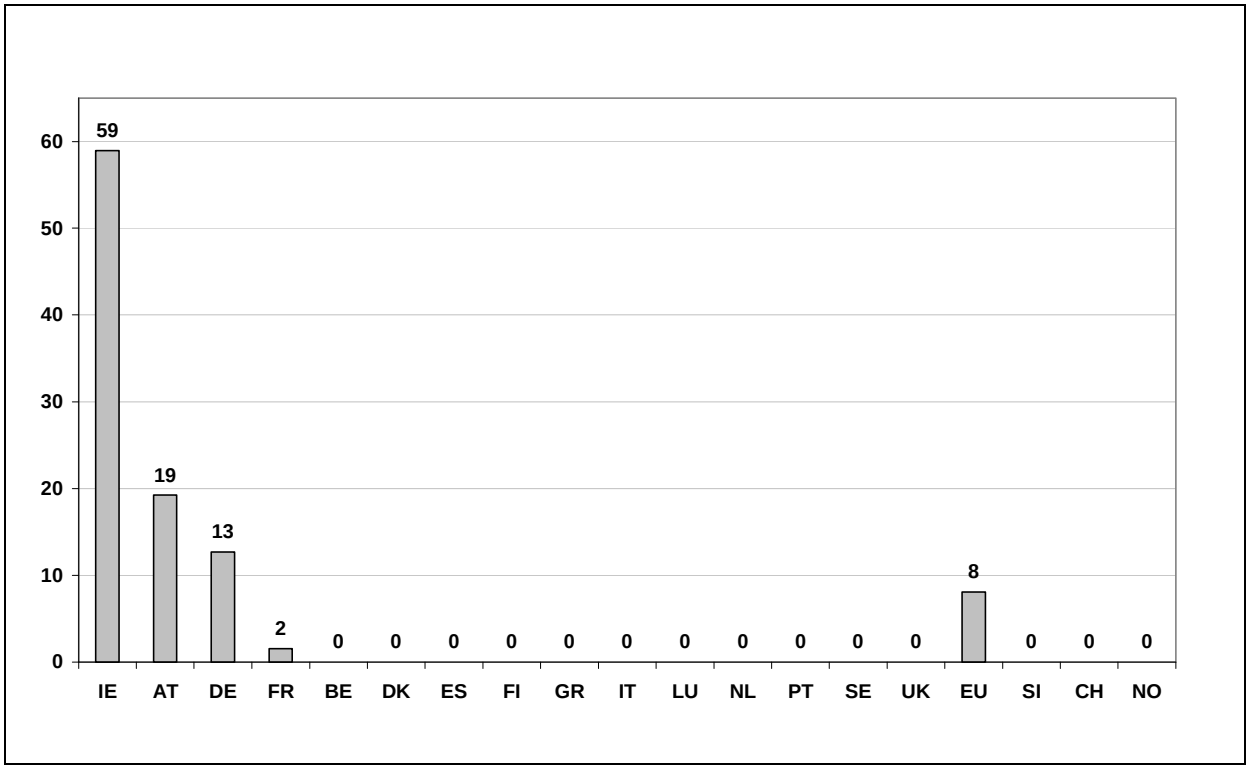
The absolute figures on organic beef imports are presented in Table 5-18. In 2001, the three countries with the largest imports of organic beef were the United Kingdom, Italy and France. In Figure 5-45 these imported amounts were related to the organic beef consumption in the surveyed countries. The countries which depended to the highest degree on imports were the Netherlands, the United Kingdom and Greece. They imported 38 to 48 percent of the organic beef consumption from other countries. The main organic beef producers among the EU countries in 2001 - France, Germany and Austria - reported very low import amounts.

Figure 5-45 Imports of organic beef as a share of the organic beef consumption in percent in 2001



From all surveyed countries, Germany exported with 4,000 tonnes by far the largest amount of organic beef in 2001 (see Table 5-18). Other countries with considerable organic beef exports were Austria and Ireland. The organic export shares presented in Figure 5-46 give an impression how much of the domestic organic beef production of the individual countries was exported to other countries. Obviously, in Ireland most parts of the organic beef production were exported. Its export share of 59 percent was by far the highest out of all investigated countries, most of which was destined for the United Kingdom. The two other main exporting countries, Austria and Germany, reported organic export shares of 19 and 13 percent, respectively. From 19 surveyed countries, a high number of 14 countries did not export any amounts above 0 percent of organic beef in 2001. This is astonishing as in all 19 countries an organic beef production existed. However, only 68 percent of the EU's organic beef production was able to be sold as an organic product. Most countries produced enough of these products themselves and had no need to import additional amounts.

Figure 5-46 Exports of organic beef as a share of the sales as organic beef in percent in 2001



Comparing the figures of organic beef imports and exports at an EU-wide level, the EU was a net importer in 2001. However, the difference between imports and exports was rather small. Organic beef was mainly imported from Argentina, the Czech Republic and Poland.

5.6.6 Balance between supply and demand of organic beef

The EU-wide degree of self-sufficiency for organic beef accounted for 99 percent in 2001 (see Table 5-18). Ireland, Austria and Germany were the countries with the highest degrees of

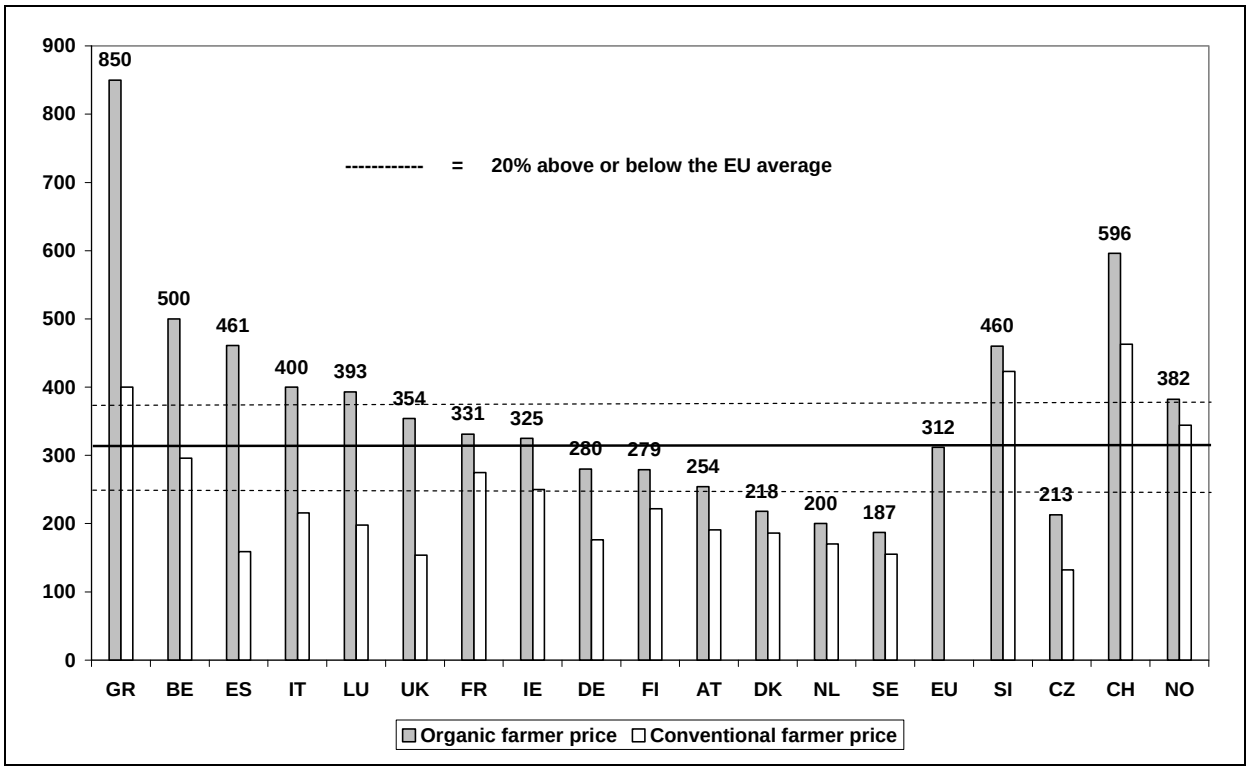
self-sufficiency for organic beef. In Ireland it was especially high with 244 percent. Fifty-nine percent of the Irish organic beef was exported, mainly to the United Kingdom where a large number of cattle had to be killed due to the infection with BSE in 2001. The Netherlands, the United Kingdom and Greece had the lowest degrees of self-sufficiency for organic beef in 2001 between 52 and 62 percent.

Asking market experts in a qualitative way if there were shortfalls for organic beef in their countries in the years 2001 and 2002, it appeared that in Spain, Finland, Greece, Luxembourg and Slovenia supply deficits existed in these years. This is astonishing as many countries reported selling their organic beef without organic label; thirty-two percent of the EU's organic beef was sold on the conventional market. This reflects the situation that in the years 2001 and 2002 the processing facilities for organic beef were still not sufficiently developed. In some regions of Europe a large organic beef production existed, but no slaughter houses were willing to slaughter organic cattle separately from conventional cattle as it was necessary for the organic certification process. In the following years the situation was expected to improve. Supply deficits for organic beef in the years 2003 and 2004 were only anticipated from experts of Spain, Finland and Slovenia.

5.6.7 Prices for organic beef

The farmer prices for organic and conventional beef are shown in Figure 5-47. From Greece an extraordinary high farmer price was reported being almost three times higher than the EU average price of 312 €/100 kg. However, a big part of the Greek beef production is veal which is sold for significantly higher prices than beef. Other countries with above average farmer prices were Belgium, Spain, Italy and Luxembourg. With the exception of Spain this can be explained with the low degree of self-sufficiency for organic beef in these countries (see Table 5-18).

Figure 5-47 Farmer prices for organic and conventional beef in €/100 kg in 2001

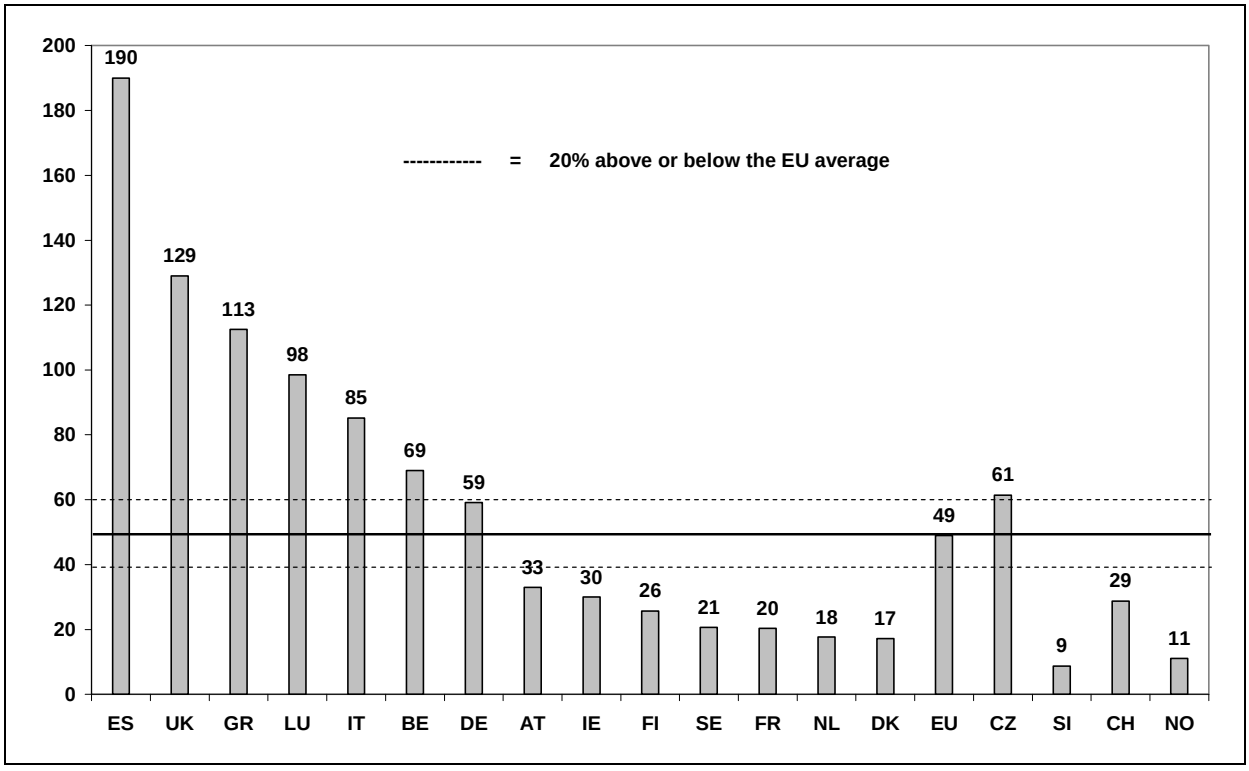


Farmers' beef prices were lowest in Sweden, the Netherlands and in Denmark. Prices for beef are linked to milk prices. In countries with high milk production beef is produced as a by-product. The level of quality of this beef is not very high and therefore prices are low. Another fact influencing the farmer prices was the low share of beef sales sold with an organic label. Only 68 percent of the organically produced beef was able to be sold as organic product; the rest had to be sold on the conventional market due to an EU-wide supply surplus for organic beef.

In Figure 5-48 the premiums of the farmer prices for organic beef over the farmer prices for conventional beef are presented. As beef production is closely connected to milk production, low farmer price premiums for organic beef were mainly surveyed in countries with a strong organic milk production. This accounted for Austria, Ireland, Finland, Sweden, France, the Netherlands and Denmark. In all six countries, farmer price premiums for organic beef were more than 20 percent below the EU average of 49 percent in 2001.

In all other surveyed EU countries farmer price premiums for organic beef were clearly above the EU average. The highest organic farmer price premium was reported from Spain with 190 percent. It is obvious that no countries reported farmer price premiums around the EU average. The surveyed countries belonged either to the group of countries with price premiums more than 20 percent above the EU average or to the group with premiums more than 20 percent below the EU average.

Figure 5-48 Farmer price premiums for organic over conventional beef prices in percent in 2001



As examples of the product group organic beef, Table 5-19 presents the **consumer prices** for organic rump steak and organic minced beef surveyed in the year 2001. Organic rump steak was the most expensive meat product surveyed in the framework of this study. In 2001, on average 22.51 €/kg were achieved. Four of the EU countries reported much lower prices. An extremely low consumer price for organic rump steak was surveyed in Finland with only 10.67 €/kg. In Austria, Italy and Sweden prices between 16 and 17 €/kg were recorded.

For organic minced beef an EU average consumer price of 9.70 €/kg was surveyed. This was undercut in Finland and in Sweden with prices between 6 and 7 €/kg. Sweden was the country with the lowest farmer prices for organic beef in 2001. This translated into low consumer prices. Clearly higher prices were reported from France, Ireland and from the United Kingdom.

Table 5-19 Consumer prices for organic rump steak and for minced beef in €/kg in 2001

Country	Rump steak	Minced beef
EU countries		
AT	17.42 ▼	8.62
BE	20.35	10.44
DE	23.46	9.26 [1]
DK	26.83	10.06
ES	nd	nd
FI	10.67 ▼	7.35 ▼
FR	22.65	12.42 ▲
GR	nd	nd
IE	23.20	11.75 ▲
IT	16.41 ▼	nd
LU	25.04	nd
NL	18.75	9.92
PT	nd	nd
SE	16.32 ▼	6.61 ▼
UK	25.85	12.89 ▲
Weighted EU average[2]	**22.51**	**9.70**
Accession countries		
CZ	5.01	3.24
SI	nd	nd
EFTA countries		
CH	32.74	13.12
NO	18.64	12.54

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Table 5-20 shows the **consumer price premiums** for organic over conventional rump steak and minced beef prices. For organic rump steak the surveyed consumer price premiums showed a strong variation between countries. The lowest price premiums among the EU countries were reported from Denmark and the Netherlands with five and nine percent, respectively. They were highest in Austria and France with 87 and 86 percent, respectively. The weighted EU average accounted for 40 percent in 2001. Interestingly, the price premium recorded in Switzerland was very low with only two percent. There was almost no difference between organic and conventional rump steak prices in this country. For organic minced beef an EU average of 45 percent was calculated. For this meat product, the variation of price premiums was not as strong as for organic rump steak. In Austria, Ireland and Sweden low price premiums were surveyed, whereas Belgium and the United Kingdom stood out because of their high consumer price premiums for organic minced beef.

Table 5-20 Consumer price premiums for organic rump steak and organic minced beef in percent in 2001

Country	**Rump steak**	**Minced beef**
EU countries		
AT	87 ▲	23 ▼
BE	54 ▲	78 ▲
DE	29 ▼	47 [1]
DK	5 ▼	47
ES	nd	nd
FI	25 ▼	47
FR	86 ▲	41
GR	nd	nd
IE	79 ▲	20 ▼
IT	50 ▲	nd
LU	70 ▲	nd
NL	9 ▼	54
PT	nd	nd
SE	16 ▼	22 ▼
UK	75 ▲	61 ▲
Weighted EU average[2]	**40**	**45**
Accession countries		
CZ	15	22
SI	nd	nd
EFTA countries		
CH	2	23
NO	48	32

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

5.7 The organic market for sheep and goat meat

5.7.1 General notes about the total market for sheep and goat meat in 2001

Despite clear differences between sheep and goat meat, these two kinds of meat are treated as one product group within the official statistics of Eurostat. In the year 2001, the sheep and goat meat production in the EU countries accounted for 1,013,000 tonnes (Eurostat 2009). This was 11 percent less than in the year before. In 1999 and 2000 the production was around 1,140,000 tonnes. In 2002, the production increased again up to the same level as in 1999 and 2000. These figures reveal that 2001 was an extraordinary year concerning its low production volume. The reason for that was the outbreak of the foot and mouth disease in the United Kingdom in 2001. This virus disease is highly contagious to sheep, goats and cattle, and it is no wonder that it spread to other countries. Ireland, the Netherlands and France were affected by the foot and mouth disease as well. However, the most significant reduction of the sheep and goat meat production was reported by the United Kingdom with 31 percent compared to the year 2000. As in the years before, the United Kingdom was the main producer of sheep and goat meat in the EU, followed by Spain, France and Greece. These four countries produced 77 percent of the total sheep and goat meat production in the EU in 2001. Due to the reduced production in the EU in 2001, the prices for sheep and goat meat were at a high level with the exception of the United Kingdom where prices decreased in 2001 (Probst 2002, p. 65).

The lower production volume in 2001 also translated into a reduced total domestic use. The reduction accounted for nine percent, and it was therewith slightly lower than the decrease in production. This can be explained by the fact that exports with sheep and goat meat as well as with living animals was limited in 2001 due to the foot and mouth disease (Probst 2002, p. 65). The total domestic use in the EU in 2001 amounted to 1,283,000 tonnes. In 1999 and 2000 it was around 1,400,000 tonnes. In the year 2002, the total domestic use was still at a low level with 1,290,000 tonnes. The countries with the highest total domestic use were identical with the main producing countries in terms of absolute figures. More interesting than the total domestic use of a country is, however, its gross human consumption per capita in kg. On average, each habitant of the EU countries consumed 3.4 kg of sheep and goat meat in 2001. As in the years before, Greece reported by far the highest amount with 13.5 kg per capita. In the United Kingdom and in Spain around 6 kg were consumed per capita, followed by Ireland and France with around 4 kg per capita (Eurostat 2007). The degree of self-sufficiency for sheep and goat meat in the EU in 2001 was with 79 percent only slightly lower than in the years before.

5.7.2 Supply balance for organic sheep and goat meat

In 2001, around 17,000 tonnes of organic sheep and goat meat were produced within the fifteen EU countries (see Table 5-21). The amounts originating from the two Accession countries were low with below 50 tonnes. 900 tonnes came from the two investigated EFTA-countries. Most parts of the meat were sold at the market. Only three countries reported that considerable amounts were used on the farms. However, only half of the organically produced sheep and goat meat was sold as an organic product. The rest had to be sold as conventional meat without any price premium. As shown in the columns G and H of Table 5-21, foreign trade with organic sheep and goat meat hardly existed in 2001. As for three countries no data on foreign trade were reported, the EU sum of the organic consumption has to be treated with caution. This figure is probably underestimated, because the consumption of these three countries is not included. Due to the limited trade with organic sheep and goat meat between countries, the degree of self-sufficiency is in most countries around 100 percent. This reflects rather the missing foreign trade than a balance between supply and demand.

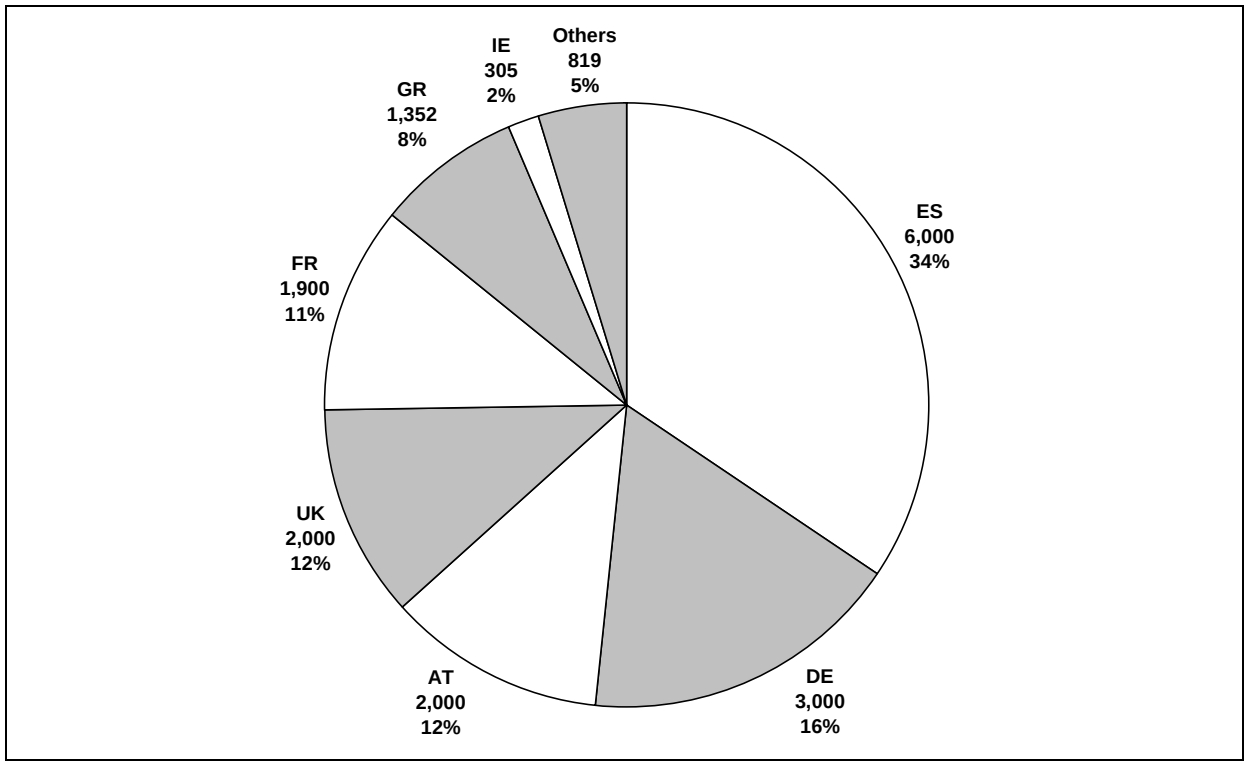
Table 5-21 Supply balance for organic sheep and goat meat in 2001

	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	2,000	20	400	1,600	30	480	/	/	480	100	AT
BE	73	0	0	73	85	62	nd	nd	nd	nd	BE
DE	3,000	0	0	3,000	60	1,800	100	500	1,400	129	DE
DK	120	0	0	120	60	72	0	0	72	100	DK
ES	6,000	0	0	6,000	20	1,200	0	0	1,200	100	ES
FI	110	0	0	110	90	99	0	/	99	100	FI
FR	1,900	0	0	1,900	100	1,900	nd	nd	nd	nd	FR
GR	1,352	0	0	1,352	92	1,244	0	0	1,244	100	GR
IE	305	0	0	305	90	274	nd	nd	nd	nd	IE
IT	0	nd	0	0	nd	0	/	/	0	0	IT
LU	9	0	0	9	50	5	0	/	5	100	LU
NL	280	0	0	280	90	252	/	/	252	100	NL
PT	44	0	0	44	80	35	0	0	35	100	PT
SE	183	0	0	183	100	183	0	27	156	117	SE
UK	2,000	0	0	2,000	80	1,600	100	/	1,700	94	UK
EU-15	**17,376**	**2**	**400**	**16,976**	**54**	**9,206**	**nd**	**nd**	**6,643**	**nd**	**EU-15**
CZ	20	0	0	20	nd	nd	/	/	nd	nd	CZ
SI	27	19	5	22	5	1	nd	/	1	100	SI
CH	600	11	63	537	26	140	/	/	140	100	CH
NO	342	0	0	342	25	85	/	/	85	100	NO

5.7.3 Organic sheep and goat meat production

The organic sheep and goat meat production in the EU in 2001 was dominated by Spain with 34 percent of the total organic production of the EU (see Figure 5-49). Comparing the organic production with the production figures of Eurostat for the total sheep and goat meat market, Spain was the second largest producer of organic plus conventional sheep and goat meat in 2001 behind the United Kingdom. Differently to the total market, Germany and Austria reported a much more prominent production of organic sheep and goat meat compared to their conventional production volumes. In both countries, sheep and goat were not only kept with the prior goal of meat production, but more often for landscape conservation purposes. In some regions of these countries, where the former agricultural use of the land was ceased by farmers, as well as in national parks and reserves, sheep and goats were used for avoiding the dominant growth of bushes. This is especially important in regions with much tourism, which otherwise would become less attractive for tourists. Thus, the sheep and goat meat production in these countries part wise was a by-product of landscape conservation measures. The United Kingdom, France and Greece were large volume producers for organic sheep and goat meat. They also belonged to the main producers concerning their total (organic plus conventional) sheep and goat meat production in 2001.

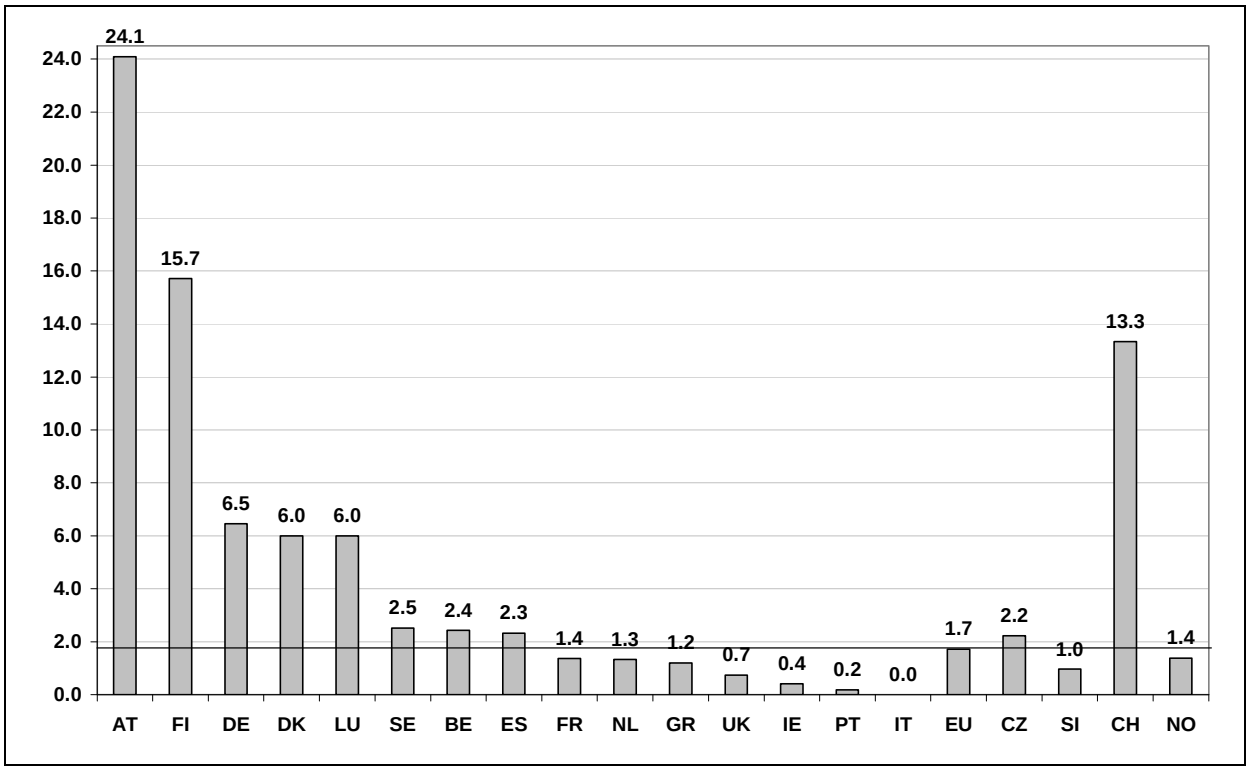
Figure 5-49 Organic sheep and goat meat production of the EU countries in tonnes in 2001



As regards the figures for organic sheep and goat meat measured by total production (see Figure 5-50) it is important to remember that high percentages were in some cases caused by small total (organic plus conventional) production volumes. This was, for example, the case in Austria and Finland which both reported two-digit organic production shares. The largest producer in volume terms was Spain which produced 6,000 tonnes in 2001. This corresponded to a production share of 2.3 percent. The second largest producer by volume was Germany. Its organic share of total production was 6.5 and therewith clearly above the EU average of 1.7 percent. In Austria and Germany sheep were mainly used for landscape conservation, for example, in national parks and reserves and to graze areas which were inaccessible to beef cattle. Other countries with high organic production shares were Denmark, Luxembourg and Sweden.

Since the United Kingdom and France both produced large volumes of conventional sheep and goat meat, they reported relatively low levels of total production as organic, with percentages of 0.7 and 1.4, respectively. Of the EFTA and Accession nations, Switzerland was a significant producer. It recorded 13.3 percent of its total production as organic. The main reason for this high percentage is the same as for Austria and Germany. In some Mediterranean countries, especially in Greece, most of the organic sheep and goats holdings were specialised on cheese production and young male animals are not fattened on organic farms but sold to conventional farms shortly after their birth.

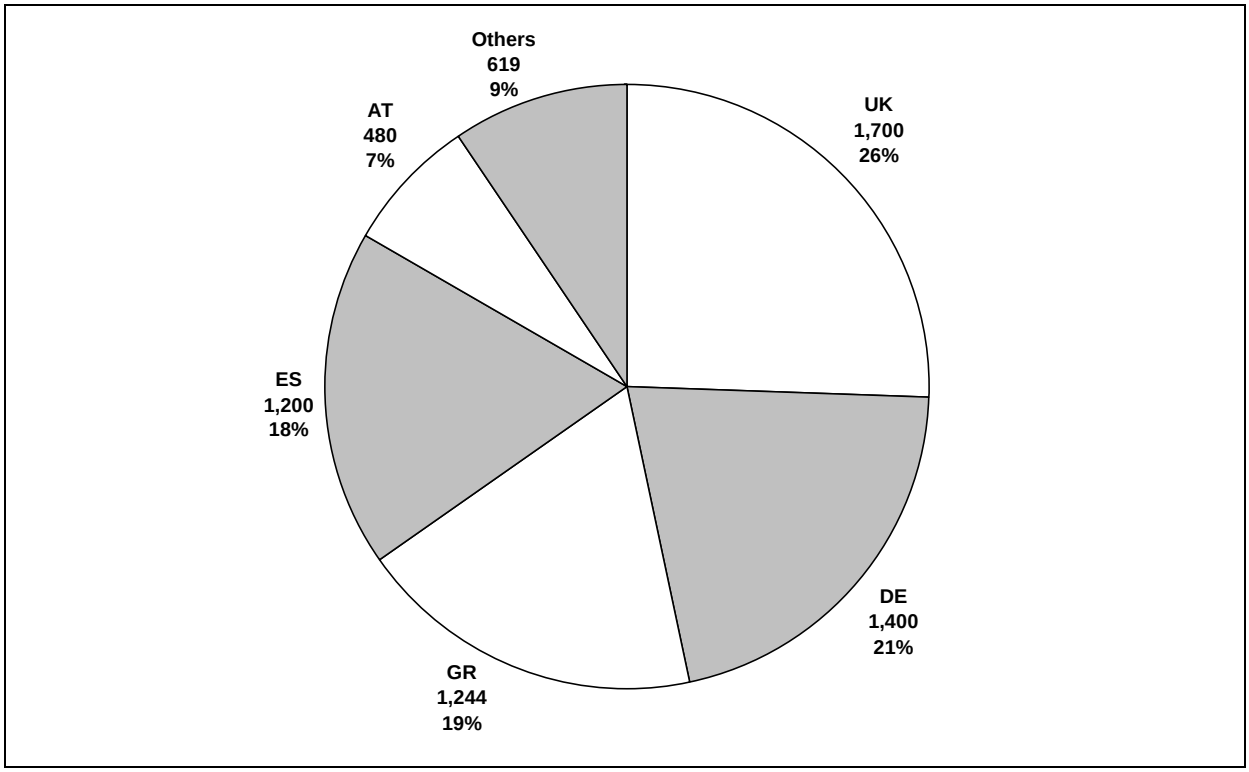
Figure 5-50 Organic share of total sheep and goat meat production in percent in 2001



5.7.4 Organic sheep and goat meat consumption

The consumption of organic sheep and goat meat was the lowest among the four meat product groups investigated in this study. The total organic consumption amounted to 6,643 tonnes in 2001. As shown in Figure 5-51, 84 percent of this volume was consumed in only four countries, the United Kingdom, Germany, Greece and Spain. However, it has to be taken into consideration that the figure for France is missing here due to missing values for organic import and export amounts. France was among the large volume producers of organic sheep and goat meat in 2001, and it was the second largest consumer of organic plus conventional sheep and goat meet after the United Kingdom. The large organic sheep and goat meat consumption of Greece and Spain reflects the fact that these two countries were the leaders concerning their gross human consumption per capita of sheep and goat meat in 2001.

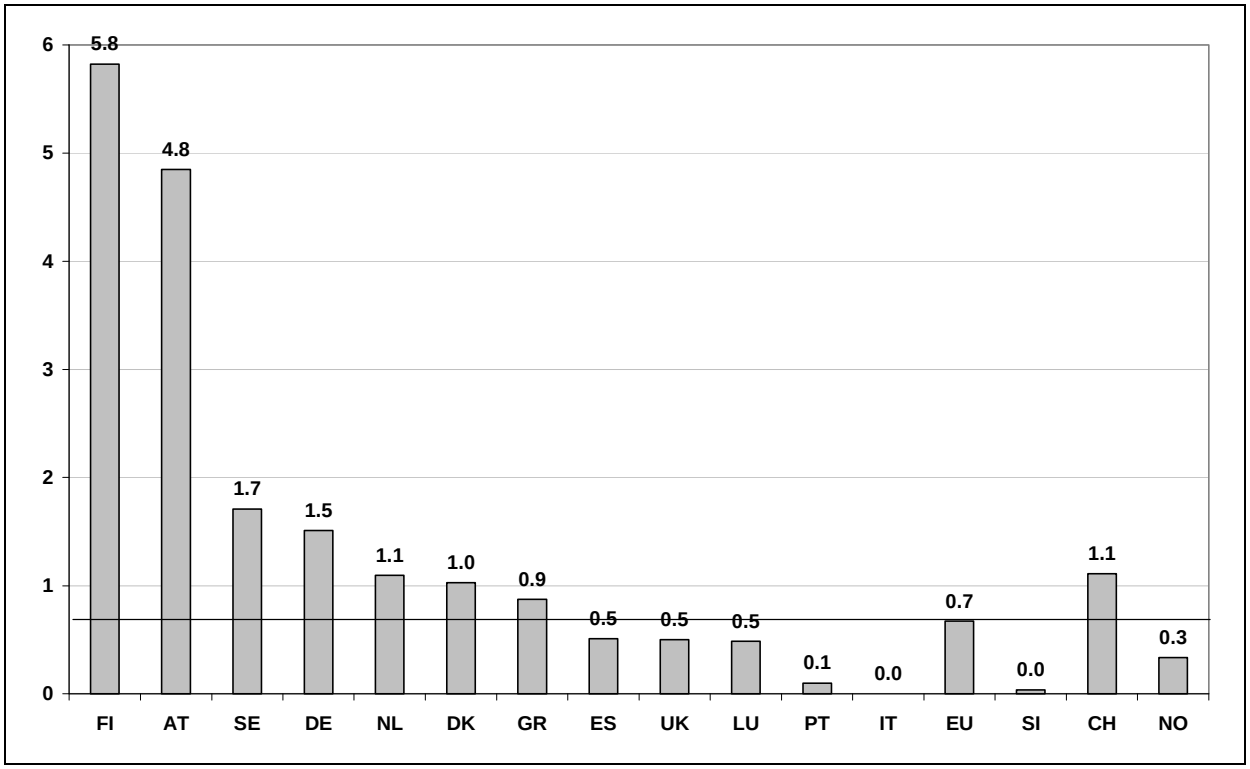
Figure 5-51 Organic sheep and goat meat consumption of the EU countries in tonnes in 2001



The consumption volumes given in the figure above represent the EU countries without Belgium, France and Ireland.

In Figure 5-52, the organic share of organic sheep and goat meat consumption measured by total sheep and goat meat consumption is presented. Due to the dependence of the absolute figures on the number of inhabitants of a country, this organic consumption share is more meaningful and allows the comparison of the different importance of organic sheep and goat meat consumption in the respective countries. The EU average for the organic share of total sheep and goat meat consumption only reached a low 0.7 percent. This is much lower than for the two other investigated grassland-based products, organic milk and organic beef. Finland had a very high organic market share of organic sheep and goat meat with a figure of 5.8 percent. This was followed by Austria with 4.8 percent. These high percentages are, however, mainly caused by a low total consumption of sheep and goat meat in these countries.

Figure 5-52 Organic share of total sheep and goat meat consumption in percent in 2001



5.7.5 Foreign trade with organic sheep and goat meat

Germany and the United Kingdom were the only countries, which imported considerable amounts of organic sheep and goat meat in 2001 (see Table 5-21). These imports accounted for seven and six percent, respectively, of the organic sheep and goat meat consumption within these countries. All other surveyed countries reported none or very low levels of imports. This shows that the market for organic sheep and goat meat was still very underdeveloped in 2001.

The main exporting countries for organic sheep and goat meat were Germany and Sweden. All other investigated countries did not export at all or exported just very small amounts of organic sheep and goat meat in 2001. The exports of Germany and Sweden accounted 28 and 15 percent, respectively, of the countries' organic sheep and goat meat sales.

For too many countries the availability of data on foreign trade with organic sheep and goat meat was poor in 2001. However, the EU was supposed to be a net importer in that year. Organic sheep meat mainly originated from New Zealand.

5.7.6 Balance between supply and demand of organic sheep and goat meat

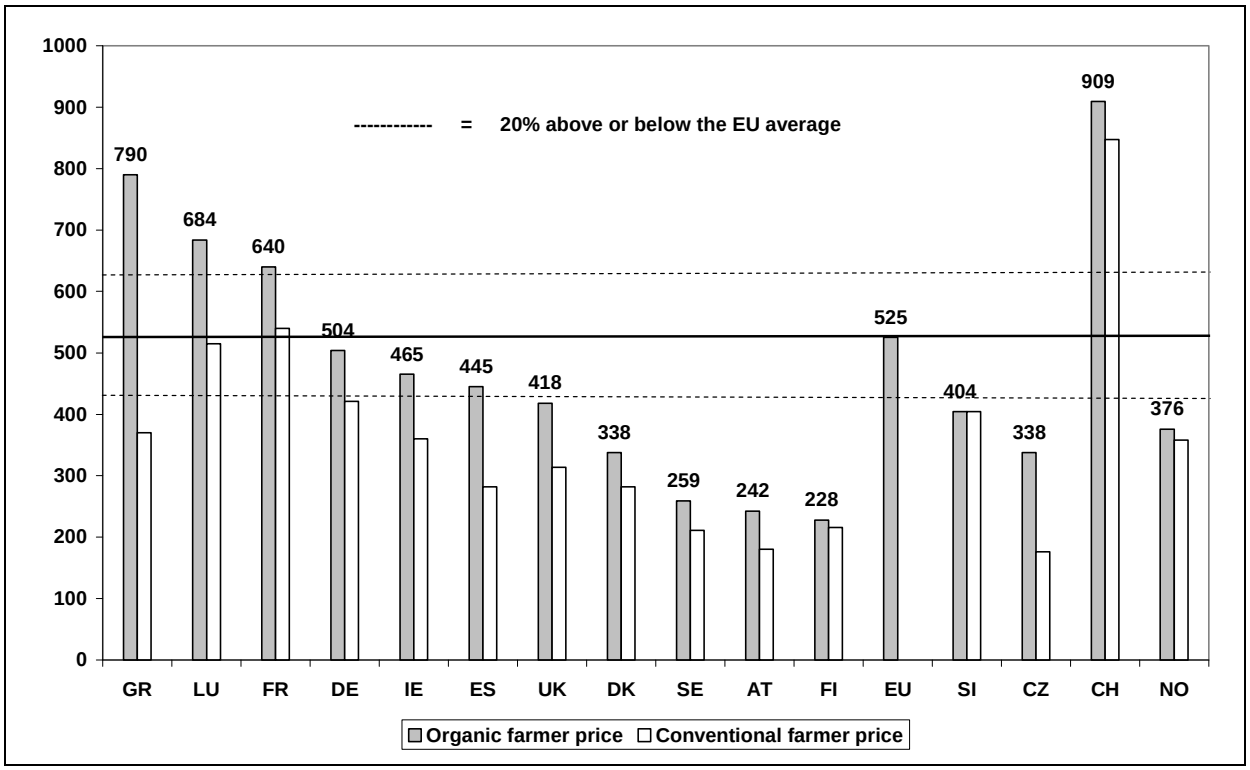
For some of the surveyed countries no degree of self-sufficiency for organic sheep and goat meat was calculated due to a lack of important data. From Belgium, France and Ireland no foreign trade data were reported, which are necessary for calculating the organic consumption. Once again it becomes obvious how poor the data availability for the foreign trade of organic products was in 2001. Due to the low amounts of imported or exported organic sheep and goat meat in most investigated countries, the degree of self-sufficiency was around 100 in twelve of 19 surveyed countries (see Table 5-21). Only in Germany and in Sweden did the organic production exceed the domestic demand and led to a certain degree of exports. In Germany the degree of self-sufficiency reached 129 percent, in Sweden it was 117 percent in 2001. Since too many data within the supply balance for organic sheep and goat meat were not available, no degree of self-sufficiency for the entire EU was calculated.

Market experts from all surveyed countries were asked to assess in a qualitative way, if they observed any shortfalls for organic sheep and goat meat despite imports in 2001 and 2002. Experts from Spain, Greece, Portugal and Slovenia recognised such supply deficits. For the years 2003 and 2004 experts from the same countries, with the exception of Greece, expected shortfalls for organic sheep and goat meat. For all mentioned countries a degree of self-sufficiency of 100 percent was calculated, because organic imports and exports of organic sheep and goat meat did almost not exist.

5.7.7 Prices for organic sheep and goat meat

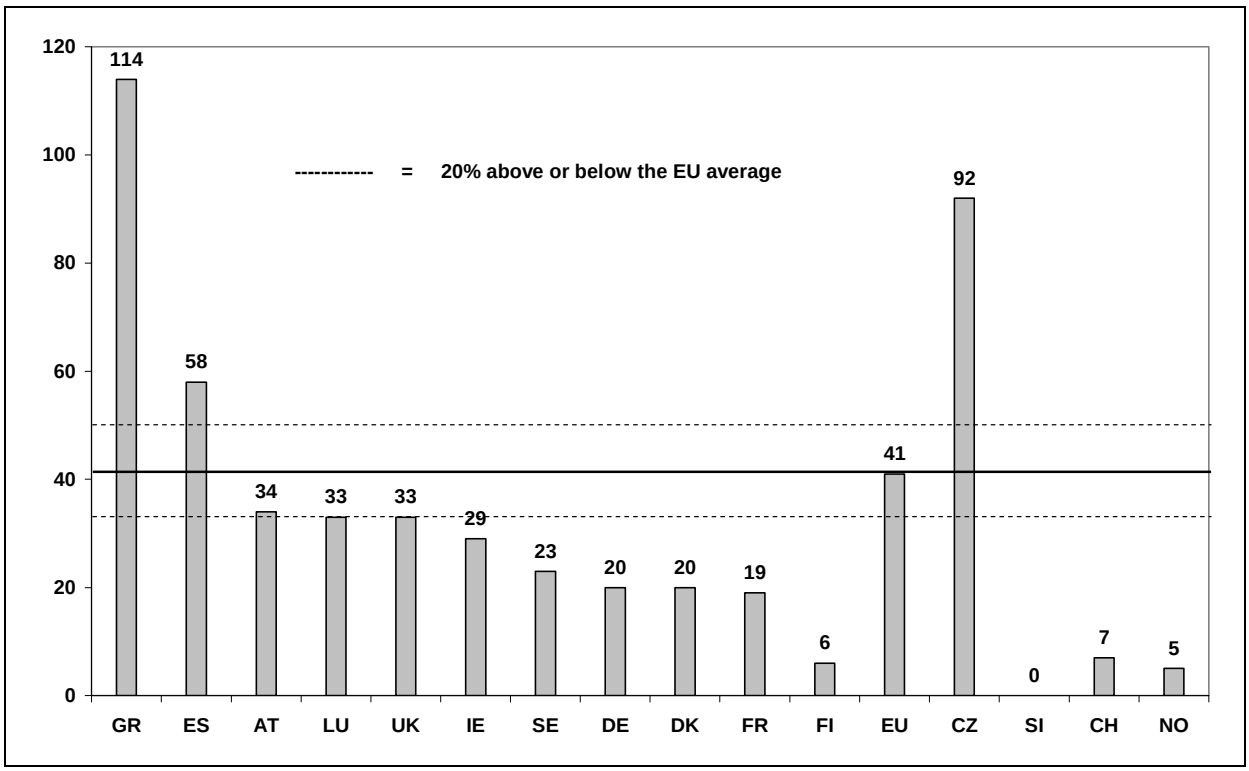
Farmer prices for organic and conventional sheep and goat meat are presented in Figure 5-53. The prices varied strongly among the surveyed countries. The farmer price for organic sheep and goat meat was lowest in Finland with 228 €/100 kg and highest in Greece with 790 €/100 kg. Only Switzerland as one of the surveyed non-EU countries reported a higher organic farmer price with 909 €/100 kg. All surveyed Scandinavian countries showed organic farmer prices more than 20 percent below the EU average of 525 €/kg. The four main producers of organic sheep and goat meat - Spain, Germany, Austria and the United Kingdom - were characterised by below EU average organic farmer prices in 2001.

Figure 5-53 Farmer prices for organic and conventional sheep and goat meat in €/100 kg in 2001



The **farmer price premiums** for organic sheep and goat meat are shown in Figure 5-54. Greece and the Czech Republic stood out for their high price premiums around 100 percent. Spain was the third country with a farmer price premium more than 20 percent above the EU average of 41 percent. All other surveyed countries reported below EU average farmer price premiums. In most countries price premiums around 20 to 35 percent were surveyed. Extremely low price premiums were reported from Finland, Slovenia, Switzerland and Norway. The EU average price premium of 41 percent is similar to that for organic beef, which was 49 percent in 2001. Both products are based on grassland for which no alternative production exists. The price premiums for these grassland-based products were clearly lower than for organic pork and poultry due to much higher production costs of the latter products.

Figure 5-54 Farmer price premiums for organic over conventional sheep and goat meat prices in percent in 2001



As an example for the product group organic sheep and goat meat, **consumer prices** for organic lamb chops were surveyed. The results of this price survey are given in Table 5-22. Lamb chops were most expensive in Belgium at 26.86 €/kg. Lamb chop prices of more than 20 percent below the EU average were recorded from Luxembourg, Sweden and the United Kingdom. From Switzerland extremely high prices were reported for organic lamb chops being twice as high as the EU average price at 20.87 €/kg.

Table 5-22 Consumer prices for sheep and goat meat in €/kg in 2001

Country	**Lamb chops**
EU countries	
AT	18.51
BE	26.86 ▲
DE	24.56
DK	nd
ES	nd
FI	nd
FR	18.51
GR	nd
IE	24.05
IT	16.82
LU	15.27 ▼
NL	nd
PT	nd
SE	14.55 ▼
UK	16.16 ▼
Weighted EU average[1]	**20.87**
Accession countries	
CZ	5.89
SI	nd
EFTA countries	
CH	43.35
NO	16.26

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Weighted by organic consumption

Table 5-23 shows the **consumer price premiums** for organic over conventional lamb chop prices. Obviously the surveyed price premiums for organic lamb chops can be divided into two groups. Either the price premium was very low or it was very high. Germany was the only country with a price premium around the EU average of 60 percent. Italy, France, Sweden, Ireland and Luxembourg belonged to the group with relatively low price premiums varying from 14 to 37 percent. On the other hand, the United Kingdom, Belgium and Austria reported high price premiums from 78 to 96 percent. Interestingly, in Norway organic lamb chops were cheaper than the comparable conventional products. However, the low one-digit percentage just shows that the difference between organic and conventional lamb chop prices was low in Norway. The reason for that was the low difference in production costs between the two production methods for sheep meat in that country. The farmer price premium was low, too, with only 5 percent (see Figure 5-54).

Table 5-23 Consumer price premiums for organic sheep and goat meat in percent in 2001

Country	**Lamb chops**
EU countries	
AT	96 ▲
BE	92 ▲
DE	60
DK	nd
ES	nd
FI	nd
FR	22 ▼
GR	nd
IE	26 ▼
IT	14 ▼
LU	37 ▼
NL	nd
PT	nd
SE	22 ▼
UK	78 ▲
Weighted EU average[1]	**59**
Accession countries	
CZ	11
SI	nd
EFTA countries	
CH	113
NO	-7

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Weighted by organic consumption

5.8 The organic pork market

5.8.1 General notes about the total market for pork in 2001

The pork market of the European Union in 2001 was influenced by the foot and mouth disease (FMD), which broke out in the United Kingdom in February (Probst 2002, p. 53). The damage was, however, not as dramatic as described for the beef market (see chapter 5.6). This corresponds to the fact that, in general, for FMD cattle are the main source of infection. Pigs, sheep and goats have less importance concerning the distribution of the virus (Rolle and Mayr 1993, p. 312).

The gross indigenous production of pork amounted to 17.6 million tonnes in the EU in 2001. The reduction compared to the year 2000 was negligible in spite of FMD. The explanation for that is the same as it was reported for the beef production. Due to trade restrictions after the outbreak of the disease, animals had to be kept longer on the farms and reached slaughter weights, which were - on average - one kg higher than usual (Probst 2003, p. 71). This led to the stable production level for the EU. In the year 2002 the pork production reached with 17.9 million tonnes again a similar level as in 1999 where 18 million tonnes of pork were produced within the EU. The main pork producing countries in 2001 were Germany followed by Spain and France. These countries produced more than 50 percent of the total pork production of the EU. Other countries with high production volumes were Denmark, the Netherlands and Italy. As expected, the strongest decrease in production opponent to the year 2000 was reported by the United Kingdom; the reduction corresponded to 14 percent. Besides the United Kingdom, the pork production in the Netherlands, in Ireland and in France was affected by FMD in 2001. In the Netherlands, this translated into a decrease in production of 3 percent. In Ireland and France production levels remained stable (Eurostat 2009).

Prices for pork in the EU increased temporarily by 40 percent in spring 2001 but decreased again in autumn when the trade restrictions were lifted (Probst 2002, p. 64). In 2001, the total exports of the EU to third countries were reduced by 16 percent compared to the year 2000. One reason was of course the restricted trade as a consequence of FMD, but in addition, the total domestic use increased by one percent compared to the year before, which led to a reduced need for exports. The increase of pork consumption has to be interpreted against the background of the BSE-outbreak in 2001, which led to a significant decrease in beef consumption in the EU and therewith to a stronger consumption of other kinds of meat, such as pork and poultry, which were not affected by BSE. In the United Kingdom and in the Netherlands, the decrease of the exported amounts of pork was most obvious with 75 percent and 16 percent, respectively (Eurostat 2009). The total domestic use of pork in the EU in 2001 accounted to 16.4 million tonnes compared to 16.2 million tonnes in the year before. The degree of self-sufficiency was 107 percent, which was one percentage point lower than in the years 2000 and 2002 (Eurostat 2007).

Who were the main consumers of pork in the EU? In terms of gross human consumption per capita, each inhabitant of the EU consumed 43 kg of pork in 2001. However, big differences can be observed between the individual countries. Front-runner was Spain with 65 kg per capita, followed by Denmark with 63 kg per capita. In Germany and Austria, around 55 kg per capita were consumed. As in other years, the lowest per capita consumption was reported by the United Kingdom with only 25 kg (Eurostat 2007).

5.8.2 Supply balance for organic pork

In Table 5-24 the collected data on the organic pork market are compiled for the year 2001. Around 40,000 tonnes of organic pork were produced in that year, with Germany being by far the most important country. Its production contributed with 40 percent to the total organic pork production of the EU. The only investigated country with considerable amounts of pork, which was directly consumed on farm, was Slovenia, where a high number of the organic pigs was kept for meeting the subsistence of the farmers. In contrast to the meat product groups beef and sheep and goat meat, the share of the pork sales, which were sold as organic product, was very high with 94 percent. This can be explained by the much higher production costs for organic than for conventional pork. Thus, an organic pork production was only started by farmers, who were sure that they would be able to sell their products with a price premium over conventional pork.

Comparing organic imports and exports, the EU was a net exporter for organic pork in 2001, even if the difference between both sums was not that striking. The supply balance led to an organic consumption of around 39,000 tonnes for the EU. The degree of self-sufficiency was on average 102 percent. It was lowest in the United Kingdom with only 76 percent. 28 percent of the organic pork consumption had to be imported by this country, probably due to the foot and mouth disease, which affected the United Kingdom much stronger than other countries.

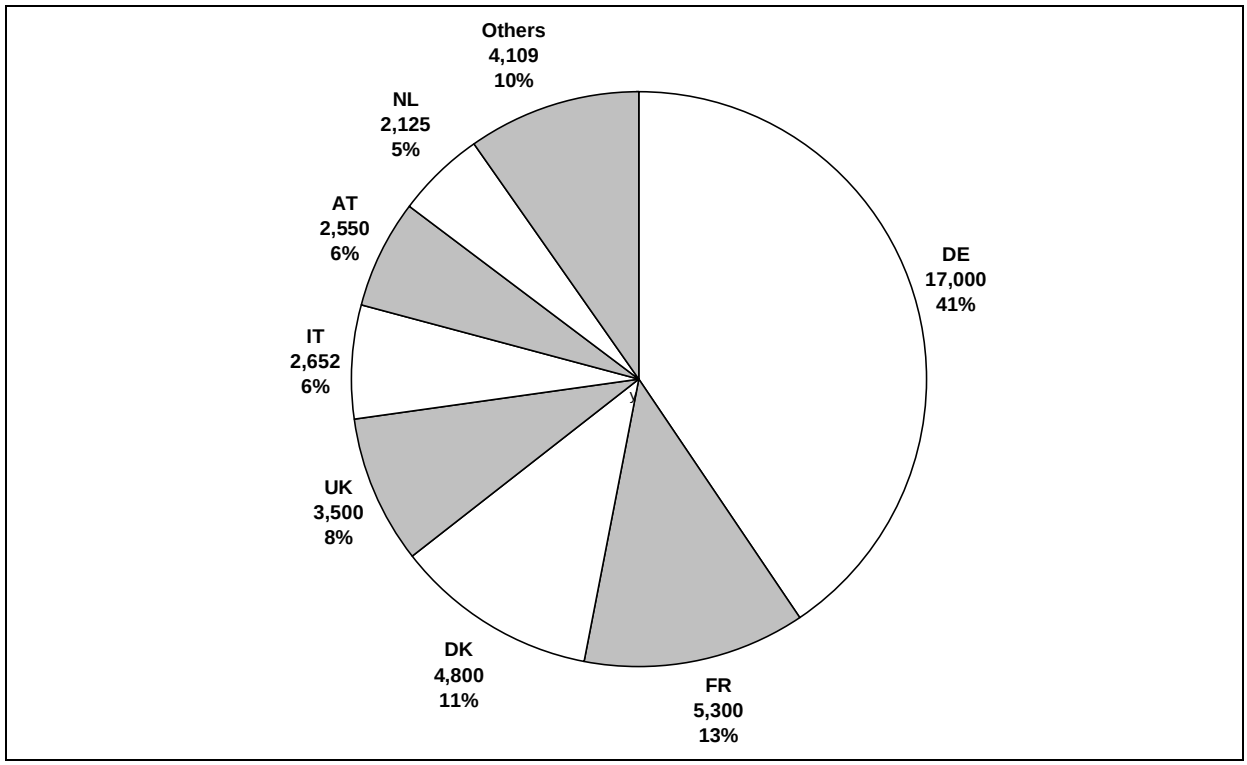
Table 5-24 Supply balance for organic pork in 2001

	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	2,550	2	50	2,500	97	2,425	500	800	2,125	114	AT
BE	1,090	0	0	1,090	100	1,090	360	120	1,330	82	BE
DE	17,000	0	0	17,000	97	16,490	2,000	3,000	15,490	106	DE
DK	4,800	0	0	4,800	75	3,600	/	720	2,880	125	DK
ES	nd	0	0	nd	90	nd	0	0	nd	nd	ES
FI	920	0	0	920	75	690	0	/	690	100	FI
FR	5,300	0	0	5,300	100	5,300	0	0	5,300	100	FR
GR	169	0	0	169	100	169	/	/	169	100	GR
IE	18	0	0	18	100	18	/	0	18	100	IE
IT	2,652	3	80	2,572	97	2,500	500	100	2,900	86	IT
LU	67	0	0	67	100	67	7	0	74	91	LU
NL	2,125	0	0	2,125	100	2,125	133	100	2,158	98	NL
PT	199	0	0	199	90	179	0	/	179	100	PT
SE	1,646	0	0	1,646	100	1,646	0	247	1,399	118	SE
UK	3,500	0	0	3,500	85	2,975	1,100	175	3,900	76	UK
EU-15	**42,036**	**0**	**130**	**41,906**	**94**	**39,274**	**4,600**	**5,262**	**38,612**	**102**	**EU-15**
CZ	1,150	0	0	1,150	nd	nd	0	120	nd	nd	CZ
SI	22	68	15	7	43	3	0	/	3	100	SI
CH	1,200	8	100	1,100	82	902	/	/	902	100	CH
NO	19	0	0	19	26	5	/	/	5	100	NO

5.8.3 Organic pork production

As shown in Figure 5-55, there were three countries - Germany, France and Denmark - which together produced 65 percent of the total organic pork in the EU in 2001. The named countries played a leading role at the total (organic plus conventional) market for pork, too. However, at the total pork market, Spain was the second largest pork producer in 2001 behind Germany. Due to the prominent role of Spain in the total pork sector, the organic pork production from Spain should be taken into consideration, too, although no figure on the organic pork production was reported from that country in 2001. As the Spanish organic sector grew very strongly from 2000 to 2001, it is likely that the organic pork production reached a high level, too. In the year 2000, an organic production volume of around 770 tonnes was reported. From 2000 to 2001, the production of beef increased fourfold, and the sheep and goat meat production grew fivefold. Assuming a similar growth for organic pork, the production would have been around 3,000 tonnes in the year 2001. Thus, Spain probably belonged to the important organic pork producers. The leading role of Germany as pork producing country was much more prominent within the organic sector, with a share of 41 percent, than in the total pork market. In the latter, its production contributed with 22 percent to the total pork production of the EU in 2001.

Figure 5-55 Organic pork production of the EU countries in tonnes in 2001

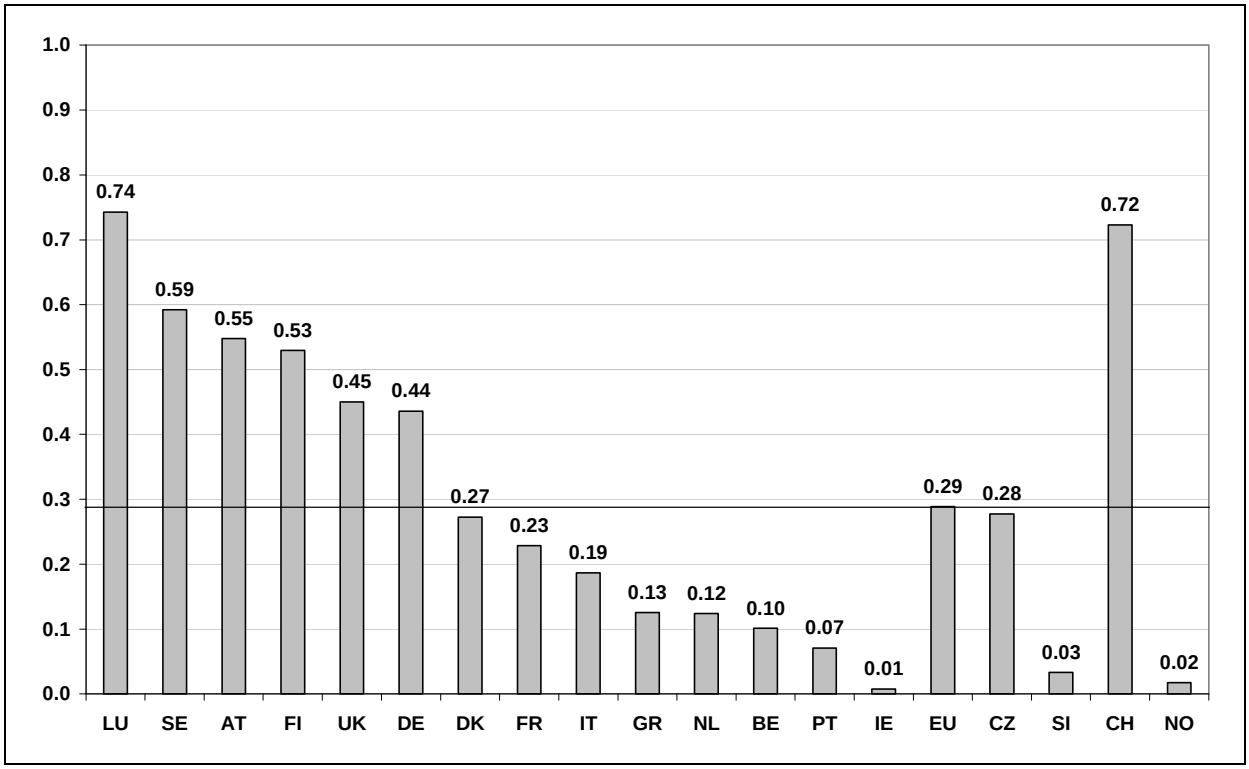


The production volumes given in the figure above represent the EU countries without Spain.

To be able to compare the significance of the organic pork production between countries, the organic production of each country was related to its total (organic plus conventional) pork production (see Figure 5-56). The production volumes of the total pork market were taken from the Eurostat online database (Eurostat 2007). The limited impact of organic pork production on total pork production in all countries was captured in the EU average of 0.3 percent. The highest percentage was 0.7 percent for Luxembourg and 0.6 percent reported from Sweden. Germany, being the biggest organic producer by volume, reported an organic production share of 0.4 percent. Of the Accession and EFTA countries, only the Czech Republic and Switzerland produced any significant amount of organic pork, leading to an organic production share of 0.3 and 0.7 percent, respectively.

The low EU average of 0.3 percent for organic pork production measured by total pork production reflects the high costs which are connected with organic pork production. It requires fundamental modifications to existing animal housing and higher levels of labour. Further, animal feed, especially protein (for example soybeans), is particularly expensive. These factors result in much higher producer costs. Whilst this is often translated into producer prices, it is then translated into higher consumer price premiums, which reduces consumer demand. However, against the background of the repeated appearance of food scandals in the supply chain of conventional meat, consumers might be more willing to pay higher prices for safer organic pork in the future.

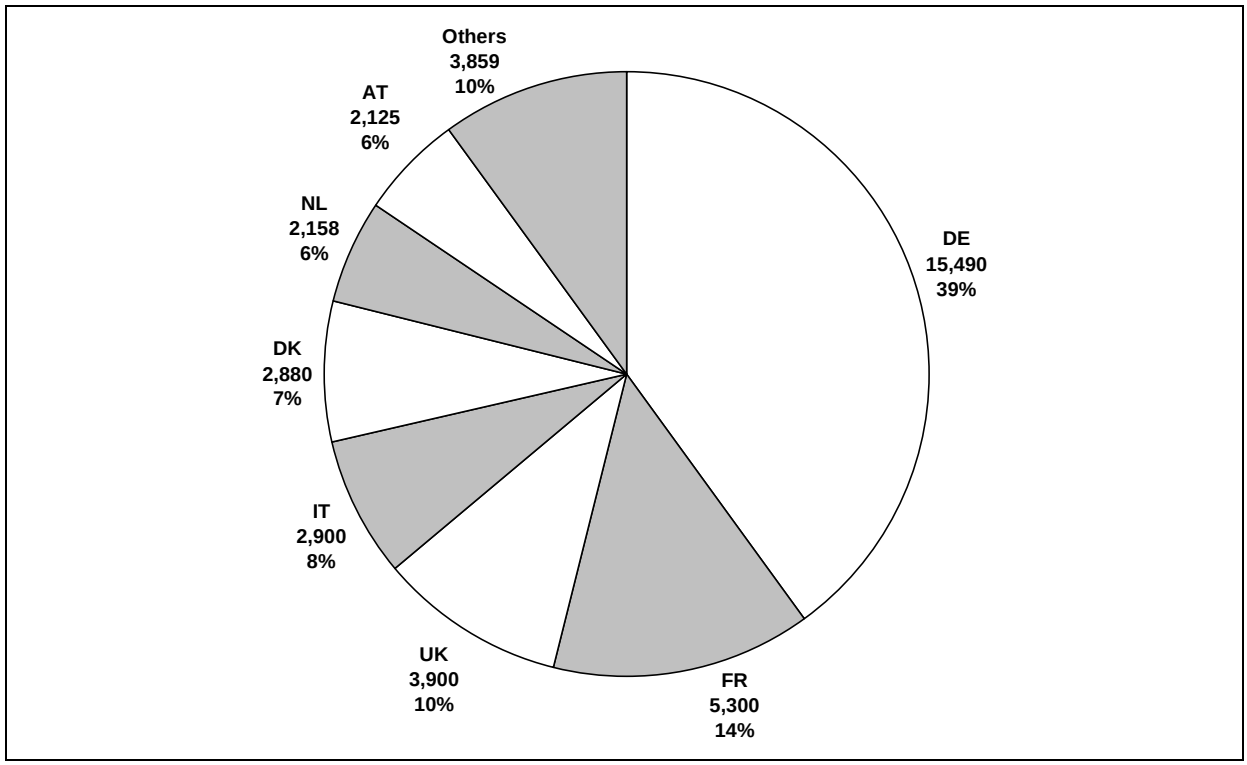
Figure 5-56 Organic share of total pork production in percent in 2001



5.8.4 Organic pork consumption

The organic pork consumption in absolute figures was mainly concentrated in a few countries. Germany, which was the main organic pork producer, was also the country with the highest consumption volume. Its consumption contributed with 39 percent to the total organic pork consumption in the EU (without Spain). France and the United Kingdom took second and third place concerning their organic pork consumption. Denmark, which took third place in terms of organic pork production, reached the fifth place concerning its organic pork consumption. The fact that Denmark clearly produced more than it consumed, corresponds to Denmark's strong position as export country for organic pork and underpins its high degree of self-sufficiency of 125 percent (see Table 5-24).

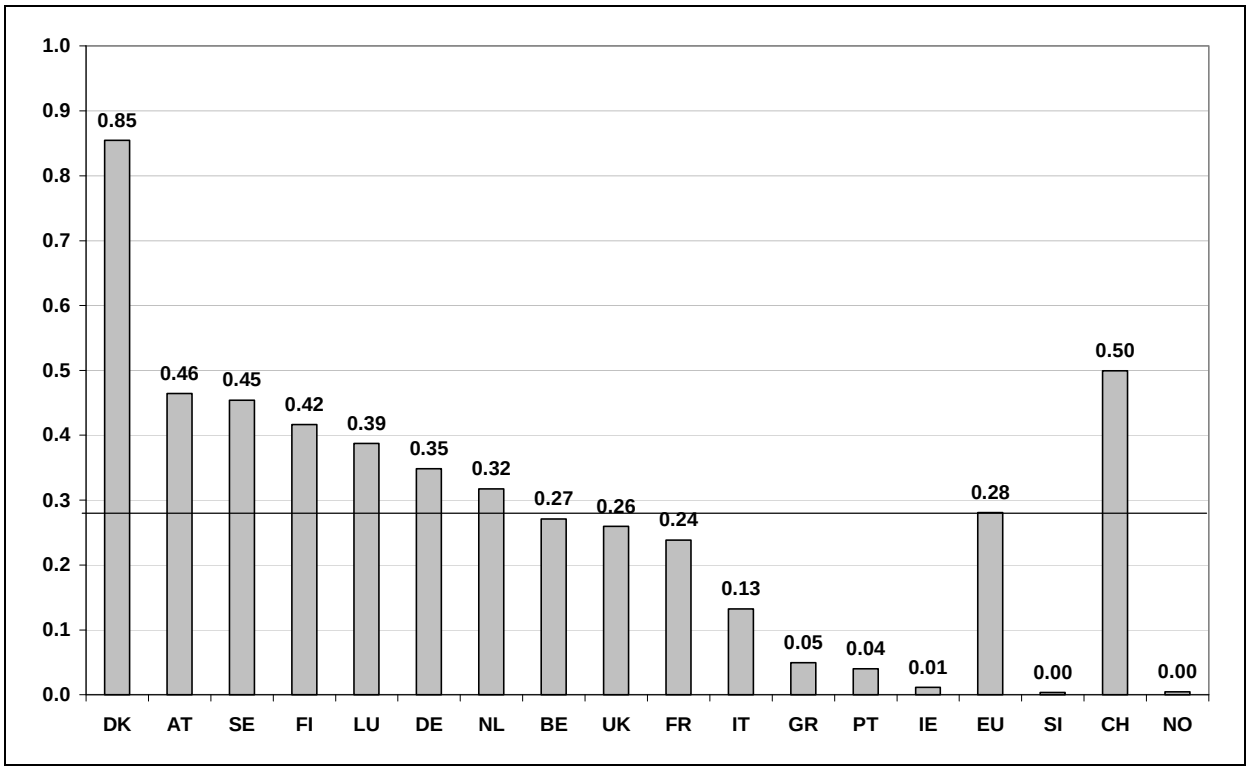
Figure 5-57 Organic pork consumption of the EU countries in tonnes in 2001



The consumption volumes given in the figure above represent the EU countries without Spain.

In Figure 5-58 the market share by volume for organic pork was calculated for the investigated countries. This share of organic consumption divided by the total (organic plus conventional) consumption is more meaningful than the absolute consumption figures, because it allows comparison, which importance the organic pork sector had reached in the analysed countries in 2001.

Figure 5-58 Organic share of total pork consumption in percent in 2001

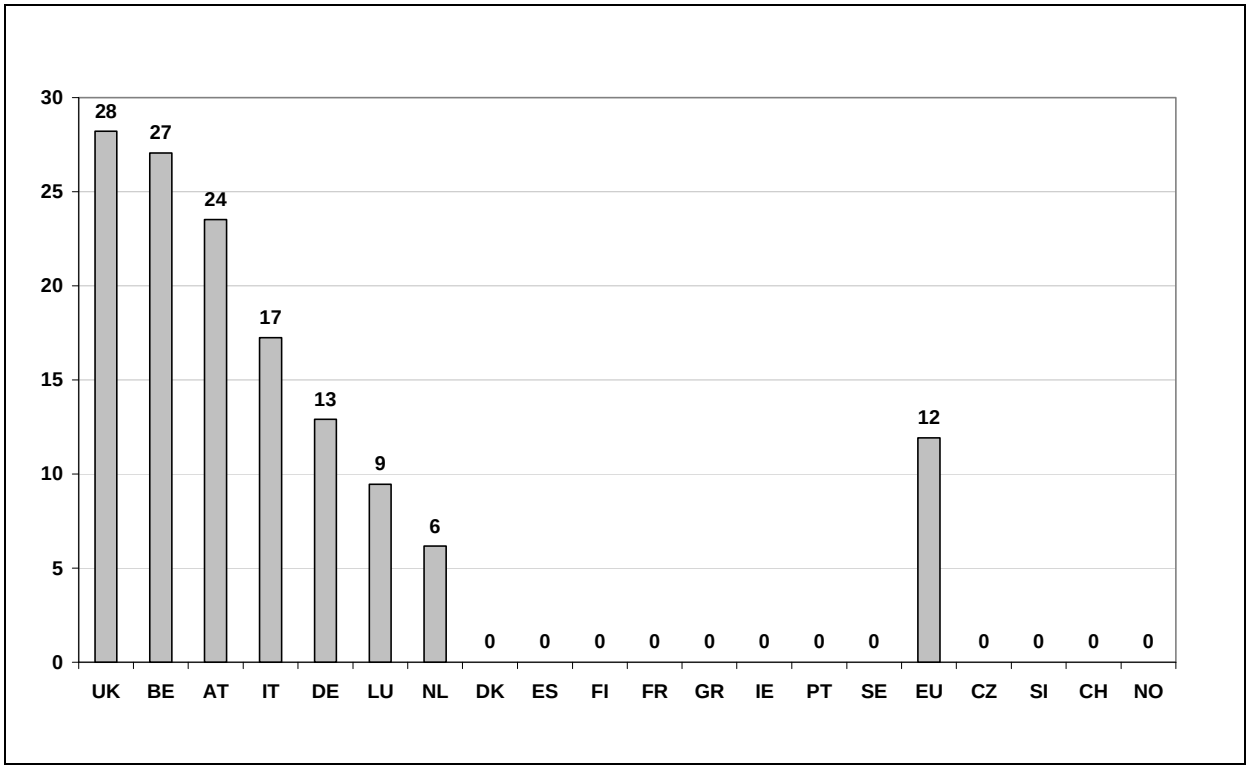


The market share for organic pork was low in all countries in 2001. In no country did the organic share of total pork consumption reach or exceed 1.0 percent. As organic pork production played an important role in Denmark, this was the country with the highest share of organic pork consumption with 0.9 percent. All countries with organic market shares of 0.5 percent or more were characterised by a high involvement of general food shops as sales channel for organic food.

5.8.5 Foreign trade with organic pork

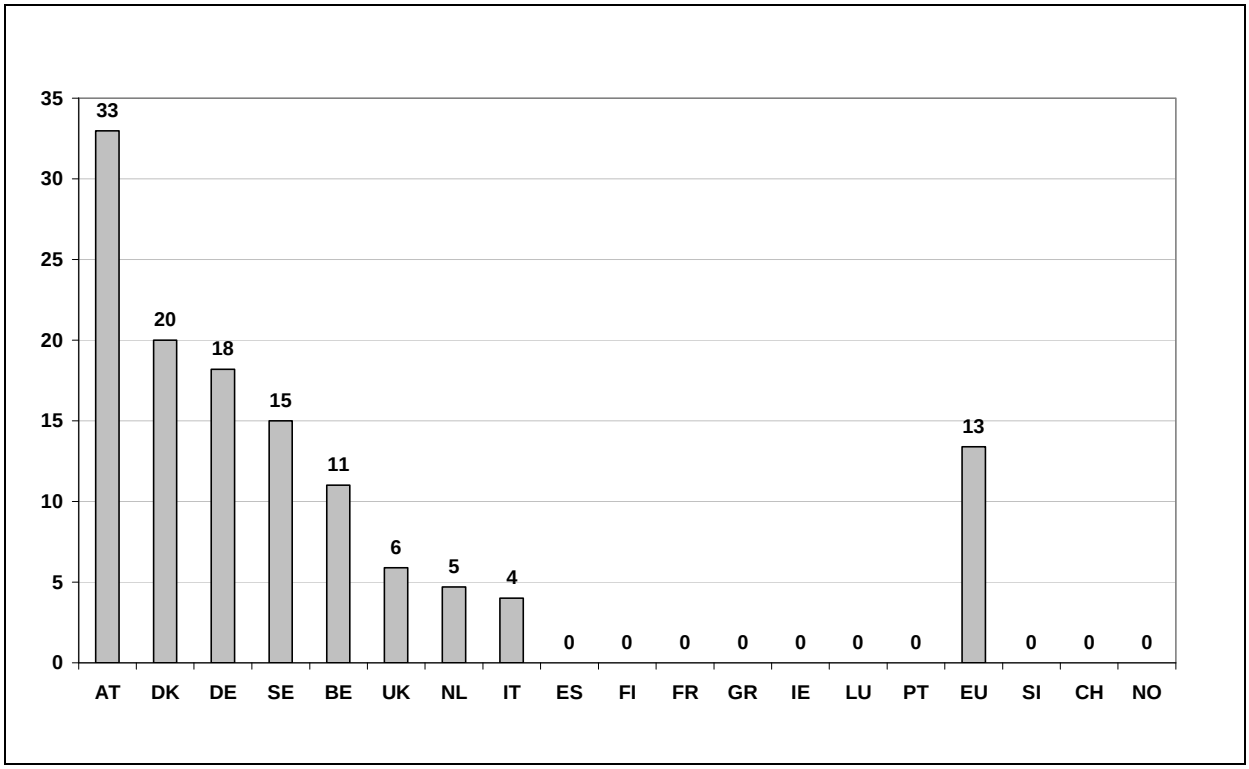
Foreign trade with organic pork was still rather limited in 2001. Only 7 of 19 investigated countries reported considerable amounts of imported organic pork. All foreign trade figures within this study include both intra and extra-EU trade. The EU sums have therefore to be treated with some caution. They might be overestimated due to double reporting in some cases, when imported products were sold on to other EU countries. The highest import levels for organic pork in 2001 were recorded for Germany and the United Kingdom (see Table 5-24). In Figure 5-59, the organic import volumes have been related to the organic pork consumption of the respective country. The import shares for organic pork were only high in countries with a well developed organic market. Three countries stood out because of their high organic import shares of around 25 percent. These were the United Kingdom, Belgium and Austria. It is striking that France, which was the country with the second highest organic pork consumption in volume terms, was able to completely meet the demand by its domestic organic pork production and without considerable organic imports.

Figure 5-59 Imports of organic pork as a share of the organic pork consumption in percent in 2001



The organic pork exports, which are presented in Table 5-24 show a similar pattern as described for the organic pork imports. Only half of the analysed countries reported any organic pork exports, and all volumes amounted to less than 1,000 tonnes, with the exception of Germany. As for imports, Germany was the clear leader with 3,000 tonnes of exported organic pork in 2001. This corresponded to its status as main organic pork producer in volume terms. In Figure 5-60 the export volumes are related to the sold amounts, which were sold as organic pork. In comparison between the countries, this percentage shows to which extent the domestic organic pork production was dedicated for meeting domestic demand or for being exported to other countries. In Austria and Denmark, the export shares for organic pork were especially high in 2001 with 33 and 20 percent, respectively. Both countries were - after Germany - the main organic pork exporters in volume terms in 2001.

Figure 5-60 Exports of organic pork as a share of the sales as organic pork in percent in 2001



When comparing the data on foreign trade at an EU-wide level, for organic pork the EU was a net exporter. However, the difference between organic imports and exports was small. Organic pork was mainly exported to the United States and to Japan.

5.8.6 Balance between supply and demand for organic pork

Only little trade with organic pork has been reported in the year 2001. The four major exporters of organic pork in the EU, being Germany, Austria, Denmark and Sweden were also the countries with the highest degrees of self-sufficiency in 2001 (see Table 5-24). In

Denmark it was highest with 125 percent, followed by 118 percent in Sweden, 114 percent in Austria and 106 percent in Germany. At 76 percent, the United Kingdom had a particularly low level of self-sufficiency in organic pork in 2001. At first view, this might be interpreted by a reduced domestic organic pork production due to the outbreak of the foot and mouth disease in that year. However, when looking back on the figures of the organic pork production of the United Kingdom in the year 2000 as well as on the degree of self-sufficiency in that year (see Hamm et al. 2002, p. 13 and p. 71), it is obvious that this is not the appropriate explanation. There was an enormous growth in organic pork production as well as in consumption from 2000 to 2001 in the United Kingdom. In 2000, the degree of self-sufficiency was only 66 percent. Thus, the balance between supply and demand in the United Kingdom developed in the direction of a more self-sufficient market, although the demand had still to be met by the help of huge organic import amounts in 2001.

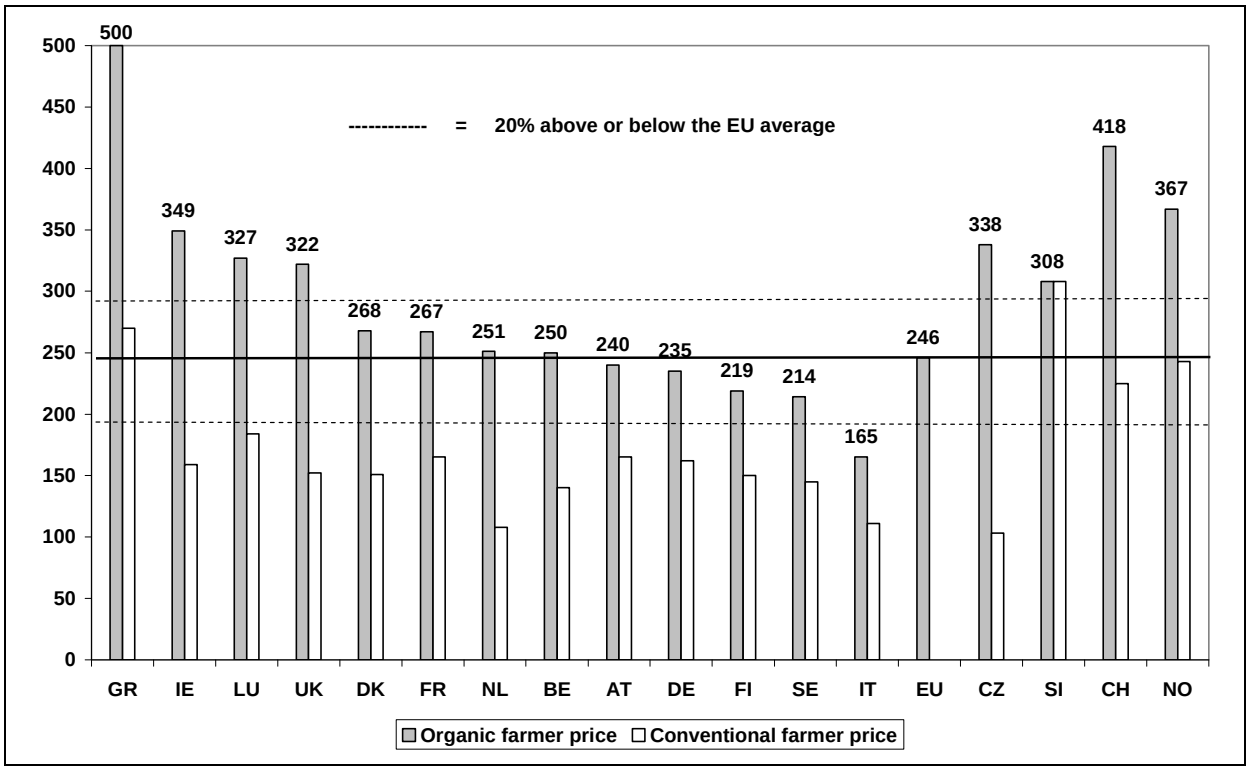
In addition to the degree of self-sufficiency, it was surveyed - by asking market experts in a more qualitative way - if there were shortfalls for organic pork in the years 2001 and 2002 despite imports. From all investigated product groups, organic pork was named most often as being in short supply. Ten of the 19 surveyed countries reported such a shortfall. These countries were: Austria, Belgium, Germany, Spain, Finland, Greece, Luxembourg (especially piglets), Portugal, Sweden and Slovenia. Due to high costs of converting pork husbandry to organic, not enough farmers decided to convert their production. As the shortfall for organic pork was reported by ten countries, it is obvious that this supply deficit had a European-wide dimension and was not only a problem of a few individual countries. Looking in more detail at the countries who reported the supply deficit, it is striking that even countries with a well functioning organic market were listed as, for example, Austria, Germany and Sweden. These countries have good trade connections to other countries. Thus, they would have imported organic pork if it was available from their trade partners.

Expected supply deficits for the years 2003 and 2004 were named by experts from eight countries: Austria, Belgium, Germany, Spain, Finland, Portugal, Sweden and Slovenia. Only Greece and Luxembourg reported that the supply of organic pork would be sufficient for these years.

5.8.7 Prices for organic pork

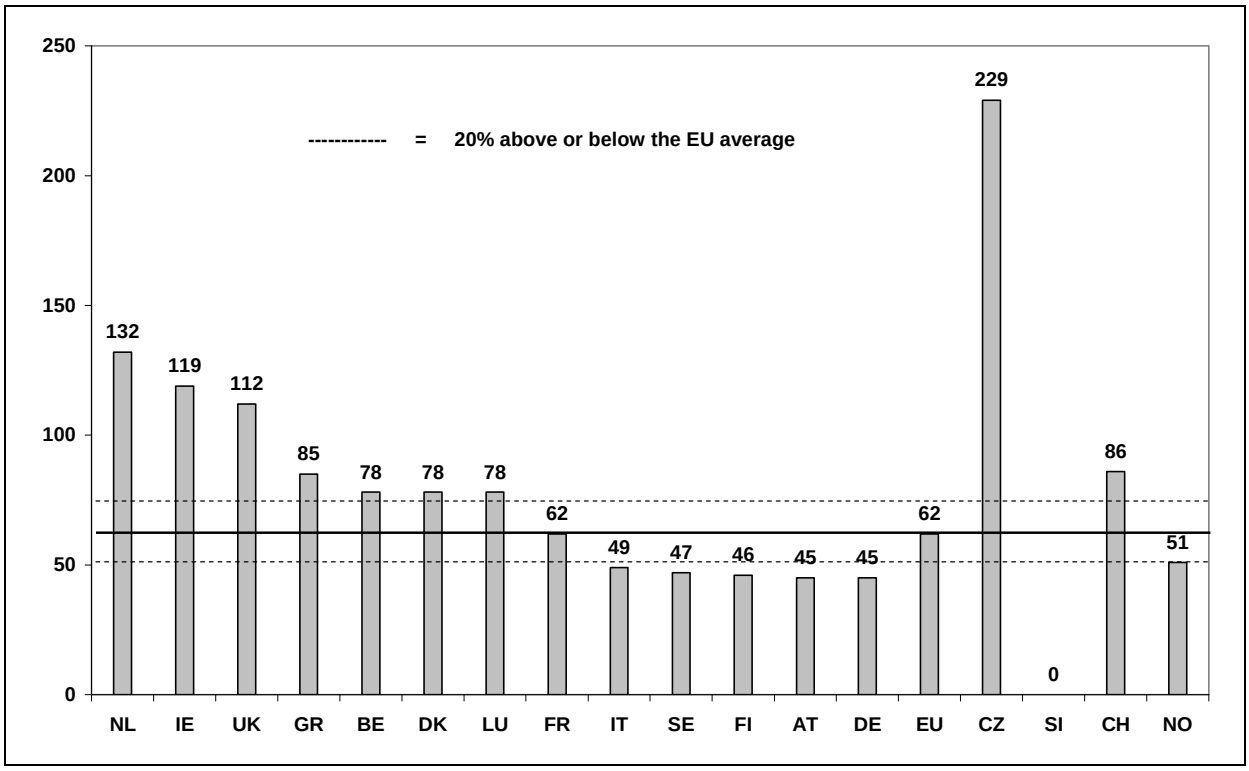
The EU average **farmer price** for organic pork in 2001 was 246 €/100 kg (see Figure 5-61). This weighted average price was mainly influenced by the farmer prices in the large volume producing countries as Germany, France and Denmark. From these countries, Germany reported the lowest farmer price with 235 €/100 kg. Only Italy reported a farmer price more than 20 percent below the EU average price. Countries with farmer prices exceeding the EU average by more than 20 percent were Greece, Ireland, Luxembourg, the United Kingdom and the four non-EU countries. The high farmer price in the United Kingdom can be explained by the high share of organic pork imports of that country and due to its low degree of self-sufficiency of only 76 percent. Because of that, farmer prices were adapted to the prices of imported organic pork, which usually are high since they include transport costs. Especially high farmer prices were surveyed for Greece with 500 €/100 kg and for Switzerland with 418 €/100 kg. Apart from these exceptions, it is obvious that the farmer prices for organic pork showed a lower variation between countries than surveyed for other meat product groups as organic beef, organic sheep and goat meat and organic poultry.

Figure 5-61 Farmer prices for organic and conventional pork in €/100 kg in 2001



In Figure 5-62, the **farmer price premiums** for organic pork are presented. These are the price premiums of organic farmer prices over the conventional farmer prices for pork. Organic pork production demands higher price premiums than, for example, organic milk or beef production, since it is mainly based on concentrates such as cereals and oilcakes, for which organic price premiums are high. Other reasons are the required costly modifications to existing animal housing, as well as higher levels of labour. The lowest price premium for organic pork among the EU countries was observed in Austria and Germany with 45 percent and in Finland and Sweden with 46 and 47 percent, respectively, whereas the EU average was 62 percent. Among the EU countries, the farmer price premium for organic pork was highest in the Netherlands with 132 percent. Interestingly, a huge difference was surveyed between the farmer price premium in the Czech Republic with 229 percent and in Slovenia, where organic and conventional pork was sold at the same price in the year 2001. In Slovenia, the share of organic pork production measured by total pork production was only 0.03 percent in 2001 and most parts of the production were consumed directly on farm and did not reach the market. Due to the fact that a market for organic pork was almost non-existent, it is no wonder that the farmer price premium was zero. In the Czech Republic, a considerable amount of organic pork was produced in 2001. Nevertheless, the production costs seem to have been much higher than for conventional pork. The consequence was a farmer price premium which exceeded the EU average more than threefold.

Figure 5-62 Farmer price premiums for organic over conventional pork prices in percent in 2001



As examples of the product group organic pork, Table 5-25 presents the **consumer prices** for organic pork cutlet and organic minced pork surveyed in the year 2001. High prices for organic pork cutlets were reported from the United Kingdom and from Denmark. For the United Kingdom this can be explained by the fact that a large part of the consumed organic pork had to be imported. However, for Denmark, the above average consumer price for organic pork cutlet was surprising as Denmark was the country with the highest degree of self-sufficiency with organic pork of 125 percent in 2001. The domestic demand was completely met by domestic production. Thus, other reasons must exist, which increased the consumer prices for organic pork. Looking at the production costs (see Figure 5-61), they cannot be the reason either. Farmer prices for organic pork in Denmark were only slightly above the EU average in 2001. Especially low consumer prices for organic pork cutlets were surveyed in Finland, Sweden and Italy. The consumer price for organic minced pork was around 10 €/kg in most EU countries. Again it was the United Kingdom reporting the highest consumer price.

Table 5-25 Consumer prices for organic pork cutlet and organic minced pork in €/kg in 2001

Country	Pork cutlet	Minced pork
EU countries		
AT	10.42	8.54
BE	12.06	10.44
DE	10.89[1]	9.93
DK	18.78 ▲	9.39
ES	nd	nd
FI	7.84 ▼	5.89 ▼
FR	10.98	7.23 ▼
GR	nd	nd
IE	12.70	nd
IT	9.32 ▼	10.43
LU	13.88	16.11 ▲
NL	11.32	10.64
PT	nd	nd
SE	9.28 ▼	nd
UK	21.24 ▲	17.67 ▲
Weighted EU average[2]	**12.35**	**10.24**
Accession countries		
CZ	4.71	3.24
SI	nd	nd
EFTA countries		
CH	24.30	12.41
NO	14.81	nd

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle (ZMP)
[2] Weighted by organic consumption

Table 5-26 shows the **consumer price premiums** for organic over conventional pork cutlet and minced pork prices. For both products the EU average was around 50 percent. It was not surprising that the price premiums recorded for pork products were higher than for beef products. The higher farmer price premium resulted from production cost differences and the relationship between demand and supply. In Belgium and Luxembourg, the consumer price premiums of both pork products were more than 20 percent above the EU average. Finland was the only country with both consumer price premiums being more than 20 percent below the EU average. Another interesting result was that in some countries price premiums for one of the two surveyed pork products was relatively high, and for the other, relatively low. Examples include pork products in Italy, the Netherlands, and in Switzerland.

Table 5-26 Consumer price premiums for organic pork cutlet and organic minced pork in percent in 2001

Country	**Pork cutlet**	**Minced pork**
EU countries		
AT	50	68 ▲
BE	95 ▲	78 ▲
DE	65[1] ▲	48
DK	27 ▼	49
ES	nd	nd
FI	27 ▼	25 ▼
FR	80 ▲	59
GR	nd	nd
IE	45	nd
IT	13 ▼	92 ▲
LU	90 ▲	92 ▲
NL	26 ▼	81 ▲
PT	nd	nd
SE	32 ▼	nd
UK	14 ▼	nd
Weighted EU average[2]	**51**	**52**
Accession countries		
CZ	10	11
SI	nd	nd
EFTA countries		
CH	80	20
NO	74	nd

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle (ZMP)
[2] Weighted by organic consumption

5.9 The organic poultry market

5.9.1 General notes about the total market for poultry in 2001

The year 2001 was an outstanding year for the EU poultry market, and this was mainly a consequence of the situation at the beef and pork market. After the outbreak of BSE and FMD in 2001, consumers avoided buying beef and pork products and compensated this reduction by an increased consumption of poultry products, which were not affected by these diseases. As poultry production can be adapted to a rise in demand in a relatively short time, the production volume in the EU in 2001 was clearly higher compared to the years before (Frenz 2002, p. 76). The years 1999 and 2000 were rather characterised by a reduction of poultry production in the EU. Thus, the crises on the other meat markets set positive impulses on the poultry market. The gross indigenous production of poultry in the EU in 2001 amounted to 9.4 million tonnes. This corresponded to an increase of nearly 5 percent compared to the year 2000. From 2001 to 2002 the production grew again slightly, but it was comparable to that in 2001 (Eurostat 2009).

The most important poultry producer in the EU in 2001, as in the years before, was France with 2.3 million tonnes of gross indigenous production. This was followed by the United Kingdom, Spain and Italy. The production volume of France contributed with 24 percent to the total poultry production of the EU. Seventeen percent of the EU production came from the United Kingdom, 14 percent from Spain, and the Italian poultry production represented 12 percent of the EU production. The poultry production in the EU is mainly characterised by chicken and turkey production. Chicken meat production accounted for 70 percent and turkey production for 20 percent of the total poultry production in the EU in 2001, whereas the turkey production showed higher growth rates due to an increased importance in processed poultry products (Probst 2003, p. 73).

The poultry consumption in the EU increased strongly in 2001 compared to the years before. The total domestic use in the EU amounted to 8.9 million tonnes in 2001 (1999: 8.5 million tonnes, 2000: 8.4 million tonnes). The slight decrease in consumption from 2001 to 2002 by 0.7 percent made clear that the extraordinary high consumption in 2001 was mainly a reaction to the outbreak of BSE and FMD. The consumption volume, however, was still much higher than in the years before 2001, which shows that a general trend exists for an increase in poultry consumption. The countries with the highest total domestic poultry consumption were the United Kingdom, France and Germany. The same pattern can be observed for the years 1999, 2000 and 2002 (Eurostat 2009). The gross human consumption per capita increased from 22.2 to 23.4 kg/head from 2000 to 2001. In Spain, Portugal and Ireland the largest amounts per capita were consumed with around 30 kg/head, respectively. As in the years before, Sweden and Finland were the countries with the lowest per capita consumption of poultry of around 14 kg/head. The increased poultry consumption in 2001 was also reflected in the degree of self-sufficiency, which was in 2001 with 105.8 percent slightly lower than in the year 2000 with 106.3 percent (Eurostat 2007).

Concerning foreign trade at the EU market for poultry, the Eurostat statistics from 1999 to 2002 show a steady augmentation of the EU's poultry imports. Important import countries of the EU for poultry were, for example, Thailand, Brazil and Hungary. The imports from these countries showed an increasing trend (Frenz 2002, p.76). Looking at the figures for the total

exports of the EU, an increase is recognised, here as well. However, in some countries, for example in France - the main poultry producer within the EU -, a reverse trend was reported. In France, exports decreased from year to year within the period 1999 to 2004. In 2001, as in the years before, the EU was a net exporter for poultry. However, the difference between imports and exports decreased from 1999 to 2001, which was caused by an increased consumer demand for poultry and - as a consequence - by a much stronger increase of imports compared to exports. From 2001 to 2002, this trend was interrupted, because the exports of the EU grew stronger than the imports, which led again to an increase of the export surplus. Higher exports in 2002 were a consequence of a decrease in poultry consumption. Consumers started again to trust beef and pork products and the demand for poultry products was, therefore, not as striking as in the year 2001 (Eurostat 2009; Probst 2003, p. 73).

5.9.2 Supply balance for organic poultry

The leading position in organic poultry production was filled by France, which was also the main producer of conventional poultry in the year 2001. Countries following France with their organic production volumes were Germany, Denmark and the United Kingdom. The EU countries together reached a production of around 25,000 tonnes. As shown in Table 5-27 no considerable amounts of organic poultry were produced in the investigated non-EU countries. The volumes of organic poultry, which were consumed on farm, were negligible. Only Slovenia reported that the complete production was used on farm. As this production did not account for more than one tonne, it is obvious that still no market for organic poultry existed in that country. Similar to the situation at the organic pork markets, nearly 100 percent of the total organic sales of the organically produced poultry in the EU were sold with an organic label.

Organic imports amounted for around 3,800 tonnes with the United Kingdom and Germany being the main importing countries. France was the main exporter of organic poultry. In more than half of the surveyed countries foreign trade with organic poultry was almost not existent. The main consumers of organic poultry in 2001 were Germany, France and the United Kingdom. The organic poultry consumption of the entire EU amounted to nearly 26,000 tonnes. The degree of self-sufficiency with organic poultry in the EU was 98 percent. In four countries the degree of self-sufficiency exceeded 100 percent. These were Denmark, France, Austria and the Netherlands.

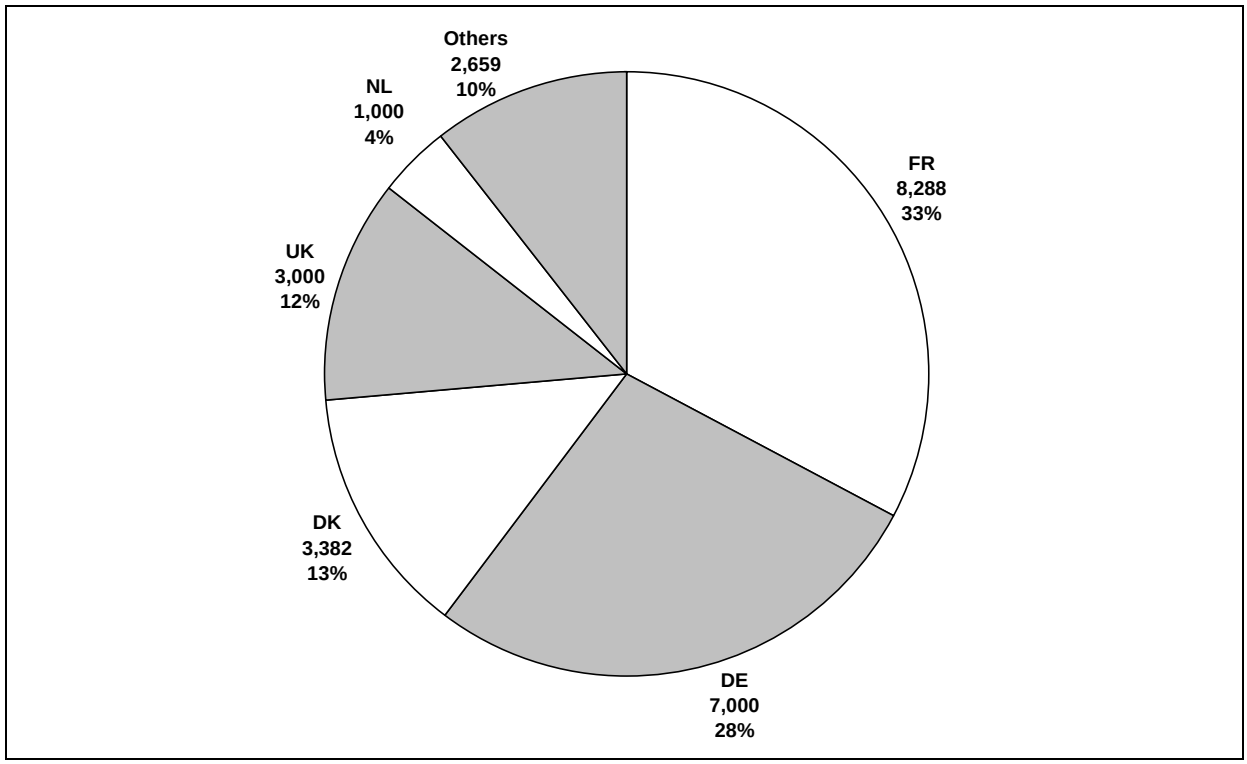
Table 5-27 Supply balance for organic poultry in 2001

	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	500	2	10	490	92	450	0	50	400	113	AT
BE	790	0	0	790	95	751	453	443	761	99	BE
DE	7,000	0	0	7,000	100	7,000	1,200	103	8,097	86	DE
DK	3,382	0	0	3,382	100	3,382	/	680	2,702	125	DK
ES	189	0	0	189	90	170	0	0	170	100	ES
FI	50	0	0	50	34	17	0	/	17	100	FI
FR	8,288	0	0	8,288	100	8,288	0	1,500	6,788	122	FR
GR	67	0	0	67	100	67	0	0	67	100	GR
IE	nd	nd	nd	nd	nd	nd	0	0	nd	nd	IE
IT	895	0	0	895	96	855	200	0	1,055	81	IT
LU	21	0	0	21	100	21	49	6	64	33	LU
NL	1,000	0	0	1,000	100	1,000	440	500	940	106	NL
PT	9	0	0	9	100	9	0	/	9	100	PT
SE	138	0	0	138	100	138	35	6	167	83	SE
UK	3,000	0	0	3,000	100	3,000	1,500	0	4,500	67	UK
EU-15	**25,329**	**0**	**10**	**25,319**	**99**	**25,148**	**3,877**	**3,288**	**25,737**	**98**	**EU-15**
CZ	50	0	0	50	100	50	0	0	50	100	CZ
SI	1	100	1	0	nd	0	0	/	0	100	SI
CH	316	0	0	316	100	316	/	/	316	100	CH
NO	4	0	0	4	100	4	/	/	4	100	NO

5.9.3 Organic poultry production

Interestingly, from fifteen EU countries, only four nations shared dominance at the organic poultry market in the year 2001. The common production of France, Germany, Denmark and the United Kingdom amounted for 86 percent of the total organic poultry production in the EU. In France and Germany, the organic poultry production increased by around 3,000 tonnes from 2000 to 2001 (compare Hamm et al. 2002, p. 13). A difference between the organic and the conventional poultry sector concerning the distribution of the production among the EU countries can be observed by Germany's and Denmark's position as second and third largest organic poultry producers in 2001. Concerning the total (organic plus conventional) poultry production, the United Kingdom was on the second place followed by Spain and Italy. It is striking that Spain, which was the third largest producer of conventional poultry in the EU only reached a tiny organic poultry production in the year 2001. The Spanish know-how in conventional poultry production might be used in the future for developing the organic poultry sector to a greater extent.

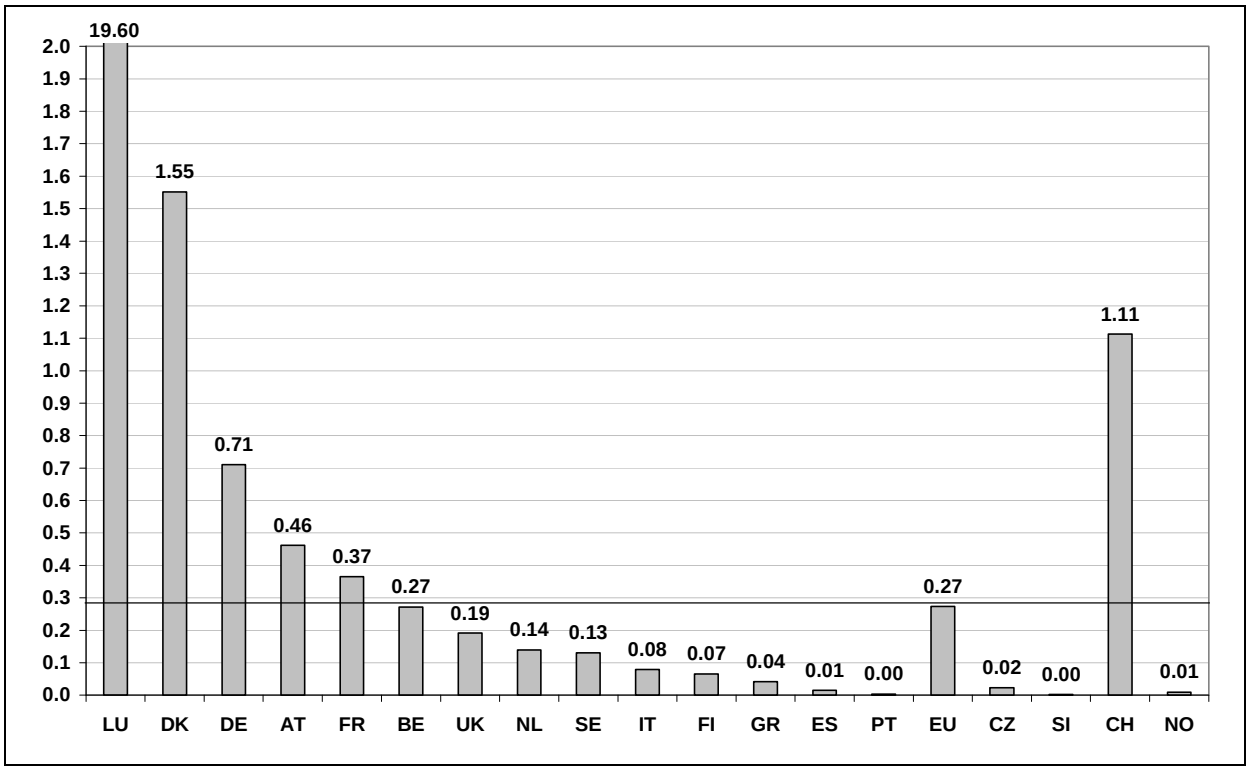
Figure 5-63 Organic poultry production of the EU countries in tonnes in 2001



The production volumes given in the figure above represent the EU countries without Ireland.

In Figure 5-64 the organic share of the total (organic plus conventional) poultry production in each investigated country is shown. These figures give an impression of the relative importance of the organic poultry sector measured by the conventional production. At an EU-wide level an organic share of almost 0.3 percent was calculated. This is, of course, a very low percentage, and has to be interpreted against the background of the enormous effort which is necessary when converting conventional poultry husbandry into organic. The conversion of poultry husbandry - as well as pork husbandry - causes more problems than the conversion of other sectors. In both cases new animal houses have to be built or the existing buildings have to be restructured to fulfil the requirements of organic certification. As for organic pork husbandry, the animal feed for organic poultry requires high protein contents, for example soybeans, and aside from that it has to originate from organic sources. In combination with higher levels of labour these factors result in much higher producer costs, discouraging a lot of farmers to convert their conventional poultry production.

Figure 5-64 Organic share of total poultry production in percent in 2001



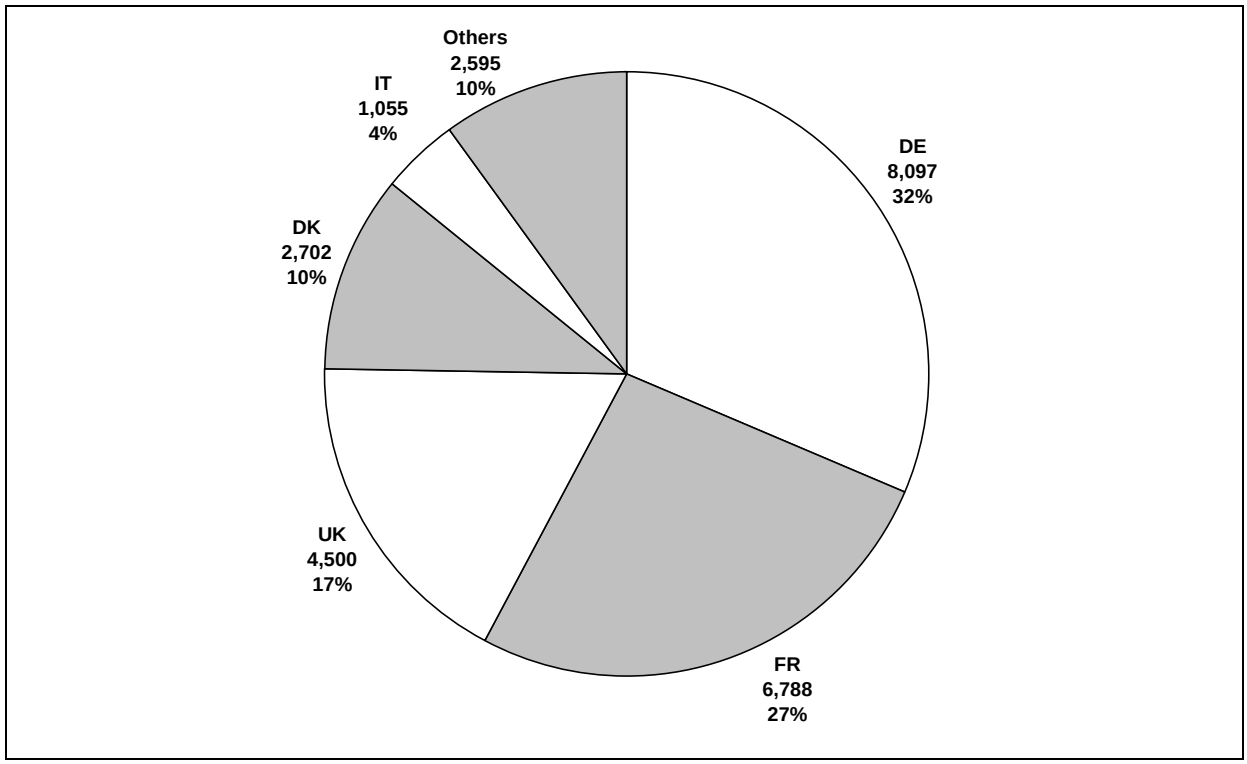
Most astonishing appears the organic production share of Luxembourg. It was extremely high with 19.6 percent. The reason for this was the tiny conventional poultry production of only 107 tonnes (Eurostat 2009) in this country in 2001, whereas the organic poultry production was high, seen relatively to the small size of the country. This production, however, originated mostly from one large producer. This underpins, once again, the fact that in many cases the development of the organic sector shows a completely different run than the conventional production of a specific product. In Spain, for example, the converse situation can be studied. Here, the conventional poultry production was one of the largest among the EU countries in 2001, whereas the organic sector had just begun to develop. This resulted in an organic production share of zero percent as shown in Figure 5-64.

Besides Luxembourg, Denmark was in a leading position concerning its organic production share of 1.55 percent. Other countries with above EU average production shares were Germany, Austria and France, as well as Switzerland from the non-EU countries.

5.9.4 Organic poultry consumption

In Figure 5-65 the absolute volumes of the organic poultry consumption in the EU in 2001 are presented. Germany, France, the United Kingdom and Denmark were the big four among the EU countries concerning their organic poultry consumption. These were at the same time the main producers of organic poultry. Naturally, these absolute figures have to be interpreted against the background of the size of the individual countries concerning their number of inhabitants. The three leading countries in organic poultry consumption were also the most populated nations in the EU. Most surprising, however, appears the relatively high consumption volume of Denmark - contributing with 10 percent to the total organic poultry consumption -, considering that the Danish population accounted for only 1.4 percent of the number of inhabitants within the entire EU in 2001.

Figure 5-65 Organic poultry consumption of the EU countries in tonnes in 2001

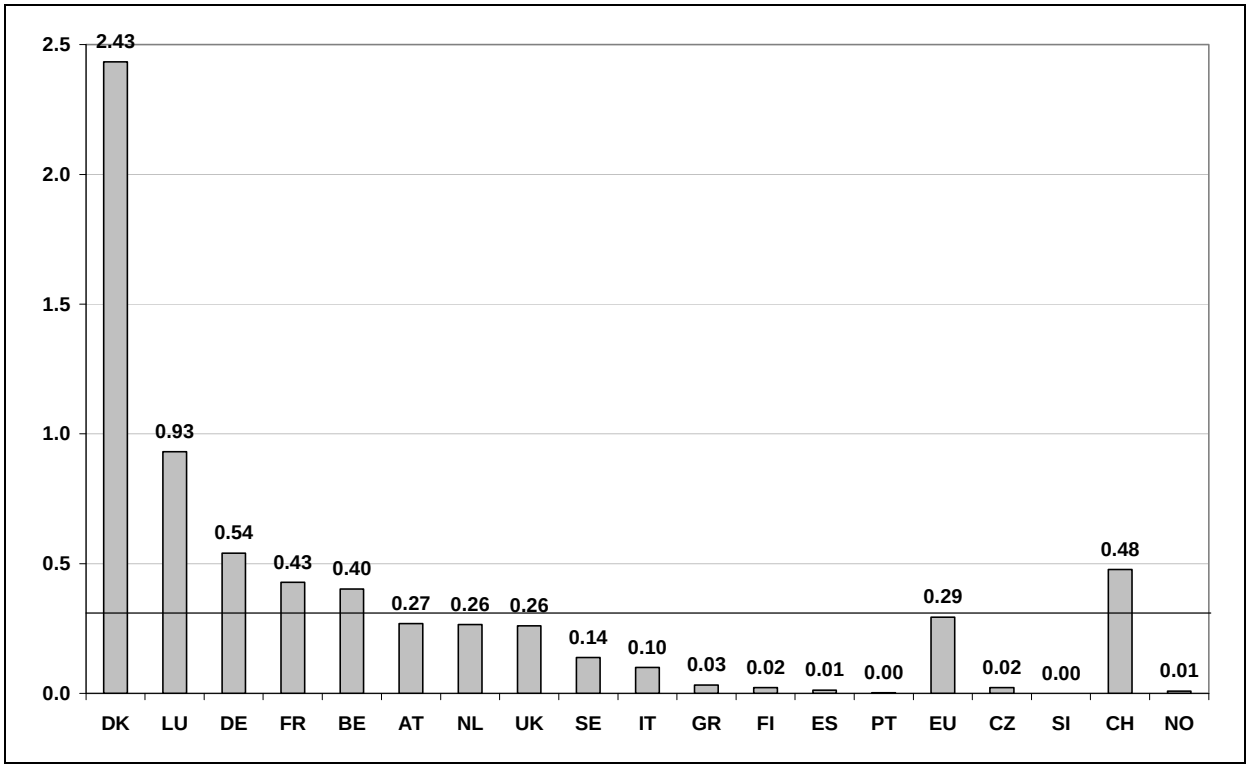


The consumption volumes given in the figure above represent the EU countries without Ireland.

The large absolute consumption volume of Denmark shown in Figure 5-65 translated also in an organic share of total (organic plus conventional) poultry consumption, which was with 2.4 percent by far the highest among the investigated countries (see Figure 5-66). As for organic pork consumption, the EU average organic share of total poultry consumption reached only 0.3 percent in 2001. Countries exceeding this EU average - besides Denmark - were Luxembourg, Germany, France, Belgium and Switzerland.

In Luxembourg, the smallest of all EU countries, the one before mentioned big organic poultry producer was responsible for a high organic production share of 19.6 percent. As sales of organic poultry were organised very well in Luxembourg through the co-operative BioGros in co-operation with a larger supermarket chain the high organic consumption share is traceable.

Figure 5-66 Organic share of total poultry consumption in percent in 2001

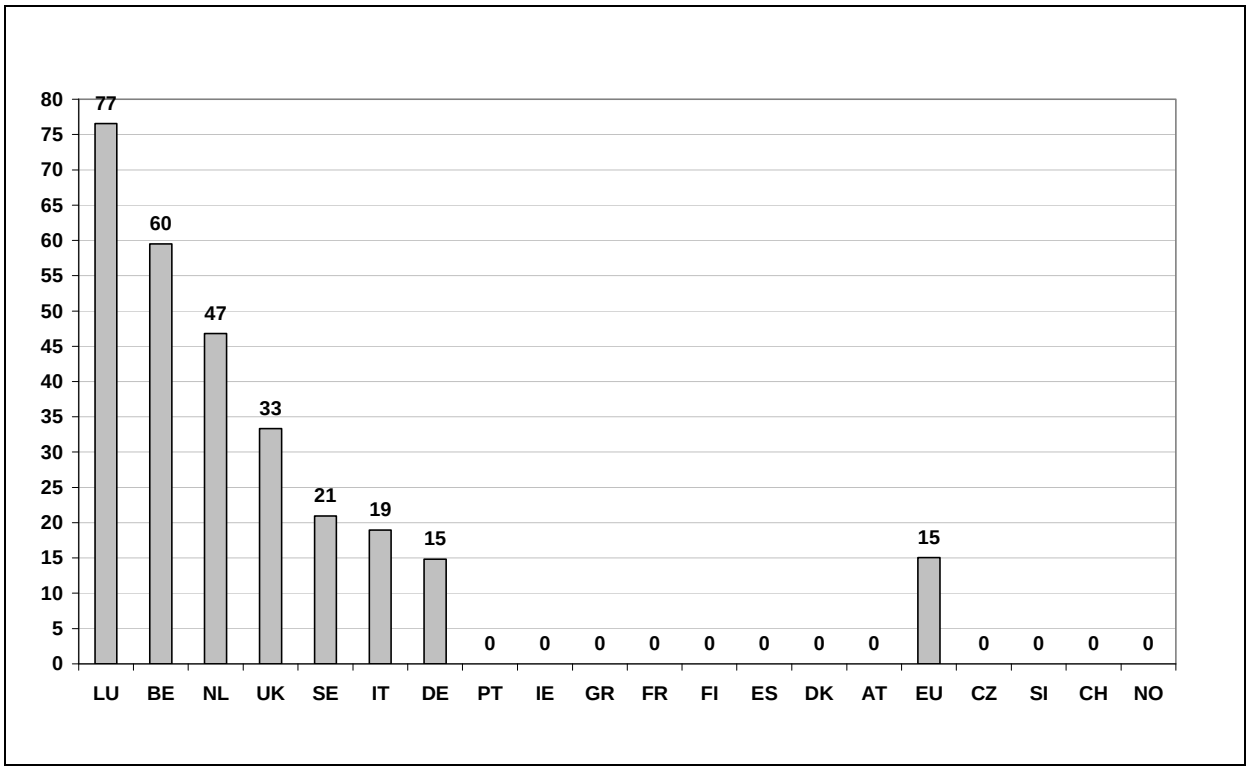


5.9.5 Foreign trade with organic poultry

Studying the figures on the organic poultry imports (see Table 5-27), it is obvious that the traded amounts were low in the year 2001. The United Kingdom and Germany were the only countries reporting more than 1,000 tonnes of imported organic poultry. As given in Figure 5-67, 15 percent of the consumption volume of organic poultry within the entire EU originated from imports.

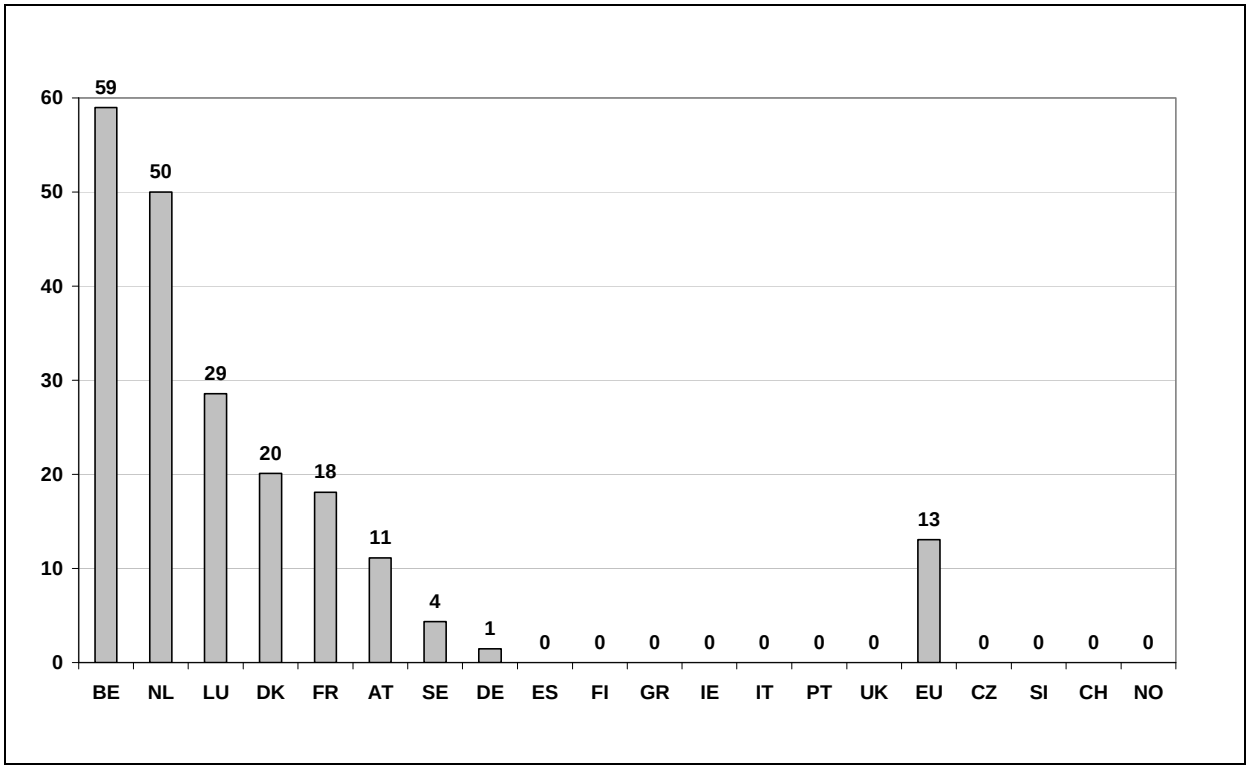
As shown in Figure 5-67, Luxembourg, Belgium and the Netherlands reported especially high import shares for organic poultry in 2001. Luxembourg led with 77 percent. In this country, organic poultry was sold via the national supermarket chain “Cactus”. This increased the availability for organic poultry as many people were able to get to know this product, which raised the demand. Luxembourg imported organic poultry from its neighbouring countries France, Germany and Belgium. In Belgium, 60 percent of the organic poultry consumption was met by imports, mainly from France. In turn, the Netherlands imported organic poultry mainly from Belgium. This shows clearly that the organic imports of poultry originated mainly from EU countries. Imports from third countries were negligible in the year 2001.

Figure 5-67 Imports of organic poultry as a share of the organic poultry consumption in percent in 2001



The export volumes of organic poultry in 2001 were comparably low as the imports (see Table 5-27). From 19 countries included in this survey, only eight countries reported considerable export amounts of organic poultry. The main export country was France, followed by Denmark and the Netherlands. In Figure 5-68, the organic exports were related to the sales as organic for human consumption. As for the organic import shares, Belgium, the Netherlands and Luxembourg were characterised by the highest organic export shares among the investigated countries. This underpins the lively trade between these neighbouring countries.

Figure 5-68 Exports of organic poultry as a share of the sales as organic poultry in percent in 2001



At an EU-wide level, the EU was a net importer for organic poultry in 2001. As stated above, most imports and exports originated from intra-EU trade. In 2001, the main export country for organic poultry from outside the EU was Hungary.

5.9.6 Balance between supply and demand for organic poultry

The degree of self-sufficiency of the entire EU with organic poultry reached 98 percent in the year 2001. Some countries were more than self-sufficient. These were Denmark, France, Austria and the Netherlands. As for organic pork, the United Kingdom had a very low level of self-sufficiency for poultry, with a measure of 67 percent. The degree of self-sufficiency for poultry in Luxembourg was even lower with 33 percent. In these countries the demand for organic poultry seemed to be high and might be used in the following years for enlarging the

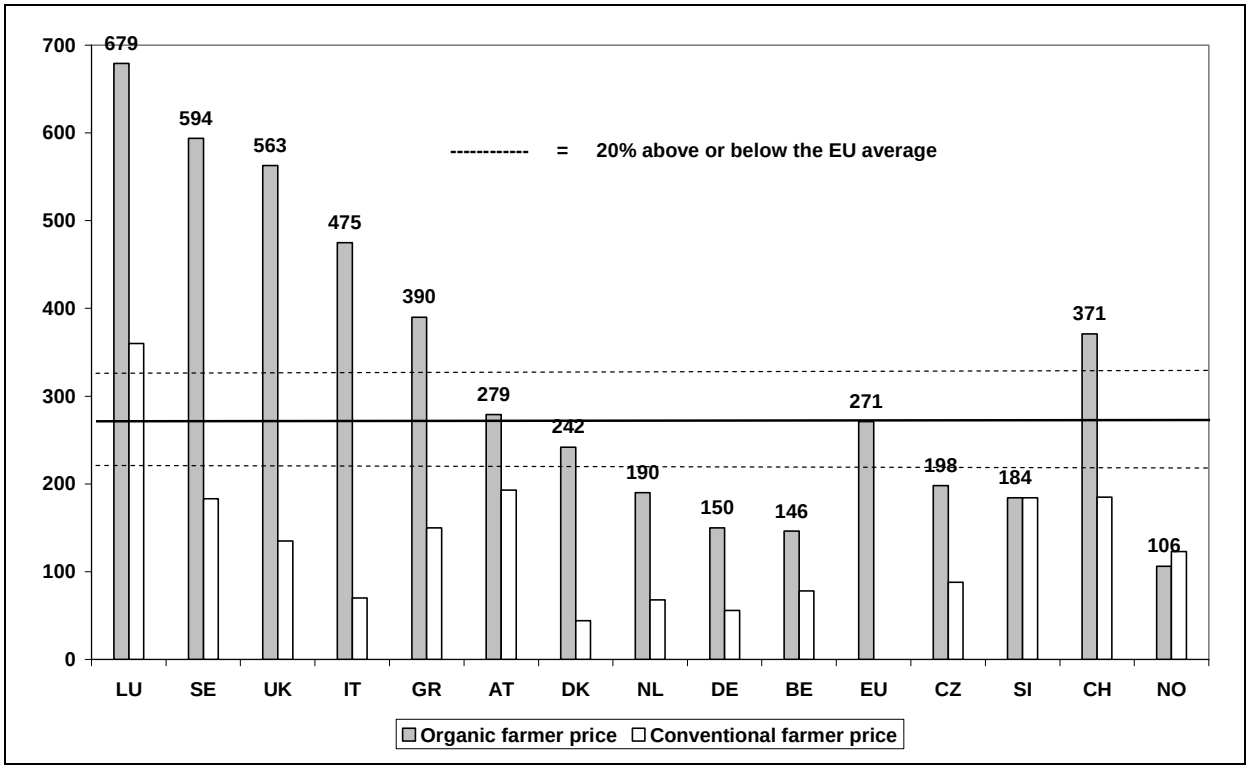
domestic organic poultry production. The same, even though to a lower degree, applied for Germany, Sweden and Italy, each with a degree of self-sufficiency of around 80 percent.

Market experts of each investigated country were asked about their recognised shortfalls for organic poultry in the years 2001 and 2002 despite imports. Supply deficits for organic poultry were mentioned by six countries in these two years. These were Germany, Greece, Luxembourg, Portugal, Sweden and Slovenia. The reason for this shortfall was similar to that of organic pork. Conversion of poultry production to organic is expensive because animal housing has to be adapted to the strict EU regulations for organic poultry keeping. Only few farmers took the risk of converting their poultry production to organic. Expected supply deficits for the years 2003 and 2004 were only named by experts from four countries: Germany, Portugal, Sweden and Slovenia.

5.9.7 Prices for organic poultry

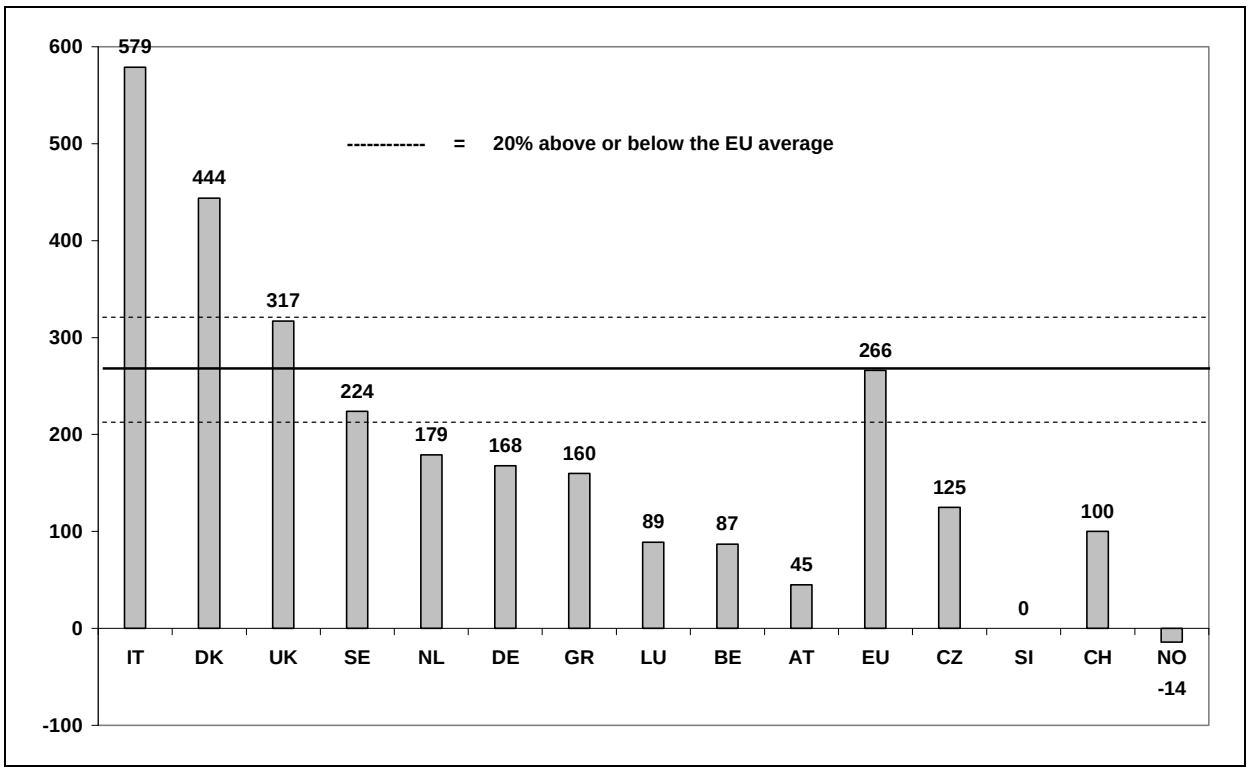
As shown in Figure 5-69 the **farmer prices** for organic and conventional poultry varied extremely in the year 2001. They ranged from 146 €/100 kg in Belgium up to 679 €/100 kg in Luxembourg. The EU average of 271 €/100 kg was weighted by the organic poultry production and it is, therefore, mostly influenced by the prices reported from Germany, Denmark and the United Kingdom. These countries belonged to the main producers of organic poultry in 2001. From six countries farmer prices more than 20 percent above the EU average were surveyed. These were Luxembourg, Sweden, the United Kingdom, Italy, Greece and Switzerland. Especially low farmer prices were achieved in the Netherlands, Germany and Belgium as well as in the Czech Republic, Slovenia and in Norway. The latter country reported that organic poultry was even cheaper than conventional poultry. This can be explained by the very low production volume and the fact that no real market for organic poultry has yet been established in Norway.

Figure 5-69 Farmer prices for organic and conventional poultry in €/100 kg in 2001



The **farmer price premiums**, shown in Figure 5-70, were calculated as price premiums of the organic farmer price for organic poultry over the respective conventional farmer price. At an EU-wide level, the farmer price for organic poultry was 266 percent higher than the conventional price in 2001. Especially high price premiums were reported from Italy and Denmark. Luxembourg, Belgium and Austria were the EU countries with the lowest difference between the organic and the conventional farmer price. Compared to other animal products, the EU average for organic poultry was very high. The costs for organic production were much higher than in conventional production systems. Thus, farmer price premiums must be relatively high. In addition, there were supply deficits for these products in many countries leading to shortage prices.

Figure 5-70 Farmer price premiums for organic over conventional poultry prices in percent in 2001



As one example of the product group organic poultry, Table 5-28 presents the **consumer prices** for whole chickens surveyed in the year 2001. As meat is usually introduced to specialised organic food shops, butchers or general food shops later than all other product groups, for some countries with a low availability for this product no organic consumer prices were surveyed. The EU average consumer price for whole chickens was with 9.44 €/kg the lowest price among the investigated meat products. However, consumer prices for organic chicken, as for all kinds of meat, vary depending on which part of the chicken is surveyed. Prices for organic chicken breast were, for example, much more expensive than the surveyed whole chicken. Denmark had the highest chicken price of 14.76 €/kg. In Greece, Ireland and Sweden chicken was more than 20 percent cheaper than the EU average.

Table 5-28 Consumer prices for organic whole chickens in €/kg in 2001

Country	**Whole chicken**
EU countries	
AT	7.80
BE	8.97
DE	9.33
DK	14.76 ▲
ES	nd
FI	nd
FR	9.53
GR	7.34 ▼
IE	7.05 ▼
IT	8.24
LU	9.25
NL	8.87
PT	nd
SE	4.89 ▼
UK	9.80
Weighted EU average[1]	**9.44**
Accession countries	
CZ	1.91
SI	nd
EFTA countries	
CH	10.35
NO	nd

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Weighted by organic consumption

Table 5-29 shows the **consumer price premiums** for organic over conventional chicken prices. The EU average consumer price premiums for whole chickens was with 113 percent by far the highest consumer price premium surveyed among the investigated meat products. This mainly reflects the high producer prices for organic poultry due to higher production costs compared to conventional poultry husbandry. The highest consumer price premiums were reported from Denmark and Italy. In Sweden, France and Ireland the difference between organic and conventional prices for whole chickens was lowest from all EU countries.

Table 5-29 Consumer price premiums for organic whole chickens in percent in 2001

Country	**Whole chicken**
EU countries	
AT	142 ▲
BE	155 ▲
DE	111
DK	267 ▲
ES	nd
FI	nd
FR	56 ▼
GR	108
IE	59 ▼
IT	191 ▲
LU	101
NL	140 ▲
PT	nd
SE	45 ▼
UK	102
Weighted EU average[1]	**113**
Accession countries	
CZ	10
SI	nd
EFTA countries	
CH	50
NO	nd

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Weighted by organic consumption

5.10 The organic egg market

5.10.1 General notes about the total market for eggs in 2001

According to Eurostat (2009) the useable production of eggs in the EU amounted to 5.3 million tonnes in 2001. This was slightly more than in the years 2000 and 2002. A clearly lower production was reported for the years 1999 and 2003 with around 5.1 million tonnes of eggs. The relatively high production level for eggs in the year 2001 was a consequence of the problems at the beef and pork markets. The outbreak of BSE and FMD in 2001 raised the demand for eggs instead of beef and pork products. The egg production was rapidly adapted to this higher demand.

The main egg producing countries in 2001 were France, Germany, Italy and Spain, followed by the United Kingdom and the Netherlands. In the year 2000 the Italian poultry and egg production was affected by the outbreak of HPAI (high pathogenic avian influenza) sub-type H7N1[1]. Although many animals had to be killed, the Italian egg production was still higher in 2000 than in the year 1999.

Prices for eggs were low in the year 1999 but rose again in the year 2000. Due to an increased production in the year 2001, prices decreased slightly but remained at a higher level than in the year 1999 (Frenz 2002, p. 71). The relatively high level of producer prices also reflected the fact that the use of meat and bone meal as animal feed has been banned in the EU since December 2000.

In 1999, dioxin[2] contamination was detected in poultry products mainly from Belgium. Doxin is a by-product of chemical processes. It is ubiquitous in the environment of countries with much industry. As it exists mainly in soil, free-range animals, as for example layer hens, take it up when picking and the dioxin is therewith able to enter the food chain. Dioxins accumulate in fatty tissue as they are highly soluble in fat. The main problems they cause are immunotoxic effects, reproductive effects and - at very high concentrations - carcinogenic effects. As a consequence of the dioxin contamination, the total domestic use of eggs in the EU was low in 1999 with only 4.9 million tonnes. The occurrence of the high dioxin contaminations in 1999 led to increased activities of the European Commission in the following years for generally reducing dioxins in the environment as well as in feed and food (see Commission 2001b).

Due to a lack of data for some countries, no EU sum for the total domestic use of eggs in 2000 was given by Eurostat. In the year 2001 the total consumption was high with 5.2 million tonnes of eggs. Obviously, the dioxin contamination was no longer a matter of interest for

[1] Not to be mixed up with another sub-type characterised by the antigen-configuration H5N1, which became popular in 2003, where it was identified in South Korea. It caused the "Avian influenza" which spread over the world during the following years (see Commission 2009).

[2] The expression "dioxin" is used as a collective term for a group of 210 polychlorinated aromatic compounds with similar properties. Seventeen of these dioxins are toxic and can cause health problems in animals as well as in humans. In the context of dioxins, mostly a second group of chemicals is mentioned. These are the PCBs, which means polychlorinated biphenyls. As some of the PCB compounds have similar toxicological properties as dioxins, they are called "dioxin-like" PCBs. In studies on dioxin contaminated food, dioxins and PCBs are usually investigated together (see Commission 2001a).

European consumers, because now they were more afraid of BSE. Against the background of a possible transmissibility of BSE onto humans, the toxic effects of dioxins became relatively unimportant. From 2001 to 2002 egg consumption decreased by 3 percent. In 2001, Germany was the country with by far the highest total domestic egg consumption among the fifteen EU countries, followed by France. Comparing imports and exports the EU was a net exporter for eggs. In 2001, the export surplus amounted for 110,000 tonnes. As in other years, the main importing country in 2001 was Germany. Concerning exports, the Netherlands were the main exporting country with 432,000 tonnes. The degree of self-sufficiency for eggs was 102 percent in the EU in 2001. The data on gross human consumption per capita recorded by Eurostat (2007) are incomplete. Therefore, no weighted EU averages are given. According to Frenz (2002, p. 72), on average, between 12 and 13 kg eggs per capita were consumed during the years 1998 to 2000 in the EU.

5.10.2 Supply balance for organic eggs

In Table 5-30 the key data on the organic egg market in the year 2001 are presented. The production volume of the EU countries amounted to 68,000 tonnes. Switzerland is the only country of the four investigated non-EU members having produced considerable amounts of organic eggs. The on-farm use of the produced eggs was negligible in most countries with the exception of Slovenia, where most produced organic eggs were consumed by the farmers themselves. As for organic poultry, France and Germany were the main producers of organic eggs in 2001. Almost all organic eggs were sold with an organic label. Only three percent of the total organic sales were sold among the conventional eggs without a price premium. Comparing the individual EU countries concerning their share of sales as organic, none of them sold less than 80 percent of the organic eggs with an organic label.

Foreign trade with organic eggs was still limited in 2001. Organic imports as well as exports accounted for around 7,000 tonnes. The degree of self-sufficiency for the EU was 100 percent. Portugal and Luxembourg reported especially low levels of self-sufficiency, whereas the Netherlands produced more than twice the domestically consumed amount. This explains the status of the Netherlands as main exporting country for organic eggs in 2001.

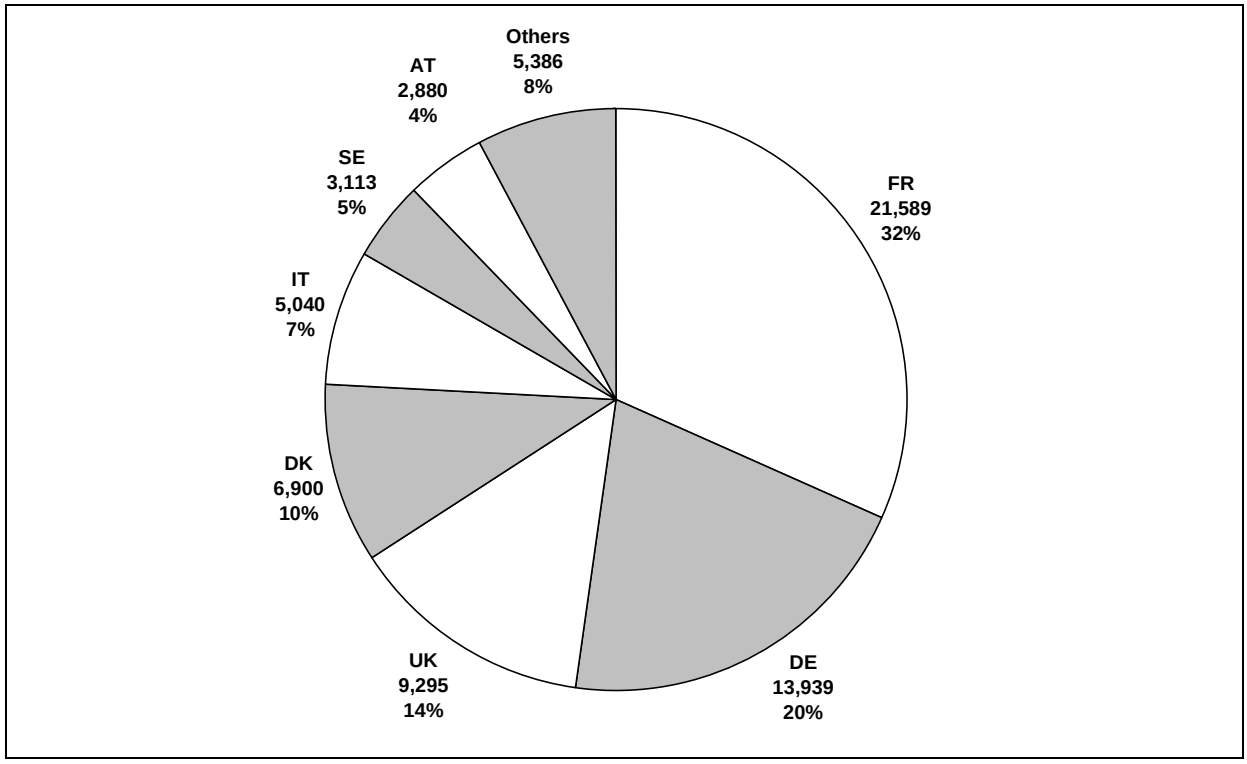
Table 5-30 Supply balance for organic eggs in 2001

	A	B	C	D	E	F	G	H	I	J	
Country	Organic production tonnes	Use on farm %	Use on farm tonnes	Total org. sales tonnes	Sales as organic %	Sales as organic tonnes	Organic imports tonnes	Organic exports tonnes	Organic consumption tonnes	Degree of self-sufficiency %	Country
Calculation		**C/A*100**		**A-C**	**F/D*100**				**F+G-H**	**F/I*100**	**Calculation**
AT	2,880	2	60	2,820	83	2,340	/	300	2,040	115	AT
BE	1,078	0	0	1,078	100	1,078	380	63	1,395	77	BE
DE	13,939	0	0	13,939	95	13,242	4,545	545	17,242	77	DE
DK	6,900	0	0	6,900	100	6,900	/	130	6,770	102	DK
ES	143	0	0	143	80	114	0	0	114	100	ES
FI	1,500	3	45	1,455	90	1,310	0	/	1,310	100	FI
FR	21,589	0	0	21,589	100	21,589	0	5,000	16,589	130	FR
GR	85	0	0	85	90	77	0	0	77	100	GR
IE	120	0	0	120	100	120	0	0	120	100	IE
IT	5,040	4	202	4,838	100	4,838	900	/	5,738	84	IT
LU	32	0	0	32	100	32	194	/	226	14	LU
NL	2,424	0	0	2,424	100	2,424	/	1,333	1,091	222	NL
PT	4	0	0	4	100	4	182	0	186	2	PT
SE	3,113	0	0	3,113	100	3,113	0	0	3,113	100	SE
UK	9,295	0	0	9,295	90	8,366	929	/	9,295	90	UK
EU-15	**68,142**	**0**	**307**	**67,835**	**97**	**65,547**	**7,130**	**7,372**	**65,305**	**100**	**EU-15**
CZ	10	0	0	10	100	10	nd	nd	nd	nd	CZ
SI	36	83	30	6	100	6	nd	/	6	100	SI
CH	1,461	1	15	1,446	100	1,446	169	/	1,615	90	CH
NO	380	0	0	380	67	255	63	/	318	80	NO

5.10.3 Organic egg production

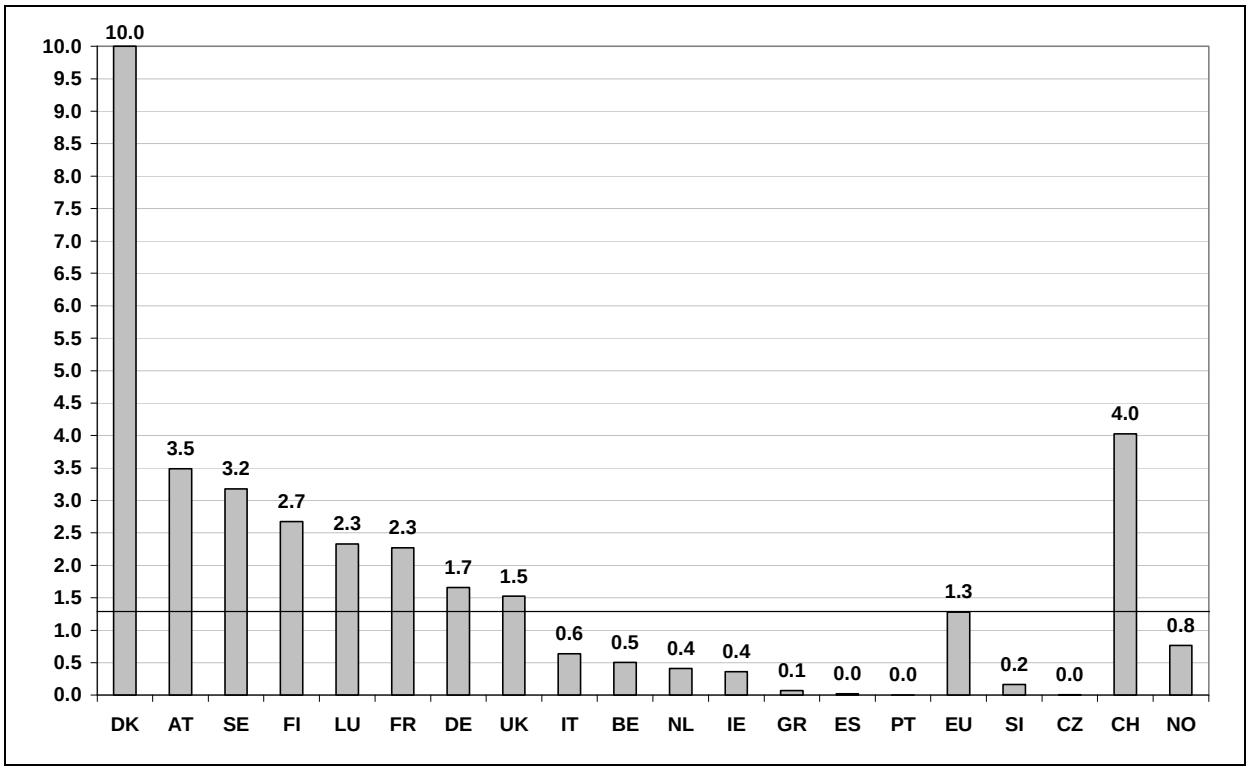
The main organic egg producing countries in volume terms in 2001 were France, Germany, the United Kingdom and Denmark. Seventy-six percent of the entire organic egg production of the EU originated from these countries. As shown in chapter 5.9.3, they also shared dominance in organic poultry production. The high organic egg production of Denmark was striking. It contributed with 10 percent to the entire organic egg production of the EU countries. When comparing the figures of organic and conventional egg production, it is obvious that Spain, which was among the four main producers of conventional eggs, did not play an important role in organic egg production. The same situation was observed for organic poultry production.

Figure 5-71 Organic egg production of the EU countries in tonnes in 2001



For giving an impression about the different importance of the organic egg production among the investigated countries, in Figure 5-72 the organic production was related to the total (organic plus conventional) egg production. The most striking result was the high organic production share reported from Denmark. Ten percent of all eggs produced in Denmark in 2001 originated from organic husbandry. The organic production shares of all other countries ranged far behind this high percentage. On average, the organic production share for eggs accounted to 1.3 percent in 2001. Obviously, this was much higher than the EU average production share for organic poultry, which only reached 0.3 percent in the year 2001.

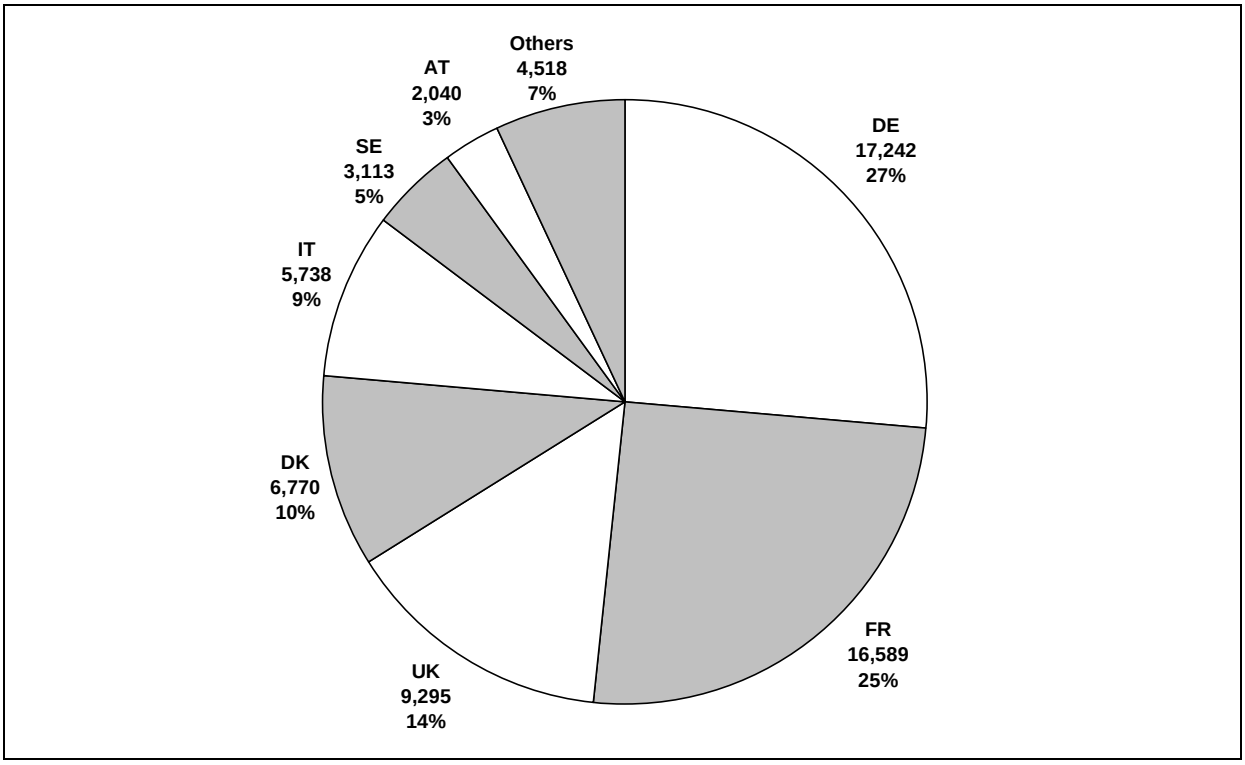
Figure 5-72 Organic share of total egg production in percent in 2001



5.10.4 Organic egg consumption

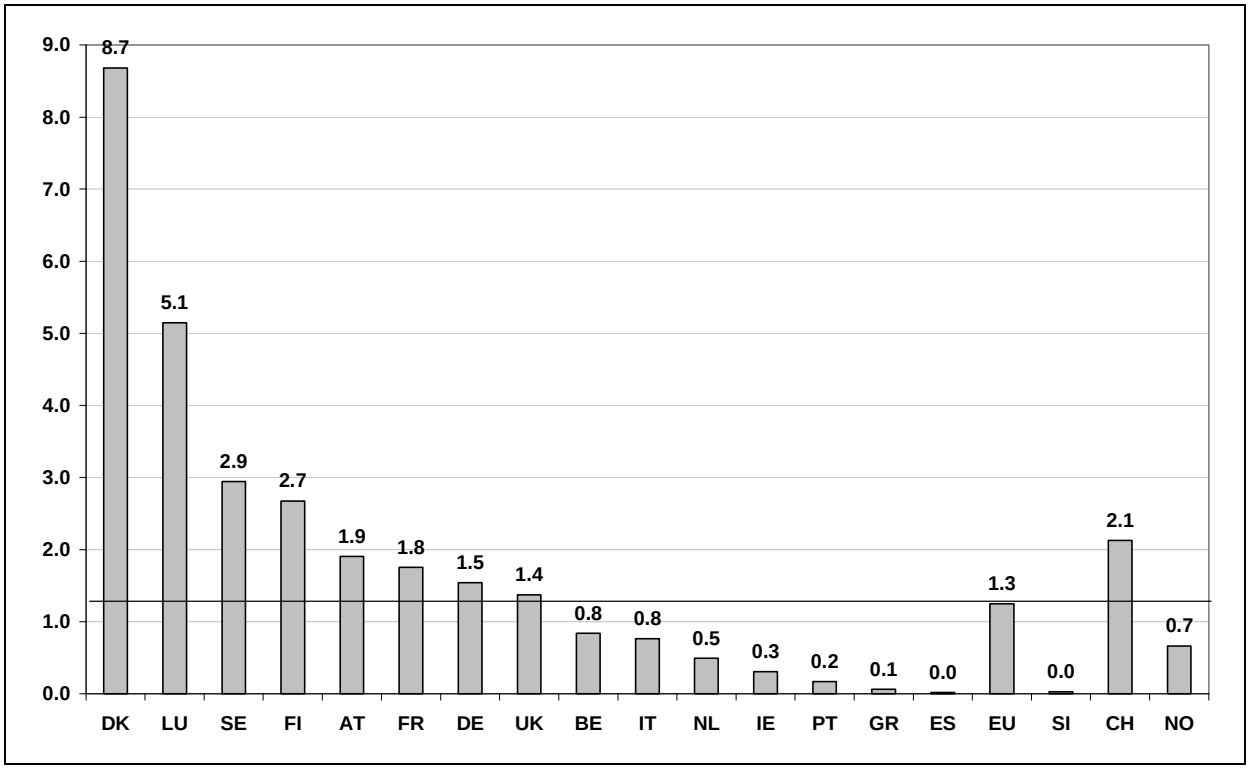
The figures on organic egg consumption, presented in Figure 5-73 show a similar pattern to the data on organic egg production. The four main producing countries were also the main organic egg consumers in volume terms. These leading countries were Germany, France, the United Kingdom and Denmark, together contributing with 76 percent to the entire organic egg consumption of the EU in 2001. As three of these four countries were at the same time the nations with the most inhabitants, it is necessary to analyse the data in a way which allows comparing the results between countries. For this, in Figure 5-74 the organic consumption was related to the total (organic plus conventional) egg consumption.

Figure 5-73 Organic egg consumption of the EU countries in tonnes in 2001



Denmark was the leading country concerning its high organic consumption measured by total (organic plus conventional) egg consumption in 2001. At an EU-wide level this market share by volume reached 1.3 percent and was therewith identical with the organic production share for eggs. Besides Denmark, Luxembourg was outstanding with a high organic market share of 5.1 percent, followed by Sweden and Finland with 2.9 and 2.7 percent, respectively. From the investigated non-EU countries, only Switzerland reported an above EU average market share of 2.1 percent. Italy, which reached place five concerning its absolute organic egg consumption, was only on place ten with its below average organic market share of 0.8 percent.

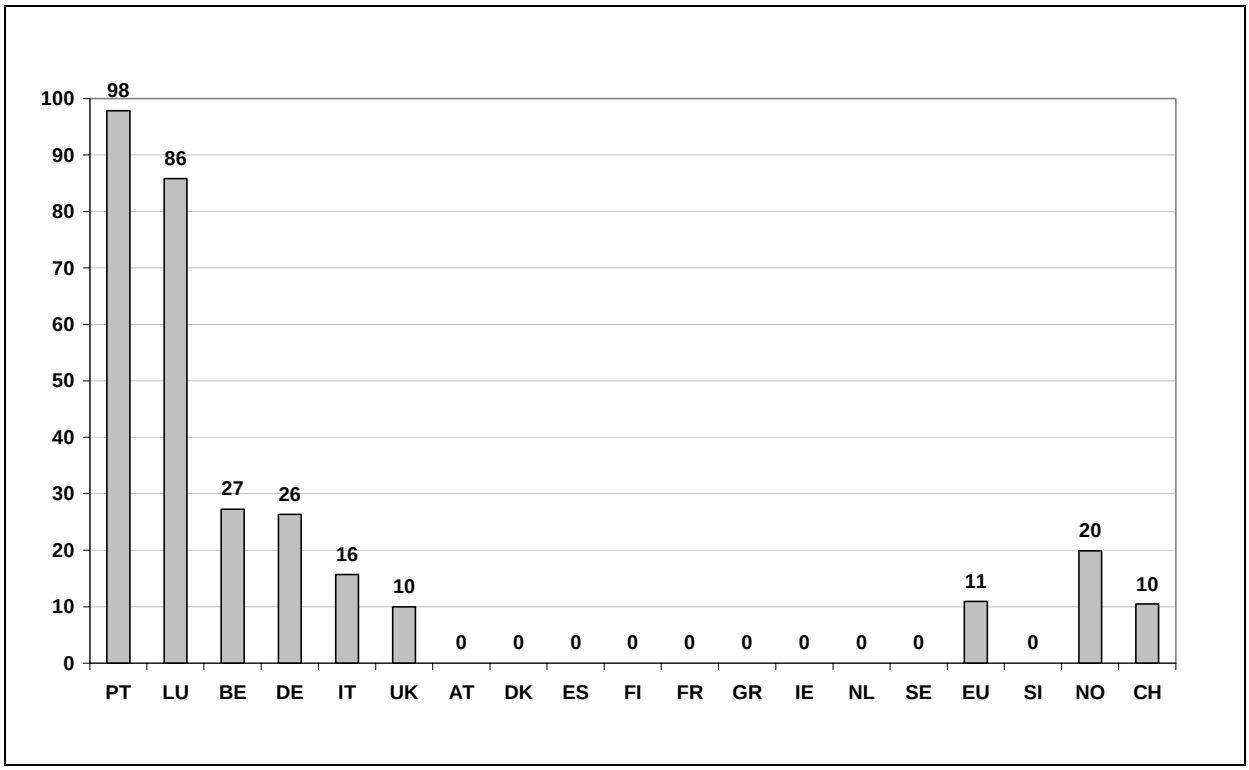
Figure 5-74 Organic share of total egg consumption in percent in 2001



5.10.5 Foreign trade with organic eggs

The imports of organic eggs within the EU countries accounted for around 7,000 tonnes in the year 2001. This referred to 11 percent of the organic egg consumption of the entire EU. However, the imports concentrated on some few countries. The main importer in volume terms was Germany with more than 4,500 tonnes (see Table 5-30). As shown in Figure 5-75, 26 percent of the German organic egg consumption originated from imports. The countries with by far the highest organic import shares were Portugal and Luxembourg. Ten of the 19 surveyed countries reported import amounts below 0.5 percent. This reflects the low level of foreign trade with organic eggs in 2001.

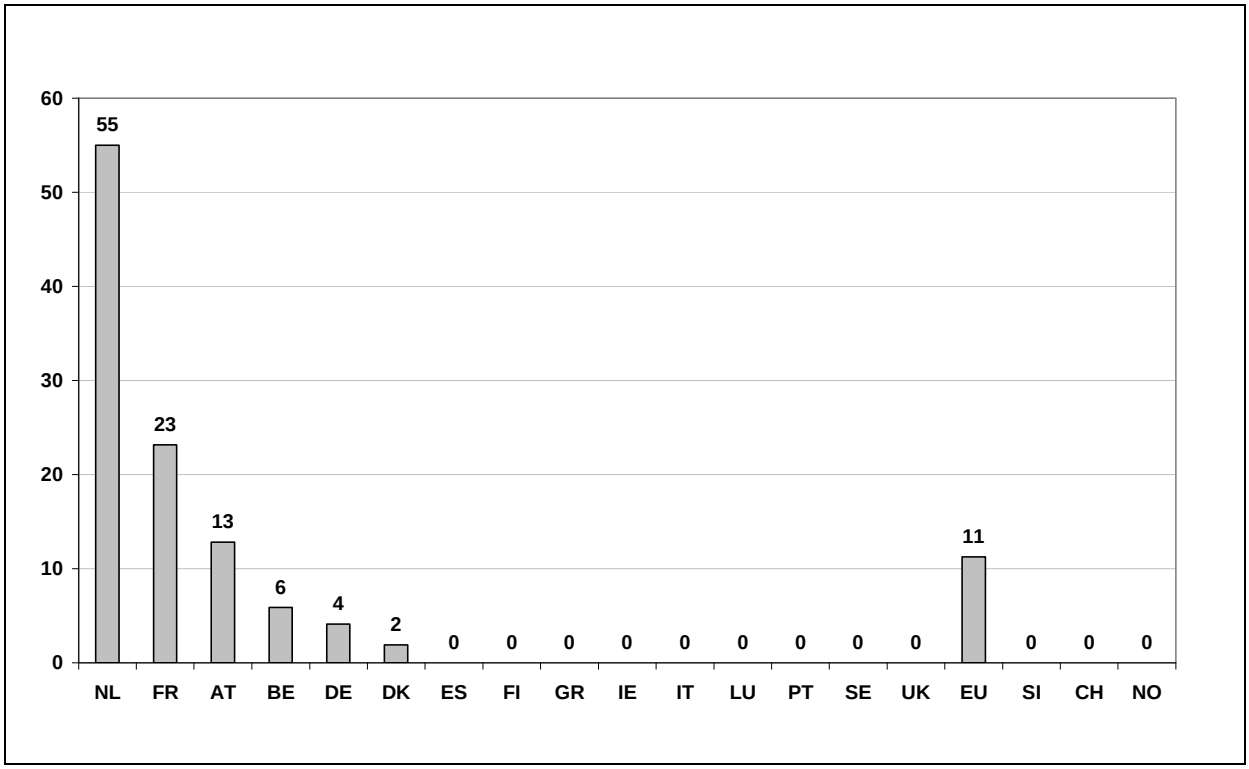
Figure 5-75 Imports of organic eggs as a share of the organic egg consumption in percent in 2001



Only six out of the 19 investigated countries reported any exports of organic eggs in 2001. Sixty-eight percent of all exports originated from the French organic egg production. These exports referred to 23 percent of the French sales as organic. The Netherlands reported by far the highest organic export share with 55 percent. This means that the Netherlands produced more than half of their organic eggs for exporting them to other EU countries. As shown in Figure 5-74, the organic consumption share of the Netherlands reached only 0.5 percent, which was clearly below the EU average of 1.3 percent.

The EU was a net exporter of organic eggs in 2001. However, the difference between total import and export amounts were very small. Most of the imports and exports referred to intra-EU trade.

Figure 5-76 Exports of organic eggs as a share of the sales as organic eggs in percent in 2001



5.10.6 Balance between supply and demand for organic eggs

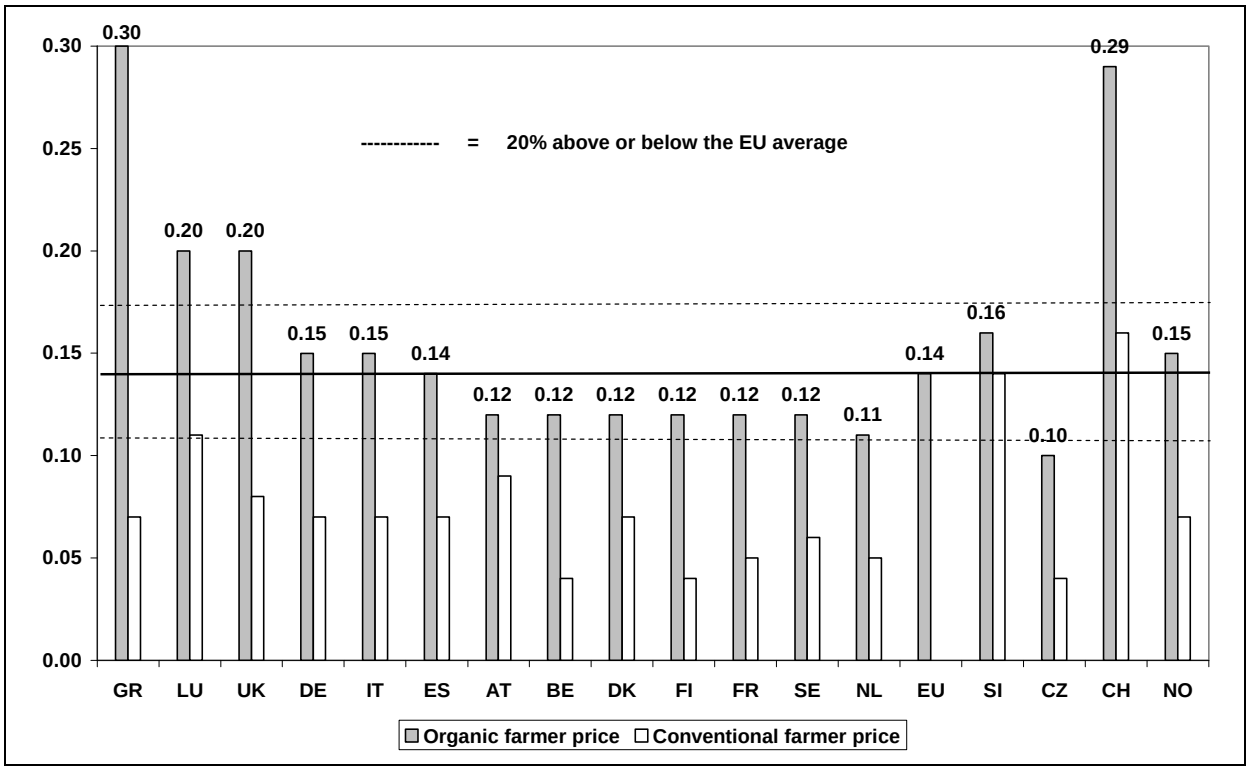
For analysing how balanced the supply and the demand side were for organic eggs, the degree of self-sufficiency was calculated (see Table 5-30). Dividing the amount of eggs, which were sold with an organic label, by the organic egg consumption led to an EU average degree of self-sufficiency of 100 percent. However, large variations were reported from the individual countries. The lowest percentages were surveyed in Portugal and Luxembourg with only two and 14 percent, respectively. The Portuguese organic egg production was lowest among all 19 investigated countries. The organic egg consumption in this country originated mostly from imports. The highest degree of self-sufficiency for organic eggs was identified in the Netherlands with 222 percent. Other countries being more than self-sufficient with organic eggs in 2001 were France, Austria and Denmark. From the non-EU countries, Switzerland and Norway relied to a certain degree on imports to meet their demand. In Slovenia, organic sales were as low as the organic consumption. As the organic imports were estimated to be around zero, the country appeared as being self-sufficient.

Due to the low level of foreign trade with organic eggs, the degree of self-sufficiency was around 100 percent in many of the surveyed countries. However, in some countries shortfalls for organic eggs were reported although no or little amounts were imported. This can be interpreted as a European wide shortfall, making imports impossible. Another reason may be found in insufficiently developed trade connections between importing and exporting countries. Market experts were asked to state in a qualitative way if there was a lack of supply for organic eggs despite imports in the years 2001 and 2002 in their countries. Such supply deficits for organic eggs were mentioned by experts from Spain, Portugal, Sweden, the United Kingdom and Slovenia. Expected supply deficits for the years 2003 and 2004 were named for the same countries without Portugal. The countries Spain and Sweden reported a degree of self-sufficiency of 100 percent in 2001. Imports as well as exports were zero in both countries. Thus, it seems to have been impossible to import the necessary amounts of organic eggs for meeting the domestic demand. From the United Kingdom considerable organic imports were reported. Nevertheless, these imports were not sufficient for meeting the high demand of English consumers.

5.10.7 Prices for organic eggs

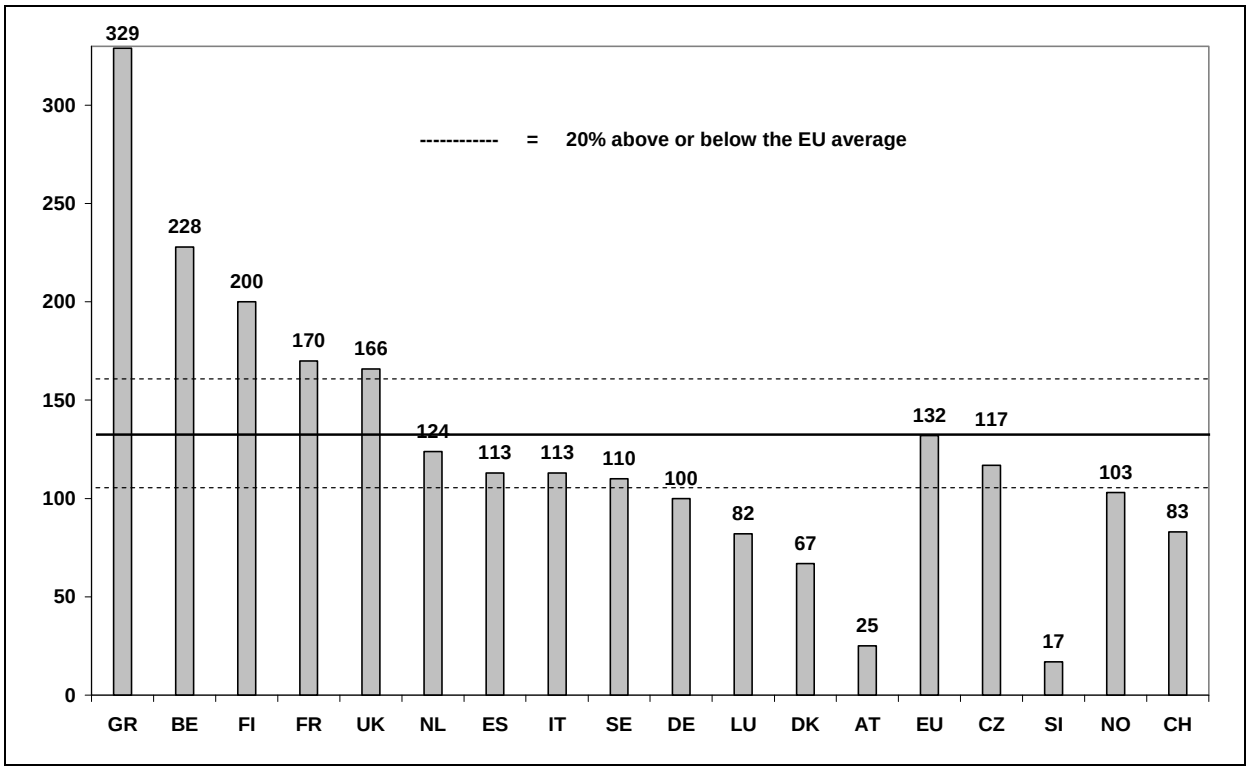
In Figure 5-77 the **farmer prices** for organic and conventional eggs apiece in 2001 are given. Obviously, the variation of the organic farmer prices for eggs was lower than for other product groups. It was also clearly lower than the variation of the reported conventional farmer prices for eggs. On average, the farmer price for one organic egg accounted for 0.14 € in the EU 2001. Only four countries reported organic farmer prices, which were more than 20 percent above this average price. These were Greece, Luxembourg, the United Kingdom and Switzerland.

Figure 5-77 Farmer prices for organic and conventional eggs in €/egg in 2001



The **farmer price premiums**, shown in Figure 5-78, were calculated as price premiums of the organic farmer price for organic eggs over the respective conventional farmer price. At an EU-wide level, the farmer price for organic eggs was 132 percent higher than the conventional price in 2001. Since the conventional farmer prices for eggs varied much more than the organic farmer prices, these differences translated into the reported farmer price premiums. The lowest farmer price premium for organic eggs among the EU countries was surveyed in Austria with 25 percent. In Greece, it was by far the highest with 329 percent.

Figure 5-78 Farmer price premiums for organic over conventional egg prices in percent in 2001



In Table 5-31 the **consumer prices** for organic eggs surveyed in the year 2001 are presented. The prices ranged from 0.21 € per piece in Portugal to 0.41 € per piece in Ireland. In the two Accession countries, the Czech Republic and Slovenia, egg prices were registered at far below the EU average, while in Switzerland and Norway egg prices were far above the EU average. Taking the Czech egg price of 0.09 € per piece, Swiss consumers paid six times more for one egg than Czech consumers did. In EU countries, the general trend was that countries with high producer prices for eggs also had relatively high consumer prices.

Table 5-31 Consumer prices for organic eggs in €/egg in 2001

Country	**Eggs**
EU countries	
AT	0.34
BE	0.28
DE	0.28[1]
DK	0.34
ES	nd
FI	0.32
FR	0.32
GR	0.35
IE	0.41 ▲
IT	0.34
LU	0.35
NL	0.22 ▼
PT	0.21 ▼
SE	0.29
UK	0.39 ▲
Weighted EU average[2]	**0.32**
Accession countries	
CZ	0.09
SI	0.14
EFTA countries	
CH	0.54
NO	0.48

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

Table 5-32 shows the **consumer price premiums** for organic over conventional egg prices. On average, European consumers paid 48 percent more for organic eggs than for conventional eggs in 2001. The consumer price premiums for eggs were noticeably high in some countries, for example, Finland, Greece and Luxembourg.

Table 5-32 Consumer price premiums for organic eggs in percent in 2001

Country	**Eggs**
EU countries	
AT	23 ▼
BE	21 ▼
DE	53[1]
DK	47
ES	nd
FI	109 ▲
FR	45
GR	140 ▲
IE	39
IT	50
LU	133 ▲
NL	94 ▲
PT	83 ▲
SE	59 ▲
UK	36 ▼
Weighted EU average[2]	**48**
Accession countries	
CZ	3
SI	40
EFTA countries	
CH	80
NO	40

▲ = more than 20% above the EU average
▼ = more than 20% below the EU average

[1] Figure from the Zentrale Markt- und Preisberichtstelle ZMP
[2] Weighted by organic consumption

6 Surveyed data over all product groups

In the chapters before, surveyed data were presented on a product by product basis. Additionally, some variables were recorded as aggregated figures over all product groups. Those data are shown in the following sub-chapters.

6.1 Turnover of the organic food market in 2001

In addition to the consumption share by volume presented in the above chapters for the surveyed product groups, the monetary value of the organic food sales in the different countries has been surveyed. In Table 6-1 the organic share of the total organic food market is given. However, some caution has to be exercised when analysing these percentages. The data represent overestimates rather than underestimates because most of the figures for the turnover of the total food market were taken at the retail level and do not include sales channels as direct sales, bakeries and butchers, drugstores or sales at petrol stations. The figures for the turnover of the organic market, however, include all sales channels.

Table 6-1 Organic share of the total turnover in the food market in 2001

Country	**Organic share of the total turnover in the food market (in %)**
EU countries	
AT	2.4
BE	1.0
DE	2.1
DK	3.5[1]
ES	0.2
FI	1.0
FR	0.7[2]
GR	0.2[3]
IE	0.5
IT	0.7
LU	1.0
NL	1.2
PT	0.1[3]
SE	1.7
UK	0.9
EU average	**1.0**
Accession countries	
CZ	0.1
SI	nd
EFTA countries	
CH	3.7
NO	0.2

[1] Source: www.organic-export.dk
[2] Own calculation
[3] Own estimation

The highest organic share of the total food market in 2001 was reported from Switzerland with 3.7 percent, closely followed by Denmark with 3.5 percent. Other countries with high percentages were Austria with 2.4 and Germany with 2.1 percent. This is twice as much as the EU average of 1.0 percent.

Five of the surveyed countries were conspicuous in their extremely low organic shares of the total food market with 0.1 or 0.2 percent, respectively. These were Spain, Greece, Portugal, Norway and the Czech Republic.

The picture portrayed by total market figures differs very much from that revealed by observations on individual product groups. For some products the organic share of turnover can be much higher in comparison to the overall organic share of the total turnover of the food market in the respective country. This applies in the case of carrots, milk and baby food. On the other hand, product groups exist where the organic share is almost zero as, for example, for fish or confectionery. Of course, some products do not exist as organic product at all such as salt or mineral water. This makes clear that a complete assessment of the organic market of a country would have to include observations of the entire market as well as separate analyses of different product groups.

6.2 Sales channels for organic food

For a successful marketing of organic products it is important to choose the appropriate sales channel. A large number of consumers can only be reached when organic products are available at shops where the majority of the consumers purchases food. This is especially important given that for most consumers only a small proportion of their total food purchase is of organic quality. General food shops have the advantage that consumers are able to buy most goods which they need for their daily life at one single location. Consumers appreciate this form of one-stop-shopping because they do not want to loose too much of their spare time by going to several different shops. The development of sales channels is an extremely important factor in the development of the organic market. As Michelsen et al. (1999, p. 11) argue, of the four Ps in marketing, place, product, promotion and price, it is place that „...seems the most decisive for understanding the organic food market as place poses clear limitations to the potential effects of the other Ps“. The figures presented in this section provide a comprehensive description of sales channels for organic food in Europe, and are based on panel data or the estimates of market experts.

In Table 6-2 the turnover of the organic food market of the 19 analysed countries in 2001 has been segmented according to the different types of sales channels. This chapter addresses the question about where consumers purchase their organic food. The options from which consumers can choose are general food shops, bakers/butchers, organic food shops, whole food shops, direct sales (incl. farmers markets and weekly markets), restaurants and others (for example drugstores, petrol station shops). The sales channel ‘general food shops’ includes those shops selling predominantly conventional food, but in addition often have a small range of organic products. In this survey we use the term ‘general food shop’ for small food retailer shops (under 400 square metres sales area), supermarkets (400-800 square metres sales area), hypermarkets (over 800 square metres sales area), as well as for discounters.

The rows for each country add to 100 percent, and it is evident from Table 6-2 that the mix of sales channels used to sell organic products varied significantly between countries. Of all sales channels, general food shops were the most important sales channel for organic food. In thirteen of the 19 surveyed countries general food shops were responsible for 50 or more percent of the total turnover with organic food, and in five of these countries even for 75 or more percent. These five countries were Sweden, the United Kingdom, Denmark, Finland and Switzerland.

Table 6-2 Share of total organic food sales by sales channels in percent in 2001

Country	General food shops[1]	Bakers/ butchers	Organic food shops	Whole food shops	Direct sales of farmers[2]	Restaurants/ canteens	Others
EU countries							
AT	63	3	13	1	13	7	-
BE	50	-	30	10	10	-	-
DE	35	7	27	9	17	2	3
DK	80	1	5	-	8	6	-
ES	10	1	19	61	5	2	2[3]
FI	80	-	-	10	5	5	-
FR	55	2	30	-	10	3	-
GR	17	1	70	-	10	2	-
IE	60	16	14	-	8	-	2
IT	55	2	31	-	9	3	-
LU	50	3	40	3	3	1	-
NL	42	10	41	-	7	-	-
PT	20	-	30	20	30	-	-
SE	90	-	1	1	5	3	-
UK	82	-	8	2	8	-	-
Accession countries							
CZ	55	-	25	-	20	-	-
SI	5	-	5	-	90	-	-
EFTA countries							
CH	75	2	9	8	6	-	-
NO	50	5	30	-	15	-	-

[1] Small retailer shops (under 400 m^2), supermarkets (400-800 m^2), hypermarkets (over 800 m^2) and discounters
[2] Including weekly markets and delivery services of farmers (for example box schemes)
[3] Consumer associations and co-operatives

In Austria, general food shops also played an important role with 63 percent of the total turnover with organic products. The fact that Austria, Denmark, the United Kingdom and Switzerland each have at least one general food shop chain, with national coverage, promoting a large range of organic products (in excess of 400 organic products) is a large factor in explaining the importance of the general food shop as an organic sales channel in these countries (Richter et al. 2000).

However, compared with the figures for the year 2000 (Hamm et al. 2002, p. 44) it seems that the importance of general food shops decreased somewhat in countries with a high share of this sales channel as in Austria and in Denmark for the benefit of organic food shops, direct sales and canteens. In 2001, the outbreak of bovine spongiform encephalopathy (BSE) had the effect that many consumers preferred to buy food directly from farmers or in organic food shops because they relied more on products offered by sales channels with a more direct contact to the producer. Especially beef sales in general food shops decreased significantly in 2001.

However, in countries where a low importance of general food shops has been reported in the year 2000, an increase can be noted when comparing these data with the figures for 2001. These countries were Belgium, Germany, France, Ireland, Italy, Luxembourg, the Netherlands, the Czech Republic and Slovenia. The only exception from this trend was Greece where the organic sales in general food shops decreased somewhat from 2000 to 2001.

In Germany and in the Netherlands, the fact that the general food shops did not play a dominant role in 2001 reflects the high importance of whole food shops (Reformhäuser) and organic food shops in building up the organic food market. In these two countries the share of turnover was almost the same in general food shops and in organic food shops plus whole food shops. In Germany this is also a sign for the lack of co-operation amongst organic farmers. This co-operation, however, is necessary for consistent and reliable supply levels in sufficient volumes and quality (Michelsen et al. 1999, p. 33).

Slovenia, Spain, Greece and Portugal were the countries with the lowest importance of general food shops. In these countries the development of the domestic organic market is still on a low level. In Greece and Spain, whole food shops played a dominant role for organic food sales. In Slovenia direct sales clearly play the most important role with 90 percent share of the turnover with organic products. Low production and therewith sales volumes have not attracted any interest from organic or general food shops.

Organic sales in sales channels other than general food shops, organic food shops or direct sales were still rather marginal. Nevertheless, one of them seems to represent a large potential for organic sales in the future: restaurants and canteens. Especially canteens of schools, universities, kindergartens and hospitals were discussed as a strong growing sales channel for organic food in many countries. In Austria, Denmark and Finland this sales channel accounts for five or more percent of the total organic food sales.

6.3 Common labels for organic food

The production of organic food is governed by regulations or standards which are in turn enforced by certification organisations. This quite complex and rigorous process ensures that producers adhere to standards. It is important that this process is communicated to the consumers of organic products to give them confidence when making a purchase. This is particularly important in justifying high price premiums that would otherwise make purchasing organic food seem a dubious prospect. One of the most important components in signalling to consumers that a product is produced organically is the use of common organic labels. These labels tell consumers that a product has been produced according to standards and certified by a certification organisation. Given the importance of labels or logos in

signalling the organic nature of a product, we asked our national experts to give details on the number and type of common national labels or logos in use in their country in 2001. It is important to note that we have not included any labels of private firms or single producer organisations. We also asked experts to estimate the share of organic products that were sold under each of the labels mentioned, in addition to consumer recognition.

The information in Table 6-3 illustrates that there was no clear pattern with respect to logos operating in the examined countries in the year 2001. Some countries had state or common labels only, while other countries had a mix of both. Among the nine leading countries in terms of organic share of turnover of the total food market in 2001, five countries reported high degrees of recognition of their common label for organic products. These countries were Switzerland, Denmark, Sweden, the Netherlands and Finland. Besides Switzerland with a common label known by 63 percent of all consumers, in all other four countries the degree of recognition of their common label was 90 percent per minimum.

However, in Austria and Germany where organic products also have a comparatively high share of the turnover of the total food market, the common label was not recognised very well by consumers. It is obvious that especially in these countries a large potential exists to increase the turnover with organic products, if the common labels were made more popular by promotion campaigns giving consumers confidence that offered products are really organic. In Germany, a well-supported government label called 'Bio nach EG-Öko-Verordnung' was introduced in 2001. Establishing a common label for organic products was a very important task in Germany, given that the market place was dominated by a plethora of farmer organisation labels and private labels of companies (Hamm and Michelsen 1996, p. 212). At the end of 2001 this label had already reached a degree of recognition of 10 percent of consumers.

Table 6-3 Percentage of products sold under common organic labels and their recognition by consumers in 2001

Country	Governmental label		Other common labels	
	Percentage of consumers that recognise this label	Percentage of organic products marked with this label	Percentage of consumers that recognise this label	Percentage of organic products marked with this label
EU countries				
AT	10 (AMA-BIO-Gütesiegel)	80	-	-
BE	-	-	11 (BIOGARANTIE)	nd
DE	10 (Bio-Siegel)	41	-	-
DK	90 (Statskontrolleret Økologisk)	95	2 (Landsforeningen Økologisk Jordbrug)	1
ES	8[1] (Agricultura ecológica)	100	nd (Vida Sana)	nd
FI	92 (Sun-label)	65	57 (Ladybird)	20
FR	41 (LOGO AB)	66	-	-
GR	1 (BIOAGRO)	5	-	-
IE	-	-	-	-
IT	-	-	-	-
LU	-	-	-	-
NL	93 (EKO)	93	-	-
PT	-	-	-	-
SE	-	-	94 (KRAV)	98
UK	-	-	-	-
Accession countries				
CZ	10 (KEZ)	100	10 (Pro-Bio)	100
SI	5 (Ekološko)	1	40 (BIODAR)	30
EFTA countries				
CH	-	-	63 (BIO SUISSE "Knospe")	67
NO	-	-	44[2] (Debio's Ø-label)	100

[1] Source: Joensen, M. (2003): Organic foods in Spain 2003
[2] With presentation of the label

An interesting development was the coupling of state and private labels in the Czech Republic. It has two labels on all products, the state KEZ label, and the farm association label Pro-Bio. This state of affairs developed from the need to introduce consumers to the state KEZ label without the existing organic consumers losing confidence in the Pro-Bio label they had become familiar with. In Finland two labels for organic products also exist. The recognition of the Sun-label is very high in Finland and a large share of organic products sold in Finland is marked with this label. The older Ladybird label has lost its importance after the governmental label was introduced in the late 1990s.

It was still difficult to record reliable estimations concerning the degree of recognition of the common labels. This highlights the desperate need for research into the consumer recognition of organic labels. The absence of such research means it is difficult to target consumer education campaigns. Such education is essential, as without high levels of recognition, confidence in organic goods cannot be assured.

7 Results of statistical data analysis over all product groups

The existence of valid organic market data allows the investigation of interesting relations between key variables. During the past, a number of assumptions have been discussed by researchers. However, it was not possible to evaluate these assumptions on the basis of statistical evidence due to the lack of the necessary data set. Hypotheses have been drawn up on the basis of these assumptions. In the following, these hypotheses are tested by correlation and regression analysis. The data used for these calculations originate from the EU project OMIaRD and refer to the year 2001.

The presented results show relations which were observed in one individual year. This means that all relationships might reflect a certain market situation which was special for the investigated year only. This has to be taken into consideration when interpreting the results. Obviously, it would be extremely helpful to survey this kind of data regularly on an annual and an EU-wide basis. This would enable researchers to check if certain relationships can be detected every year or if they only occur in certain periods of time.

7.1 Results of correlation analyses

7.1.1 Organic market variables correlated with the "organic turnover share"

The most interesting market variable is the organic share of total food sales of a country (see chapter 6.1). It represents the development stage of the organic market and can be easily compared between countries. Therefore, it is interesting to find out which other market variables are correlated with this "organic turnover share". In the literature several assumptions were found. Various authors (Dabbert et al. 2004, p. 25; Michelsen et al. 1999, p. 27) state that there probably is a positive relationship between the organic production share and the organic turnover share. For a successful marketing of organic products a certain critical mass of domestic production is necessary. Otherwise, organic raw material is not attractive for processors. They need large amounts to benefit from economies of scale. If processors are able to buy large and homogenous amounts of the needed product, they are more willing to establish an organic product line. As a consequence, supermarkets are attracted by the availability of these processed products as well as by a stable organic raw production of unprocessed products as fruit and vegetables. This leads to increased sales of organic food. In the following calculations the variable "organic production share" represents the arithmetic mean of the organic production shares surveyed for the ten investigated product groups within the respective countries (see chapter 5.1 to 5.10).

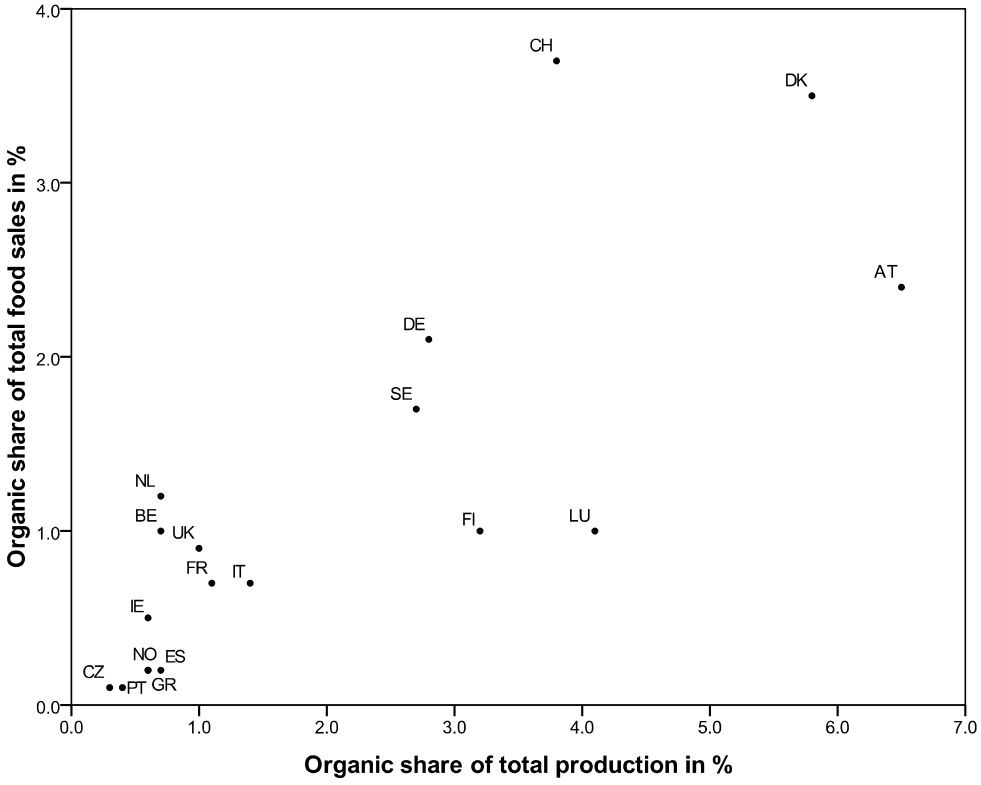
Hypothesis 1: There is a positive relationship between the organic share of total production and the organic share of total food sales.

↑ Organic production share	↑ Organic turnover share

Figure 7-1 shows a strong relation between the two variables which is confirmed by a high Spearman correlation coefficient of 0.86. The correlation is significant at the 0.01 level (2-tailed). This result can be interpreted in two ways. The production could be seen as the driving force pushing the demand. In many countries the governmental support for organic farming was the trigger for increasing conversion. On the other hand the existing demand can

be the reason for pulling an increase of organic production as well. If, for example, national or regional supermarket chains in a country strongly promote organic products, this can act as a signal to producers and can increase their disposition for converting to organic production. In most countries both market mechanisms are existent but the extent of both effects may differ among countries and even among individual product groups.

Figure 7-1 Scatter plot of the variables “organic turnover share” and “organic production share”



According to Dabbert et al. (2004, p. 27) and Michelsen et al. (1999, p. 30) there is a positive correlation between the importance of general food shops as sales channel for organic food and the organic share of total food sales. The authors base their assumption on the observation that, in general food shops, new consumer groups get in touch with organic products. These consumers would never go into an organic food shop and probably they were not interested in organic food before, but in supermarkets they can accidentally purchase some organic products. Some of the consumers will be convinced by the better taste or by the fact that they support a healthier agricultural production, and these consumers may become re-buyers.

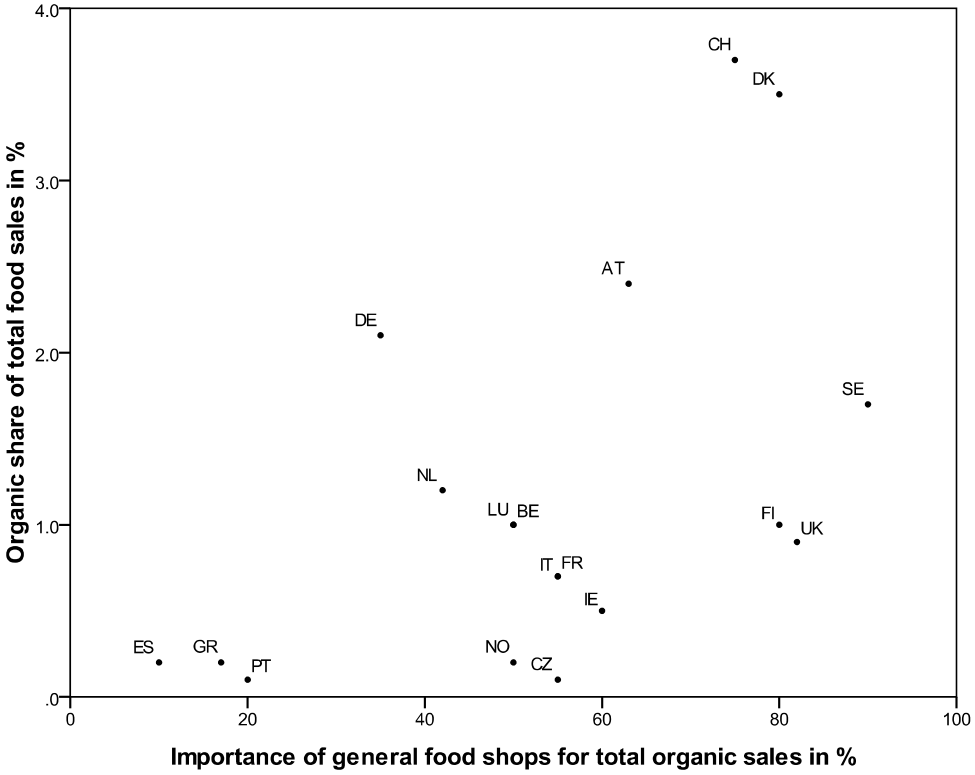
As for the relation between the two variables a clear direction is assumed, two hypotheses were built. H2 refers to the correlation between the variables. In the next chapter, it is analysed by regression analysis how strongly the "supermarket share" influences the variable "organic turnover share" (see chapter 7.2).

Hypothesis 2: **There is a positive relationship between the importance of general food shops as sales channel for organic food and the organic share of total food sales.**

↑ Supermarket share	↑ Organic turnover share

The scatter plot shown in Figure 7-2 shows a middle-strong correlation between the variables "organic turnover share" and "supermarket share" which is reflected in a Spearman correlation coefficient of 0.49. The correlation is significant at the 0.05 level (2-tailed).

Figure 7-2 Scatter plot of the variables "organic turnover share" and "supermarket share"



Dabbert et al. (2004, p. 27) assume a positive relationship between the existence of one national label for organic food and the organic turnover share. A nation-wide organic label is likely to increase the degree of recognition by consumers much more than the use of several labels of different organic organisations or retail chains. Within the framework of the OMIaRD project the degree of recognition of existent nation-wide organic labels was investigated. Michelsen et al. (1999, p. 40 and p. 58) assume that there is a positive relationship between the degree of recognition of a nation-wide organic label and the organic turnover share of the respective country. This relation is interpreted by the authors by the fact that in countries with a high organic turnover share, systematic promotion for the national organic label was conducted - in most cases by retail chains - leading to a high degree of label recognition. Even in promotion campaigns for the supermarket's own commercial organic label, an indirect promotion effect for the national organic label occurs, as in most cases both labels are used.

Hypothesis 3: **There is a positive relationship between the degree of recognition of a national label for organic food and the organic share of total food sales.**

↑ Label recognition	↑ Organic turnover share

The assumed positive association between "organic turnover share" and "label recognition" was not confirmed significantly by the correlation analysis. The correlation analysis showed a Spearman correlation coefficient of 0.44 which was not significant at the 0.05 level (2-tailed). However, the correlation coefficient is positive which tends to support the assumption of a positive relationship between the variables. A trend is visible that countries with a high degree of recognition of their national label for organic food also show high organic shares of total food sales.

A high percentage of consumers who recognise the national organic label in shops, will probably lead to more frequent sales of organic products. On the other hand, in countries with a high organic share of total food sales, the presence of the national organic label is more significant than in countries with low organic turnover shares, simply because the number of organic products sold in the shops is higher. This means that consumers get in touch with the national organic label more frequently which increases the degree of recognition of this label independently from the fact whether consumers really buy organic products or not.

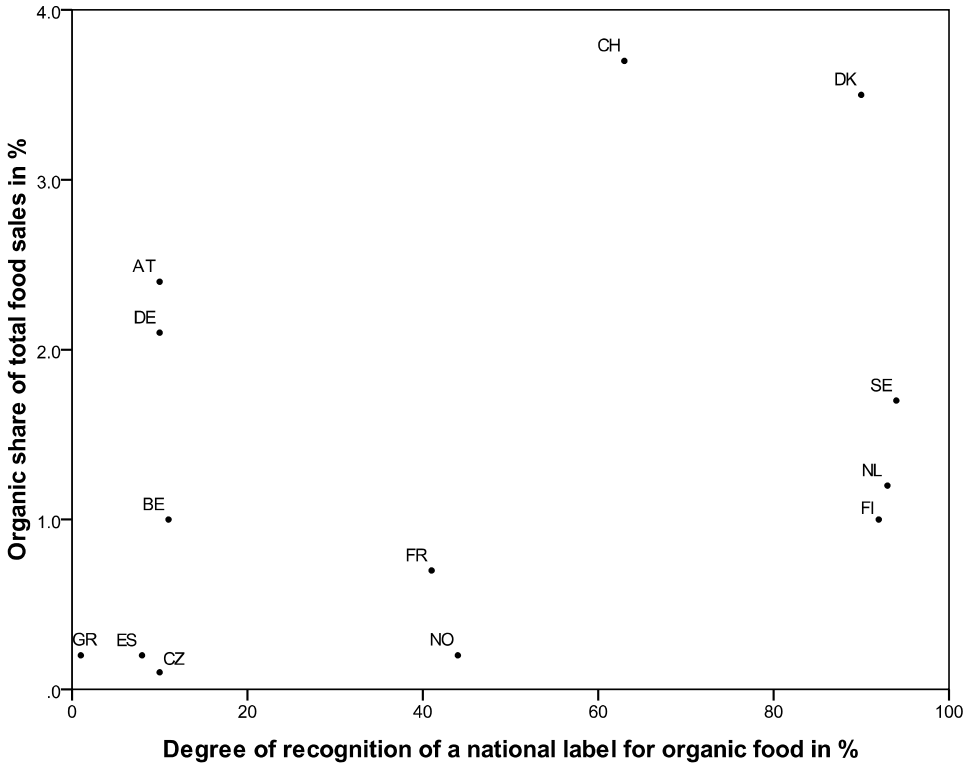
As it is visible in Figure 7-3, no clear pattern exists for the relationship between the variables "organic turnover share" and "label recognition". This has several reasons. For Germany, for example, the degree of recognition of the national organic label is quite low with 10 percent although the organic turnover share is relatively high with 2.1 percent. Here it is important to have in mind that the German organic label was introduced in autumn 2001, i.e. just a few months before these data were surveyed. In the Netherlands, the national organic label is very well known with 93 percent of consumers recognising the label. Nevertheless, the organic share of total food sales is not that high as one would assume when just looking at the degree of recognition of the national organic label. Here, a large part of the organic sales are carried out in whole food shops. As general food shops do not play a key role as sales channel for organic food in the Netherlands, this might be a reason for the lower organic turnover share.

When looking at Norway in Figure 7-3, it is interesting that even if the organic turnover share is one of the lowest out of the 19 surveyed countries, the degree of recognition of the national organic label is relatively high with 44 percent. This can be explained by the fact that the

Norwegian population is well informed about their domestic agriculture. As Norwegians trust the quality of the conventional domestic agricultural produce very much, many people may not see the need of an extra organic production. Therefore, they may know about it and even recognise the national organic label but they still buy conventional Norwegian food.

The above examples underpin why no clear pattern of the relationship between the variables "organic turnover share" and "label recognition" is observed as this relationship varies strongly according to country specific circumstances.

Figure 7-3 Scatter plot of the variables "organic turnover share" and "label recognition"



7.1.2 Organic market variables correlated with the "supermarket share"

Another variable which is assumed to be an important sign for the development stage of the organic market of a country is the "supermarket share". It shows the importance of general food shops as sales channel for organic food. As shown above, there exists a significant positive relationship between the supermarket share and the organic turnover share. Therefore, researchers are interested in finding out which variables are correlated with the supermarket share.

Dabbert et al. (2004, p. 25) and Michelsen et al. (1999, p. 29) assume that there is a positive relationship between the organic production share and the supermarket share. Retail chains are only willing to purchase organic products from suppliers who guarantee large and homogenous product quantities. In countries with a very small organic production, retail chains will not buy organic food or they will import their products from foreign countries. A well developed domestic organic production seems to be correlated with the willingness of general food shops to purchase organic products.

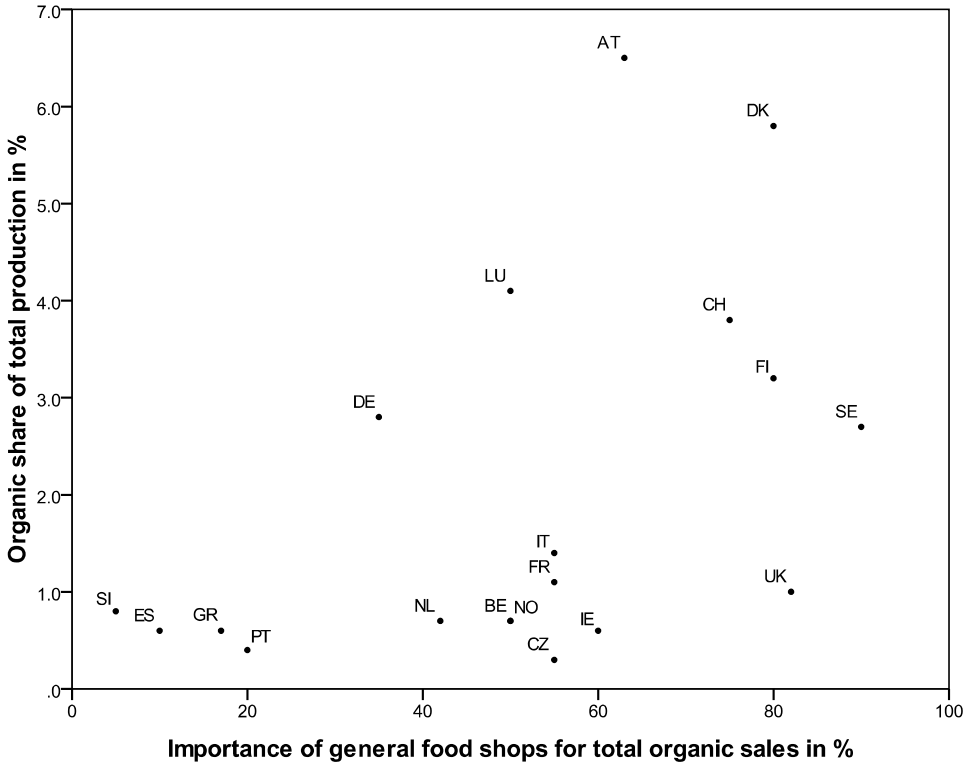
Hypothesis 4: **There is a positive relationship between the organic share of total production and the importance of general food shops as sales channel for organic food.**

↑ Organic production share	↑ Supermarket share

The statistical relationship between the variables "organic production share" and "supermarket share" is significant at the 0.05 level (2-tailed) with a Spearman correlation coefficient of 0.51. Interpreting these figures it seems logical that general food shops are more motivated to start selling organic products in a country where a sufficient organic supply exists. This applies especially for fresh products as dairy products and vegetables which are expensive to import as measured by their product value. Looking from the viewpoint of the producer, countries with a high involvement of general food shops in developing the organic market offer attractive opportunities for organic producers, since reliable buyers for their products exist. A precondition for making general food shops attractive for organic producers is that both sides work together in a fair partnership which includes that cost-covering prices are paid to the farmers.

Looking more detailed at the scatter plot in Figure 7-4 it is obvious that a group of countries do not fit into the pattern of the assumed relationship between both variables as they show a relatively high importance of general food shops for total organic sales but low organic production shares. In the United Kingdom, for example, more than 80 percent of the turnover with organic products is achieved in general food shops. However, a high percentage of the sold organic products is imported. Around 70 percent of the consumed organic cereals and almost the total consumption of organic fruit originate from countries outside the United Kingdom.

Figure 7-4 Scatter plot between the variable „organic production share“ and „supermarket share“



Michelsen et al. (1999, p. 29) state that the price profile for organic products in general food shops is clearer than in other sales channels for organic food. Pricing in retail chains takes into consideration that consumers accept price premiums for organic over conventional products only to a certain degree. This is assumed to be around 30 percent with large variations among different product groups. In supermarkets it is more important to respect this barrier because consumers can directly compare prices between organic and conventional products. In pure organic food shops, it is easier to let consumers forget the price of the comparable conventional product.

H5 refers to the correlation between the two variables. As for the relation between these variables it is assumed that the "supermarket share" influences the "consumer price premium", a regression analysis is performed and described in chapter 7.2 investigating the strength of this influence.

Hypothesis 5: **There is a negative relationship between the importance of general food shops for total organic sales and the consumer price premium[1] for organic products over comparable conventional products.**

↓ Consumer price premium	↑ Supermarket share

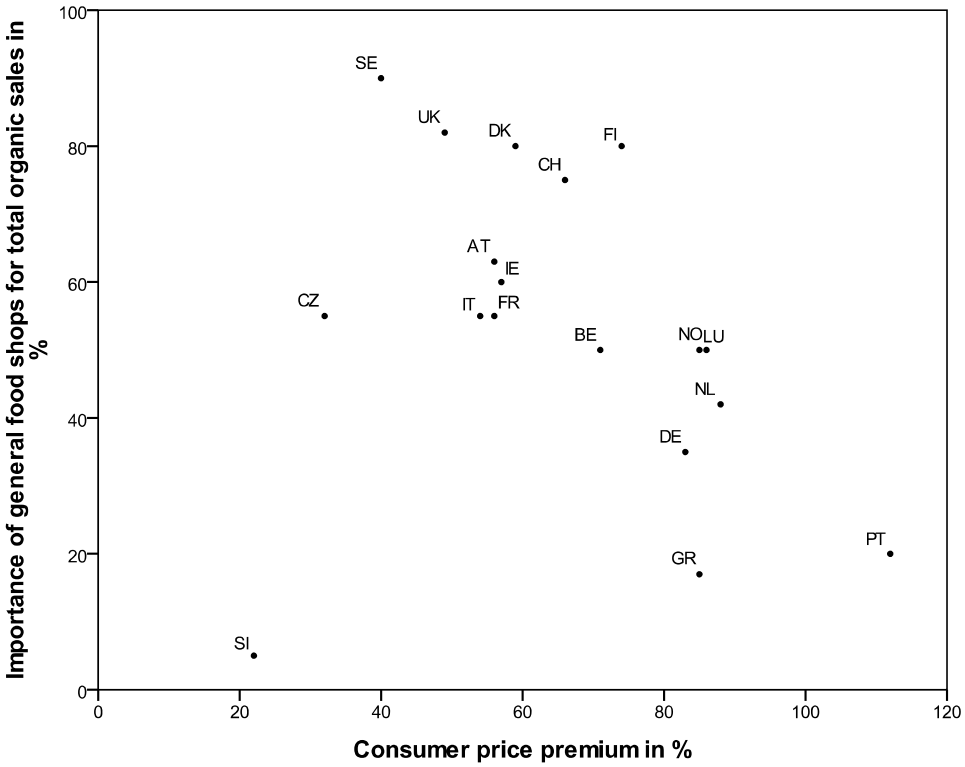
The relationship between the variables "supermarket share" and "consumer price premium" was not confirmed significantly at the 0.05 level (2-tailed) by correlation analysis. The Spearman correlation coefficient, however, was negative as it was assumed, being - 0.44. Looking at the scatter plot in Figure 7-5, it is obvious that the pair of variates for Slovenia is the only one which lies completely outside the very clear pattern of the relationship between both variables. The main pattern of the surveyed figures shows the assumed negative correlation of the variables.

In Slovenia the organic market is at the very beginning of its development. Therefore, the engagement of general food shops for this market segment is still limited. Most part of the few organic products traded in Slovenia is sold via direct sales, i.e. directly from farmers to consumers in farm shops or at weekly markets. However, the consumer price premiums for these products are extremely low compared to all other surveyed countries. One reason for this could be that the knowledge about organic products is still so low in Slovenia that scarcely anybody would buy them if they were much more expensive than conventional products.

Calculating the Spearman correlation coefficient by omitting Slovenia leads to a Spearman correlation coefficient of - 0.71 which is significant at the 0.01 level (2-tailed). This confirms the result published in Hamm et al. (2002, p. 115) where this relationship was analysed with market data for the year 2000. Here, the correlation between these variables was significant as well.

[1] The consumer price premium for organic products over comparable conventional products has been calculated as the arithmetic mean of 22 product groups.

Figure 7-5 Scatter plot of the variables “supermarket share” and “consumer price premium”



7.1.3 Organic market variable correlated with the “label recognition”

As stated by Dabbert et al. (2004, p. 28) as well as by Michelsen et al. (1999, p. 58), in countries with a high supermarket share important retail chains actively promote the national organic label. As a consequence, label recognition is high. As it is assumed that the “supermarket share” influences the degree of “label recognition”, two hypotheses were built. H6 refers to the assumed correlation between the variables. In chapter 7.2, the strength of the influencing factor “supermarket share” is investigated by regression analysis.

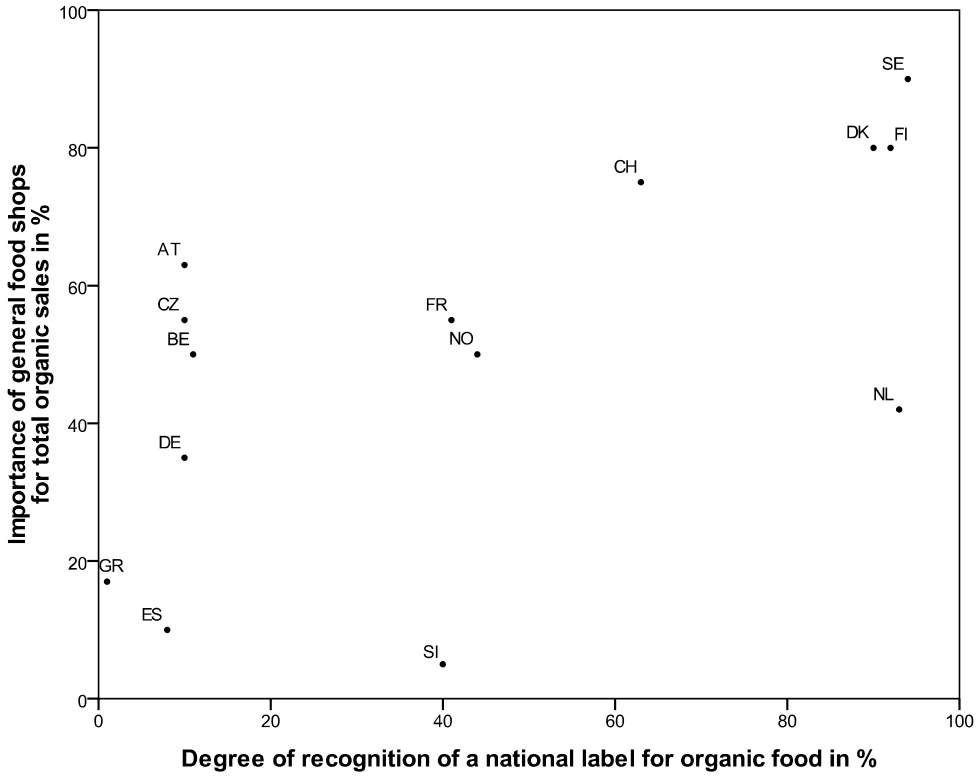
Hypothesis 6: **There is a positive relationship between the importance of general food shops as sales channel for organic food and the degree of recognition of a national label for organic food.**

↑ Supermarket share	↑ Label recognition

The correlation is significant at the 0.05 level (2-tailed) with a Spearman correlation coefficient of 0.62. This result underpins the assumption that in countries with a high involvement of general food shops in selling organic products the degree of recognition of a national label for organic food is high as well. The importance of general food shops is correlated with the “organic turnover share” (see hypothesis 2). Many more people are

tempted to buy organic food when these products are available in general food shops. This increases the percentage of consumers recognising a national label for organic food.

Figure 7-6 Scatter plot of the variables “supermarket share” and “label recognition”



7.2 Results of regression analyses

As this study has been conducted at a point in time where the European Union consisted of only 15 countries, it is obvious that only a limited number of cases was able to be analysed. In addition with the four non-EU countries a maximal number of 19 cases is reached. Therefore, the explanatory power of the results of the regression analysis should be interpreted as showing a trend of the relation between the investigated variables, rather than offering a statistically firm basis for predictions. However, the results can identify clues on interesting relationships between variables. For further research, it is of decisive importance to continually collect organic market data and on this basis to regularly repeat a statistical analysis of key variables.

In the chapter before, the correlation between the variables “supermarket share” and “consumer price premium” was calculated. For these variables it is assumed that it is the variable “supermarket share” which influences the value of the “consumer price premium”. In countries with a high importance of general food shops for total organic sales the consumer price premiums for organic over comparable conventional products are lower than in countries with a low supermarket involvement in organic sales. Lower costs of supermarkets for collecting and distributing organic products are the logical reasons behind this

relationship. The strength of the influencing factor "supermarket share" was calculated by regression analysis.

Hypothesis 7: **The consumer price premium is influenced negatively by a high importance of general food shops as sales channel for organic food.**

↑ Supermarket share	→	↓ Consumer price premium

As shown in Table 7-1, the F-value of this regression model is not significant at the 0.05 level. Therefore the assumption of H7 has to be refused. At least, the algebraic sign of the coefficient for the independent variable "supermarket share" corresponds to the assumption in H7[1].

Table 7-1 Results of testing hypothesis 7

	R^2	Significance of F-value and T-value	Non-standardised coefficient	Standardised coefficient
Entire model	0.074	0.273		
Constant			79.225	
Supermarket share			- 0.260	- 0.273

As explained in the chapter before, the engagement of supermarket chains is seen as the cause for a high organic share of total food sales. In countries with national supermarket chains strongly promoting organic food, a high percentage of the population daily has the opportunity to get in touch with organic products. The probability of purchasing organic food is significantly higher in these countries than in countries where whole food shops and direct sales are the main sales channels for organic products as only well informed and interested persons will reach these places. The strength of the influence of the variable "supermarket share" was tested by a regression analysis.

Hypothesis 8: **The organic share of total food sales is influenced positively by a high importance of general food shops as sales channel for organic food.**

↑ Supermarket share	→	↑ Organic turnover share

Table 7-2 Results of testing hypothesis 8

	R^2	Significance of F-value and T-value	Non-standardised coefficient	Standardised coefficient
Entire model	0.280	0.024		
Constant			- 0.185	
Supermarket share			0.025	0.529

[1] H7 can be accepted when Slovenia is excluded from the calculation. The result leads to an R^2 of 0.48 and a significance of the F-value of below 0.01.

The coefficient of determination of the regression model shows that almost 30 percent of the constant's value can be explained by the variable "supermarket share". The goodness of fit (F-value) of the regression model is significant at the 0.05 level and hypothesis 8 is accepted.

In chapter 7.1.3 it was assumed that the variable "supermarket share" influences the degree of recognition of national labels for organic food. This is investigated by the following regression analysis.

Hypothesis 9: **The degree of recognition of a national label for organic food is influenced positively by a high importance of general food shops as sales channel for organic food.**

↑ Supermarket share	→	↑ Label recognition

Table 7-3 Results of testing hypothesis 9

	R^2	Significance of F-value and T-value	Non-standardised coefficient	Standardised coefficient
Entire model	0.381	0.019		
Constant			0.582	
Supermarket share			0.847	0.617

The F-value is significant at the 0.05 level. Around 38 percent of the value "label recognition" can be explained by the "supermarket share". Hypothesis 9 can be accepted.

As shown in chapter 7.1.1, several variables are correlated with the organic turnover share. For drawing up a multiple regression model which explains the organic turnover share, two influencing variables were chosen: the "organic production" share and the "supermarket share".

Hypothesis 10: **The organic share of total food sales is influenced positively by a high organic production share and a high importance of general food shops as sales channel for organic food.**

↑ Organic production share ↑ Supermarket share	→	↑ Organic turnover share

Table 7-4 Results of testing hypothesis 10

	$R^2_{adjusted}$	Significance of F-value	Non-standardised coefficients	Standardised coefficients	Significance of T-value
Entire model	0.628	0.000			
Constant			- 0.136		
Organic production share			0.408	0.715	0.001
Supermarket share			0.009	0.184	0.292

As shown in Table 7-4, around 63 percent of the dependent variable “turnover share” can be explained by the independent variables “organic production share” and “supermarket share” The F-value is significant at the 0.001 level. Looking at the non-standardised regression coefficients of the model, the algebraic signs of all coefficients are in line with the hypothesis postulating a positive influence on the dependent variable. The values of the standardised coefficients allow comparing the strength of the respective influence. Here, it is obvious that the “organic production share” is the most important influence factor, whereas the influence of the “supermarket share” is clearly lower.

However, when looking at the T-value of the individual regression coefficients, it is obvious that only the influence of the “organic production share” can be assessed as being significant. The influence of the “supermarket share” is not significant at the 0.05 level within this model.

8 Conclusions for the setup of an EU-wide organic market data collection system

Within this study national economic data for ten important organic product markets were compiled for the EU-15 countries. The data were surveyed exemplarily for the year 2001, and still they represent the only comprehensive data collection on organic markets at the EU-level. Most available data sources focus on individual product groups in one or in a few countries. The difficulty with these studies is the low comparability of the surveyed market data. This has three main reasons: (1) The survey methods are not standardised, (2) the figures refer to different periods of time and (3) the definition of individual variables is not consistent.

It is obvious that a solid and reliable data basis can only be created, if the implementation is coordinated by an international and independent institution. At the EU-level the statistical agency of the EU countries, Eurostat, is most suitable for this task. From a global point of view the Food and Agriculture Organisation of the United Nations, FAO, is the adequate institution. Both institutions should work closely together in establishing an international organic market data collection system. They should start with collecting data from the EU countries and, later on, integrate all relevant countries.

In the following sub-chapters three aspects regarding the future organic market data collection will be discussed. In chapter 8.1 important reasons are given why a solid data basis for the organic sector is absolutely essential. Chapter 8.2 describes the role organic supply balances can play in assuring the quality of the surveyed data. And in chapter 8.3 the question is answered how the setup of an EU-wide organic market data collection should be coordinated.

8.1 Necessity of a solid data basis for the organic sector

The data which are discussed within this study are aggregated basic data as, for example, production volume, import and export volume and consumption volume of individual countries. For the total (organic plus conventional) agricultural sector these data are available and open to the public, since they are surveyed by national statistical agencies on a regular basis and published in the statistical yearbooks of the respective countries. Due to the dramatic changes within the small organic markets from one year to another, a separate and continuous collection of organic market data is necessary. Only on the basis of a regularly updated database can market actors analyse the development of the sector in individual countries and within the respective product groups. This is essential for all decision makers within the organic market to avoid misinvestments. Some of the reasons for establishing an organic market database are specific for individual groups of market actors. These are described in the following:

Agricultural policy makers are supposed to make reasonable decisions on how and to what extent organic farming should be supported. The most important task of agricultural policy makers is to achieve a balanced support of supply and demand. A one-sided support of organic production, as it was practised during the 1990s, led to oversupply and to decreasing farmer prices. During that time it was important to financially support marketing activities for increasing the demand. On the other hand, in times of strong demand as it has been observed since the year 2005, it is important to motivate organic farmers through financial support to start or maintain organic production.

For being able to calculate governmental support in a reasonable way, agricultural policy makers rely on solid market data surveyed during the course of several years. Only a long-term data collection can be used for estimating developments of the market in following years. Reliable market data would also enable policy makers to perform statistical analyses for evaluating their support schemes. Given that organic production volumes for individual products are surveyed during the course of several years, it is possible to understand if and to what extent increased financial support results in increased production volumes.

Organic farmers rely on a transparent market for being able to attune their production to the future demand in a reasonable way. Especially for farmers converting to organic production it is necessary to be aware of future trends, since they need to take into consideration that the first organically grown products will not be on the market until two years later. Due to this conversion period they are less flexible in their reaction to changed market conditions compared to their conventional colleagues. Against this background organic farmers need to be well informed about at least the status quo of supply and demand. For them, access to trustworthy market data is a precondition for their production planning and therefore contributes to securing their existence. In addition, farmers have a need for support schemes which are planned for a long duration instead of changing too often.

Market data required by organic farmers are not limited to the domestic market situation. Especially foreign trade data reflecting developments in other countries need to be considered. An increase in organic production in foreign countries might have a significant influence on the domestic market situation. Given that production costs are much lower elsewhere, domestic farmers may reckon with decreasing prices for their own produce, since their products compete with imported goods.

As stated by Rippin et al. (2006, p. 2) a lack of market data implies the risk that farmers mistime their decision to convert or to not convert. This has consequences for all involved market actors including the farmers themselves. The latter may suffer from decreasing farmer prices in times of an over-supplied market. However, an under-supplied market can mean that the critical mass of production is not reached, and therefore, not enough collecting, processing and trading companies are interested in the small volume of the organic produce.

The same applies for **organic producer organisations and farmer consultancies**. They have the function of advising organic farmers regarding an optimal production planning. How can they successfully perform this task without sufficient and up-to-date market information? For organic producer organisations, as well as for farmers, it is not enough to base their decisions on rough estimations for the development of the entire organic sector. They need detailed data on production and consumption broken down according to all organic product groups which play a role in the respective country.

An important group of market actors with an urgent need for organic market data are the **collecting, processing and trading companies** which consider starting a business within the organic sector. Starting such a company or establishing an organic product line goes along with considerable financial investments as well as an expenditure of time for introducing new machines, new processes (e.g. for securing that organic and conventional goods are processed separately), training of employees, certification according to EC regulation 834/2007 (Council 2007), quality assurance and marketing. Companies only take this risk if they have trust in a stable or increasing supply of organic raw products and in a stable/increasing consumer demand.

In addition, reliable market data for the organic sector can serve as a controlling tool for the above mentioned companies. Access to current market data enables them to assess the development of their own company against the background of the development of the entire organic market.

When considering the need for an annual updated organic market data collection, the **consumers of organic products** are seldom mentioned. Obviously, consumers are not as dependent on a solid organic market data basis as the above mentioned groups of market actors who earn a living from the organic sector. However, current developments of the organic market can be used as a tool to support consumers' motivation to purchase organic products. After all, the consumers cause further market growth with their buying decisions. Therefore, it might be appropriate to communicate important developments of the organic market to consumers.

8.2 Organic supply balances as a tool for quality assurance of the collected data

Supply balance sheets (SBS) are a specific way of data presentation. The SBS shows in condensed form the key data characterising supply and demand of an individual product. Official SBS for the total (organic plus conventional) market are built on an annual basis for all important agricultural products. They are published in the annual yearbooks of the national statistical agencies and by Eurostat at an EU-wide level. The information provided by the SBS is especially important for agricultural policy makers who have to decide on reasonable support schemes for supply and demand. The most important items of an SBS are:

Production + Imports – Exports = Consumption

Starting point of the SBS is the domestic production. The imported amounts are added and the exports are subtracted. This leads to the consumption of the respective product[1].

For the organic market, no separate organic supply balance sheets (oSBS) are available so far. Within this study, for each investigated organic product group an oSBS was drawn up on the basis of the surveyed figures (see for example Table 5-1), using the structure of the official SBS fort the total (organic plus conventional) market.

Drawing up organic supply balance sheets is an appropriate tool to assure the quality of the surveyed figures. Organic supply balances provide a quick overview of the supply and demand situation of a product. This has important advantages compared to a separate presentation of the individual items. With a separate reporting it would be more difficult to reveal errors. However, drawing up oSBS with the surveyed figures helps to see the whole picture from production to consumption of a product. As the availability of organic market data is still limited, the aspect of quality assurance and cross-checking is crucial for establishing a reliable data basis. On the basis of annually updated oSBS important cross-checks between years and between countries are possible.

[1] The published official SBS include additional items as, for example, the change in stock and the volume used as animal feed, which have been omitted here for clarity reasons.

Examples for quality checks on the basis of organic supply balances:
The following quality checks should be performed (please compare with the respective data categories in Table 5-1):

- The share of the organic production used on farm should be compared between countries. Is this percentage similar in all countries or exist extreme values which might be a hint for an incorrect reporting of the organic production in that country?
- For verifying the use on farm it might be helpful to look up in the SBS for the total market how much of the domestic product is used on farm in an individual country. In addition, the information is needed if the use on farm of a product differs significantly between organic and conventional farms. With this knowledge the reported percentages can be checked country by country and then compared between countries.
- The percentage of the "sales as an organic product" should be compared between countries. For example, the sales as organic in column E (Table 5-1) were reported with approximately 90 percent by most countries. Only Portugal reported a very low 10 percent. At first glance this figure looks extremely strange and might be an incorrect figure. In a situation like this, the data provider should go back to the market experts of the respective country and try to find out the reason for this extreme value. In this concrete case, the reason for this low percentage was that the organic market in Portugal was just emerging in 2001 and that only a small part of the organic production was able to be placed on the market as a certified organic product. With this information on hand, the 10 percent were considered as being valid and remained in the calculation.
- The percentage of the sales as organic animal feed should be compared between countries. It is important that this figure is reliable, since it is the precondition for differentiating between the volume sold as organic animal feed and the amount sold for human consumption. This regards cereals, but also animal products as pork and poultry used for the production of organic pet food.
- Regarding the organic exports it is obvious that a country will not be able to export more than the sum of its own domestic production plus imports. Even if oSBS do not solve the problem of missing organic foreign trade data, it can be made sure that the surveyed figures fulfil logical requirements.
- After having performed cross-checks within the individual data categories between countries, it should be checked if the relation between production, imports, exports and consumption of each country makes sense.
- During this study cross-checks between data in the oSBS and the comparable data taken from published SBS for the total (organic plus conventional) market were performed. With this procedure the following percentages were obtained:
  1. Organic production share
  2. Organic import share
  3. Organic export share
  4. Organic consumption share

  After that, the calculated percentages were compared between countries. For example, in the year 2001 the EU average organic production share for cereals was 0.9 percent, varying from 0.1 to 2.8 percent in different countries. Obviously, an organic production share of 30 percent within one of the countries would look strange against this background. Occurring extreme values are therefore treated with caution. They are a hint that maybe the reported organic production amount was incorrect.
- When comparing organic production or consumption shares between countries it is important to take into consideration that similar countries should be compared to each other, i.e. neighbouring countries with a comparable production and consumption structure and countries with organic markets in a similar stage of development.

- Comparing organic with conventional figures on a product by product and country by country basis reveals, for example, transcription errors, since the organic figure must be lower than the respective conventional figure.

For being able to set up reliable oSBS much more effort is needed to survey figures regularly on organic foreign trade. Without data on imported and exported amounts, calculation of the organic consumption will remain on the level of rough estimations.

In order to draw up organic supply balances successfully, three aspects need to be taken into consideration: (1) oSBS have to be built on an annual basis, (2) oSBS should be developed for all EU countries and (3) the person obliged with cross-checking the data needs to have a deep insight into the respective national organic markets.

8.3 Coordinating the setup of an EU-wide organic market data collection system

The setup of a harmonised organic market data collection system for all EU member states needs to be managed by an appropriate coordinator. Eurostat, at an EU-wide level, is obviously the most experienced institution regarding its know-how of collecting and processing statistical data. As Eurostat has already established a comprehensive database for agricultural market data (organic and conventional market aggregated), this should be used as a standard. It is crucial to avoid building up a separate database for organic market data which, at the end, is not compatible with the methods and variables of the New Cronos Database of Eurostat. This would reduce the benefit of an organic database and a lot of time and financial resources would be wasted. It is necessary that Eurostat is involved in the setup of an organic market data and collection system to guarantee that the institution's knowledge and "lessons learned" with establishing the statistical online database for the total agricultural sector can be used for avoiding mistakes. As preconditions for a data processing by Eurostat, Weiler (2006, p. 194) states the definition of items relevant to users at the EU-level and the availability of the basic data.

In order to meet the requirements of a standardised data collection deep knowledge and understanding of the current data availability and data sources in each of the respective countries are necessary. The most comprehensive collection of knowledge on organic market data sources in the European countries origins from the European Concerted Action project EISfOM (European Information System for Organic Markets, www.eisfom.org). In the framework of this project researchers analysed existing information collection systems for organic market data in 32 European countries. The recommendations for developing a European information system for organic markets resulting from this project are summarised in Rippin et al. (2006). These recommendations need to be taken into consideration by the coordinators of a future organic market database, since the results of this project represent a huge storage of knowledge. During the course of this project a network of people was established working directly or indirectly with collecting and processing of organic market data. It is strongly recommended that the institution coordinating an organic market database involves and maintains this network of stakeholders. For the start-up phase of such an organic market database the researchers of the EISfOM project propose the establishment of a "European Statistics Expert Group" consisting of "Commission, Member State and external experts, including researchers and stakeholders" for helping to "implement the institutional network in the long term" (Rippin et al. 2006, p. iv).

In each member state the national statistical agency should be responsible for collecting and compiling the national organic market data and for submitting these data compilation in a standardised way to Eurostat. In the phase of setting up the system, representatives of these national statistical agencies need to be strongly involved in the team of experts. It is important to plan the procedure of data collection as user friendly as possible and to try to reduce the costs. Implemented IT solutions should be simple and fast, the data collection should focus on some important product groups in the beginning and researchers having experience with organic data collection should be involved.

Eurostat should cooperate with the Food and Agriculture Organisation of the United Nations (FAO) when setting up the data collection system. This has mainly two reasons: (1) the FAO has started to collect organic market data during the past and it would be most constructive if both the FAO and Eurostat would combine their knowledge and competencies, (2) as a long-term strategy, the database should allow for integration of market data from all countries in the world where organic farming is practised. Therefore, it would be desirable that Eurostat and the FAO work closely together from the beginning. From a global point of view, it seems to be much more sensible to establish one harmonised world-wide organic market data collection, instead of going on with a situation where two large institutions work on the same task in parallel with different survey methods. Working together will reduce the input of resources and the costs for both institutions.

A precondition for establishing an international organic market database is the harmonisation of the national organic data collection systems. Standards should be published which can be used as guidelines for adapting these national systems step by step to the requirements of the international database. Common guidelines for all countries would be especially helpful in countries where organic market data have not been collected until now. In these countries organic data collection systems can be established in a way that they are compatible to the international database right from the start.

The final output of the processed, compiled and validated organic market data for all member states should be open to the public and free of charge. Most suitable is a web based open-access database in the style of the Eurostat online database for the total agricultural sector. This is the fastest way to make the data available for users all over the world.

Increasing market transparency, by means of providing reliable organic market data on a regular basis, would contribute decisively to the economic development of the organic sector. Aggregated data of organic production, consumption and foreign trade on a national level, as they were investigated in the framework of this study, are especially important for market actors who are in the process of deciding whether they should focus their business on organic production/processing/trade or not. The availability of organic supply balances, updated on an annual basis, would show the trends of production and consumption within and across the involved countries over the years. Therewith, such figures would provide confidence in the market. It supports the decision-making of farmers who are willing to convert to organic production but who are not completely convinced yet. A transparent market also facilitates cooperations between processing companies and farmers. Only if companies can be sure that the market will continue to develop positively, are they willing to guarantee farmers stable prices for their organic raw products.

9 Summary

During the last four decades the European organic food market developed from a niche market to an important market segment in most EU countries. In the 1990s, policy makers started to support farms converting to organic production both by subsidies and by introducing a common European standard for certification and control: the EC regulation 2092/91 (now replaced by EC regulation 834/2007). At the time, government support for organic production focused mainly on the supply of organic raw products. As a consequence, the area under organic cultivation increased throughout Europe. At the end of the 1990s it became apparent that the demand for organic food needed to be supported with the same amount of attention as the supply to avoid surplus production and market imbalances. In the year 2004, a significant milestone was reached when the European Commission declared the expansion of the organic sector an important goal of the EU policy in publishing the "European Action Plan for Organic Food and Farming" (Commission 2004). This Action Plan outlines 21 actions aimed, among other things, at achieving a balanced market growth. One goal of this Action Plan is the improvement of the organic sector's market transparency, which is reflected in Action 3 "Improve the collection of statistical data on both production and market of organic products".

Up to now, no official agricultural statistics on quantitative figures such as organic production and consumption are available for the organic sector at the EU level. The first attempt to collect and analyse European organic market data in a harmonised way were made by Michelsen et al. (1999) in the framework of the EU research project "Effects of the CAP-reform and possible further developments on organic farming in the EU" (OFCAP, FAIR3-CT96-1794). Based on the results of this project, a similar market survey was performed a few years later within the framework of the EU research project "Organic Marketing Initiatives and Rural Development" (OMIaRD, QLK5-2000-01124). The survey instrument of the earlier study was clearly improved in order to be able to record quantitative figures on organic production, consumption, foreign trade and prices for 19 European countries. Two comprehensive data sets on the European organic market were collected, referring to the years 2000 and 2001. The data set for the year 2001 was analysed in detail in the present study.

It is the aim of the study to find appropriate methods for data collection, processing and analysis, to identify suitable data sources, to elaborate the special needs of organic data collection as opposed to surveying data for the total (organic plus conventional) market, and to investigate how the recorded data can be checked for plausibility. The analysis encompasses ten important organic product groups: cereals, potatoes, vegetables, fruit, milk, beef, sheep and goat meat, pork, poultry and eggs. The market data originate from the EU-15 countries plus the Czech Republic, Slovenia, Norway and Switzerland. In addition, the surveyed organic production and organic consumption as well as organic farmer and consumer prices are related to the respective figures of the total (organic plus conventional) market to evaluate the importance of the organic sector in relation to the total food market.

Chapter 2 deals with the methods used for data collection. In sub-chapter 2.1, the data categories investigated in this study are outlined. These are: organic production, organic sales, organic consumption, organic foreign trade as well as organic farmer and consumer prices. In sub-chapter 2.2, the concept of supply balances is explained. Supply balances are drawn up taking the useable organic production as starting point. From this production amount the part used on farms for animal feed and for seed is subtracted. This leads to the total organic sales.

In most cases, a certain part of the total organic sales has to be sold on the conventional market. Thus, this volume has to be subtracted from the total organic sales to obtain the amount sold as an organic product with a special organic price premium over the conventional price. To these "sales as organic for human consumption" the organic imports for human consumption have to be added and the organic exports for human consumption are subtracted. This results in the organic human consumption of a country. Based on these figures, the degree of self-sufficiency can be calculated.

For collecting organic market data, desk research and field research should be conducted. The methods of desk research are described in sub-chapter 2.3. They encompass existing secondary sources which can be found in print or online publications of various authors such as agricultural ministries, statistical agencies, international organisations, organic producer organisations, university institutes, academic publishers and market research institutes. The advantage of secondary sources is mainly the fact that it is cheaper and faster to work with existing information than to start a new survey. However, disadvantages of desk research are that the surveyed information might be too old or the research method used might not be appropriate to answer the current question.

In sub-chapter 2.4, the methods of field research are outlined. Empirical data as surveyed within this study can either be recorded in a quantitative or in a qualitative way. In this study, the focus is set on quantitative methods as hard market data were collected. The following survey methods are presented in this chapter: mail survey, telephone interview, face-to-face interview and web survey. Each method has its specific advantages and disadvantages regarding criteria such as costs, response rate, staff requirements, and the likelihood to obtain high quality data. This has to be taken into consideration when choosing the appropriate survey method.

Chapter 3 presents the process of data collection used in this study to survey organic market data. Both desk research and field research was performed. Sub-chapter 3.1 deals with the desk research conducted for this study. The most useful source for the collection of existing data was the internet. For many of the surveyed countries information was accessible online in a timesaving way. Market experts who completed a questionnaire in the framework of this study were asked to state Internet sources they had used for providing the requested information. These internet links were evaluated and the most useful sources are presented in this chapter. For this study, a number of international scientific journals were reviewed with regard to information on organic market data. Useful journals are listed in this chapter. However, the amount of useful information within these journals was low compared to information obtained from the internet or from publications of market research institutes specialised on organic markets.

Field research conducted in the framework of the OMIaRD project is described in sub-chapter 3.2. Most parts of the surveyed figures originate from interviews with market experts in the countries involved. A comprehensive questionnaire consisting of five parts was designed. One part contained all questions posed to market experts. All other parts were completed by project partners and subcontractors. Information was requested on government support for organic farming, figures for the total (organic plus conventional) food sector such as production, imports, exports and consumption - which were necessary as a basis for comparison with the surveyed organic figures -, on organic land use, organic production, organic sales, organic animal feed, organic imports and exports, organic consumption, organic and conventional farmer prices and consumer prices, organic turnover and sales channels for organic food. The survey methods used were mail survey, telephone interview, face-to-face

interview and observation (to record prices). Information provided by project partners was received by e-mail. To obtain information from market experts mainly telephone interviews and face-to-face interviews were conducted.

The reliability of the surveyed data was checked carefully. Cross-checks between data provided by different countries gave the first clues as to whether data was plausible. Comparison of organic production and organic consumption data with the respective figures for the total (organic plus conventional) market showed if the organic amounts reported were reliable. The figures for 2001 were also cross-checked with those for 2000 in order to detect any mistakes. When figures did not seem reliable, queries were sent to the respective project partner for an additional review of the data. After these first quality checks, organic supply balances were drawn up with the figures surveyed. On this basis the organic consumption was calculated and compared to the figures provided for the countries surveyed. Any discrepancies were discussed with project partners again.

After the data had been compiled for all surveyed countries hypotheses regarding assumed relationships between key variables were tested by correlation and regression analysis. These methods are presented in chapter 4. Calculating the correlation coefficient provides a measure of whether there is a statistical relationship between two variables as well as of the strength of any such association. With regression analysis, moreover, it is possible to relate two or more variables. For regression analysis it is necessary for the researcher to determine the direction of the relationship before conducting the calculation. With this, it is possible to measure the strength of influence of one or more independent variables on one dependent variable, and to measure how strong the dependent variable will change after a change of the independent variable.

In chapter 5, the organic market data surveyed are analysed according to ten important product groups. Several objectives were achieved by this analysis: (1) the comparison of production volumes of different countries reveals the main players with regard to organic supply, (2) the organic production share (relating organic and total production) highlights the development stage of the respective product sector throughout the countries surveyed, (3) organic foreign trade data were obtained as a basis for calculating the organic consumption of the products investigated, (4) the comprehensive price survey revealed significant differences in organic price premiums between countries. Reasons for these country-specific differences are provided in this chapter. Each product chapter follows the same structure: an overview is given about the total (organic plus conventional) market for the year 2001 as a basis for understanding of the organic data. The organic supply balance is presented covering the key data surveyed for the respective organic product group. This is followed by information on organic production, consumption and foreign trade. Then the balance between supply and demand is analysed, and in the last sub-chapter all organic farmer and consumer prices and price premiums are discussed. In chapter 6, some additional data categories used for the statistical analysis are presented. These are the turnover of the organic food market in 2001, sales channels for organic food and common labels for organic food.

The results of the correlation and regression analyses are presented in chapter 7. A number of assumptions are found in literature regarding possible relationships between key market variables. In absence of a reliable data set, researchers were not able to prove these assumptions in the past. By correlation analysis one found, for instance, that there is a significant positive correlation between the organic share of total production and the organic share of total food sales, as well as a significant positive correlation between the importance of general food shops as sales channels for organic food and the organic share of total food

sales. Regression analysis, for example, tested how strong the importance of general food shops as sales channels for organic food influences the organic share of total food sales. The regression model showed that almost 30 percent of the value of "organic turnover share" can be explained by the variable "supermarket share".

In chapter 8, conclusions are drawn for the setup of an EU-wide organic market data collection system. A solid and reliable data basis can only be created if the setup and implementation is coordinated on an international level by adequate institutions such as Eurostat on the EU level and the FAO on a global level. In sub-chapter 8.1, the need for reliable and up-to-date data is outlined from the perspective of various market actors. Agricultural policy makers need detailed information on the development of the organic market as a basis for their decisions on support schemes for organic farming. Organic farmers have to decide from year to year which products to focus on. Especially for farmers who decide to convert to organic production it is necessary to be aware of future trends since they have to calculate with a two-year conversion period before they are able to sell their first products as certified organic. Collecting, processing and trading companies need detailed market information, since starting an organic product line entails a lot of investments in new machines, training of employees, certification, quality assurance and marketing. Before taking a risk like this, they need to be sure that they can have trust in a stable supply of organic raw products and in a stable consumer demand.

In sub-chapter 8.2, it is emphasised that organic supply balances should be used as a tool for quality assurance of market data surveyed. Organic supply balances provide a quick overview of the supply and demand situation of a product. This has important advantages over a separate presentation of the individual items. With separate reporting it would be more difficult to reveal errors. However, drawing up organic supply balances with the surveyed figures helps to see the whole picture from production to consumption of a product. As the availability of organic market data is still limited, the aspect of quality assurance and cross-checking is crucial to establish a reliable data basis. On the basis of annually updated organic supply balances, important cross-checks between years and between countries are possible.

As outlined in chapter 8.3, the setup of an EU-wide organic market data collection system needs an appropriate coordinator. Eurostat seems to be the most experienced institution with comprehensive know-how in collecting and processing statistical data for the EU countries. As Eurostat has already established a comprehensive database for agricultural market data (organic and conventional market aggregated), this should be used as a standard. One should definitely avoid building up a separate database for organic market data which, in the end, turns out not to be compatible with the methods and variables of the Eurostat database. This would reduce the benefit of an organic database and waste a lot of time and financial resources. In addition, Eurostat should use the knowledge collected by researchers in the framework of the European Concerted Action project EISfOM (European Information System for Organic Markets).

A precondition for establishing an international organic market database is the harmonisation of the national organic data collection systems. Standards should be published and used as guidelines for adapting these national systems step by step to the requirements of the international database. Common guidelines for all countries would be especially helpful in countries where organic market data have not been collected until now. Establishing an EU-wide organic market data collection system would be an important step towards an increased market transparency of the organic sector.

10 List of tables

11 List of figures

12 References

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13 Annex

13.1 Questionnaire Part A

EU-Project: Organic Marketing Initiatives and Rural Development (OMIaRD) QLK5-2000-01124
P3 Neubrandenburg University of Applied Sciences
SWP 1.4

Analysis of the European market for organic food in the year 2001

Part A
Contractor section

Prof. Dr. Ulrich Hamm, Dipl.-Agr. Biol. Friederike Gronefeld

Country:
Date of response:
Respondent: Name:
E-mail:
Phone:
Fax:

Preface

Aim of the market survey
The aim of this survey is to gather from relevant key informants an up-to-date and accurate overview of the scale of organic commodity production, current organic consumption and the foreign trade of organic products. This will be completed for all EU-countries plus 4 countries which are non-members of the EU.

The data collected will form the empirical basis for attempts to determine the prospects for overall growth in the market for organic goods in the EU.

This questionnaire has been designed to systematise the collection of the best possible information for each country in relation to market development for the full range of organic food products.

The survey consists of five parts (A-E). A: Contractor section, B: Telephone interviews with key informants, C-E: Consumer price survey.

Guidelines for filling in the questionnaire
- Please insert data for the year 2001.
- If data is not available, please insert a forecast for 2001 based on experts' opinion.
- The following market actors should be contacted for the telephone interviews:
  - → wholesalers
  - → processors
  - → importers/exporters
  - → organic farmer organisations
  - → certification bodies
  - → market researchers
  - → governmental agencies etc.

- Besides the telephone interviews you should use the available literature and the internet for gathering the best possible information.

Contractor section

Sources

Question 1 Which studies/official statistics of your national market for organic food did you use for completing the questionnaire?

➔ Please provide the whole list of references you have used.

Author(s), editor	**Year of publication**	**Title of publication**	**Source (Name of the journal, publisher)**	**Place of publication**	**Pages**
German Ministry of Agriculture	2001	German Agricultural Statistical Yearbook 2000	Landwirtschaftsverlag	Münster	35-38

Question 2 Which internet sources did you use for completing the questionnaire?

URL	Last up-date of the homepage

Key informants

Question 3 What telephone interviews have you done with national key informants on the organic market?

Name of key informant	Organisation	Coverage (products)

Government support for organic farming

Question 4 What were the area based subsidies for conversion to or maintenance of organic agriculture per ha in 2001?

➔ Please give a nation-wide average in case of regional differences.

Crop area	Financial support for conversion to organic agriculture (in €/ha)	Financial support for maintenance of organic agriculture (in €/ha)
Arable farm land		
Grassland		
Vegetable area		
Fruit area		
Viticulture area		
Olive tree area		

Sources and comments to Question 4:

Promotion

Question 5 What were the most important buying motives of consumers for organic food in 2001?

→ Please try to find the information for this question in the current market literature of your country.
→ Please rate the arguments mentioned in the table from low importance (1) to high importance (7).
→ After that, please indicate any other important buying motives of consumers and the corresponding rating number 1-7.

Buying motive	Example	Rating 1 = low importance 7 = high importance
Nature conservation and environment protection	5	
Food safety/health	6	
Animal welfare	3	
Taste	3	
Regional origin	4	
Non GMO[1]	1	
Others (please specify)		

[1] Genetically Modified Organisms

Sources and comments to Question 5:

Supply balance for total food

Question 6 Which were the total (organic and conventional) production, imports, exports and consumption in 2001?

➔ Please use data from national statistics according to the systematics of EUROSTAT to complete Question 6

Product	Useable production (in 1000 tonnes)	Total imports (in1000 tonnes)	Total exports (in1000 tonnes)	Change in stocks (in1000 tonnes)	Gross consumption (in1000 tonnes)	Degree of self-sufficiency (in %)
Column	A	B	C	D	E	F
Cereals					Human consumption: Animal feed:	
Oilseeds					Human consumption: Animal feed:	
Olives for oil						
Potatoes						
Vegetables						
Fruit (incl. nuts)						
Wine (in 1000 hl)						
Milk						
Beef [1]						
Sheep and goat meat[1]						
Pork[1]						
Poultry[1]						
Eggs (in mill. pieces)						
Eggs (in 1000 tonnes)						

[1] Slaughter weights

Sources and comments to Question 6:

Calculation section

Question 7 What was the level of organic production expressed as a percent of total (organic and conventional) production for the year 2001?

Product group	Organic production (in tonnes)	/	Total production (in tonnes)	=	Organic as a fraction of total production	*100	Organic as a % of total production
Source of Data?	Insert column A from Question 4 (Part B)	/	Insert column A from Question 6 (Part A)	=	Calculate	*100	
Cereals		/		=		*100	
Oilseeds		/		=		*100	
Olives for oil		/		=		*100	
Potatoes		/		=		*100	
Vegetables		/		=		*100	
Fruit (incl. nuts)		/		=		*100	
Wine (in hl)		/		=		*100	
Milk		/		=		*100	
Beef (incl. veal)		/		=		*100	
Sheep and goat meat		/		=		*100	
Pork		/		=		*100	
Poultry		/		=		*100	
Eggs		/		=		*100	

Question 8 What was the level of organic sales for human consumption of cereals and oilseeds in 2001?

Product group	Sales of organic as organic (tonnes)	-	Organic production sold as organic animal feed (tonnes)	=	Organic sales for human consumption (tonnes)
Source of Data?	Insert column D from Question 4 (Part B)	-	Insert column B from Question 6 (Part B)	=	Calculate
Column	A	-	B	=	C
Cereals		-		=	
Oilseeds		-		=	

Question 9 What was the human consumption of organic products sold as organic in 2001?

Product	Sales of organic as organic (in tonnes)	+	Organic imports (in tonnes)	-	Organic exports (in tonnes)	=	Organic human consumption (in tonnes)
Column	A		B		C		D
Source of Data?	Insert column D from Question 4 (Part B), but for cereals and oilseeds insert column C from Question 8 (Part A)	+	Insert column A of Question 7 (Part B) NB: "Human consumption" for cereals and oilseeds!	-	Insert column C of Question 7 (Part B) NB: "Human consumption" for cereals and oilseeds!	=	Calculate total
Cereals		+		-		=	
Oilseeds		+		-		=	
Olives for oil		+		-		=	
Potatoes		+		-		=	
Vegetables		+		-		=	
Fruit (incl. nuts)		+		-		=	
Wine (in hl)		+		-		=	
Milk		+		-		=	
Beef (incl. veal)		+		-		=	
Sheep and goat meat		+		-		=	
Pork		+		-		=	
Poultry		+		-		=	
Eggs		+		-		=	

Question 10 What was the level of organic human consumption expressed as a percent of gross human (organic and conventional) consumption in 2001?

Product group	Organic human consumption (in tonnes)	/	Gross human consumption (in tonnes)	=	Organic human consumption as a fraction of gross human consumption	*100	Organic human consumption as a % of gross human consumption (in %)
Column	A		B		C		D
Source of Data?	Insert column D from Question 9 (Part A)	/	Insert column E from Question 6 (Part A)	=	Calculate	*100	
Cereals		/		=		*100	
Oilseeds		/		=		*100	
Olives for oil							
Potatoes		/		=		*100	
Vegetables		/		=		*100	
Fruit (incl. nuts)		/		=		*100	
Wine (in hl)		/		=		*100	
Milk		/		=		*100	
Beef (incl. veal)		/		=		*100	
Sheep and goat meat		/		=		*100	
Pork		/		=		*100	
Poultry		/		=		*100	
Eggs		/		=		*100	

13.2 Questionnaire Part B

EU-Project: Organic Marketing Initiatives and Rural Development (OMIaRD) QLK5-2000-01124
P3 Neubrandenburg University of Applied Sciences
SWP 1.4

Analysis of the European market for organic food in the year 2001

Part B
Telephone interviews with key informants

Prof. Dr. Ulrich Hamm, Dipl.-Agr. Biol. Friederike Gronefeld

Country:
Date of response:
Respondent: Name:
E-mail:
Phone:
Fax:

Telephone interviews with key informants

Land use and average yields for total and organic production in 2001

Question 1 What was the total utilisable agricultural area (UAA) and the organic area in **2001**?
(in ha)

Total UAA (org. and conv.)	Certified organic area	In conversion area

Question 2 What were the **certified** organic area and average yields of organic plant products in 2001?

➔ Please note that data should cover the whole product group. If you have only data for parts of the product group, please proceed in the following way. Example:

Average yield for cereals:
Wheat: 60% of total area for cereals, 45 dt/ha ⇒ 0.6 x 45 = 27.0
Rye: 20% ....., 40 dt/ha ⇒ 0.2 x 40 = 8.0
Barley: 10%....., 45 dt/ha ⇒ 0.1 x 45 = 4.5
Oats: 10%....., 35 dt/ha ⇒ 0.1 x 35 = 3.5
Average yield for cereals: **∑ = 43.0 dt/ha**

Product group	Certified organic area (in ha)	Organic yield (100kg/ha)	Organic production (in tonnes)
Column	A	B	C
Example: Cereals	37,000	40	148,000
Cereals			
Oilseeds[1]			
Olives for oil			
Potatoes			
Vegetables		xxxxxxxxxxxxxxxxx	
Fruit[2] (incl. nuts)		xxxxxxxxxxxxxxxxx	
Wine[3] (in hl)			

[1] Rapeseed, soy beans, sunflower seeds, linseed etc.
[2] Including berries and including gross weights of fruit for fruit wine, fruit juice and schnapps.
[3] Only grape wine, other fruit wines are included under "fruit" as gross weight of the fruit. Wine yield is recorded as 100 litres per hectare.

Sources and comments to Question 1 and Question 2:

Question 3 What were the number of animals on certified organic farms and the average yields of organic milk and egg production for the year 2001?

➔ If no data available concerning the number of animals, please proceed in the following way:

A: Please estimate the number of organic farms keeping the respective animal species.
B: Please estimate the number of animals kept on average on one farm.

Please multiply A and B = estimation for the number of animals.

Product group	Animal numbers	Organic yields (kg milk/cow and year or eggs/hen and year)	Organic production of milk, meat[4] and eggs (in tonnes)
Column	A	B	C
Example: Dairy cows	66,000	4,900	323,400
Dairy cows			
Cattle for beef production[5]		xxxxxxxxxxxxx	
Sheep and goats		xxxxxxxxxxxxx	
Pigs		xxxxxxxxxxxxx	
Poultry (meat birds)		xxxxxxxxxxxxx	
Eggs (layer hens)			

[4] Slaughter weight
[5] Attention: in column A, only cattle for beef production should be listed, in column C total beef production in slaughter weight (including slaughtered dairy cows) should be listed.

Sources and comments to Question 3:

Organic production and organic sales

Question 4 What were the organic production and organic sales in 2001?

Product group	Organic production (in tonnes)	Organic production used on farm[1] (in tonnes)	Total organic sales (in tonnes)	Sales of organic as organic (in tonnes)	Share of organic products sold as organic (in %)
Column	A	B	C	D	E
Source of data?	Column C of Question 2 and Question 3				
Calculation			C=A-B		E=D/C *100
Example: Oilseeds	10,000	2,000	8,000	7,000	7,000/8,000* 100=87
Cereals					
Oilseeds[2]					
Olives for oil					
Potatoes					
Vegetables					
Fruit[3] (incl. nuts)					
Wine[4] (in hl)					
Milk					
Beef [5] (incl. veal)					
Sheep and goat meat[5]					
Pork[5]					
Poultry[5]					
Eggs (in mill. pieces)					
Eggs (in tonnes)[6]					

[1] Organic production used on-farm, for seed, feed or that which is unsaleable. Example: ca. 600 l milk of a dairy cow are used on-farm only for the calf.
[2] Rapeseed, soy beans, sunflower seeds, linseed etc.
[3] Including berries and including gross weights of fruit for fruit wine, fruit juice and schnapps.
[4] Only grape wine, other fruit wines are included under "fruit" as gross weight of the fruit. Wine yield is recorded as 100 litres per hectare.
[5] Slaughter weights
[6] 16.5 eggs ≈ 1kg eggs (see national statistics)

Sources and comments to Question 4:

Question 5 What were the organic and conventional farmer prices in 2001?

➔ Here are meant average farmer prices for the year 2001 received from wholesalers and processors.
➔ Please give all prices in national currency (n.c.).

Product	Farmer price for organic products sold as organic[1] (in n.c./100 kg or n.c./100 l)	Conventional farmer price[2] (in n.c./100 kg or n.c./100 l)	Price premium of organic over conventional farmer price (in %)
Column	A	B	C
Calculation			C=A/B*100-100
Example: Oilseeds	16.9	13.0	30
Cereals			
Oilseeds[3]			
Olives for oil			
Potatoes			
Tomatoes			
Onions			
Cucumber (per piece)			
Carrots			
Apples			
Oranges			
Wine[4] (per hl)			
Milk			
Beef [5 6]			
Sheep and goat meat[5]			
Pork[5]			
Poultry[5]			
Eggs (per piece)			

[1] Please indicate the average price for 2001.
[2] Average farmer price given in official statistics for 2001
[3] Rapeseed, soy beans, sunflower seeds, linseed etc.
[4] Only grape wine
[5] Referring to slaughter weights
[6] Weighted average for bulls, heifers, calves and cows

Sources and comments to Question 5:

Question 6 What was the quantity of organic production sold as animal feed in 2001?

➔ Please note that figures in the table below must include domestic sales and export sales.

Product group	Total organic production sold as animal feed (in tonnes)	Total organic production sold as organic animal feed (in tonnes)
Column	A	B
Example: Cereals	25,000	15,000
Cereals		
Oilseeds[7]		
Dried pulses[8]		

[7] This figure is only to include oilseeds and not oil cakes.
[8] Field beans, field peas, fodder lupine etc.

Sources and comments to Question 6:

Organic imports and exports

Question 7 What were the import and export levels for organic food and where were they imported from or exported to in 2001?

→ If you do not have any figures on quantities in tonnes, please indicate the share of organic imports and exports measured by the total (organic and conventional) imports and exports.

Product group	Organic imports		Organic exports	
	Total quantity (in tonnes)	Main country(ies) of origin[1]	Total quantity (in tonnes)	Country(ies) exporting to[1]
Column	A	B	C	D
Example: Vegetables	3,000	France, Italy, Australia	500	Austria, UK, USA
Cereals Human consumption				
Cereals Animal feed				
Oilseeds Human consumption				
Oilseeds Animal feed				
Dried pulses[2]				
Olives for oil				
Potatoes				
Vegetables				
Fruit (incl. nuts)				
Wine[3] (in hl)				
Milk and milk products				
Beef (incl. veal)				
Sheep and goat meat				
Pork				
Poultry				
Eggs (in million pieces)				
Eggs (in tonnes)				

[1] Countries worldwide
[2] Field beans, field peas, fodder lupine etc.
[3] Only grape wine

Sources and comments Question 7:

Supply deficits

Question 8 Have there been any organic products for which the amount of national production plus imports have been insufficient to meet consumer demand in 2001 and 2002 and for which supply deficits are expected for 2003 and 2004?

➔ Please tick the box.

Products	Supply deficits in 2001 and 2002 (in spite of imports)	Expected supply deficits in 2003 and 2004 (in spite of imports)
Cereals:		
-Wheat		
-Barley		
-Rye		
-Oats		
Oilseeds[1]		
Olives for oil		
Potatoes		
Vegetables		
Fruit (incl. nuts)		
Wine		
Milk		
Milk products		
Meat products		
Beef (incl. veal)		
Sheep and goat meat		
Pork		
Poultry		
Eggs		
Animal feed:		
-Leguminous fodder crops (for example peas)		
-Feed mixtures		
Seed		
Others (please specify in the box below)		

[1] Rapeseed, soy beans, sunflower seeds, linseed etc.

Sources and comments to Question 8:

Organic share of the total food market and sales channels

Question 9 What was the organic share of the total turnover in the food market in 2001?

Turnover of total food market[1] (in national currency)	Turnover of the organic food market (in national currency)	Organic share of the total food market (in %)
A	B	B/A*100

[1] Incl. food shops, bakers and butchers, direct sales, restaurants, catering etc.

Question 10 How many percent of the organic turnover accounted for the different sales channels in 2001? (in % of total organic sales)

General food shops[2]	Bakers and butchers	Organic food shops	Whole food shops	Direct sales of farmers[3]	Restaurants	Others (please specify under "comments")	Total
							100

Sources and comments to Question 9 and Question 10:

[2] Small retailer shops (under 400 m^2), supermarkets (400-800 m^2) and hypermarkets (over 800 m^2)
[3] Including weekly markets and delivery services of farmers (e.g. box schemes)

Promotion

Question 11 Was there a nation-wide **government** label for organic products in **2001**?

Yes No

If yes, what was the name of the label? .....

If yes, what was the percentage of all consumers knowing this label? ..... %

If yes, what was the percentage of all organic products signified with this label? ..... %

Question 12 Was there one nation-wide label for organic products run **by an umbrella organisation** of organic agriculture in **2001**?

→ Example: BIOSUISSE Knospe or KRAV in Sweden
→ Labels of private firms are excluded!

Yes No

If yes, what was the name of the label? .....

If yes, what was the percentage of all consumers knowing this label? ..... %

If yes, what was the percentage of all organic products signified with this label? ..... %

Sources and comments to Question 11 and Question 12:

13.3 Questionnaire Part C

EU-Project: Organic Marketing Initiatives and Rural Development (OMIaRD) QLK5-2000-01124
P3 Neubrandenburg University of Applied Sciences
SWP 1.4

Analysis of the European market for organic food in the year 2001

Part C (Selection of shops)
Consumer price survey

Country:
Date of response:
Respondent: Name:
E-mail:
Phone:
Fax:

Aim of the price survey

The aim of this section is to survey prices which consumers have typically to pay for organic products as well as for comparable conventional products to calculate the consumer price premiums.

Guidelines for selecting shops

→ The data for this section have to be collected by yourself by registering prices in different shops. The aim of this question is to get a nation-wide average. Therefore the chosen shops should be **spread over the country according to the relevance of the regions** (in case there are differences between prices and turnovers among the regions).

→ Before starting the price survey you need to complete Question 10 (Part B) of the market questionnaire of SWP 1.4 (How many percent of the organic turnover in € accounted for the different sales channels in 2001?) to know the importance of different sales channels for organic products in your country.

➔ To get weighted average prices over all sales channels, please take **ten shops** (from different regions) according to the importance of sales channels (see Question 10, Part B). In the list below we used the results of the survey in 2000 and other sources to give you a clue about the spreading of different sales channels for the price survey. Please check if the given figures are congruent with the data you inserted in Question 10 (Part B) of the market questionnaire for SWP 1.4 = data for the year 2001.

Nation	General food shop	Baker/butcher	Organic food shop/ Whole food shop	Direct sales (Farm shops, weekly markets)
AT[1]	7	-	2	1
BE[1]	5	-	4	1
DE	3	1	4	2
DK	9	-	-	1
ES[2]	nd (2)	nd	nd (6)	nd (2)
FI	8	-	1	1
FR	4	1	3	2
GR	3	1	4	2
IE	5	-	-	5
IT	5	-	4	1
LU[1]	6	-	3	1
NL	4	1	4	1
PT[2]	nd (2)	nd	nd (5)	nd (3)
SE	7	2	-	1
UK	8	-	1	1
CZ	1	-	2	7
SL	-	-	-	10
CH	7	-	2	1
NO[2]	nd	nd	nd	nd

[1] Source: Der Fachhandel für Bio-Produkte in Europa (2002), FiBL, synergie

[2] We did not receive any results about the importance of different sales channels for these countries in the year 2000. Thus, you need to find out these figures for the year 2001 before you can start the price survey. In brackets, we have given an own estimation for Spain and Portugal.

List of shops which you have chosen for the consumer price survey

→ In shops with exclusive organic products, please compare the prices with similar sales channels. Examples: organic food shop with small conventional shop (not with a big supermarket) or organic farmer's shop with conventional farmer's shop.

→ In shops with both organic and conventional food, shop a and shop b are identical.

→ Please use the attached Excel file for calculating the weighted average price over all sales channels.

No.	Sort of shop[1] a = organic shop b = conventional shop for comparison	Estimated sales area (in m^2)	Name and address of the shop
1a			
1b			
2a			
2b			
3a			
3b			
4a			
4b			
5a			
5b			
6a			
6b			
7a			
7b			
8a			
8b			
9a			
9b			
10a			
10b			

[1] General food shop, baker or butcher, organic food shop, whole food shop, direct sales

Comments to the selection of shops:

13.4 Questionnaire Part D

Part D (Collection of prices)

SWP 1.4 Consumer price survey

- photocopy template -

Guidelines for collecting prices in shops

→ This document is meant as template for photocopying and to be used by those persons doing the price collection in the shops. The following list is only for surveying prices in the shops. Calculations of average prices from all shops should be done in the attached Excel-tables (Part E). Please send us all raw data which you collect (= the filled in Excel file).

→ In shops with both organic and conventional products, please insert prices for comparable products. Examples:
organic cow milk cheese, specialised Edamer with conventional cow milk cheese, specialised Edamer or organic apples Golden Delicious with conventional apples Golden Delicious.

→ If the same product (for example wheat flour or muesli) is sold in different varieties/trademarks in the same shop, please choose the one with an average price.

→ Where the products cannot be found in the described quantities then please multiply or divide the amount to equal the required amount (e.g. if only 250g yoghurt can be found please multiply it by 4 to reach a figure for 1kg).

→ Please record all prices in your national currency (n.c.). We will convert all prices of non-Euro countries into € at the end.

Consumer price survey

No. of shops	Name of shops	Who conducted the price survey?
a		
b		

Product	Organic consumer price (shop a) (in national currency/kg or n.c./litre)	Conventional consumer price (shop b) (in n.c./kg or n.c./litre)	Price premium of organic over conventional consumer price (in %)
Column	A	B	C
Calculation			A/B*100-100
Example: Potatoes	1.00 €/kg	0.70 €/kg	43
Whole wheat 1kg			
Wheat flour 1kg			
Muesli 1kg (with dried fruits or nuts)			
Standard wheat bread 1kg			
Extra virgin olive oil[1] 1 litre			
Potatoes 1kg			
Tomatoes 1kg **(No tomatoes on the vine and no cocktail tomatoes!)**			
Onions 1kg			
Cucumber piece			
Carrots 1kg			
Apples 1kg			
Oranges 1kg			
White wine 1 litre **(The cheapest "wine of certified origin and quality")**			
Red wine 1 litre **(The cheapest "wine of certified origin and quality")**			

[1] If several extra virgin olive oils are available in the same shop, please take the one with an average price.

Continuation:

Product	Organic consumer price (in n.c./kg or n.c./litre)	Conventional consumer price (in n.c./kg or n.c./litre)	Price premium of organic over conventional consumer price (in %)
Column	A	B	C
Calculation			A/B*100-100
Example: Potatoes	1.00 €/kg	0.70 €/kg	43
Fresh milk (≥ 3% fat) 1 litre **(Tetra Pack milk![1])**			
Butter 1kg			
Margarine 1kg			
Natural yoghurt 1 litre			
Fruit yoghurt 1 litre (strawberry or similar)			
Cheese 'Edamer' (or similar) 1kg			
Rump steak 1kg			
Minced beef 1kg			
Lamb chops 1kg			
Pork cutlet 1kg			
Minced pork 1kg			
Whole chicken (for roasting) 1kg			
Free-range eggs (per piece)			
Baby-food in jars 1 kg (carrots and potatoes or similar)			

[1] If only milk in bottles is available, please make a note for us, and please compare in this case organic bottle milk with conventional bottle milk because prices differ according to the way of packing.

13.5 Questionnaire Part E

OMIaRD SWP 1.4
Consumer price survey

Part E (Calculations)

Country: **National currency:**

Organic prices (in n.c./kg) = Column A of the template for collecting prices

For inserting comments, please use the right mouse button. E.g. "bottle milk" if no Tetra pack milk was available.

Product	Shop 1a	Shop 2a	Shop 3a	Shop 4a	Shop 5a	Shop 6a	Shop 7a	Shop 8a	Shop 9a	Shop 10a
Whole wheat 1kg										
Wheat flour 1kg										
Muesli (fruits or nuts) 1kg										
Standard wheat bread 1kg										
Extra virgin olive oil 1 litre										
Potatoes 1kg										
Tomatoes 1kg										
Onions 1kg										
Cucumber piece										
Carrots 1kg										
Apples 1kg										
Oranges 1kg										
White wine 1 litre										
Red wine 1 litre										
Fresh milk 1 litre										
Butter 1kg										
Margarine 1kg										
Natural yoghurt 1 litre										
Fruit yoghurt 1 litre										
Cheese 1kg										
Rump steak 1kg										
Minced beef 1kg										
Lamb chops 1kg										
Pork cutlet 1kg										
Minced pork 1kg										
Whole chicken 1kg										
Free-range eggs (per piece)										
Baby-food in jars 1kg										

Part E (Calculations)

Country: **National currency:**

Conventional prices (in n.c./kg) = Column B of the template for collecting prices

For inserting comments, please use the right mouse button. E.g. "bottle milk" if no Tetra pack milk was available.

Product	Shop 1b	Shop 2b	Shop 3b	Shop 4b	Shop 5b	Shop 6b	Shop 7b	Shop 8b	Shop 9b	Shop 10b
Whole wheat 1kg										
Wheat flour 1kg										
Muesli (fruits or nuts) 1kg										
Standard wheat bread 1kg										
Extra virgin olive oil 1 litre										
Potatoes 1kg										
Tomatoes 1kg										
Onions 1kg										
Cucumber piece										
Carrots 1kg										
Apples 1kg										
Oranges 1kg										
White wine 1 litre										
Red wine 1 litre										
Fresh milk 1 litre										
Butter 1kg										
Margarine 1kg										
Natural yoghurt 1 litre										
Fruit yoghurt 1 litre										
Cheese 1kg										
Rump steak 1kg										
Minced beef 1kg										
Lamb chops 1kg										
Pork cutlet 1kg										
Minced pork 1kg										
Whole chicken 1kg										
Free-range eggs (per piece)										
Baby-food in jars 1kg										

Part E (Calculations)

Country:

Price premium of organic over conventional consumer price (in %) = Column C of the template for collecting prices

Product	Shop 1	Shop 2	Shop 3	Shop 4	Shop 5	Shop 6	Shop 7	Shop 8	Shop 9	Shop 10	Arithmetic mean
Whole wheat 1kg											**#DIV/0!**
Wheat flour 1kg											**#DIV/0!**
Muesli (fruits or nuts) 1kg											**#DIV/0!**
Standard wheat bread 1kg											**#DIV/0!**
Extra virgin olive oil 1 litre											**#DIV/0!**
Potatoes 1kg											**#DIV/0!**
Tomatoes 1kg											**#DIV/0!**
Onions 1kg											**#DIV/0!**
Cucumber piece											**#DIV/0!**
Carrots 1kg											**#DIV/0!**
Apples 1kg											**#DIV/0!**
Oranges 1kg											**#DIV/0!**
White wine 1 litre											**#DIV/0!**
Red wine 1 litre											**#DIV/0!**
Fresh milk 1 litre											**#DIV/0!**
Butter 1kg											**#DIV/0!**
Margarine 1kg											**#DIV/0!**
Natural yoghurt 1 litre											**#DIV/0!**
Fruit yoghurt 1 litre											**#DIV/0!**
Cheese 1kg											**#DIV/0!**
Rump steak 1kg											**#DIV/0!**
Minced beef 1kg											**#DIV/0!**
Lamb chops 1kg											**#DIV/0!**
Pork cutlet 1kg											**#DIV/0!**
Minced pork 1kg											**#DIV/0!**
Whole chicken 1kg											**#DIV/0!**
Free-range eggs (per piece)											**#DIV/0!**
Baby-food in jars 1kg											**#DIV/0!**