Market signals for organic farming

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- ☐ Chains
- ☐ Policy
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- ☐ Models and data

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The organic material price project studies the methods and tools to improve the provision of information on 'Economic opportunities for organic farming in the EU Member Countries'. An important issue is the improvement of the quality and the speed of relevant information for policy purposes, for statistics and research on the farm sector. The report presents proposals on this as well as the results of analyses on (1) the relationship between the prices of organic products and prices of conventional products; (2) economic results of organic compared to similar sized conventional farms.

Disclaimer

The present report is the result of a study carried out for European Commission - DG Eurostat, Unit F3 - Environment and Sustainable Development by a group of experts of the Agricultural Economics Research Institute (LEI), The Hague. The report does not necessarily reflect the opinion of the European Commission services and in no way prejudges the Commission's official position on this matter.

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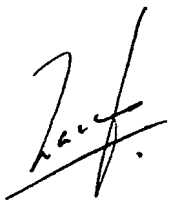
Preface

Organic farming is a relatively new way of production in agriculture, in the European Union as well as in other parts of the world. Organic farming is linked to the developments in the society and needs of consumers. This way of production is responding to the need for a more sustainable production system. For that reason it is supported by policy regulations of the EU as well as activities of national governments as well as other stakeholders.

For these reasons and because organic production is expanding in the Member States, it is obvious that the need in the European Union for economic information on it as well on the comparability with the information of the conventional agriculture sector is increasing. This kind of information may assist policy makers, farmers and other interested stakeholders in their decisions.

For this reason Eurostat asked the Agricultural Economics Research Institute (LEI), to carry out this study. The European Community supported this project. The project team would like to express its sincere thanks to all persons who provided useful input to the project.

We hope that this report will help the European Commission services, Eurostat and others in their work to improve statistical and economic information on organic farming.



Prof. Dr. L.C. Zachariasse
Director General LEI B.V.

Summary

Organic farming is considered as an important development towards sustainable production. The need for economic information concerns prices of organic products as well as data on incomes of organic producers. The interest on the comparability with the conventional sector is also increasing.

For this reason Eurostat asked the Agricultural Economics Research Institute (LEI) in The Hague (Netherlands), to carry out this study on 'Market signals for organic farming'.

The need for economic information makes it desirable to have the same kind of information as is produced in different data collections at national and European level (agricultural prices of Eurostat, farm results of FADN/RICA). The actual situation is analysed in this report.

In the framework of this project, this study provides information on (1) the relationship between the prices of organic products and prices of conventional products; (2) economic results of organic farms compared to similar sized conventional farms. The study is based on information of member countries in the EU-15.

Information on prices of organic products as well as on the income results of organic farms is collected during the project from different sources (see chapter 2). The information is used to analyse the relationship between prices of organic and conventional products as well as between the level of prices and the level of incomes. A methodological study is done to get information on the links between prices and farm results. On top of that income results of conventional and organic farms in two types of farming (grazing livestock and field crops) are analysed and compared.

Availability of data

Data on prices of organic products on a regular base are only available for Denmark, Germany, Italy and the UK. Germany has the most specified list of products with available price information. In other countries mentioned, it concerns only some products. Other countries, for instance France, are preparing or starting the collection of data on prices.

On farm results (incomes), FADN started rather recently - 2000 is the first accountancy year - with the presentation of organic farms. However, only in a restricted number of Member States, namely Austria, Germany, Denmark, and Finland, for two specific types of farms - arable and dairy farms - sufficient results were available. Besides, for the year 2000 Austria had sufficient organic grazing livestock farms in its sample, and Austria and Germany both have sufficient mixed farms to publish relevant results. The picture improved in 2001 with the presentation of data from Italy and the UK. For the year 2002 more member countries provided or plan to provide results of organic farms. So the picture on the availability of data is improving. Nevertheless, still only for a minority of farm types and countries sufficient organic farms are in the samples.

Results of analyses

Analyses of data on prices and farm results in this study make clear that there are no stable and clear relations between organic and conventional prices as well as between incomes of organic and conventional producers.

On prices, as received by farmers, for several products analysed (beef, pig meat, eggs, potatoes and milk) data show in general higher prices for organic products. In all cases the absolute levels of prices as well as the differences in prices are changing over time depending on the market conditions of the specified conventional and organic product.

On incomes, in practice a lot of other aspects than only product price levels are influence of the level of incomes in the same period and over time. Analyses make clear that characteristics and structural elements of the farms (acreage, herd size, crops grown etc.) in the (FADN) samples are important elements to take into account. The level of returns (output) as well as of production costs may depend on that. Furthermore, at least in some countries, the level of subsidies has a large influence on the level of incomes. On top of that secondary activities are, at least in some countries on some types of organic farms, relevant as a source of income.

Recommendations

Because of the fact that there is still a lack of data on prices and farmers' incomes on organic production for a lot of member countries, farm products/sectors and types of farming, it is clear that it is worthwhile to invest in the improvement of information systems and data processing in this field.

The report presents ideas, proposals and a number of recommendations on what is desired as well on what is feasible in the future (section 3). This concerns micro as well as macro-economic indicators: farm results and incomes (FADN), prices, standard gross margins (SGM) as well as the sector account (EAA). Based on the analyses, some indications for future work in the framework of Eurostat and FADN as well as the Member Countries are given.

1. Introduction

1.1 Problem definition and objective

A main reason for the work in this project is that organic farming is an important element of the EU policy, as well as of the individual Member States, in the desired transition of the farm sector and rural development (Organic farming in Europe, volume 1, 1999). Organic farming is an important element of the EU policy, as well as of the individual Member States, in the desired transition of the farm sector and rural development. Governments as well as social organisations see organic production as a means to meet increasing consumer demand as well as an opportunity for farmers and for environmental and other benefits. Organic farming is considered as an important development towards sustainable production.

In fact organic farming is an important element in the development in the wider framework of corporate social responsibility (People, Planet, Profit or Triple P). Linked to the last P in this abbreviation, it is clear that the (organic) sector, the concerned producers as well as policy makers and other stakeholders have an interest in the remuneration of the labour, the capital and the land used in this way of production. This interest is linked to the possibility to continue this way of farming on the long term. This is important to create a sustainable situation in environmental as well as in economic respect.

The need for economic information concerns prices of organic products as well as data on incomes of organic producers. In fact, it is desired to have same kind of information as is produced in different data collections at national and European level for conventional agriculture (agricultural prices of Eurostat, farm results of FADN/RICA).

It is clear that it is necessary to have more information on the economic opportunities for organic farming in the EU Member Countries. In order to achieve this, it is necessary to improve the quality of the relevant information and the speed of collecting the relevant data, which can be used for policy purposes and for statistics and research on the farm sector.

In the framework of this project, it is required to provide information on (1) the relationship between the prices of organic products and prices of conventional products; (2) economic results of organic farms compared to similar sized conventional farms in the same area. The study is based on information of Member Countries in the EU-15.

This report may contribute to improve the information in this respect.

1.2 Methodology

The study *Market signals for organic farming* has been carried out by a team of specialists on price information and farm results of the Dutch Agricultural Economics Research Institute (LEI).

Phase 1 Fact finding on the current situation

In this stage information on prices of organic products as well as on the income results of organic farms was collected from different sources. A main objective of the survey was to find out the quality and frequency of this information.

The available information on prices and farm results was used to analyse the relationship between:

- prices of organic and conventional products;
- the level of milk prices and the level of incomes of organic and conventional milk producers;
- results of two types of organic and conventional farms in some member countries.

In the context of the analyses in the report, methodological studies are done to get information on the links between the population of organic farms and the FADN samples as well as on the links between prices and farm results of organic and conventional farms.

Phase 2 Analyses of future requirements and possibilities

Based on the collected information it became clear that is necessary to define the future requirements on economic information on the organic farm sector. These needs are compared with the possibilities in the coming years.

1.3 How to read this report

For readers who are not inclined to read the full report from the beginning to the end, the management summary might give links to interesting chapters.

Chapter 2 is interesting for readers who want to get a view on the current situation on the economic information concerning the organic farming sector in Europe. Economists with an interest in organic farming itself and in the relationship with conventional agricultural production might be inclined to read this chapter. It gives information on the relationship of prices and farm results on organic and conventional farms.

Chapter 3 analyses the needs, theoretically and practically. Decision makers might be interested in this chapter in particular.

The chapter with conclusions as well as the management summary are of interest for those readers who prefer to have a quick, bird's eye view of the results of the study.

2. Availability and analyses of data

2.1 Introduction

This section of the report presents the results of the inventory on the collection of data on organic farming. It is a stocktaking based on the knowledge of different persons in LEI, contacts with other institutes and questionnaires of the EISfOM project. This concerns not only official statistical information of (central) institutes in the Member States. This kind of information is in fact collected and used by the services of the European Commission as Eurostat to provide qualified statistics on a harmonised base.

Along with this, information from non-governmental organisations, private and co-operative enterprises in the agribusiness, is included in the information gathered and presented in this paragraph.

The section also includes some comparisons and analyses between prices of organic and conventional products as well between the results of farms in both. The section starts with some general information on organic farming in the EU (-15).

2.2 Data on farm production structure

In 2002 some 4.8 million hectares of land (uaa, utilised agricultural area) was used for organic production[1] in the EU-15, representing 3.5% of total uaa. It is clear that the 'sector' is still growing. In 2000, 3.8 million hectares of land were devoted to organic farming (Eurostat, 2003). The number of organic holdings in 2002 was about 140,000 (some 2% of the total number of farms in the EU-15[2]). The organic area in EU-15 expanded with more than 100% in the period 1998-2002 and the number of organic farms increased with more than 30% (see appendices, tables.

These figures illustrate that:

- organic farming is a fast growing 'sector';[3]
- the size of the 'sector' however is still relatively small.[4]

[1] These data represent 'fully converted' as well as 'in conversion' areas and farms.

[2] In the increased EU-25 the organic area at the end of 2002 was more than 5.5 mln. hectares (almost 3.4% of the uaa), managed by more than 160,000 farms (1.7% of total number of farms).

[3] Data on organic farming in 2001 and 2002 show a more moderate growth in EU-15 in recent years (see tables in appendixes).

[4] The Eurostat report as well as the information in the appendices show a wide difference between Member States in this. In Italy and Austria organic farming has some 8% of the uaa, in Greece and Ireland the share is less than 1% in 2002. Austria is leading with some 9% in the share of organic holdings in total number of farms, followed by Denmark and Finland with some 6%. See also Irena Indicator fact sheet and figure in appendix. Inside some member countries the share of organic farming area in total UAA is very different per region, for instance in Italy, which allocatess a quarter of organic area in EU-15, a large part of organic land is on the islands Sicily and Sardinia (based on FSS, see IRENA, 2004).

The consequence of this is that data collection on this 'sector' is still less developed than on agriculture in general. 'Conventional farming' is still dominating agricultural production, but the growth of organic farming combined with the political importance of and interest on this sector are good arguments to construct a mature statistical information system on it.

The data just mentioned are derived from the Regulation (EEC) 2092/91. Farming is only considered to be organic at EU-level if it complies with this regulation. Based on this regulation data are transmitted from the Member States to DG Agri, responsible DG for organic farming. Eurostat is collecting only the data on organic farming, which are transferred from DG Agri to Eurostat. These data are available for each year.[1]

The Farm Structure Survey (FSS) is carried out by the Member States based on agreements in the framework of Eurostat and its working party on farm structure and typology. The FSS provides so far no additional information on organic farming, besides the regional/ geographic coverage of organic farming in the Member States (NUTS 2/3 data). Data are supplied by EU-15 Member States to DG Eurostat E1, conform the regulations on the survey. The regional data submitted by Member States do in some cases not only cover organic farming areas certified by 2092/91, but also areas receiving agri-environmental support for organic farming (f. ex. Sweden). Concerning the years covered by these data sources:

- DG Agriculture questionnaire: yearly since 1998;
- Farm Structure Survey: 2000 and 2003 (results 2003 not available at the moment) and planned in 2005 as well as 2007.

Along with the number of organic farms and the organic area, data are collected in all 15 Member States on the area of different crops (e.g. cereals, forage plants etc.). On the number of 'organic' animals however only a few member states presented data for some years (Eurostat, 2004b): the Netherlands from 1998 onwards, Belgium from 1999 onwards, France from 2000 and Austria, Finland and Luxembourg starting in 2002. The available data for Belgium and the Netherlands show a strong increase in the period 1998-2000 in most livestock categories (Eurostat, 2004b). Germany has some data on livestock in organic production based on the information of control organisations (ZMP, Ökomarkt Jahrbuch 2003, p.176 a.f.). Based on Eurostat (2002), Häring made an overview of the organic and conventional livestock by country in the year 2000 (see table 5 in appendix).

Data on prices, volumes and value

So far, Eurostat did not collect information on prices of organic products nor on the volume and value of organic production. The value of organic production could (in principle) be represented as a specific part in the EAA, the Economic Account on Agriculture. For this purpose, information on volumes and prices of organic production is needed.

One of the reasons for this lack of data might be that it is impossible or at least very expensive to collect data on prices, volumes and values of (all) organic products. Up to

[1] Besides data on organic area for all or at least a part of the member countries, data from 1998 onwards are available on the number of registered operators (producers/farmers, processors, importers from third countries) and industrial production (Eurostat, 2004b).

now, it is even impossible to collect all information on conventional products, especially on all specific horticultural crops, as well as on all goods and services used for the agricultural production (intermediate consumption, input prices). It could hence be wise to take some decisions on collecting data on only some (main) products.

It means that authorities in Member States recognise the relevance to collect data on the organic sector, but the 'state of art' reflects that it has (only) started - at least in most Member States - with data on the structure of farm production (data available in the context of the management of regulation FSS data in specific years).

2.3 Data on prices

2.3.1 Availability

Farm price statistics in the EU and the availability of prices of organic products

In the EU each Member State collects data on prices of the most important products of conventional agriculture as well as on purchase prices or prices of inputs, goods and services (Eurostat, 2004a). The monthly prices are used to produce monthly and yearly indices of the agriculture input and output. There is in general (macro-economic) a link between the developments of the indices and the incomes in the farm sector. Therefore indices provide useful information for the (Common) Agriculture Policy in the European Union (CAP).

Official information (of Eurostat) at EU level on prices of organic products is, as mentioned, not available. This, however, does not mean that there is no qualified information.

Since organic production in agriculture has been grown during the last decades, some countries started a system to collect prices of organic products. On farm level, there are currently only producer prices (out prices) collected and no purchase prices (prices of inputs, goods and services used in the production on the farm) in the Member States.

Farm price statistics in specific Member States

Most prices of organic products are available in Germany. The collecting of producer prices by ZMP (Zentrale Markt- und Preisberichtstelle) started around 1991 (see text box). At first, the collecting was started for the most important agriculture products. However since 1997/98 prices are collected also from less important agriculture and horticulture products (see table annex). The prices of some products are even collected from three different selling channels: selling to handlers, retail and/or consumers. In Germany, the last channel is important because many farmers have a shop near their farm were they sell their organic products.

In Denmark, the collection of prices of organic products started around 1998 by Landbrugsraadet (Danish Agriculture Council). Nowadays prices of five products are collected: wheat, milk, cows, eggs and pig meat (see table 7 in appendix).

In the United Kingdom, Soil Association started the collection of organic producer prices in 1999. This concerns the prices of milk as well as of the most important cereals, livestock and horticulture products. The collecting of the prices of 15 products takes place every quarter of the year.

In Italy, PrezziBio, created by the Chamber of Commerce in Rome and the Italian association of Organic Agriculture, started collecting retail prices of organic products in October 2001 and organic producer prices in April 2002. The number of organic products monitored is about 100. It includes, for instance, potatoes and tomatoes. Organic wheat, however, is not included. On organic milk only the retail prices are monitored at the moment (March 2004).

In France the Ministry of Agriculture started in 2004 the collection of prices of organic vegetables and fruits on the (grocery) markets in Rungis (Paris), Nantes and in Mediterranean region.

In other Member States, there is no system for collecting organic prices so far. Representatives of some countries - Greece and Portugal for instance - have ideas to start collecting data on organic prices in the future.

ZMP information on organic producer prices

To make the market more transparent, organic product prices have been collected since 1991 by the 'Zentrale Markt- und Preisberichtstelle für Erzeugnisse der Land-, Forst- und Ernaehrungswirtschaft GmbH (ZMP)', a semi-state body in charge of registering prices for agricultural, forestry and food industry products. In 1999, 1,362 organic farms declared their prices to ZMP (see annex for a list of products monitored).

The ZMP also evaluates statistics on organic land use and organic animal husbandry and estimates production volumes. At the end of 1998, they investigated the production volumes of 56 out of a total of 67 producers' marketing co-operatives. Together with researchers from the Fachhochschule Neubrandenburg (a technical university), they estimated which marketing channels were mainly used as well as the amounts in the respective channels.

Different sources of prices

It may be concluded there are different categories of sources of data on prices (table 2.1):

- Research institutes: e.g. FØI, LEI etc. collecting data from farms, agro-industries etc.
- Market information institutes: e.g. ZMP, PrezziBio (id.);
- Agro-industries (cooperatives and private holdings);
- Institutes and organisations representing the organic branch: Soil Association, Danish Agriculture Council using data from members etc.

Table 2.1 Availability of data on prices of organic products in EU Member States a) b)

Country	Institute or organisation	For which products	For which year(s)	Remarks
Austria	FADN	Milk, potato, grain, sugar beet	2000-01	
Austria	Offerman/Nieberg	Wheat, potato, milk, beef, pork, egg	1997	
Belgium	Offerman/Nieberg	Wheat, potato, milk, beef	1995,96,97	Not all products for all years
Denmark	FADN	Milk, potato, grain	2000-01	Arable from 2001
Denmark	FØI	Milk	2001	
Denmark	Danish agriculture council	Wheat, milk, cows, eggs, pig meat	1997 or 1998-2003	
Denmark	Offerman/Nieberg	Wheat, potato, milk, pork, egg	1994,95,96	Not all products for all years
Finland	FADN	Milk, potato, grain	2000-01	
Finland	Offerman/Nieberg	Wheat, potato, milk, beef, pork	1993,94,95 /97	Not all products for all years
France	Ministry of agriculture	Vegetables and fruits	2004	Specified per regional market
Germany	FADN	Milk, potato, grain, sugar beet	2000-01	Sugar beet only 2001
Germany	Offerman/Nieberg	Wheat, potato, milk, beef, pork, egg	1993-97	Not all products for all years
Germany	ZMP	Vegetable, fruit, arable, herbs, milk, beef, pork, lamb, fowl, eggs	1996-2002 or 1999-02 (animal)	Not all products for all years; See table in appendix for specific crops, animal products
Greece				
Ireland	Offerman/Nieberg	Wheat, potato, milk, beef, egg	1997	
Italy	FADN	Milk, potato, grain, sugar beet	2001	
Italy	Offerman/Nieberg	Wheat, potato, milk, beef, egg	1995,97,98	Not all products for all years
Luxembourg	Offerman/Nieberg	Wheat, potato, milk,	1997	
Netherlands	FADN	Milk, potato, winter-wheat, onions, winter-carrot, cabbage, milk	2001, 2002	Milk from 1995
Netherlands	Agrifirm	Wheat, rye, barley, oats	2000-2002	
Netherlands	Nautilus	Shallot, sugar maize, onions, cauliflower, white/red cabbage,	2000/2001	
Netherlands	Nautilus	Winter carrot, spinach, asparagus, beetroot, pumpkin, broccoli	2001	
Portugal	Offerman/Nieberg	potato	1997	
Spain	Offerman/Nieberg	Wheat, potato	1994-96	Only average
Sweden	Offerman/Nieberg	Wheat, potato, milk, beef, pork, egg	1994,95,97	Only arable in 1994,95

United Kingdom	FADN	Milk	2001	
United Kingdom	Offerman/Nieberg	Wheat, potato, milk	1993-96	Not all products for all years

a) If Source FADN: Milk prices for general type 4 and particular type 7110 and 8110; if Source FADN: Arable prices for general type 1 en 6; b) In this table as fas as data on prices based on FADN are mentioned the situation till the year 2001 is indicated. Based on actual information, data provision in 2002 includes more organic products in several member countries (see table on number of organic farm in samples per year later on in section 2.6).

Quality of data

Concerning the quality of data on prices of (organic) products it is important to meet some criteria (Eurostat, 2004a). This refers different aspects:

- frequency, regularity, speed of collection and presentation;
- availability of prices of different products representing the sector, depending on the sources of prices;
- comparability with data on conventional farm products (definitions).

On the first point - frequency etc. - Eurostat requires (on conventional products) information on prices per month in a relative short period (2 months) after the specified period. This requires a specific facility in the Member States concerned with collecting the prices; with prices derived from FADN it is not possible to meet this requirement. On the other hand prices derived from FADN are of interest to use for analyses, as is done in this report.

The second point - availability of prices of specific products - means that some choices must be made. Price collection on conventional products is based on a selection procedure in which Member Countries present choices of products linked to their production value and in some cases the political relevance of a product (in CAP). To collect the data it is necessary to have reliable sources (markets, auctions, cooperatives and processing industries etc.), which provide the information.

The third point - comparability - is relevant concerning different aspects: the quality of products, the selling point, the volume etc. In fact, in Eurostat definitions are agreed with representatives from the Member States in the Working party on agricultural prices. These definitions are described in Handbooks of Eurostat.

2.3.2 Comparisons of prices of organic and conventional products

A number of comparisons between prices of organic and conventional products are presented here to get some ideas on the specific aspects and problems connected to it.

The presentations make clear that prices of organic products are (in general) higher than prices of comparable conventional products (see also appendix table 8). This is not surprising, it is one of the arguments for organic producers to convert to organic farming given the lower yields and higher costs per unit of product. The difference in price between organic and comparable conventional products however is not stable, at least not for all

products, but is depending of several factors in the specific markets as is illustrated in the examples. However, for instance for milk producer prices of organic milk are often linked to conventional prices plus a premium fixed either in absolute value or in percentage. For other products, for example cereals, most of the organic production is contracted with an agreed price.

Meat prices in Denmark

In Denmark prices of organic beef and pig meat are available since 1997. Figure 2.1 presents the development of the yearly prices of organic and conventional products. Pig meat is famous for his cycle; a period of high prices is followed by a period of low prices. The length of the cycle is about 4 years. The trend of the prices of organically and conventionally produced pig meat is almost the same. However the gap between the prices of organic and conventional pig meat is getting smaller.

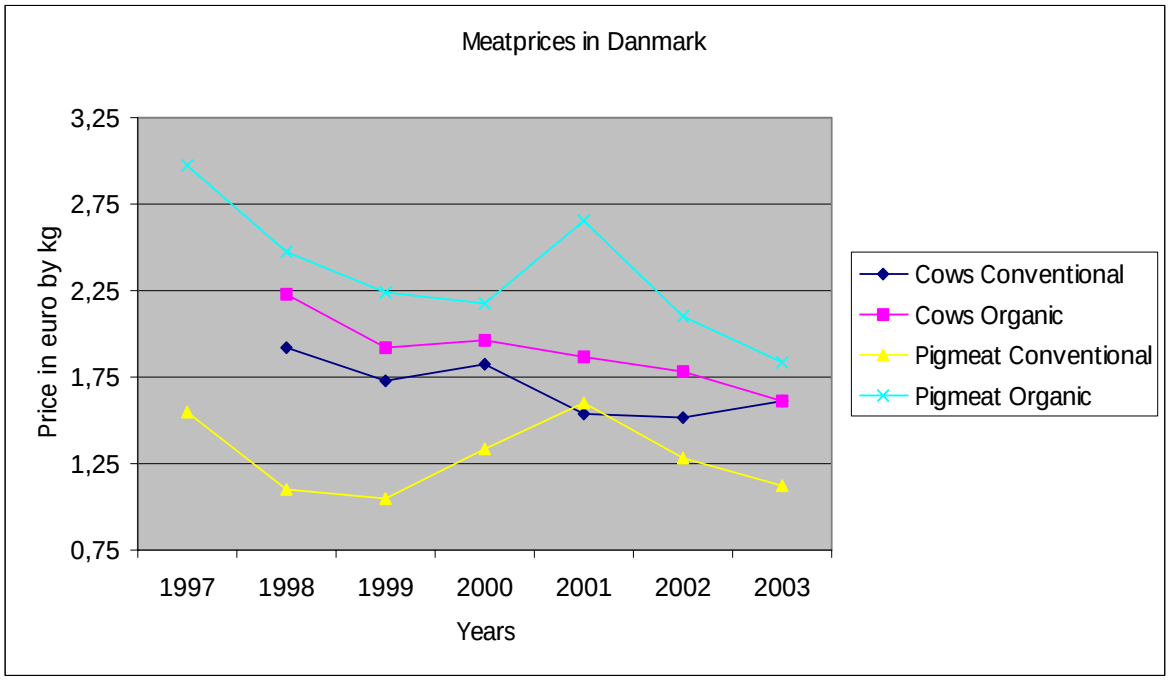


Figure 2.1 Prices of organic and conventional pig meat and beef in Denmark 1997-2003
Source: Landbrugsraadet.

The organic and conventional prices of meat from cows (beef) show the same trend. The gap between the prices of organic and conventional beef is much smaller than for pig meat. A reason for this might be that production costs for organic beef are not so much higher than for conventional beef: the way of production of organic beef is not so different from conventional production; organic pig production requires however further adjustments in the stables and the provision of feed. Moreover beef is for a large part produced on dairy farms, for which the returns of milk are the most important for income.

After the BSE-problems at the end of year 2000, the price of conventional beef has gone down much more than the price of organic beef. In more recent years, however, the faith in the safety of conventional beef is recovering and therefore the gap is now very small. Another reason for a smaller difference and the lower prices of organic beef in 2002 and 2003 is the market situation; in fact Denmark has a surplus of organic meat and Danish exports of organic products are not so successful so far (FOI, 2002).

Potato prices in Germany

The prices of organic potatoes in Germany received by producers are available at different selling channels or stages in the market. The prices of organic potatoes that are sold directly to the consumers are under normal circumstances around 60 euro per 100 kg. The prices of organic potatoes sold to the retail are about 10 euro lower. For a good comparison with the prices of conventional potatoes, figure 2.2 shows the price of organic potatoes that are sold to wholesalers.

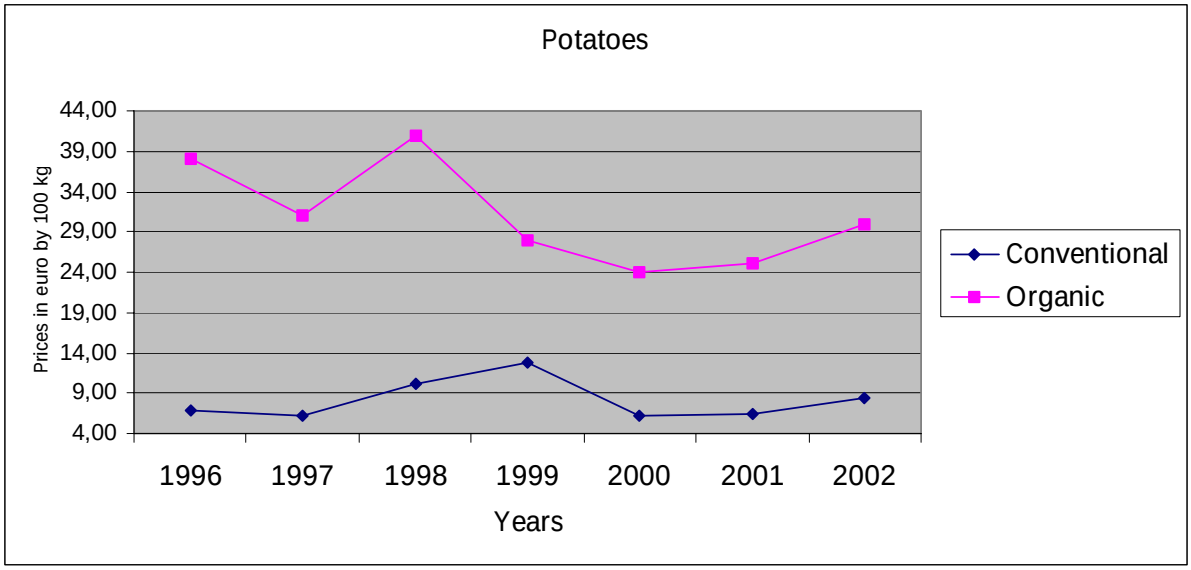


Figure 2.2 Prices of organic and conventional potatoes in Germany 1996-2002
Sources: ZMP and Eurostat.

It is clear that the price level of organic potatoes is much higher (100-200%) than for conventional potatoes. The development of both prices is not always identical. In the period 1996-1999 the price fluctuation of organic potatoes is very strong. Besides the fluctuation in the volume of production (depending on harvest conditions), changes in the composition of different varieties of potatoes could be a reason for this development. A large number of varieties have influence on the average price. The volume of the market of organic potatoes is relatively small. Fluctuations in the harvest in a market with a smaller volume may result in larger fluctuations in prices.

Prices of eggs in Germany and Denmark

Prices of conventional eggs in Germany and Denmark in general show a similar development (figure 2.3). Small changes in egg prices however can have big influence on the income of farmers. The gap between the prices of conventional and organic eggs in Denmark in recent years is very stable. It seems that the market for conventional and organic eggs is rather balanced.

The price of organic eggs in Germany, however, is much higher than the price of conventional eggs as well as than the price of organic eggs in Denmark. The main reason for these higher prices is that the German organic poultry farmers directly sell their eggs to consumers. Eggs sold to consumers contain more added value (costs of packaging, transport and distribution are in fact included). Besides that this price is more stable, because it is not directly influenced by the fluctuations on the (international) market.

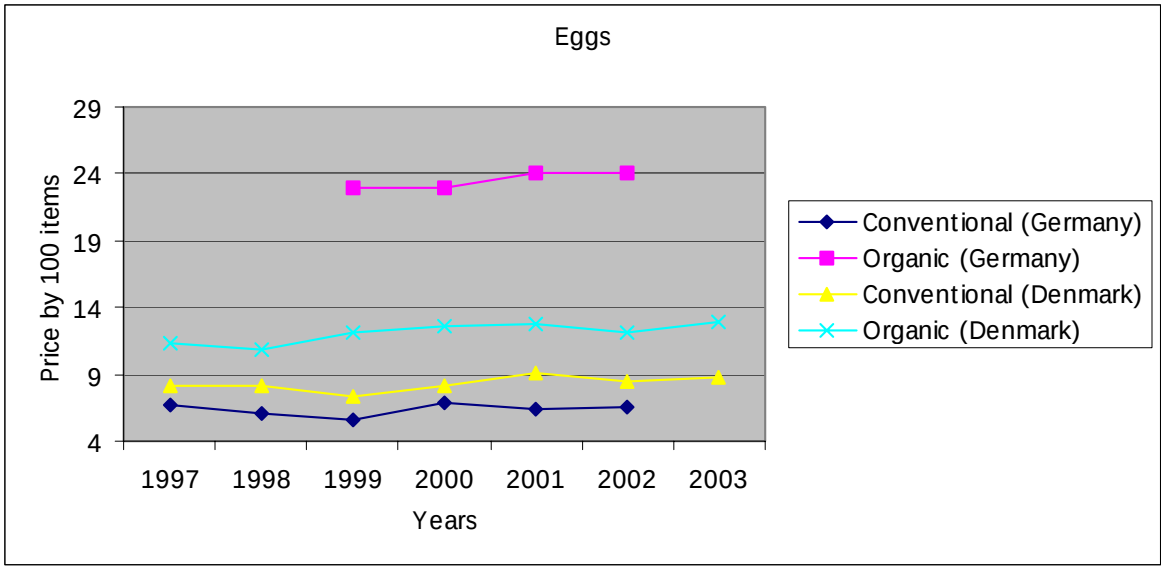


Figure 2.3 Prices of organic and conventional eggs in Denmark and in Germany 1997-2002
Sources: Landbrugsraadet, ZMP and Eurostat.

Prices of milk in Denmark, Austria and Finland

Organic producers of milk receive in general a higher price for their product than conventional dairy farmers (figure 2.4). It strikes that there is however a rather big gap in the prices in Denmark (4-6 euro per 100 kg) compared with the situation in Austria and Finland.

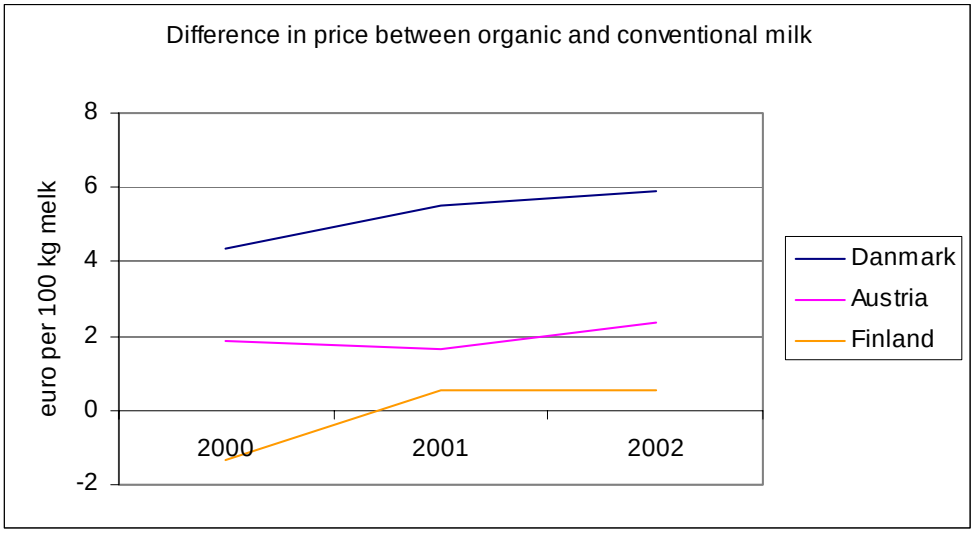


Figure 2.4 Difference in price of organic and conventional milk
Source: Source: FADN-CCE-DG Agri.

2.4 Farm results

2.4.1 Availability of FADN data

FADN started in 2000 with organic farms

Official information on farm results of organic production is still rather scarce. In the framework of FADN/RICA the first results of organic farms are included rather recently: for the year 2000. The code that allows the identification of organic farms in the FADN sample was not added until the year 2000. These results so far concern only a part of the 15 Member States (table 2.2 and 2.3). It strikes at least that some larger countries, France (with more than 10% of organic land in the EU-15) and Italy (more than 20%), did not present results of organic farms for that year.

Table 2.2 Member States representing farm results on organic farming for the year 2000

	BEL	DAN	DEU	ESP	FRA	IRE	ITA	LUX	OST	POR	SUO	SVE	UKI
Organic farming	X	x	X	x				x	x	x	x	x	x

Source: FADN-CCE-DG Agri.

In the Member States with the code on organic farms, only results of a part of the farm types can be published for the year 2000 (table 2.3). For confidentiality and representativity reasons it is required to have at least 15 farms per type in the sample. To provide reliable results it is in fact necessary or at least desirable to have a reasonable number of

farms for the farm type concerned in the sample. The necessary or desired number may depend on the variety of farms concerns. Above a level of 15 farms actually only a small number of Member States may present results.

Table 2.3 Number of organic farms in the FADN accounting year 2000

Farm types	EU15	AUT	BEL	DEU	DNK	ESP	FIN	GBR	LUX	NLD	PRT
All	645	316	11	127	75	25	58	9	1	7	16
Arable	110	29		30	15	11	17			5	3
Horticultural	18			6	9	2	1				
Wine		5		2							1
Permanent crops	22	3		2	1	10					6
Dairy	316	200	4	41	42		19	6	1	1	2
Grazing livestock	80	51	6	7	2		8	3		1	2
Pigs/poultry		2			1		3				
Mixed	85	26	1	39	5	2	10				2

Source: FADN-CCE-DG Agri.

The table 2.3 illustrates that (for the year 2000) only in four Member Countries (Austria, Germany, Denmark and Finland) for two specific types of farms (arable and dairy farms) sufficient farms with results are available. Along with that, Austria has sufficient organic grazing livestock farms in its sample and Austria and Germany both have sufficient mixed farms to publish results of it.

This means that so far only for a restricted part of organic farming in the EU some comparisons can be made with the results of conventional farms.

For the year 2000, in total results of some 650 organic farms in the EU-15 are available. The total FADN sample for EU-15 is some 60,000 farms. The proportion of organic farms in FADN (some 1.1%) is less than its part in the total population of farms (some 2%). It is a clear that for a large part this difference is caused by the absence (or in fact the fact that they can not be identified) of organic farms in FADN's sample in some (major) Member States. However for the farm types on which results of organic farms are available, it is possible that a larger part of the farms are in the sample than in the Farm Structure Survey.

This picture improved for the year 2001 because Italy and the UK made data on organic farms available (table 2.4). The table however makes still clear that only for a minority of farms results were available. For a majority of farm types - including horticulture, wine growing, permanent crops (including fruits), grazing livestock (not specialised in dairy), the granivore farms (including pigs and poultry) as well as most types of mixed farms - no results of organic farms can be presented so far.

Table 2.4 Availability of data on results of organic farms in EU Member States a) b)

Country	Institute or organisation	Data available, yes or no?	If yes, for which types of farms	If yes, for which years	Remarks
Austria	FADN	Y	Mixed dairy, arable	2000-01	
Belgium		N			
Denmark	FADN	Y	Mixed dairy, arable	2000-01	Arable only 2001
Denmark	FØI	Y	Arable, dairy	2001	
Finland	FADN	Y	Mixed dairy, arable	2000-01	
France		N			
Germany	FADN	Y	Mixed dairy, arable	2000-01	
Greece		N			
Ireland		N			
Italy	FADN	Y	Mixed dairy, arable	2001	
Luxembourg		N			
Netherlands	BIN-LEI	Y	Arable, dairy	1990-1999	Dairy from 1995
Netherlands	FADN	Y	Arable, dairy	2000-01	
Portugal		N			
Spain		N			
Sweden		N			
United Kingdom	FADN	Y	Mixed dairy, arable	2001	

a) Milk prices for general type 4 and particular type 7110 and 8110 (together), Arable prices for general type 1 en 6 (together); b) This table provides information till the year 2001; later on in this report the actual situation for the year 2002 is given.
Source: LEI based on EISfOM and additional information.

2.4.2 Comparability of organic and conventional farms

When comparing the results of an organic farm with those of a conventional farm, a number of issues need to be considered. Strictly speaking, a precise comparison between the performances of an organic and a conventional farm implies comparing one and the same farm, one time being managed organically and the other time being managed conventionally (Offermann and Nieberg, 2000). In other words, one would like to compare two totally identical farms, with the only difference that one farm is managed organically and the other one conventionally. However, in practice, such a comparison is very difficult to perform and would only be possible at very high costs.

Offermann and Nieberg (2000) describe a number of alternatives to the strict comparison mentioned above. First, one could compare the results of a farm before and after the conversion to an organic farm. A problem with this approach is that it does not include the developments of the farm if it had not been converted to organic management. These developments occur due to, for example, changes in prices and policies or technical changes. The second alternative is to compare farms that are similar with respect to a number of factors, such as farm type, farm size, production potential, factor endowment and location (including region, soil type, climate etc.). The more factors are taken into account, the better the comparison.

The problem with comparing the results of organic farms with those of conventional farms on the basis of FADN is that the sample of organic farms in FADN is still rather small (see 2.4.1). The sample can be categorised according to farm type, i.e. dairy farms or arable farms. However, a further categorization of the sample into different groups according to the factors mentioned above (e.g size of the farm etc.) is for the time being not possible. Up to now, FADN does not include any methodology for ensuring that the sample of organic farms is representative for all organic farms in Europe, anyway (IRENA report). It is however of interest to analyse this question of comparability more in detail. This is done in section 2.6.

Related questions

Comparing and analysing the results of organic and conventional farms of a type it is necessary to look at the (main) characteristics of the farms. Some of these characteristics are:

- utilised agricultural area (uaa) per farm. In general organic farms are larger in hectares. The average acreage of all organic farms is only lower in Ireland (Häring, p. 187/188). The higher uaa per farm may be partly the consequence of relatively less organic farms specialised in pigs and poultry and in horticulture. Per type of farm (dairy farms resp. arable farms) however the situation may be different:
  - organic dairy farms need more land to have an equal milk production based on feed mainly produced on the farm than conventional farms. Moreover the conventional farms have on average a higher yield (in kg of milk) per cow. The results of farms in Denmark, Austria and Finland presented in this report underline this situation;
  - organic arable farms with more vegetables than conventional arable farms need more labour per hectare and may, under normal circumstances, provide a higher return and income (per hectare). However on organic arable farms with the same division of crops the difference may be smaller. Data on field crop farms in Denmark, Italy and Austria in this report underline that the production plan of organic farms differs mainly from conventional farms; organic farms produce more feed (forage) and less cereals. Organic farms often have more forage crops to fulfill the need for organic feed. Organic farms have in general a wider rotation of crops to produce without the use of pesticides;
  - organic farms in less favoured regions are often specialised in sheep, suckler cows etc. (grazing livestock). In fact on this type of farms managed as conventional holdings the level of inputs (pesticides, fertilizers) is low. The difference in farm structure and farm results could be small with conventional farms. Organic farms however have the advantage of higher premiums;
- livestock per farm. The average number of dairy cows per organic farm is higher in most Member Countries than on conventional farms with a higher kg yield per cow. Data in this report for Austria and Finland however show a smaller dairy herd on organic farms. In Denmark however organic farms have a larger number of dairy cows than comparable conventional farms. The number of e.g. pigs per organic farm, however, is lower depending on the labour needed;
- livestock units per hectare. Conventional farms have in most countries, except in Greece, a higher livestock density than organic farms. The lower density of organic

farms is for a part the result of a higher proportion own feed and of the absence of the use of fertilizers, for a part also of the lower rate of specialization in pigs and poultry production on organic farms;

- labour units per farm. Organic farming may require more labour per animal (because of more home produced feed) and or per hectare (because of more labour intensive crops, e.g. vegetables) than conventional farming;
- other activities on the farm. Organic farming is rather often combined with other, strictly spoken non-agricultural activities on the farm, for instance processing of agricultural products, (agri-)tourism and maintenance of landscape. These activities provide a part of the income of the farmers' family;
- altitude, natural and geographic situation. Organic farming, especially with grazing livestock, is at least for a part connected with the production of specific regional products in less favoured areas. The productivity (level of production per labour unit and or per hectare) of those farms is in general normally lower than on farms under normal conditions;
- personal capacities of the farmer, skillness related to the age of the farmer. Organic farmers are on average five years younger than conventional farmers (FOI, 2002).

Given (all) these different relevant characteristics of a farm, it will be clear that a minimum of 15 farms per type of farms per country is in fact a very low threshold to present (avarage) results of farms and to compare these results with the results of other groups of farms. In fact in the larger countries with larger differences in production circumstances between regions it is desirable to have more organic farms in the sample, per (sub) type of farm. On the other hand, given the situation that still a small proportion of farms are producing organic, it is not reasonable to expect that this will be fulfilled in all Member Countries.

The presented specific aspects of organic farms in relation to conventional farms influence the opportunities of making comparisons of types of farms, even in the same type of farms.

Different returns, subsidies and incomes

Given the characteristics of a farm (e.g., structure, land use, non-agricultural activities) the returns of that farm have different sources (marketed products, services on the farm, EU and national/governmental subsidies). Farms are in the position to receive, at least during a period of some years, specific subsidies to convert to organic production as well as a permanent, structural subsidy as (registered) organic farm. Besides that there are subsidies (per hectare or per animal) linked to the reform of the Common Agricultural Policy (CAP). In the near future a specific subsidy (compensation) will be linked to each kg of milk quota. These subsidies are to compensate farmers for income losses resulting of the decrease of EU guarantee prices for cereals, beef, milk etc. As a result of the Mid Term Review of the CAP in 2003 (most of) these subsidies will be decoupled from production in the coming years. This means that income levels of farms will at least for a part be decoupled from the structure and the volume of production, the farm size (at least in economic

size units) etc. These aspects will influence the comparability of the results of farms. At least these specific points have to be taken into account.

2.5 Prices and farm results

Methodological study to compare prices and incomes

A question to be answered is whether (the development of) market prices of (organic) product can give an indication of the (development of) income of (organic) farms. In other words, we want to find out to what extent market prices of (organic) products influence the income of (organic) farms.

Theoretical approach

In order to answer the question above it is important to know the composition of farm income and the way in which market prices influence the different components of farm income. The FADN usually employs the indicator Family Farm Income (FFI) for measuring farm results (Offermann and Nieberg, 2000). In the following we hence use this indicator as an example.

FFI is the reward to the farmer and his family from using own land, capital and labour input in agricultural activity on the holding. It can more or less be described as the income from farming available for consumption, saving and investments or for other personal expenses (Hill, 1996). Two different approaches to define FFI are given in tables 2.5 and 2.6.

Table 2.5 Definition (I) of Family Farm Income

Farm output		Market revenues from sales of agricultural products
	+	Subsidies and compensatory payments
	+	Other farm income, such as rent or contract work for others
	+	Net value of change in stock
	+	Value of farmhouse consumption
Costs	-	Variable costs
	-	Overheads (incl. depreciation)
	-	Wages, salaries paid to seasonal and non-family workers
	-	Interest paid on borrowed capital
	-	Rent paid
	=	Family Farm Income

Source: Offermann and Nieberg, 2000.

Table 2.6 Definition (II) of Family Farm Income

	Total gross production
+	Balance from farm subsidies (and compensatory payments) and farm taxes (mainly direct payments)
-	Intermediate consumption
=	Gross Farm Income
-	Depreciation
=	Farm Income
-	Total liabilities (factor costs: wages, rent, interest)
+	Balance from investment subsidies and investment taxes
=	Family Farm Income

Source: FADN-CCE-DG Agri.

In FADN, FFI is usually expressed in terms of income per hectare utilizable agricultural area (UAA) or in terms of income per family work unit (FWU) (Offermann and Nieberg, 2000). The indicator FFI has two advantages: Firstly, it is a proper representation of the income that is derived from farming. Secondly, it excludes hired labour force and covers only (the income of) farmers and their families, which are the main aim of the Common Agricultural Policy (CAP) of the EU (Hill, 1996). After all, an important function of income indicators is to be a guide for (future) agricultural policy-making.

Market prices influence farm income through market revenues form sales of agricultural product, which is the market price times the yield (table 2.5). IRENA states that prices are important for agricultural income, but that they may not be good enough as a indicator for the financial viability and hence the income of organic farming or for developments in the market. As shown in table 2.5, FFI is also influenced by other components such as yield, production costs (including costs of input for production) and subsidies and other compensatory payments.

An aggravating problem is that the different components of FFI are not independent of each other. The components influence each other in one-way or another. For example, if prices or yields are unexpectedly low, subsidies or compensatory payments may be increased (or vice versa). When estimating the effect of market prices on farm income, it is hence important to take the relationships among the different components of farm income into account. This could be done in a model with a number if related equations, such as for example:

(1) FFI = market revenues + subsidies + … - variable costs - …
(2) Market revenues = MARKET PRICES * yield
(3) Subsidies = α + β1 (MARKET PRICES) + β2 (yield) + β3 (variable costs) +...
(4) …

For estimating such a model, it would surely be necessary to have sufficient data of all components of FFI for organic farms available. Currently, this condition is unfortunately not fulfilled, at least not at EU-level.

Empirical approach

Another, rather simplified approach, is just to look at the available data and try to detect a relationship between market prices and income, without considering the theoretical aspects mentioned above.

As an example, we take the available data on dairy farms from the FADN database for organic farming for the year 2001. The represented countries are Denmark, Germany, Finland, UK, Italy and Austria. Figure 2.5 shows the relationship between FFI per farm and the milk price for organic farms. Subsequently, income and prices for organic farming are compared with those of conventional farming.

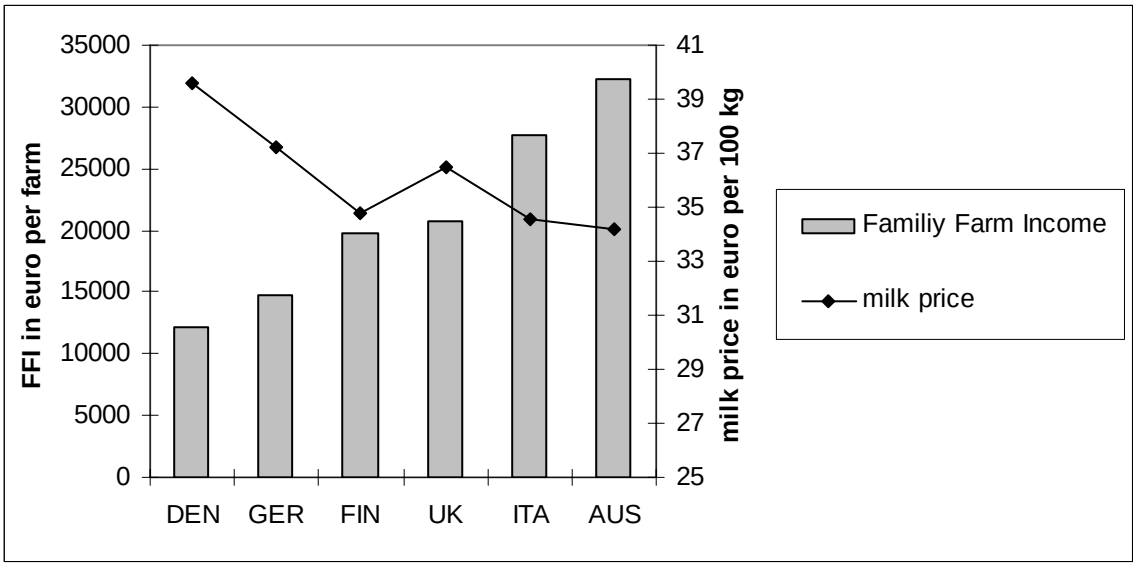


Figure 2.5 Family Farm Income per farm and milk price of organic farms in 2001, various countries
Source: FADN-CCE-DG Agri, adaptation LEI.

Figure 2.5 indicates that a pure visual inspection of prices and income would suggest a negative relationship between the two. Low FFI indicates a high milk price and vice versa. On the basis of these results, it has to be assumed that other components of the FFI indicator are relatively more important in determining the level of FFI. For example, the low FFI in Denmark may suggest that production costs are rather high in this country, or the high FFI in Austria may infer that subsidies and other compensatory payments or other farm receipts (f.i. cattle, crops) are high here. However, there are other, numerous country specific aspects that influence the level of FFI and the milk price and it would need some further investigations to detect the most important ones. Figure 2.8 (later in this section) indicates that the level of market revenues from milk only give a weak indication for the farm income level on organic farms.

Let us now have a look whether income and prices in conventional farming and the relationship between the two differ substantially from those in organic farming. Figure 2.6

shows FFI per farm and milk price for conventional farming for the year 2001. Since the data availability for conventional farming in FADN is much richer than that of organic farming, figure 2.6 shows more countries than figure 2.5.

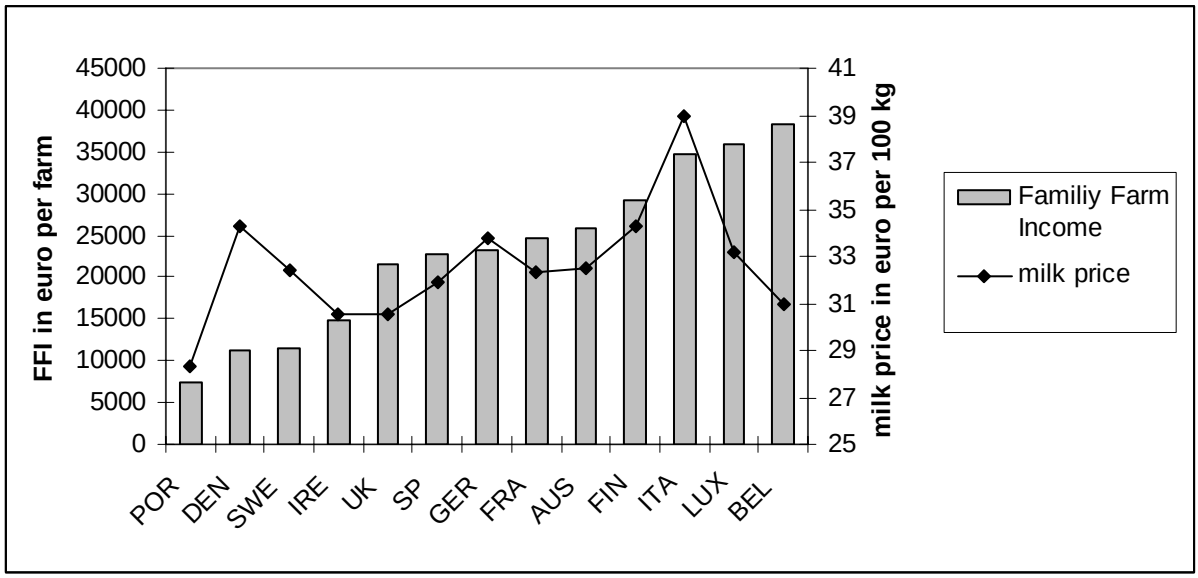


Figure 2.6 Family Farm Income per farm and milk price of conventional farms in 2001, various countries
Source: FADN-CCE-DG Agri, adaptation LEI.

Figure 2.6 shows that in conventional farming income seems to correspond better to milk prices than in organic farming. A high level of FFI more often accompanies a high milk price. (The correlation coefficient between milk price and FFI of the underlying data is +0.45). From the results in figure 2.6 it may be concluded that the composition of FFI, depending on the structure of the farms, in conventional farming is different from that in organic farming. For a direct comparison between the results from figure 2.6 and those from conventional farming, figure 2.7 incorporates both FFI and milk price for organic and conventional farming for the year 2001. The represented countries are the same as those in figure 2.5.

Figure 2.7 shows that the price for milk produced on organic farms is in general higher than that of milk produced on conventional farms (exception Italy; this specific situation on prices in Italy might be caused by the fact that organic farms are smaller and located in other regions than most of the conventional farms). In Austria and Denmark, FFI of organic farming in 2001 lies above that of conventional farming. In general however: a higher price level of organic milk is not a guarantee for a higher level of income for the farmer concerned.

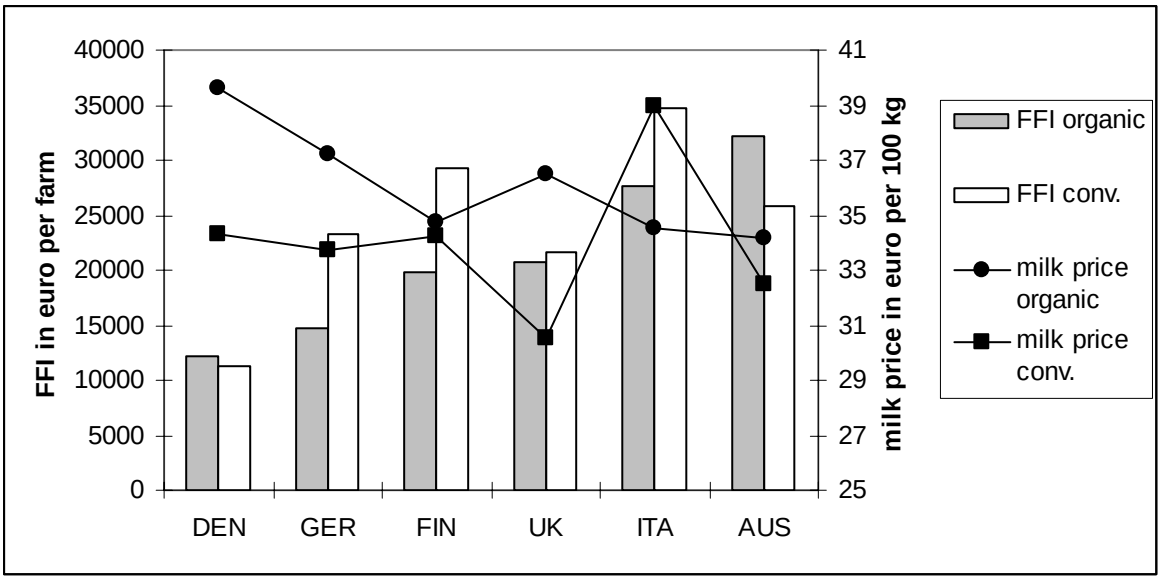


Figure 2.7 Family Farm Income per farm and milk price of organic and conventional farms in 2001, various countries

Source: FADN-CCE-DG Agri, adaptation LEI.

Instead of a cross-country comparison, a comparison per country through time could be performed, which may give a better indication of the relationship between market prices and FFI. Up to now, the FADN only includes 2 years of information on organic farming for a restricted group of farms. However, for the Netherlands income and price data for organic and conventional farming are available for the years 1995-1999. We hence take the Netherlands as an example for this exercise. The results are shown in figure 2.8.

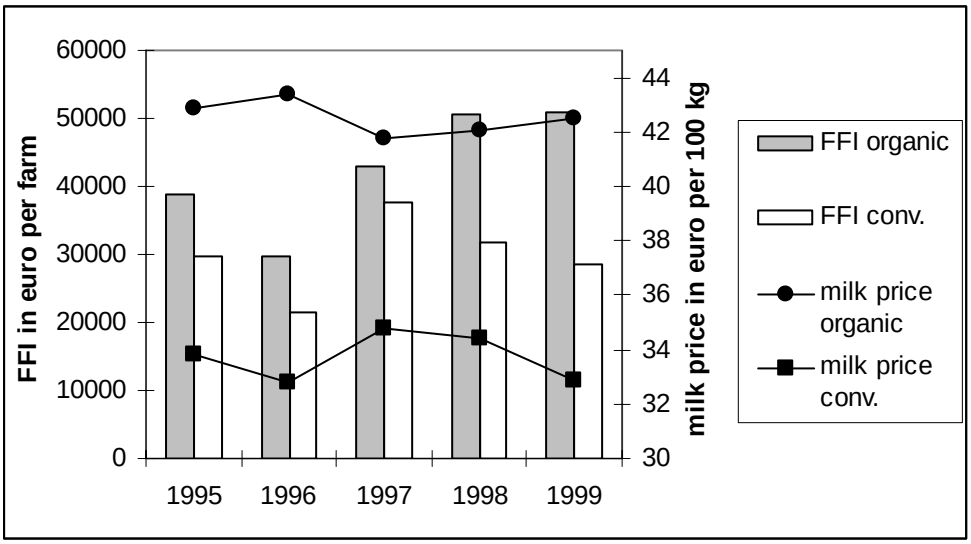


Figure 2.8 Family Farm Income per farm and milk price of organic and conventional farms in the Netherlands, 1995-1999

Source: LEI (BIN).

Let us first look at the relationship between income and price of organic farms. Figure 2.8 suggests that also in a comparison through time milk price and income seem to be negatively related to each other (the correlation coefficient of the underlying data is -0.7). The figure gives another impression for the relationship between income and price of conventional farming. Here, price and income seem to develop in the same direction. (The correlation coefficient of the underlying data is +0.8). Both relationships hence correspond to the results of the cross-country comparison.

Concerning the comparison between the results of organic and conventional farming, it becomes obvious from figure 2.8 that in the Netherlands the price for milk produced organically is much higher than that of milk produced conventionally. It is furthermore striking that the price for organically produced milk and the price for conventionally produced milk develops in opposite directions. In years when price for organically (conventionally) produced milk increases, conventionally (organically) produced milk decreases (and vice versa). In the years 1997-1999 also the income from organic farming and from conventional farming develop in opposite directions.

Market revenues and incomes

Figure 2.9 shows the relationship between FFI and market revenue from milk for some EU countries. It makes clear that the situation per country is very different. Farmers in Denmark have a very small income margin (between returns and costs paid by the farmer) per kg of milk produced compared with e.g. farmers in Austria and Italy. Dairy farmers in these countries have other returns besides the revenue of milk, including subsidies.

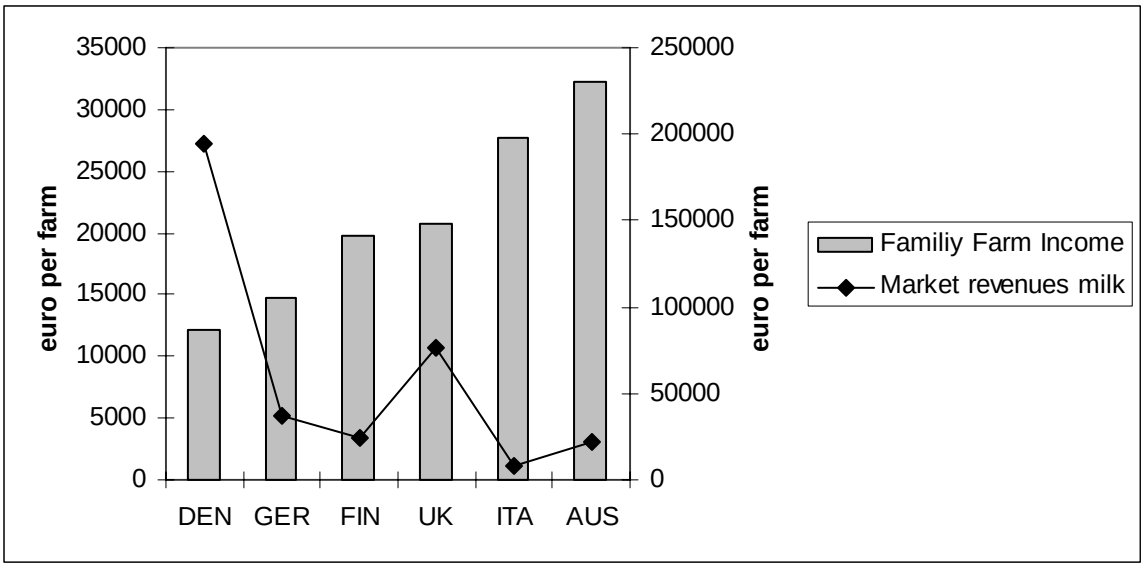


Figure 2.9 Family Farm Income per farm and market revenue from milk of organic farms in 2001, various countries

Source: FADN-CCE-DG Agri, adaptation LEI.

Concluding remarks on the relationship between prices and incomes

Analyses on available prices of some products (in section 2.3.2) make clear that organic prices are in general higher (so there is a positive market signal for organic farming), but there is no (stable) relationship between the prices of organic and conventional products. Over time market conditions are changing for both types of products, but the development of production volume and demand for both can differ. Besides that, it is important to see what is the definition of the price: is the product sold directly to the consumer or the retail, as in many cases of organic products at least in some countries, or is the product delivered to wholesalers, manufacturers etc. as is usual for conventional products.

The empirical approach (2.5) makes clear that a direct relationship between the level of prices and incomes of organic and conventional farmers is not available. In practice a lot of other aspects than (only) product price levels is influencing the level of incomes in the same period and over time. We analyse these aspects more in detail in next paragraphs.

Because of the fact that there is a lack of data on prices and farmers' incomes on organic production for a lot of Member Countries, farm products/sectors and types of farming, it is clear that it is worthwhile to invest in the improvement of information systems and data processing in this field.

2.6 Examination of FADN results

The most attractive source for the comparison of income of organic and conventional farms is the EU-FADN. In this database a sample of 60,000 farms of the EU-15 are assembled using the same definitions and accounting principles. From 2004 on, also the data of the new member states will be included. The farms are weighted using the Farm Structure Survey and in this way are representative for all commercial farms in the EU. Since 2000 a variable is included that describes if a farm is:

- organic;
- in conversion;
- conventional.

In the following section the use of FADN for the comparison of income of conventional and organic farms is investigated more in detail.

2.6.1 Use of data

Results of FADN can only be used if a certain minimum number of (organic) farms are available in the sample, as is stated in section 2.4.1. Results can only be presented for at least 15 farms while otherwise it would be possible to trace the data back to individual farms. This is off course not alone for privacy reasons of the farmers. Next to this, the reliability will be very low if only a few farms are included.

Table 2.7 shows the countries with that minimum level, per type of farm per year for organic farms. The table presents only the types of farms with the highest number of or-

ganic farms: field crops, grazing livestock and mixed farms. All other types (horticulture and intensive livestock farms (granivores)) are combined in the group 'other' farms.

In 2000 several countries did not include the variable that identifies organic farms in their sample although they might already be included in the sample. In 2001 the situation improved. For the year 2002 it is expected that some additional countries will present data on organic farms. At the moment of the presentation of this report for six countries FADN results were sent to Brussels yet.

Most farms are available on the farm type 'Grazing livestock', which includes dairy farms. On 'Field crops' (arable farms) the availability is somewhat less. On other types of farms, including mixed farms, the availability is minimal. Most results on organic farms so far are presented by Austria, Denmark, Finland, Germany, Italy and the Netherlands.

Table 2.7 Number of organic farms in sample per type per year a)

	Field crops			Graz. Livest.			Mixed			Other			Total		
	00	01	02	00	01	02	00	01	02	00	01	02	00	01	02
Belgium	.	.	.	.	.	+	.	.	.	.	.	.	.	+	+
Denmark	.	+	+	x	x	x	.	.	.	.	.	.	x	x	x
Germany	+	x	-	x	x	-	+	x	-	.	.	-	x	x	-
Greece	.	.	-	.	.	-	.	.	-	.	.	-	.	.	-
Spain	.	.	-	.	.	-	.	.	-	.	.	-	+	+	-
France	.	.	-	.	.	-	.	.	-	.	.	-	.	.	-
Ireland	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Italy	.	x	x	.	x	x	.	x	x	.	x	x	.	x	x
Luxembourg	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Netherlands	.	.	+	.	+	+	.	.	.	.	.	.	.	+	x
Austria	+	+	+	x	x	x	+	+	+	.	.	.	x	x	x
Portugal	.	.	-	.	.	-	.	.	-	.	.	-	+	+	-
Finland	.	.	.	+	+	+	.	.	.	.	.	.	x	x	x
Sweden	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
United Kingdom	.	.	-	.	+	-	.	.	-	.	.	-	.	+	-
Total	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

a) '.': 0 or < 15 Sample farms; '-': not available yet; '+': 15-40 Sample farms; 'x': > 40 Sample farms.
Source: FADN-CCE-DG Agri, adaption LEI.

If a comparison of the average income of all farms would be made, the most countries would have the minimum number of farms available. This approach has however two disadvantages:

1. The distribution of farms over the farm types might be different between organic farms and conventional farms. In this situation, a difference in income might not be caused by a real difference between organic and conventional farms but caused by a different distribution of the farms over the farm types.

2. While the number of organic farms is still rather low in most countries, some countries might choose only to include organic farms for the most important farm types. Although results are representative for these farm types, they are not for all organic farms.

Therefore we will concentrate the analysis in the following sections on only two farm types: grazing livestock and field crops. While income fluctuates a lot between the years a comparison based on one year might not be very reliable. Therefore we will concentrate on the countries that have data available for several years.

For grazing livestock, three countries have sufficient farms available for the years 2000, 2001 and 2002: Denmark, Austria and Finland. For field crops only one country (Austria) has data available for three years. Therefore we have chosen three countries that have data available for at least 2001 and 2002: Denmark, Austria and Italy.

2.6.2 Comparison of population and sample

Most countries do not select a priory a minimum number of organic farms in their sample. Since the percentage of organic farms in the population is often low (see section 2.2), the number of organic farms in the sample also relatively low. This means that the chance that differences appear between the average organic farm in FADN and the average organic farm in the member country are large. In this case representativity might be improved by using post stratification. That is weights per farm are recalculated afterwards by a comparison between the farms included in the sample and the farms included in the Farm Structure Survey.

This method has been used is the past in the Netherlands. For the type field crops (combination of arable and vegetables in the open field, NEG-types 1, 6 and 8) the Farm Census in the Netherlands for 1999 included 117 organic farms with an average acreage of 38 ha. In FADN in 1999 20 of these farms were available with on average 43 ha.

Table 2.8 Influence of weighting on representativity and results of organic farms in the Netherlands (results x 1,000 euro per farm)

	Ha	DSU a)	Output	Costs b)	Family Farm Income
Population	38.1	75			
FADN, kind of weighting					
Unweighted	42.8	89	297	294	64
Weighting based on type	43.2	90	299	296	64
Weighting based on type and size	39	80	267	270	56

a) DSU= Dutch size units; 1 dsu= 1,14 esu; b) Including calculated costs for own labour and own capital.
Source: LEI.

Two methods are used to improve the relationship between the sample and the population: (a) post stratification for the 3 specified types of farms and (b) post stratification for the 3 types of farms combined with a distinction in farms size. The results of these methods are presented in table 2.8. Based on the results of these methods preference is given for method (b). This choice has a significant influence on returns, costs and income as is indicated in the table.

Weighting

Countries that do select a minimum number of organic farms (for example Denmark and the Netherlands) in their sample also may have problems on the representatively in EU-FADN. In the current methodology of weighting in EU-FADN there is no stratum for organic farms: Organic farms are weighted on the same way as conventional farms. In a situation of relatively more organic farms in the sample and thus a lower weight per farm, the number of these farms may be over estimated because organic farms do get the same weight as conventional farms. It is therefore recommended in the process of weighting farms at EU- level to take into account the criteria used in the member countries to select farms and to correct the weight of organic farms.

Knowing this, it is of interest to compare the results of the sample with the results of the population, which is presented by the Farm Structure Survey. Table 2.9 presents this comparison.

It is relevant to underline that FADN represents only 'commercial' farms and therefore selects only farms of a minimum size (1 to 16 esu depending on the country)[1]. In the FSS nearly all farms are included. In theory it is possible to select only the farms in the FSS that are represented by FADN but in the current database of Eurostat of FSS 2000 it was not possible to split organic farms into farm type or size class. It is recommended to make these distinctions for organic farms in FSS available for researchers so that a more accurate comparison can be made.

Comparisons for the selected countries make clear there are significant differences in the number of organic farms in FSS and represented by FADN (table 2.9). Italy shows the largest difference: The number of organic farms in FADN is roughly one third of the number in FSS.

The average acreage (in hectares) of organic farms in FADN is significant higher than in FSS. Using the average acreage and the sum of the weighting factors results in a total surface of land represented by FADN. In Austria and Finland the surface represented in FADN is higher. Table 2.9 also shows that the (average) structure of the farms is in fact not changing very much over the years.

[1] In some countries FADN uses also a maximum threshold for the selection of farms.

Table 2.9 Population and sample: structure of organic farms

	Denmark	Finland	Austria	Italy
Number of farms				
Population 1998	2,228	4,975	20,207	42,238
Population 2000	3,466	5,225	19,031	51,120
FADN 2000	1,750	3,580	14,790	.
FADN 2001	2,250	3,740	14,510	16,730
FADN 2002	2,400	3,640	14,070	19,730
Ha, total				
Population 1998	99,161	126,176	287,900	785,738
Population 2000	165,300	147,400	272,000	1,040,400
FADN 2000	110,250	162,532	363,834	
FADN 2001	138,600	183,260	346,789	555,436
FADN 2002	145,200	184,912	358,785	611,630
Ha per farm				
Population 1998	44.5	25.4	14.2	18.6
Population 2000	47.7	28.2	14.3	20.4
FADN 2000	63.0	45.4	24.6	,
FADN 2001	61.6	49.0	23.9	33.2
FADN 2002	60.5	50.8	25.5	31.0
Total cows				
Population 1998	65,000	26,970	103,287	,
FADN 2000	56,420	21,158	144,203	,
FADN 2001	72,540	21,505	143,794	41,490
FADN 2002	62,832	26,572	139,293	65,701
Cows per farm				
Population 1998	29.2	0.5	5.1	,
FADN 2000	32.2	5.9	9.8	,
FADN 2001	32.2	5.8	9.9	2.5
FADN 2002	26.2	7.3	9.9	3.3
ESU per farm				
FSS 2000				
FADN 2000	68.7	30.3	16.6	,
FADN 2001	65.9	29.5	16.3	20.6
FADN 2002	61.0	34.2	16.9	25.2

Source: Lampkin.

As mentioned above differences might be causes by:

1. Differences in field of survey between FSS and FADN.
2. Weighting method of the EU-FADN.
3. Selection method in member states (for example choice to be only representative for some farm types).
4. Low reliability of FADN because of small number of farms included in the sample.

1. Leads to a lower number of represented farms in FADN compared to FSS and a larger average size. 2. Leads to a relatively higher number of represented farms in FADN. 3. Might lead to a relatively lower number of represented farms in FADN.

1. Only leads to differences in the table but does not lead to problems in practice. 2. Leads to a higher number of represented farms but does not necessarily lead to the wrong average results. 3 might lead to a problem for all farm types but will not lead to problems for the analysis of the main farm types, as we will do in this study. 4. Would result in the biggest problems but might partly be solved by post stratification. With the current availability of data, it can't be calculated however which cause has the largest influence.

Because of the lack of data it is difficult to estimate the reliability and representativity of the organic farms in the FADN. Based on the number of available farms in FADN, the results will be much less reliable than for conventional farms.

The following recommendations are made:

- for Eurostat: make data available about the number of farms per farm type and size class in the FSS;
- for member states: to include a separate stratum in their selection plan for organic farms;
- for member states: to increase the number of organic farms in the sample. It sources are not available to increase the number of organic farms for all farm types in might be recommended only to be representative for the main farm types;
- for EU-FADN: to use information about the national selection plan for the weighting of farms or to use post stratification for the weighting of organic farms.

2.6.3 Farm results grazing livestock

While comparing income of conventional and organic farms, the comparison should not be disturbed by differences between the two groups of farms that have nothing to do with the difference between organic and conventional but do influence the income. Therefore we decided to make an analysis per farm type so that difference in the distribution over farm types between organic and conventional will not influence the results. Other reasons might however disturb the comparison (see sections before) like:

- size;
- products;
- natural circumstances (LFA regions);
- number of workers;
- income from non-agricultural sources;
- subsidies.

To investigate the role of these reasons, an analysis is made between farm results of organic and conventional farms for two farm types. In this section the comparison for grazing livestock is made and in the next section for field crops.

Denmark

Organic livestock farms on average are larger (nearly 5% in hectares) and less intensive than conventional farms. This results in a 13% higher milk production level per farm. With a 15% higher price of milk returns of products are much higher, despite the lower returns on cattle (table 2.10 and figure 2.10). The reasons of these lower returns on animals (beef) are not analysed in detail, but it may be the consequence of the relative low price of organic beef in Denmark (see paragraph 2.3.2). Milk yields per cow on organic farms are lower. Labour input on organic farms is much higher on organic farms and is for a larger part based on salaried workers. This results in higher factor costs on organic farms. Direct costs of feed etc. are however lower. Subsidies on organic farms are higher; it is assumed that these subsidies are related to the conversion to organic farming (Denmark has no LFA). Without subsidies incomes of organic as well as conventional producers would be negative.

Returns on milk account for some 75% of total returns (including subsidies) of organic as well as conventional grazing livestock farms.

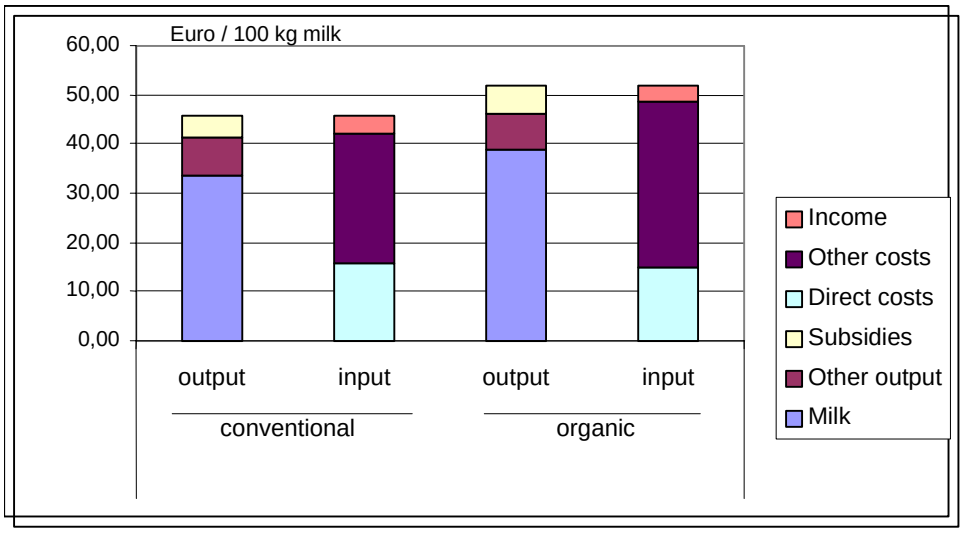


Figure 2.10 Returns, costs and income of organic and conventional grazing livestock farms in Denmark per 100 kg of milk (2000-2002)
Source: FADN-CCE-DG Agri, adaptation LEI.

The result of the different aspects is that organic livestock farms have on average an income level equal to conventional farms. Per 100 kg of milk produced on both groups of farms the income level on organic farms is somewhat lower. Higher prices on milk and higher subsidies result in 14% higher returns on organic farms, but costs are some 15% higher per 100 kg of milk.

Austria

In contrast with the situation in Denmark, organic livestock farms in Austria have a lower volume of total production of milk per farmer than conventional farms. On the other hand, organic farms have, like in Denmark, a larger surface and lower yield (in kg) per cow. In Austria on conventional as well as organic farms a large part of the area is situated in LFA regions.

Returns on milk account for some 40% of total output on conventional farms and (only) 32% on organic farms. Direct costs are relatively low on both groups. Besides that they hardly make use of salaried labour. This results in an income, which is relatively high given the small average size of the farms of both groups. Subsidies are important in these incomes, but include a smaller part than for the Danish organic producers.

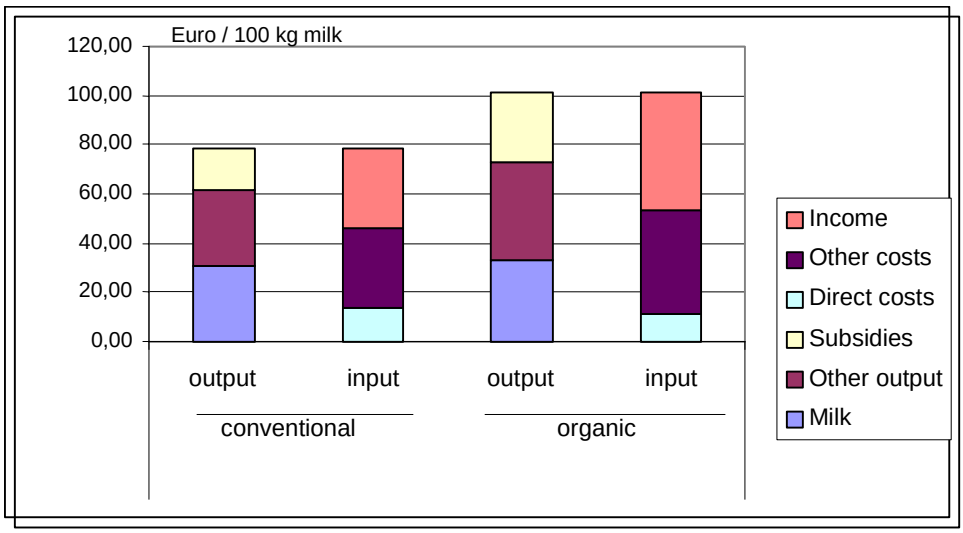


Figure 2.11 Returns, costs and income of organic and conventional grazing livestock farms in Austria per 100 kg of milk (2000-2002)
Source: FADN-CCE-DG Agri, adaptation LEI.

Because of the small part of milk in total returns and the low level of (paid) costs, the level of income per kg of milk is higher than the price of milk. On organic farms it is even some 15 euro per 100 kg higher.

Finland

In general in Finland the situation on organic farms is equal to that in Austria: they are smaller, less intensive and have lower yields than conventional farms. It is surprising that there is no difference in prices for organic and conventional milk. Subsidies are high for both groups, which may be partly caused by the fact that all farms are in LFA-regions. On organic farms the amount of subsidies is even higher than the returns of products. In abso-

lute terms income level on conventional farms is higher than on organic farms, but per 100 kg of milk income on organic farms is higher.

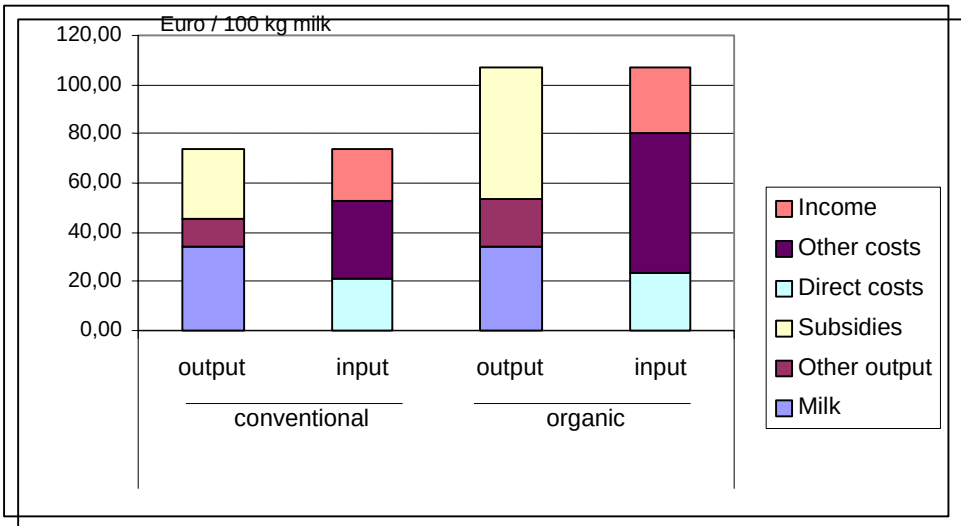


Figure 2.12 Returns, costs and income of organic and conventional grazing livestock farms in Finland per 100 kg of milk (2000-2002)
Source: FADN-CCE-DG Agri, adaptation LEI.

Concluding remarks on grazing livestock

Per member country (i.c. Denmark, Austria and Finland) the differences in the structure of the grazing livestock farms in the organic and conventional sectors are relatively small. This makes it possible to make good comparisons between both of groups of farms.

The data show that the output of secondary activities has only a small influence on the farm results. The influence of subsidies, not only the subsidies related to crops and livestock as a result of the CAP reform, but especially on the reconversion, LFA etc., on the farm results are much higher. Total subsidies are higher on organic farms than on conventional farms.

The differences in results on the most common used income indicator, family farm income, are small between organic and conventional farms in all three countries. Results do not change a lot when family farm income is divided by the number of family workers.

Besides a comparison on the level of the farm it is in theory possible to make comparisons per cow, per kg of milk, per hectare or per esu. Each of them has its pro's and contra's. Organic farming is by nature less intensive than conventional farming; for this reason a comparison per hectare is less logic. A comparison per cow or per kg of milk can be difficult given the somewhat different purposes of the farms in the groups: specialised on milk or beef production as well in some regions sheep and or goats. Because several specializations are possible on the farm type grazing livestock it is preferred to use at least

Table 2.10 Results of conventional and organic grazing livestock farms, 3 year average (2000-2002), amounts x 1,000 euro per farm

Code	Description	Denmark		Austria		Finland	
		convent.	organic	convent.	organic	convent.	organic
SYS03	Sample farms	>1000-2000	>100-200	>2000-3000	>500-1000	>1000-2000	>40-100
SYS02	Farms represented	8,350	820	29,940	11,410	21,120	1,980
SE005	Economic size-ESU	97	118	19	16	44	35
SE010	Total labour input-AWU	1.58	1.88	1.89	1.91	2.01	1.64
SE020	Of which Paid labour input-AWU	0.39	0.69	0.04	0.05	0.13	0.10
A39	% LFA	0	0	86	98	100	100
C01YR	Age of entrepreneur a)	53	57	.	.	55	59
SE025	Area-ha	63.9	94.1	21.0	23.0	37.8	42.6
D30AV	dairy cows	60.2	75.7	13.5	12.0	17.2	11.6
K162QQ	quantity cows milk (tons)	434	492	78	64	134	80
	Kg milk/cow	7,220	6,490	5,760	5,350	7,830	6,890
	Milkprice per 100 kg	33.60	38.90	31.20	33.10	34.40	34.40
SE131	*Total output (A+B)*	181.9	229.7	47.3	46.1	61.0	42.4
	Of which:						
K183TP	Products (A)	161.2	211.2	37.7	39.1	52.9	33.6
	Of which secondary	4.1	4.4	5.4	8.8	2.2	3.0
ETOTTO	Total livestock (B)	20.7	18.4	9.7	7.1	8.1	8.8
SE605	*Total subsidies*	18.4	28.4	13.5	18.4	38.0	42.7
	Of which:						
JC600	arable crops	11.9	14.0	1.1	0.4	3.4	3.8
JC700	Beef	4.5	2.7	2.7	2.9	3.2	4.9
SE270	*Total Inputs*	183.4	239.1	36.3	34.7	70.4	63.7
	Of which:						
SE281	Specific costs	69.5	74.8	10.5	7.4	28.3	18.6
SE336	Overhead	40.3	55.2	11.8	12.5	20.9	22.3
SE340	of which machin.&build. current costs	14.9	20.2	5.4	5.9	7.4	8.0
SE360	Depreciation	23.0	31.7	11.6	12.2	15.2	15.8
SE415	*Farm Net Value Added*	65.2	93.1	28.5	34.1	34.6	28.4
SE365	Total external factors	50.6	77.4	2.3	2.6	5.9	7.0
SE420	*Family Farm Income*	15.1	16.1	25.2	30.8	28.7	21.4
	Id. in % of output	8	7	53	67	47	50
	Id. in % of input	8	7	70	89	41	34
	per 100 kg milk						
	Output (incl. subsidies&tax)	45.70	51.90	79.00	101.60	73.70	106.80
	Input	42.20	48.60	46.60	53.80	52.40	79.90
	Family Farm Income	3.50	3.30	32.40	47.80	21.30	26.80

a) Problems with Age of birth or age for Austria.
Source: FADN-CCE-DG Agri, adaption LEI.

mainly more general indicators to compare the economic performance of the farms. On the other hand on many grazing livestock farms the production of milk is dominating. For this reason, it is of interest to report incomes per kg of milk produced.

Family farm income per family labour unit is the most common used and most suitable indicator for measuring income. It links the output on the inputs and can therefore also be used for farms of different size.

Besides this indicator, it is interesting however to compare other economic indicators to get a more balanced picture and to investigate the reasons for difference in income. Other useful indicators are:

- family farm income (ffi);
- the ffi per family labour unit;
- the ffi in % of output (including or excluding subsidies and secondary activities);
- the ffi per 100 kg milk;
- net added value;
- net added value per labour unit.

2.6.4 Farm results field crops

Farm structure

In each of the member countries analysed organic farms have, compared with the conventional farms, a different structure concerning the crops produced. The part of cereals is significant lower on organic farms, which have nearly any production of sugar beets. Organic field crop farms in the Netherlands have a significant production of vegetables. This is not the case however in Denmark and Italy; this part is even lower than on conventional

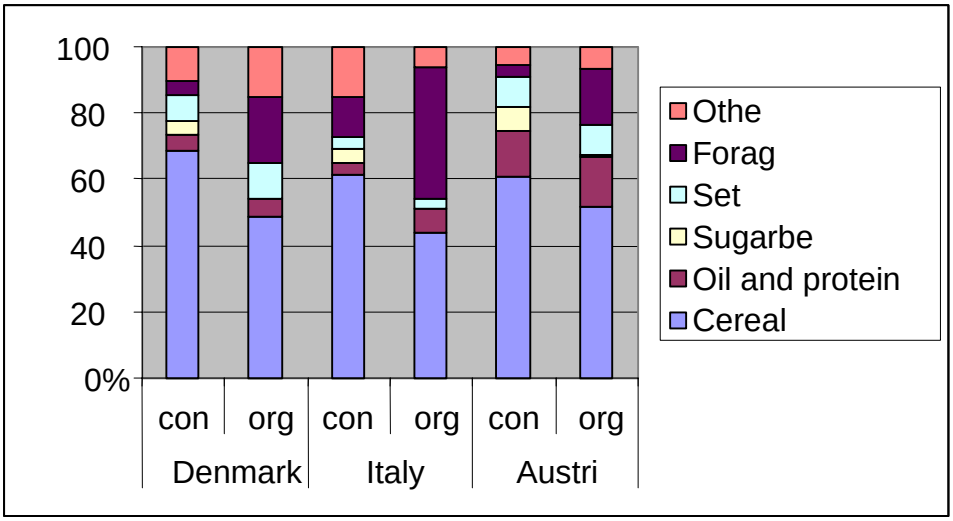


Figure 2.13 Production plan of conventional and organic field crop farms in some countries (2 year average (2001-2002))

Source: FADN-CCE-DG Agri, adaptation LEI.

farms. Besides that Danish and Italian organic farms produce nearly no potatoes. Organic field crop farms in Austria however have higher proportion of the land used for potatoes and vegetables.

Organic farms in Denmark, Italy as well as in Austria use a higher proportion of their land for feed crops (including grassland). Compared with the conventional farms the organic farms are less specialised in the production of food crops.

Returns and costs

Since FADN provides no information on specific, direct costs per crop, it is impossible to compare (gross) margins of specific crops. On the other hand it is possible to compare the returns in euro per hectare. Given the differences in production plans per member country however, it is difficult to make such comparisons for most crops. Even rather general crops on arable farms as sugar beet and potatoes are not grown on most of the organic farms in this type of farming.

In fact only for cereals such a comparison makes sense. Figure 2.14 presents the result of this comparison. The returns of cereals in Denmark and Italy on organic crops are lower than on conventional farms. Austria however shows the opposite situation. It is not clear or whether the differences are caused by differences in cereals produced (wheat, barley, maize etc.).

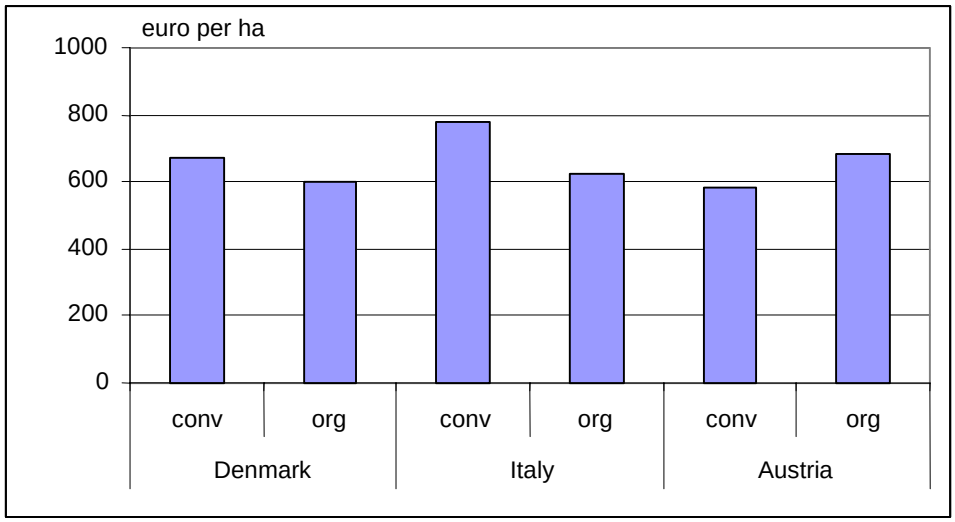


Figure 2.14 Returns per hectare of cereals on conventional and organic field crop farms in some countries (2 year average (2001-2002))
Source: FADN-CCE-DG Agri, adaptation LEI.

Subsidies

Subsidies on organic farms specialised on field crops are higher in Italy and Austria than on conventional farms of the same type (figure 2.15). The higher level is caused by premiums on conversion and LFA. Denmark however has no LFA-regions.

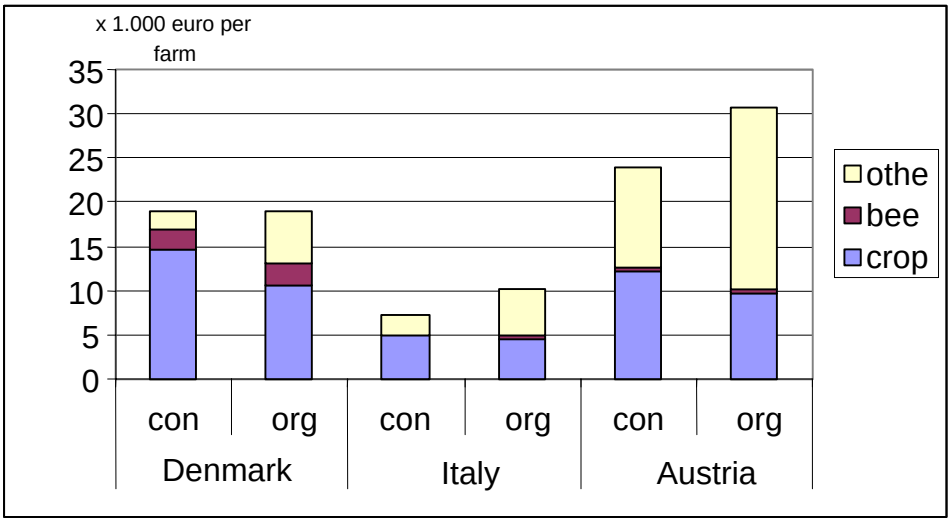


Figure 2.15 Subsidies on organic and conventional field crop farms in member countries
Source: FADN-CCE-DG Agri, adaptation LEI.

Results

Denmark
Organic farms specialised on field crops are on average smaller than conventional farms; they have some 20% less hectares. Organic farms use a larger part of their land to produce feed crops, but the conventional farms have more animals. Returns on animals, mainly pigs, are much higher on the conventional farms. Given the criteria for organic production it seems that organic farmers produce a larger part of the feed on their own farm.

Field crop farms, conventional as well as organic are smaller than grazing livestock farms, at least in esu and concerning total labour input.

A comparison of the results of conventional and organic field crop farms learns that output of conventional farms is 100% higher than from organic farms, subsidies are equal (in absolute terms) and costs (inputs and factor costs) on conventional farms are more than 60% higher. Per hectare of land costs are some 30% higher on conventional farms. The final result is that the average family farm income on both groups of farms is around zero.

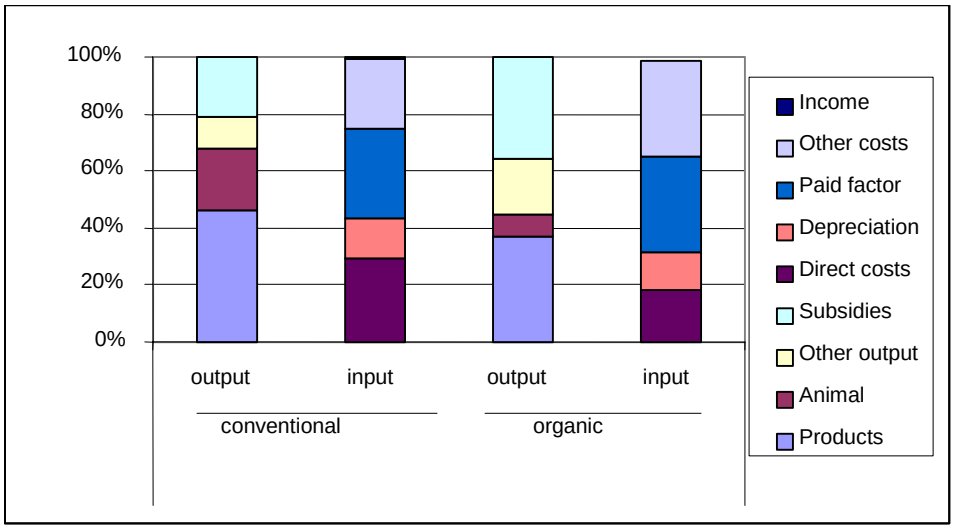


Figure 2.16 Returns, costs and income on organic and conventional specialist field crop farms in Denmark
Source: FADN-CCE-DG Agri, adaptation LEI.

Italy

In contrast with the situation in Denmark, organic farms specialised in field crops in Italy are much larger (in hectares) than conventional farms in this type. The size of the organic field crop farms in esu is however smaller than of the conventional farms. Organic farms are somewhat more extensive than conventional farms. Both groups of farms have on average a turn over of some 30,000 euro, including subsidies. On organic farms subsidies are nearly 3,000 euro higher (figure 2.17). This difference is caused by higher subsidies on LFA as well as conversion premiums.

The level of costs (inputs as well as factor costs) per farm is nearly the same on both groups of farms.

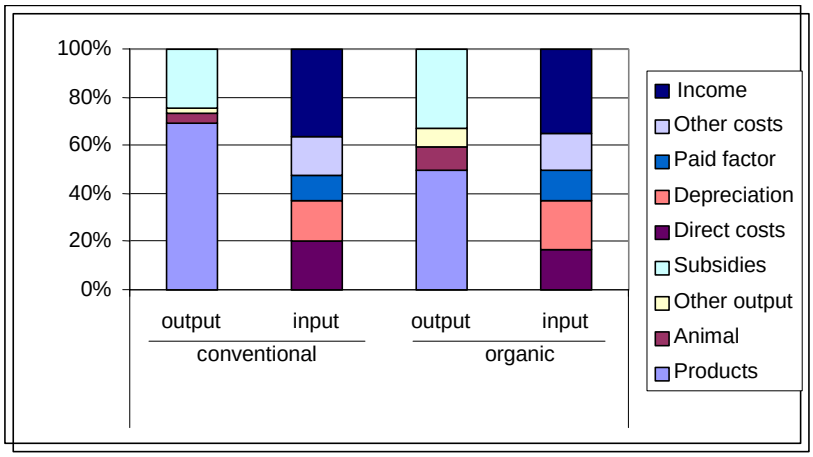


Figure 2.17 Returns, costs and income on organic and conventional specialist field crop farms in Italy
Source: FADN-CCE-DG Agri, adaptation LEI.

The final result is that the average family farm income on both groups of farms is around 10,000 euro, equal to some 35% of the returns.

Austria

Organic farms specialised on field crops are smaller in acreage (hectares) as well as in economic size (esu) than the conventional farms of the same type. Compared with the farms in Denmark, which are somewhat larger, they have a much larger labour input. Linked to that higher labour input, total output of the Austrian organic farms concerned is higher than on the conventional farms. This is mainly caused by higher secondary returns, probably mainly from agro-tourism. Besides that the amount of subsidies is high (some 30,000 euro per organic farm).

Family farm income is relatively high on the organic farms, above 40,000 or more than 1,000 euro per hectare. The income per hectare on organic farms is nearly twice the income per hectare on conventional farms. The income is also relatively high compared with the output (excluding subsidies) of the farm: nearly 75%.

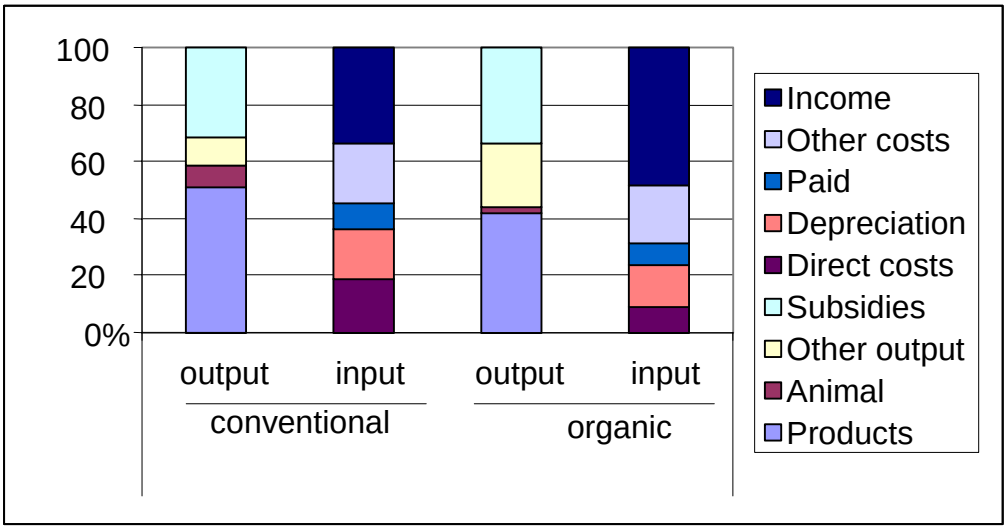


Figure 2.18 Returns, costs and income on organic and conventional specialist field crop farms in Austria
Source: FADN-CCE-DG Agri, adaptation LEI.

Concluding remarks on specialised field crop farms

In this farm type organic farms show more differences in production plans (diversity in crops and animal production) and size (in hectares and esu) compared with the conventional farms in the same country than in the grazing livestock sector. A consequence of this is that the comparison between organic and conventional farms might be influenced by differences in the crop plan.

Table 2.11 Results of conventional and organic arable farms, 2 year average (2001-2002), amounts x 1,000 euro per farm

Code	Description	Denmark		Italy		Austria	
		convent.	organic	convent.	organic	convent.	organic
SYS03	Sample farms	>500-1000	>15-40	>8000-9000	>100-200	>500-1000	>15-40
SYS02	Farms represented	19,270	1,015	224,440	2,905	10,420	880
SE005	Economic size-ESU	40	26	18	15	29	20
SE010	Total labour input-AWU	0.81	0.62	0.97	0.99	1.35	1.39
SE020	of which Paid labour input-AWU	0.16	0.05	0.08	0.11	0.10	0.13
A39	% LFA	1	0	48	41	39	74
SE025	Area-ha	55.5	43.5	17.2	24.7	45.0	41.6
C01YR	Age of entrepreneur a)	49	53	49	56	.	.
SE131	*Total output (A+B)*	73.7	36.0	22.9	20.4	53.3	60.1
	of which:						
K183TP	products (A)	54.0	31.8	21.7	17.5	47.8	58.0
	of which secondary	10.0	10.6	0.6	2.3	7.9	20.3
ETOTTO	tot livestock (B)	19.7	4.2	1.2	2.9	5.6	2.2
SE605	*Total subsidies*	19.0	18.9	7.3	10.1	23.9	30.6
	of which:						
JC600	arable crops	14.6	10.7	4.9	4.6	12.3	9.8
JC700	beef	2.3	2.3	0.1	0.3	0.3	0.3
SE270	*Total Inputs*	89.4	54.1	19.0	19.9	50.7	47.2
	of which:	0.0	0.0	0.0	0.0	0.0	0.0
SE281	specific costs	26.4	9.8	6.0	5.1	14.4	8.2
SE336	overhead	21.8	18.6	4.9	4.9	15.7	18.6
	of which						
SE340	machin.&build. current costs	9.8	6.4	0.9	1.0	5.9	6.5
SE345	energy	2.7	2.0	1.6	1.7	3.5	3.2
SE360	depreciation	12.8	7.6	5.0	6.2	13.5	13.4
SE415	*Farm Net Value Added*	29.0	17.3	13.7	14.1	34.2	52.3
SE365	Total external factors	28.4	18.1	3.2	3.8	7.0	6.9
SE420	*Family Farm Income*	0.7	-0.7	10.9	10.6	25.8	43.9
	Id. in % of output	1	-2	48	52	48	73
	Id. in % of input	1	-1	57	53	51	93
	per hectare in euro						
	output (incl subsidies&tax)	1,620	1,230	1,740	1,230	1,700	2,190
	input	1,610	1,240	1,110	800	1,130	1,130
	Family Farm Income	10	-20	630	430	570	1,060

a) Problems with Age of birth or age for Austria.
Source: FADN-CCE-DG Agri, adaptation LEI.

Besides that the returns of secondary activities, for instance agro-tourism, are in absolute and relative terms higher than on the grazing livestock farms. The impact of subsidies on incomes is big in all analysed cases, on organic as well as conventional farms. For this the situation is comparable with that on the grazing livestock farms.

It may be concluded that the following income- indicators can be used on arable farms to compare organic with conventional results:

- family farm income (ffi);
- the ffi per family labour unit;
- the ffi in % of output (including or excluding subsidies and secondary activities);
- the ffi per ha;
- net added value;
- net added value per labour unit.

2.7 Conclusions on the use of FADN

The analysis in this section makes clear that FADN may provide good indications on the economic performance of the organic sector related to the conventional farm production.

The analysis makes also clear that there are so far many restrictions to do this. The most important one is the limited number of organic farms in the FADN. At this moment only a comparison for a restricted number of countries and types of farms is possible. In the near future, more countries will be available and as the number of organic farms increases, the number of farms in FADN will also increase. Things might improve a lot if countries would add a separate stratum for organic farms in their sample.

The second problem is the current weighting of organic farms in the EU-FADN. Improvement could be made using post stratification based on the FSS and the selection plan in member states.

A third problem, the differences in farm structures and variations in circumstances per type of farm (LFA, subsidies, secondary activities etc.) have to be taken into account in the analyses. For the farm types investigated, these differences do not prevent a 'fair' comparison between organic and conventional farms although for field crops differences in crop plan do influence the comparison. The more heterogeneous the farm type, the more complex the comparison is. Further on it is important not to focus too much on one income indicator and on one year.

3. Future needs

3.1 Introduction

Given the conclusions on the current availability of data and the results of analyses on the data available as presented in section 2, this section concerns ideas and proposals on what is desired in the future as well on what is feasible. The section starts with some thoughts on the objectives of data and the use of indicators. In each part of the section on micro- and macro-economic indicators some recommendations are formulated. These recommendations are combined later in paragraph 3.3. Based on that in 3.4 indications for future work are given.

3.2 Objectives; indicators

3.2.1 Micro-economic

Farm Results

As indicated in section 2 several income indicators can be used. It is recommended to follow FADN in this, because this is a harmonised system (with identical definitions) for all EU countries. The family farm income (FFI) provides data on income of (only) agricultural activities (in fact activities in the farm) or farmers (family) incomes. On organic farms it is of interest to decide on the time it takes for a farm to become an official organic farm (in other words, how long are farms 'in conversion'); this distinction is made in FADN (a variable for farms in conversion is used). It is necessary to be clear on this (incomes including subsidies) due to the role of subsidies (compensation payments, conversion payments, LFA) in incomes of organic farms and conventional farms.

Indicators
Several indicators in the framework of FADN can be used[1]:
- family farm income (ffi);
- the ffi per family labour unit;
- the ffi in % of output (including or excluding subsidies and secondary activities);

[1] See also common evaluation questions on Commission Regulation (EC) 1750/1997 (Rural Development Programs); in this the following are mentioned:
- Net added value per labour unit;
- Gross farm income per farm;
- Net farm income per farm;
- Net farm income per family farm worker (labour unit).

- net added value;
- net added value per labour unit.

The ffi per 100 kg milk.
Output per hectare (euro)
Output per hectare (tons)
Output (euro) per hour of labour
Costs (of direct inputs) per unit of basic products sold (euro per ton)

Ratio of family farm income of organic farms/ conventional farms etc.

Recommendation
In fact the first group provides general information on the income level, the second group (data per hectare etc.) provide more technical, background information for analyses.

The ratio of incomes of organic/conventional farms gives an indication on the question: is organic farming favourable.

The analyses in section 2 however make clear that a (large) number of conditions have to be fulfilled to make such a comparison reliable. The main point here is to obtain a situation in which a reliable number of organic farms (per type) are represented in the FADN sample. It is clear that this can only be achieved in sectors above a certain threshold (minimum part of production or absolute number of farms) of production. The tables in the appendices (tables 1-5) provide information on the actual situation on organic farms, area, specified crops and animals in the Member Countries of EU-15. It makes clear for instance that only in some countries for some products more than 10% is produced organically. FADN (the services of the European Commission, DG Agri) could invite Member States to take more organic farms in their FADN samples in sectors (types of farms) in which the organic production is above a certain threshold, e.g. 3-5%, depending on the number of farms available in the FSS. In fact the following recommendations are made:
- for Eurostat: make data available about the number of farms per farm type and size class in the FSS;
- for member states: to include a separate stratum in their selection plan for organic farms;
- for member states: to increase the number of organic farms in the sample. It sources are not available to increase the number of organic farms for all farm types in might be recommended only to be representative for the main farm types;
- for EU-FADN: to use information about the national selection plan for the weighting of farms or to use post stratification for the weighting of organic farms.

SGM (Standard Gross Margins)

Standard Gross Margins have the advantages of providing a rather simple tool to compare the size of farms (in European size units, e.s.u.[1]) of different types (e.g. dairy farms and arable farms) as well as to identify the type of individual farms (typology of farms).

[1] 1 esu has the value of 1,200 euro.

SGM are used for different purposes, e.g. statistics, research and policy (De Bont et al., 2002). The farm typology is described in Commission decision 85/377/EEC of 7 June 1985. Types of farms are defined in terms of the relative importance of the SGM of the different activities on the farm. For instance if dairy cattle contribute > 2/3 of farms' total SGM the farm in question is a specialised dairy farm (Eurostat, 2003).

SGM are calculated on specified agricultural activities (crops per hectare and units of animals) as the margin between gross output and direct inputs, defined by Eurostat/ RICA.

SGM are calculated regularly, once in each 2 years. The majority of SGM of agricultural activities are based on FADN as the main source of information. The standard margins are based on the results of a (sufficient) number of farms with the specified activity, e.g. production of barley, during a period of several, at least three years. The level of SGM is not dependent of prices in a short period.

Because of the origin and way of calculation of the data SGM provide micro-economic information, but they are at least for a part (to be) used for macro-economic purposes: to compare the value of production and of inputs based on SGM with the data concerned in the EAA (De Bont et al., 2003).

This kind of information provides at least in theory more opportunities, for instance the Standard Gross Margin per Annual Work Unit (AWU) in organic farming and in conventional farming per Member Country is calculated by Häring (2004). However, as long as there are no (official) SGM on organic crops and animals such a comparison is based on the simplified assumption that there is no difference in the (gross standard) margin between both.

Indicators

Ratio of SGM (in e.s.u.) for a specific agricultural activity in organic farming to the SGM for the comparable conventional activity.

Ratio of e.s.u. of the total organic production in a region or Member Country to the total of e.s.u. of the farm sector.

Recommendation

Despite the fact that in principle the SGM provides simple indicators to compare the gross margins of conventional and organic production, it is not to expect that (all) Member Countries will present specific, separate SGM for organic farming, at least not on all products and farm activities.

For some major activities in organic farming it would be interesting to invite Member Countries to do some calculations. Dairy cow is a good example in this, because nearly all countries have (sufficient) organic dairy farms.

Given these restrictions on data availability, it is not possible to use SGM for a more appropriate classification of organic farms in strata of economic sizes (esu) and types of farms. So far, the organic farms are classified with the 'general' SGM. A consequence of this is could be that (a part of) those farms are not classified correct (Häring et.al., 2003). In fact the 'mistake' in classification may concern the type as well as the size of the farm. For the time being this has to be accepted.

3.2.2 Macro-economic

Sector account (EAA)

The function of the sector account on agriculture (EAA) is the provision of adequate social-economic information. It is based on information concerning volumes of production (acreages, number of animals and yields), prices and costs (intermediate consumption or direct inputs, depreciation, costs of salaried labour, interest payments and rent), subsidies and taxes, the volume of labour etc (Eurostat, 2000).

A specific sector account on organic farming - EA(O)A - could provide information on the economic performance (value of production, added value) of the organic production in general as well as on specified (sub) sectors of agriculture, e.g. dairy farming, arable cropping.

So, such a sector account provides detailed information on the value of production (per year) of specified sub sectors (e.g. arable production), relevant products etc.

This kind of information is of interest for discussing the economic relevance of the organic production sector. It provides data additional to what is available on e.g. the consumption of organic products.

Indicators

- Ratio of the specified values (gross production value or net value added) in EA(O)A to the (total) EAA.
- Ratio of the gross production value of organic farming per hectare to the gross production value per hectare of conventional farming.
- Ratio of the gross production value of organic farming per labour unit to the gross production value per labour unit of conventional farming.
- Ratio of values in the accounts per product.
- Developments per ratio from year to year.

Recommendation

So far, only a very small part of the desired information for these EA(O)A-indicators is available; in fact only the information based on the Farm Structure Surveys (utilised area of crops, not for each year). More precise information on the volumes of production and the use of inputs could be derived from FADN, if it would represent sufficient farms and from cooperatives, retail organisations etc. Given the actual situation described in section 2, this condition on FADN will not be fulfilled in the coming years, at least not for the whole agricultural sector (including all types of farms). It is for discussion to restrict the comparison to some specific sectors on which most of the information on organic farming is available: dairy farming and/ or arable production (field crops).

Prices

Farm prices (received by farmers) provide information on the remuneration of the product by processors, wholesale traders etc.

Farm input prices (paid by farmers) are an interesting source of information on the development of the costs of production, at least for a part (fodder and feed prices, prices of seeds etc.). This input price information may not be neglected in relation to incomes of (organic) farmers.

In fact, prices may differ from day to day or from week to week. In agricultural statistics, as indicated in section 2, mostly average prices per month and per year are used to show the absolute level as well as the development (Eurostat, 2004).

Price indices are used to facilitate the analyses of price development over time. In practice, indices are based on the level of prices in a base period (at the moment for Eurostat Agricultural Prices the year 2000=100).

Price indices on output (producer prices) compared with price indices on input provide information on the development of the terms of trade of the production concerned. It is hence a way to be informed in global terms on the profitability of the sector. Furthermore, the development of productivity (changes in volumes) is of interest for the income development

Information of agricultural prices of Eurostat is based on methods and definitions described in the Handbook (Eurostat, 2004) (most recent draft on prices 2000=100, 2004). Important issues in this field are the choice of representative products (minimum production value to be selected), the quality of product to take into account (standard in EU?), representative sources (markets, companies, cooperatives), the treatment of taxes (e.g. TVA) and subsidies etc.

Along with the information on prices of Eurostat, FADN may provide (some) information on prices, depending on the specification of returns (volumes or yields x prices). This information, however, is generally not specified per month and not available per specified quality of a product. Therefore, FADN may provide (only) average prices of products. Besides that, the information derived from FADN is available at a later moment than the information on prices of Eurostat.

Indicators

Ratio of the price of specified organic products (e.g. milk) to the price of conventional products.

Ratio of the price of specified organic inputs (e.g. feed, seeds) to the price of specified organic inputs.

Recommendation

Because some Member Countries already started to collect price information on (some) organic products, Eurostat could invite them to present the available information. Other Member Countries could be invited to select some major products for starting the collection of data.

Because production costs of organic farming are rather specific on some points (feed, seed), it is of interest to invite Member Countries to gather also prices on such inputs.

3.3 Data content, quality and organisation

Given the analyses in par. 3.2 the main recommendations to get data are:

- on FADN: FADN (the services of the European Commission, DG Agri) could invite Member States to take more organic farms in its FADN sample in sectors (types of farms) above a certain e.g. 3-5%-threshold (and depending on the total number of farms per type per country);
- on SGM: For some major activities in organic farming it would be interesting to invite Member Countries to do some calculations. Dairy cows is a good example for this;
- on the sector account (EAA): It is for discussion (in Eurostat, working party Agricultural Accounts and Prices) to restrict the comparison to some specific sectors of agriculture on which most of the information on organic farming is available: e.g. dairy farming and/or arable production (field crops);
- on prices: Eurostat could invite member states, which started already to collect prices of organic products to present the available information. Eurostat could stimulate the collection by the preparation of some criteria to select products. Other member countries could be invited to select some major products for the start of collecting data of prices.

It is clear that in this process with several issues at least some coordination between the main stakeholders (European Commission, DG Agri and Eurostat, Representatives and Institutes in Member Countries) is necessary. Existing institutions as the RICA committee and Eurostat's working parties on Agricultural statistics can have a role in this. Important in this is the control of the quality of data and the use of identical definitions.

3.4 Work to be carried out in future

Recommendations on the work to be carried out at EU and national level are specified below on the same 'items' (FADN, SGM, EAA and prices):

FADN

DG Agri could formulate criteria to select (more) organic farms for the FADN sample. The criteria could relate to the volume and part of organic farming in each Member State, specified in sectors, products and types of farming. The criteria have to be discussed with representatives of the Member States, in the RICA committee. Based on that discussion, decisions can be made for the selection of organic farms per Member Country and type of farm in the years ahead. The purpose of this procedure is to enlarge the number of 'reliable organic FADN farms' to a more 'acceptable' situation than is presented in table 2.7 (for the year 2000).

Member States could be invited to be active in this process. It is of interest to find out the specific characteristics of organic farming compared with conventional farming (farm

structure: size, uaa and labour input, planted crops, number of cattle and density per hectare, marketing system of products, specialization in specific regions).

These aspects could be important in the context of the decisions to be made on the selection and choice of (sufficient) farms in the FADN sample since the level of the (family) farm income as well as profits per ha uaa and per farm work unit (FWU) may differ strongly between individual organic farms (Offermann and Nieberg, 2000 and analyses in sections 2,63 and 2.6.4). In fact it relates the question to have a reliable view on the economic results (incomes) of organic farms compared with conventional farms, with a comparable size (in e.s.u. or acreage?), with the same type of farming and in the same region (comparable natural and economic conditions). Along with an extension of FADN samples, it is of interest to see if data from additional organic farms are available from national studies and additional sources. For some countries, e.g. Italy, this could add a lot of organic farms represented (Irena, FAL, Braunschweig).

SGM

Linked to the decisions on the enlargement of the FADN sample with organic farms, DG Agri could formulate some criteria to select some 'major activities in organic farming' for which standard gross margins could be calculated. It is preferable to discuss this with the representatives of the Member States, in the RICA committee.

Given the restricted function and role of such SGM of only some organic farm activities for statistics and research, this process has more a voluntary character. Specified SGM on organic activities could be exchanged between Member Countries, DG Agri and Eurostat on a voluntary base. As long as there are only some 'organic SGM' they have no role in the typology of farms, but they could be of interest for the use in agro-economic research.

EAA

Eurostat could start some studies to find out to what extent comparisons between the organic and conventional sector and sub-sectors can be made on items as production value, net value added etc. Such studies could be discussed in the working party Agricultural Accounts and Prices. Based on that, it is worthwhile to invite Member Countries to present additional information. As far as this kind of information is not necessary as a policy tool, this process has a voluntary, experimental character.

Member States could inform Eurostat on statistics available and the results of (national) studies on the economic position and development of the organic sector in general or specified sectors (including the processing industries, distribution and retail).

Price information

Given the specific aspects of organic markets (in some countries a large part is directly sold on the farm to consumers) it is important to make clear what kind of information on prices is desired (average prices received or prices depending of the market channel). Besides that, it is important to detail the definition of the organic product concerned, as it is done on conventional products in the framework of Eurostat price statistics (handbook). In-

formation on prices of some organic inputs (seeds, feed) is important in order to get a more balanced picture (relation between returns and costs of production, terms of trade, indices).

With these aspects and concerns in mind, Eurostat could present ideas on the (major) products on which data of prices could be collected. The (pre) selection before the list of products could contain criteria as the value of organic production in different member countries. This list could be discussed with the Member Countries in the working party Agricultural Accounts and Prices. Given the differences in the position of organic farming, Eurostat could start to collect data of some countries.

To arrive at a comparable situation (concerning frequency and the use for indices) as on prices of conventional products, data on organic products will preferable be presented on a monthly base. However for some seasonable products (e.g. vegetables) prices per year are acceptable. Given the complexity of at least some markets of organic products and difficulties to get the information of major stakeholders in the market, it is advisable to start with some 'pilot projects'.

4. Conclusions and recommendations

1. Organic farming is a growing sector corresponding to political and social needs as sustainable production. Economic information on organic farming in the EU is still rather scarce. So far, the European Commission and Eurostat presents only some statistics based on Regulation (EEC) 2092/91 and Farm Structure Surveys: number of organic farms and acreages of crops. This does not provide information on the market and other economic conditions for organic farming itself and compared with the conventional producing sector.
2. The European Commission, DG Agri started recently with the presentation of farm results of organic farms. However, currently data are available only for some member countries and for a restricted number of farm types. It is clear that there is a need for more information in order to have a reliable view on the opportunities of organic farming compared with conventional farming.
3. Information on prices of organic products is available in some countries, but not on a harmonised base as required by Eurostat on farm prices in general. Most countries so far have no qualified price information for the organic sector or parts of it on a regular base.
4. Analyses of data on prices and farm results in this study make clear that there are no clear and stable relations between organic and conventional prices as well as between incomes of organic and conventional producers. Prices of organic products are in general higher, but the price gap is influenced by market conditions as well as the buyer (consumer, retail or wholesaler) of the product from the farmer. In practice, a lot of other aspects than (only) product price levels are influencing the level of incomes in the same period and over time. So market signals for the organic production sectors may differ over time and under changing conditions.
5. Because of the fact that there is a lack of data on prices and farmers' incomes on organic production for a lot of Member Countries, farm products/sectors and types of farming, it is clear that it is worthwhile to invest in the improvement of information systems and data processing in this field.
6. The report presents ideas, proposals and a number of recommendations on what is desired in the future as well on what is feasible (section 3). This concerns the development of micro- as well as macro-economic indicators: mainly on farm results and incomes (FADN) and prices, with also some ideas on standard gross margins (SGM) as well as the sector account (EAA).
7. Based on the analyses, some indications for future work in the framework of Eurostat and FADN as well as the Member Countries are given. It makes clear that EU institutions have to invest some time in stimulating the construction of the desired information system on organic farming in close cooperation with the Member States.

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www.dainet.de/
www.irs.aber.ac.uk/omiard/

http://europa.eu.int/comm/agriculture/rur/eval/index_en.htm
www.eurotech.co.at/html/engl/intro.htm

Appendix

Table A1.1 Organic land and farms in the EU-15 (2002)

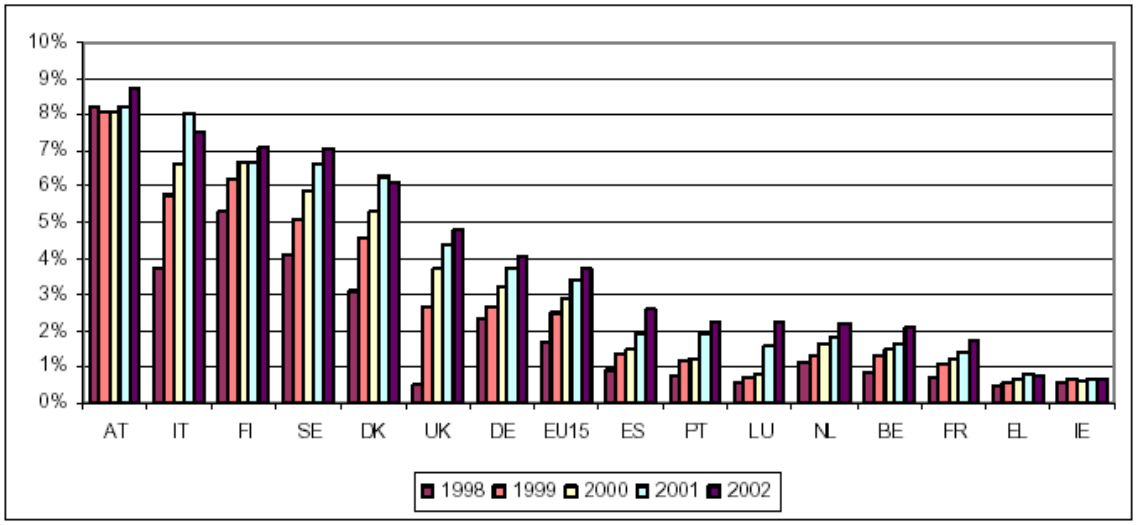
	Organic Land Area	% of all land	Organic farms	% of all farms
Austria	297,000	11.60	18,292	9.20
Belgium	20,241	1.45	700	1.23
Denmark	178,360	6.65	3,714	5.88
Finland	156,692	7.00	5,071	6.8
France	509,000	1.70	11,177	1.55
Germany	696,978	4.1	15,628	4
Greece	28,944	0.86	6,047	0.69
Ireland	29,850	0.70	923	0.70
Italy	1,168,212	8.00	49,489	2.14
Luxembourg	2,004	2.00	48	2.00
Netherlands	42,610	2.19	1,560	1.70
Portugal	85,912	2.20	1,059	0.25
Spain	665,055	2.28	17,751	1.47
Sweden	187,000	6.09	3,530	3.94
U.K.	724,523	4.22	4,057	1.74
EU-15	4,792,381	3.51	139,046	1.99

Source: Organic Farming in Europe - Provisional Statistics 2002.

Table A1.2 Organic area and area in conversion (in ha), certified under 2092/91

	1998	1999	2000	2001	2002
BE	11,744	18,515	20,667	22,452	29,118
DK	93,201	137,294	157,676	168,372	164,519
DE	414,293	452,327	546,023	632,165	696,978
EL	15,402	21,451	26,707	31,000	29,000
ES	269,465	352,164	380,920	485,079	665,055
FR	218,775	315,771	369,933	419,750	517,965
IE	24,411	29,360	27,231	30,017	29,800
IT	577,475	911,068	1,040,377	1,237,640	1,168,212
LU	744	888	1,074	2,003	2,851
NL	22,268	26,350	32,334	35,876	42,610
AT	287,899	272,635	272,000	276,410	296,154
PT	29,533	46,918	48,066	73,504	85,900
FI	116,206	136,662	147,268	1,479,432	156,692
SE	127,329	155,463	174,227	202,827	214,120
UK	78,833	425,945	578,803	679,631	741,174
EU-15	2,287,577	3,302,812	3,823,306	4,444,669	4,840,148

Sources: Organic farming questionnaire - DG Agriculture, data treated by DG Eurostat. Estimates for EU 15 (2001, 2002), Greece (2001, 2002), Portugal (2002) and Ireland (2002).



Source: Organic farming questionnaire - DG Agriculture, data treated by DG Eurostat; ZPA1 – DG Eurostat
Estimates for EU15 (2001, 2002), Greece (2001, 2002), Portugal (2002) and Ireland (2002)

Figure A1.1 Share of organic farming area in total UAA

Table A1.3 Development number of organic farms a) in EU, 1985-2002 and % of total nr. of farms (2002)

Country	1985	1990	1995	2000	2001	2002	
						number	% tot.
Austria	420	1,539	18,542	19,031	18,292	18,292	9.2
Belgium	50	160	193	628	694	700	1.2
Denmark	130	523	1,050	3,466	3,525	3,714	5.9
Finland	60	671	2,793	5,225	4,983	5,071	6.8
France	2,500	2,700	3,538	9,283	10,364	11,177	1.6
Germany	1,610	4,188	6,642	12,732	14,703	15,628	4.0
Greece	0	25	568	5,270	6,680	6,047	0.7
Ireland	8	150	378	1,014	997	923	0.7
Italy	600	1,500	10,630	51,120	56,440	49,489	2.1
Luxembourg	10	10	19	51	48	48	2.0
Netherlands	215	399	561	1,391	1,528	1,560	1.7
Portugal	1	50	349	763	917	1,059	0.3
Spain	264	350	1,042	13,424	15,607	17,751	1.5
Sweden	150	1,588	2,473	3,329	3,589	3,530	3.9
UK	300	700	828	3,565	3,981	4,057	1.7
EU-15	6,168	12,965	49,606	130,290	142,348	139,046	2.0

a) In principle only certified farms.
Source: 1985 en 1990: Dr. N. Lampkin (www.organic.aber.ac.uk); partly estimates, notably for 1985; 1995: Foster en Lampkin, 2000

Table A1.4 Development area organic agriculture in EU, 1985-2002 (x1000 ha) and % of total uaa (2002)

Country	1985	1990	1995	2000		2001	2002	
							area	% tot.
Austria	5.9	21.5	335.9	272.0	a)	285.5	297.0	11.6
Belgium	0.5	1.3	3.4	20.3		22.4	20.2	1.5
Denmark	4.5	11.6	40.9	165.3		164.6	178.4	6.7
Finland	1.0	6.7	44.7	147.4		147.9	156.7	7.0
France	45.0	72.0	118.4	371.0		419.8	509.0	1.7
Germany	24.9	90.0	309.5	546.0		632.2	697.0	4.1
Greece	0	0.2	2.4	24.8		31.1	28.9	0.9
Ireland	1.0	3.8	12.6	32.4		30.1	29.9	0.7
Italy	5.0	13.2	204.5	1,040.4		1,230.0	1,168.2	8.0
Luxembourg	0.4	0.6	0.6	1.0		2.1	2.0	2.0
Netherlands	2.5	7.5	12.9	27.8		38.0	42.6	2.2
Portugal	0	1.0	10.7	50.0		70.9	85.9	2.2
Spain	2.1	3.7	24.1	380.8		485.1	665.1	2.3
Sweden	1.5	28.5	83.5	171.7		193.6	187.0	6.1
UK	6.0	31.0	48.4	527.3		679.6	724.5	4.2
EU-15	100.3	222.0	1,252.5	3,778.1		4,442.9	4,792.4	3.5

a) From 1998 alms etc. used only during a part of the year are excluded.
Source: 1985 en 1990: Dr. N. Lampkin (www.organic.aber.ac.uk); partly estimates, notably for 1985; 1995: Foster en Lampkin, 2000

Table A1.5 Part (%) of livestock on organic farms (2000)

	Total livestock	Dairy cows	Other cattle	Sheep	Pigs	Poultry
Austria	10.3	15.3	15.2	22.6	1.0	2.4
Belgium	0.7	1.3	1.2	6.8	0.2	0.4
Germany	1.7	1.7	2.4	6.0	0.4	0.9
Denmark	3.6	10.4	8.6	18.3	0.7	4.0
Spain	2.2	1.0	2.9	2.8	1.7	1.6
Greece	0.2	0.3	0.2	0.1	0.1	0.2
France	1.0	1.1	1.0	1.7	0.4	2.1
Finland	5.2	4.2	5.9	24.4	3.0	5.3
Italy	5.2	4.5	5.3	17.5	1.9	3.1
Ireland	0.6	0.2	0.5	1.1	0.1	1.6
Luxembourg	0.6	0.5	0.5	0.0	0.0	0.0
Netherlands	0.4	0.7	0.6	1.1	0.1	0.0
Portugal	1.0	0.1	1.4	2.9	0.2	0.1
Sweden a)	14.5	15.4	16.8	29.0	8.5	1.8
UK	1.7	1.3	0.2	1.7	1.4	4.2
EU-15	2.2	2.6	2.6	3.2	0.9	2.1

a) Including non-certified farms.
Source: Häring, Dabbert et al., 2004.

Table A1.6 Part (%) of organic production in the acreage of some crops (2000)

	Cereals	Root crops	Vegetables a)	Fruits	Feed crops b)	Grassland
Austria	3.2	2.5	6.1	4.8	10.7	16.4
Belgium	0.8	0.5	1.3	1.8	1.6	2.9
Germany	1.8	0.9	6.3	5.7	2.8	4.4
Denmark	1.4	8.5	3.2	15.3	10.0	
Spain	1.4	0.9	1.8	2.4	1.7	4.1
Greece	0.1	0.1	0.2	0.1	0.1	0.2
France	0.7	0.4	1.9	3.3	1.4	1.6
Finland	4.8	1.5	5.7	18.0	9.1	11.5
Italy	3.9	2.2	3.3	7.3	13.0	7.5
Ireland	0.2	0.3	3.3	1.6	0.8	1.0
Luxembourg	0.8	1.0	-	0.0	0.8	0.7
Netherlands	0.8	0.2	2.2	1.1	0.6	1.4
Portugal	2.8	0.4	1.1	2.0	2.3	3.3
Sweden c)	11.1	8.1	11.5	10.7	19.8	19.3
Uk	1.1	1.4	3.5	1.2	2.1	3.0
EU-15	2.0	1.2	2.9	3.7	5.0	4.0

a) Including melons and strawberries; b) Including temporary grassland; c) Including non-certified farms.
Bron: Häring, Dabbert et al., 2004.

Table A1.7 Available prices on vegetables, fruit, arable, herbs and other crops and other products in Germany: 1996-2002

Blattgemüse	Hülsengemüse	Wurzel- & Knollengemüse
Bataviasalat - 8er-12er	Bohnen /Busch-	Fenchel
Chicoree - lose	Bohnen /Dicke-	Möhren - gewaschen
Eichenblatt- - 8er-12er	Bohnen /Stangen-	Möhren - ungewaschen
Eissalat - 8er-12er	Erbsen /Mark-	Möhren /Bund- - 500g
Endiviensalat - 8er-12er	Erbsen /Zucker-	Pastinaken - gewaschen
Feldsalat - gewaschen		Radieschen - 10er Bund
Kopfsalat - 8er-12er		Rettich - rot - 4er Bund
Kopfsalat - 12er		Rettich - schwarz
Lollo rossa - 8er-12er		Rettich - weiß
Mangold		Rettich - weiß
Postelein / Portulak		Rote Bete
Radicchio		Rote Bete
Romana- - 8er-12er		Schwarzwurzeln
Spinat - gewaschen		Sellerie /Bleich-
		Sellerie /Knollen-
		Sellerie /Knollen-
		Steckrüben
		Topinambur
		Wurzelpetersilie
Stängelgemüse	Zwiebelgemüse	Kräuter
Rhabarber	Knoblauch	Basilikum
Spargel/ -grün, Hkl. II, 12mm+	Knoblauch	Basilikum
Spargel/ -weiß, Hkl. I/E, 16mm+	Lauch/Porree	Bohnenkraut
Spargel/ -weiß - Hkl. II	Lauchzwiebeln	Dill

	Schalotten Zwiebeln /Gemüse- Zwiebeln/Speise- br, 30-50mm Zwiebeln/Speise- rot, 30-50mm	Kresse Mischbund Petersilie Rucola Schnittlauch Thymian
Fruchtgemüse Auberginen Gurken /Einlege- - 9-12cm Gurken /Land- - Freilandware Gurken /Schlangen- - 400-500g Gurken /Schlangen- - Mini Kürbis - Gelber Zentner Kürbis - Hokkaido Kürbis - Spaghetti Kürbis - Squash	Kohlgemüse Blumenkohl Blumenkohl - 6er-8er Blumenkohl - 8er-12er Broccoli Chinakohl Grünkohl Kohlrabi - 50-70mm Kohlrabi -Superschmelz Rosenkohl - geputzt Rotkohl Spitzkohl Weißkohl Wirsing	Kernobst Äpfel Ø aller Sorten Birnen Ø aller Sorten Steinobst Pflaumen/Zwetschen Steinobst Süßkirschen - div. Sorten Beerenobst Brombeere Erdbeere Heidelbeere Himbeere Johannisbeere - rot Johannisbeere - schwarz Stachelbeere
Speisekartoffeln Frühkartoffeln Ø aller Sorten Frühkartoffeln Ø aller Sorten Kartoffeln Ø aller Sorten Kartoffeln Ø aller Sorten	Brotgetreide Dinkel (Mindestanforderung: Basisfeuchte 15 %, Protein 14 - 15 % i. TS) entspelzt, gesackt	Gerste /Nackt- (Mindestanforderung: Basisfeuchte 15 %, hl > 64 kg) speisef., gesackt Hafer /Nackt- (Mindestanforderung: Basisfeuchte 15 %, hl > 54 kg) speisef., gesackt Roggen (Mindestanforderung: Basisfeuchte 15 %, FZ > 120) speisef., gesackt
Weizen II (Mindestanforderung: Basisfeuchte 15 %, Protein 10 - 11 % i. TS, FZ > 220, Sedi > 25, Kleber 22-26 %) speisef., gesackt speisef., gesackt	milk, beef, pork, lamb, fowl, eggs	fowl: Ente Gans Hähnchen Pute Suppenhuhn Schenkel, Hähnchen Oberschenkel, Pute Schnitzel Hähnchen Pute

Source: ZMP.

Table A1.8 Market prices of conventional and organic products

Germany	Source	Year		VAT	Selling to:	Quantity	1995	1996	1997	1998	1999	2000	2001	2002	2003
Wheat	Soft														
	ZMP	Conventional		E		100 kg	13.23	13.65	12.06	11.34	11.24	11.59	11.16	10.14	
	FADN	Conventional		E		100 kg						12.10	11.60		
	Offermann/Nieberg	Conventional		?		100 kg	13.80	13.50							
	ZMP	Organic	Lose	I	Wholesale	100 kg	-	-	-	-	-	-	27.00	24.00	
	ZMP	Organic	Sacks 25 kg	I	Retail	100 kg	-	60.00	56.00	62.00	61.00	56.00	56.00	59.00	
	FADN	Organic		E		100 kg						24.10	23.80		
	Offermann/Nieberg	Organic		?		100 kg	36.90	41.00							
Potatoes	Main crop														
	ZMP	Conventional		E		100 kg	20.66	6.87	6.26	10.21	12.88	6.14	6.52	8.46	
	FADN	Conventional	all potatoes	E		100 kg						7.00	9.00		
	Offermann/Nieberg	Conventional		?		100 kg	10.40	7.90							
	ZMP	Organic	Lose	I	Wholesale	100 kg	-	38.00	31.00	41.00	28.00	24.00	25.00	30.00	
	ZMP	Organic	Sacks 25 kg	I	Retail	100 kg	-	51.00	42.00	46.00	49.00	50.00	55.00	60.00	
	ZMP	Organic	lose	I	Consumers	100 kg	-	60.00	55.00	57.00	55.00	57.00	61.00	75.00	
	FADN	Organic	all potatoes	E		100 kg						23.40	29.20		
	Offermann/Nieberg	Organic		?		100 kg	53.30	37.70							
Milk	Actual fat contents														
	ZMP	Conventional		E		100 kg	31.50	30.51	29.77	31.18	30.07	31.58	34.54	31.50	
	FADN	Conventional		E	most factory	100 kg						32.52	33.73		
	Offermann/Nieberg	Conventional		?		100 kg	30.00	30.00							
	ZMP	Organic		I	Consumers	100 kg	-	-	-	-	70.00	72.00	76.00	76.00	
	FADN	Organic		E	most factory	100 kg						35.94	37.25		
	Offermann/Nieberg	Organic		?		100 kg	35.00	34.00							

Beef	Heifers or cows														
	ZMP	Conventional		E		100 kg live weight									
	ZMP	Organic	Halves	I	Consumers	100 kg sl. weight	-	-	-	-	535.00	531.00	580.00	619.00	
Pig meat	ZMP	Conventional	Carcass	E		100 kg live weight	139.29	169.57	172.06	118.83	112.48	141.12	167.00	135.00	
	ZMP	Organic	Halves	I	Consumers	100 kg sl. weight	-	-	-	-	384.00	359.00	422.00	454.00	
Eggs	ZMP	Conventional		E		100 items	8.15	8.39	6.72	6.09	5.52	6.84	6.43	6.57	
	ZMP	Organic	L	I	Consumers	100 items	-	-	-	-	23.00	23.00	24.00	24.00	
Denmark															
Wheat	Soft														
	Danish agriculture council	Conventional				100 kg				12.54	12.14	12.51	13.15	11.39	11.43
	Danish agriculture council	Organic				100 kg				19.63	29.46	27.25	25.29	19.85	15.08
Milk	Content 4.2% fat, 3.4% protein														
	Danish agriculture council	Conventional				100 kg			31.27	31.85	31.12	31.89	33.89	33.87	32.84
	Danish agriculture council	Organic				100 kg			40.00	42.14	37.84	38.13	39.31	38.84	37.76
	Slaughtering														
	Danish agriculture council	Conventional				kg sl. weight				1.92	1.73	1.82	1.53	1.51	1.61
	Danish agriculture council	Organic				kg sl. weight				2.23	1.92	1.96	1.87	1.78	1.62
Eggs	Danish agriculture council	Conventional				kg			1.31	1.31	1.19	1.29	1.44	1.35	1.40
	Danish agriculture council	Organic				kg			1.82	1.74	1.93	2.01	2.04	1.95	2.06
Pig meat	Danish agriculture council	Conventional				kg sl. weight			1.54	1.10	1.05	1.34	1.60	1.28	1.12
	Danish agriculture council	Organic				kg sl. weight			2.98	2.48	2.24	2.18	2.65	2.10	1.84