

Farm viability in the European Union

Assessment of the impact of changes in farm payments



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Farm viability is an important issue in the European Union. Farm payments contribute to the viability of farms. This study analyses the differences in farm payments within Europe and analyses the possible impacts of reductions in farm payments on the viability of farms in Europe.

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Preface

Farm viability is an issue of major concern. This study describes the importance of farm subsidies in the EU and analyses the impact of changes in levels of farm subsidies on the viability of farms and regional differences in farm viability.

This research was initiated by the Department for Environment, Food and Rural Affairs (DEFRA). The project was closely monitored by Mr. Richard Gower of the Reform and Agricultural Markets Theme Group. The data was provided by the FADN unit of DG-AGRI of the European Commission. We thank them all for their contribution to this project.

A handwritten signature in black ink, appearing to read 'R.B.M. Huirne', written in a cursive style.

Prof. Dr R.B.M. Huirne
Managing Director LEI

Summary

Farm viability

Farm viability is an issue of major concern. It has a direct impact on land use and an indirect impact on issues such as the socio-economic status of rural areas. Farm viability is determined by the level of incomes but also by the fluctuations of incomes and the level of leverage (use of loans). Incomes in agriculture show strong fluctuations over time due to fluctuations in prices and yields. The level of incomes is also influenced by the amount of farm subsidies.

This study describes the importance of farm subsidies in the EU and analyses the impact of changes in levels of farm subsidies on the viability of farms and regional differences in farm viability. A distinction is made between (1) all farm subsidies, (2) decoupled payments and (3) decoupled payments plus product related subsidies (coupled payments). The primary focus of the study is on the impact of the abolition of decoupled payments of the Common Agricultural Policy (CAP).

It is important to note that the analysis illustrates only the first-order impact of the abolishment of subsidies, and thus gives a 'worst-case' assessment. It does not take into account farmers' behaviour, although the past has shown that farmers do adapt to changes in the Common Agricultural Policy. It also assumes a fixed cost structure and abstracts from changes in factor prices and structural change, all elements which would reduce the impact of reform on farm incomes.

The share of farm subsidies in total agricultural output differs strongly within Europe. In countries such as the Netherlands, Italy and Belgium that share is below or around 10%, in Austria and Slovenia above 30%, in Ireland around 50% and in Finland even above 60%. Besides differences between countries, there are also large differences within countries. These differences are caused by the type of agricultural production, the structure of farms and the production circumstances (such as less favoured areas) per region. In the less favoured areas the level of subsidies is higher than in other regions. Differences also exist between sectors. The level of subsidies in the grazing livestock sector is the highest, followed by the arable sector. The horticultural sector, and to a lesser extent the wine and intensive livestock sector receive the lowest amount of subsidies related to total output.

The current study makes clear that in some countries and regions the viability of farms is more affected by the abolition of decoupled payments than in general in the EU. The viability of farms in Spain, Poland, Lithuania, Latvia, Belgium and Austria is hardly affected, whilst farms in Denmark, Ireland, Sweden and the UK, as well as farms of some types in France, Germany, Hungary and Slovakia are heavily affected. In these countries, abolition of decoupled payments results in a large share of farms with negative farm incomes.

Detailed description of research approach

This research is based on data of the European Farm Accountancy Data Network (FADN). The analyses focus on the EU-25. The primary aim of FADN is to gather data from farms for the determination of incomes and business analysis of agricultural holdings (farms). FADN is an important data source for the evaluation of the income of farms and the impacts of the CAP.

This study looks at the shortfall risk of farms after a policy change with respect to agricultural subsidies. Shortfall risk is defined as the percentage of farms in a region or in a country that will have a farm income of less than zero due to a policy change. The impact of the described change in farm payments on farm incomes is simulated. To establish the financial viability of a farm, after the described change in subsidy payments, farms are categorised in five categories. These categories are:

- Family farm income is positive after policy change, a distinction is made between:
 - Family farm income is higher than opportunity costs of own labour and own assets (category 1). They are in a position to save money for investments in the farm and have good prospects;
 - Absolute level of family farm income is above zero (category 2). These farmers have rather good prospects;
- Family farm is negative after policy change, but postponing depreciation is an option (category 3). These farmers have difficulties to modernise and to adjust the farm;
- Family farm income cannot be compensated with postponing depreciation. Unless the farmer has liquidities to compensate for the negative income, financial distress will be the result (category 4). These farms have rather bad prospects;
- Family farm income is already negative before change; the change worsens the situation (category 5). These farms have a weak position and bad prospects. Many of these farmers will have to terminate the farm activities.

Farmers in categories 3 and 4 are most clearly affected by the reduction of subsidy payments. These farms had a positive income before the reduction of the CAP payments and now end up in a situation with a negative income or even a negative cash flow. Farms in category 1 and 2 are also affected by the reduction of payments but still show positive incomes. Category-5 farms obviously depend on non-farm income sources, or are likely to choose to leave the sector even under the reference situation.

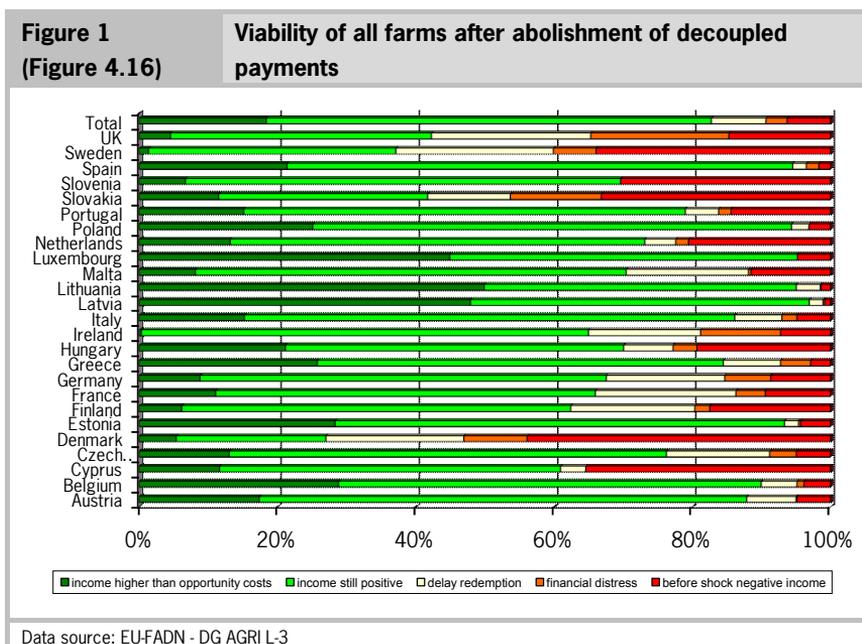


Figure 1 shows that in this worst-case analysis, about 11% of all farms in EU-25 belong to the categories with a swing from positive to negative incomes due to the abolishment of direct payments. And only about 3% of this 11% have a negative cash flow. Almost 83% of farms in the EU-25 still have a positive income after the abolishment of decoupled payments (of which 65% of the farms belong to the second category with positive incomes but less than opportunity costs and about 18% of the farms belong to category 1 with incomes higher than opportunity costs). There are however huge differences between countries and between different types of farming.

Figure 2 gives a more detailed regional analysis of the impact of the abolition of the decoupled payments. The figure shows the percentage of farms with a positive income after the abolishment. It is not the percentage of all farms but of those farms with a positive income before the policy measure. The countries that are largely unaffected are Spain, Poland, Italy, Austria, Belgium, Latvia and Lithuania; whereas a large share of farms in France, UK, Denmark, Germany, Sweden and Finland are heavily affected. There are strong regional differences per country. In France and Germany in particular there are large differences between regions. These differences depend on the regional specialisation and the (financial) structure of farms.

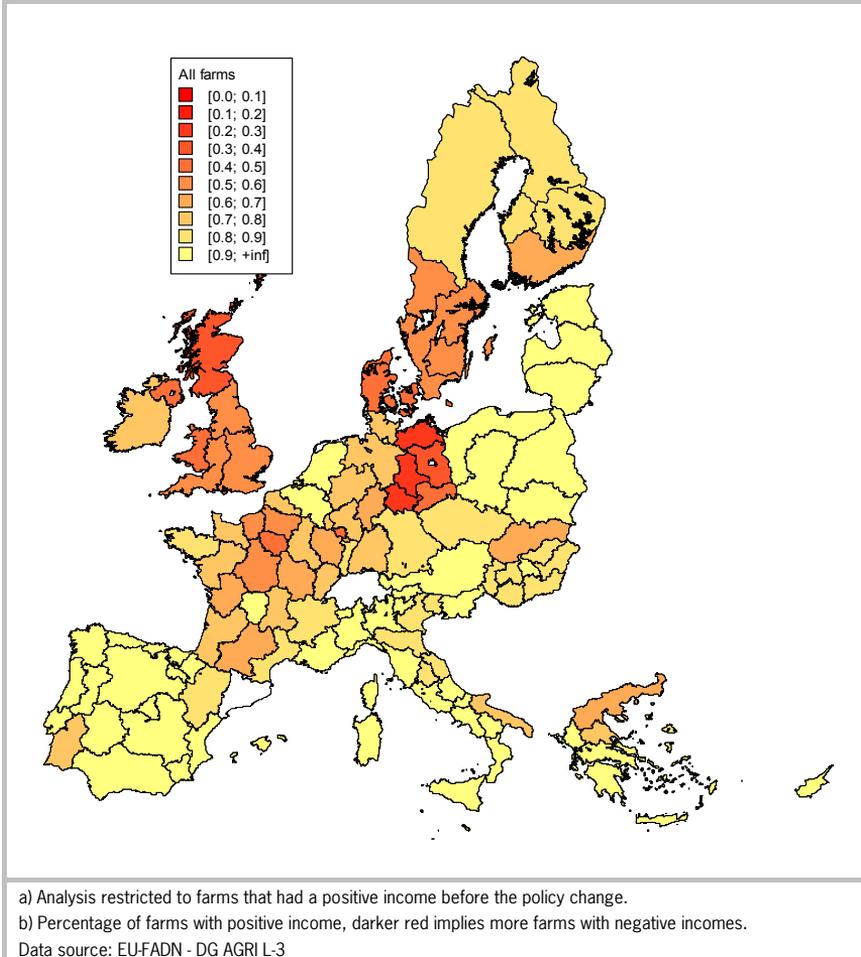
These results are sensitive to the level of prices in the data period (2004-2006). Sensitivity analysis shows that if prices rise, as the OECD and others expect, farm viability improves. A price rise of 20% for output and intermediate consumption results in 15% of farms graduating to a higher income group. This is largely a shift from 'farm income larger than zero' to 'farm income larger than opportunity costs'. It should be noted that a substantial number of farms move from negative to positive income in the countries most exposed to the elimination of decoupled payments (UK, Denmark, France, Germany and Sweden).

There are clear differences in the impact of the abolition of decoupled payments between types of farming. For example, although almost 90% of dairy and mixed farms, and more than 60% of field crop farms, have positive incomes following payment abolishment, a lower percentage - only about 14% - achieve income levels above opportunity costs. Grazing livestock farms do better with slightly less than 20% belonging to this category 1. In the non-CAP-related farms (horticulture, wine, permanent crops and intensive livestock) a much higher percentage - about 40% - achieve incomes higher than opportunity costs, and almost 90% of these farms have positive incomes. It is thus expected that farmers of these CAP-related farms will adapt in order to cope with the reduction of payments.

These CAP-related farms - farms with the highest level of subsidies: arable, dairy, other grazing cattle and mixed - comprise the majority of farms and they use a very large part of the agriculture land in the EU (95%). Therefore, if they do not adapt, the deterioration of the viability of these farms resulting from the abolition of the (decoupled) subsidies may have a serious negative impact on the structure of the farming sector in some rural areas.

Figure 2
(Figure 4.17)

Viability of all farms after abolishment of decoupled payments (farms with positive income before abolishment)



The analyses show that problems with viability are focused in particular areas. The problems associated with non-viability (such as land abandonment) could be addressed by targeted solutions. Furthermore the analyses show that only a minority of farms shift from being viable to non-viable when payments are abolished, it would be possible to keep all currently viable farms afloat with more targeted payments than currently apply under Pillar 1.

Adaptation of farmers

As already mentioned, the analysis only illustrates the first-order impact of the abolishment of subsidies. It does not take into account the changes in the behaviour of farmers, although it has been shown that farmers do adapt to changes in the Common Agricultural Policy. Changes in CAP will affect investments, farming practices - changing the products produced, production methods or changing the scale of production in order to benefit from economies of scale - and decisions to continue the farm. An abolishment of farm subsidies will also have an impact on rents, land prices and milk quota values. Although the market value of land is determined by multiple factors, research has shown that CAP subsidies do have an impact on land values, but the impact varies across countries and appears relatively modest compared to other factors, especially in those countries where land prices are high. Given this diversity in land markets it is likely that an abolishment of agricultural subsidies will have varying effects in different countries.

Abolishment of direct payments will affect structural change of the agricultural sector. There is some evidence that single farm payments constrain farm exit and increase part time farming. Abolition of payments will thus result in some farms choosing to leave the industry - the pressure will especially be on less efficient farms and this will provide possibilities for other farms to expand (especially in areas where there is a strong competition for the production factors land and labour). An abolishment of payments will speed up the process of structural change.

The abolishment of direct payments means that income from farming will become less stable: the subsidy payments provide a stable portion of farm income. Since farmers lose a stable source of income they might choose less risky alternatives in their agricultural activities and in their investments, as economic theory assumes that lower levels of wealth results in less willingness to accept risk. This could both result in lower levels of investments and in a choice for less risky (and less profitable) crops.

Other important considerations in interpreting results

As mentioned above, the analysis looks only at first-order effects. The focus is on changes brought about by decoupled payments, since these are assumed to be less distortive of production decisions and should therefore have a limited impact on the cost structure of farms. Changes in coupled payments can on the other hand have a more distortive impact on the production incentives, and

changes in the production plan immediately results in changes in the direct costs of a farm. Furthermore, research shows that a very large proportion of coupled payments leaks away into input costs; only a small amount is actually translated into income. The analysis for coupled payments is therefore likely to significantly overestimate the effect of abolishment and is highly uncertain. Less distortive effects are expected with the abolishment of decoupled payments, although there are some indirect effects on the risk profile of farms.

The results are partly affected by the extent of full decoupling as applied at the Member State level and the data set used in this research (up to 2006). Countries such as France and Spain maintained a high degree of coupling. Countries such as Poland and Czech Republic maintained specific sugar payments. Dairy decoupling in Greece, The Netherlands, Austria and Portugal only took place in 2007. The results for dairy farms are therefore too optimistic for these countries. In these exceptional cases, the results of the abolishment of decoupled payments plus product related subsidies as shown in the report give a better indication of the dependency on farm payments.

FADN does not cover all the farms in the European Union but only those, which due to their size could be considered 'commercial'. Each country has a specific threshold in economic size (expressed in economic size units). Farms larger than the threshold are considered to be commercial. This study focuses on the viability of these commercial holdings. It is important to note that abolishment of farm payments will also affect the viability of non commercial holdings. In new member states in particular the share of non commercial holdings is large (see appendix 4). Due to a lack of data it is difficult to predict the impact of an abolishment of payments on the viability of these farms.

Finally, FADN is a well-recognised tool to monitor income and situations of low farm income; however, it is criticised for not providing information on non-farm income and household income (restricting itself to agricultural income). Due to the lack of information on non-farm resources it is difficult to predict what will happen on a farm when it ends up in financial distress. The presented analysis focusses on the viability of farms based on their agricultural profitability, which is only part of the picture. It cannot provide a full impact assessment on the farmers' income or poverty situation of farmers. Insight into off-farm income and off-farm wealth are a prerequisite to obtain a full comprehension of the income situation of farmers and the continuity perspectives of farms. Different tax systems between countries also still affect the viability and continuity of farms - for example the extent to which farms can balance tax payments in good and bad years and conditions under which a farm successor can take over the farm (Veen et al., 2007).

1 Introduction and problem statement

1.1 Introduction

Farm viability is an issue of major concern. It has a direct or indirect impact on issues such as food security, the socio-economic status of rural areas and on land use. Farm viability is determined by the level of incomes but also by the fluctuations of incomes and the level of leverage (use of loans). Incomes in agriculture show strong fluctuations over time due to fluctuations in prices and yields. Fluctuations in yields are caused by natural conditions such as draught, heavy rain, frost and animal diseases and such yield fluctuations lead to even stronger price fluctuations¹ (in non-regulated markets). Another source of risk for farm incomes is an institutional risk, changes in farm policies affecting the level of farm subsidies. Farm subsidies do not so much influence fluctuations of incomes (although there are some indirect effects) but have a substantial effect on the level of incomes. The extent to which farms in Europe depend on farm subsidies differs strongly, depending on region, type of farming and the structure of farms.

1.2 Problem statement

The dependency of farms on governmental subsidies differs strongly. Although there are similar trends in the farming sector in all countries of the EU, there are still large differences. Farms in the European Union have shown a strong structural development in the last decades. In general, farm size has increased to achieve economies of scale; production has become more specialised with a continuous reduction in labour input and an increase in capital. The restructuring of agriculture has resulted in a concentration of production. Differences in local production circumstances (land quality, weather conditions, water supply) but also economic circumstances (such as cost of production factors, especially land and labour and distance to markets and processors) and socio-economic circumstances (economic viability of rural areas and unemployment), have created or sustained different production structures in different areas in Europe. In

¹ Prices can fluctuate stronger due to a delicate balance between demand and supply and because demand elasticities for agricultural commodities are low. At farm level the volatility of yields are larger than the volatility of prices, because prices are more correlated among farms than yields.

addition to these factors national fiscal and social security policies influence changes in farm structure; in Central and Eastern Europe the transition to the western economic system and to EU membership played a major role. Changes in policies on farm subsidies could affect these areas to different extents. This study aims at:

- Describing the importance of farm subsidies in the EU;
- Analysing the impact of changes in levels of farm subsidies on the viability of farms and the regional differences in farm viability.

1.3 Structure of the report

Chapter 2 provides a description of the methodology of this research and a description and brief evaluation of the data source used. Chapter 3 gives an outline of the current system of agricultural subsidies in Europe. Chapter 4 analyses the possible impact of changes in policies on farm subsidies on the viability of farms. These analyses are based on simulations of policy changes at an individual farm level. Furthermore the sensitivity of the results is analysed. Aside from the simulation results, the indirect impacts of changes in farm subsidies will be discussed. Chapter 5 gives a summary of the results and a discussion of the findings.

2 Methodology and data source

2.1 Introduction

This research is based on European Farm Accountancy Data Network data. The analyses focus on the EU-25. In section 2.2 the FADN source is briefly described and some advantages and disadvantages of this source are listed. Section 2.3 gives an outline of the methodology for the simulations of policy changes as described in chapter 4.

2.2 Data source

The European Farm Accountancy Data Network (FADN) was established in 1965 (DG-Agri, 2002). The primary aim of FADN is to gather data from farms for the determination of incomes and business analysis of agricultural holdings (farms). FADN is important to evaluate the income of farms and the impacts of the Common Agricultural Policy.

FADN consists of an annual survey carried out by the Member States of the European Union. Every year data is collected from a sample of the farms in the European Union. Farms are selected to take part in the survey on the basis of sampling plans established at the level of each region in the Union. The survey does not cover all the farms in the Union but only those, which due to their size could be considered 'commercial' (see appendix 4). Each country has a specific threshold in economic size (expressed in economic size units). Farms larger than the threshold are considered to be commercial. In some national FADN's additional criteria based on a minimal labour input are applied.

The yearly sample analysed in this research consists of approximately 80,000 holdings (EU-25). The information collected, for each sample farm, concerns approximately 1,000 variables. These variables include aspects such as:

- Physical and structural data: such as location, crop areas, livestock numbers, labour force;
- Economic and financial data: such as the value of production of the different crops, stocks, sales and purchases, production costs, assets, liabilities, production quotas and subsidies, including those connected with the application of CAP measures.

The advantage of FADN is that it is a harmonised data source with micro-economic data on the structure and the economic performance of farms. Harmonised means that the bookkeeping principles are the same in all countries. Micro-economic data provides the advantage that detailed information is available on individual holdings, which provides the opportunity to conduct analysis on a holding level and gives insight in the distribution and differences in incomes between holdings. It also makes it possible to analyse the effect of a policy measure on different objectives such as income, environmental performance, and budget, et cetera.

Another aspect of FADN is that it is a sample. This is not so much a disadvantage but one has to take this aspect into account by interpreting results. The values given in this report that are based on FADN are estimations. Some fluctuations can therefore be explained by the sampling methodology.

Another important aspect of FADN data is the fact that it covers agricultural activities on farms. It also collects information on a limited set of non-agricultural farming activities. This leads to an important distinction: income from farming versus total family income. A farmer can have income from non-agricultural activities, be it on or outside of the farm. This outside income and the income from farm activities together determine the disposable income of a farmer. This distinction is important to understand investment behaviour, survivability of farms, et cetera. However, the FADN currently limits its data collection to agricultural and a limited set on-farm, agriculture related activities (such as forestry, contract services). This implies that certain effects of the policy changes in the recent past (e.g. a shift to non-agricultural activities) cannot be analysed with European data sets (Abitabele, 1999; Hill, 1996).

Incorporated into the founding legislation of FADN is a stipulation that all data relating to individual farms received by the Commission are to be treated with utmost confidentiality. This means that information relating to individual farms cannot be disclosed. In this report no numbers will be presented if the statistic is based on a group of less than 15 observations.

2.3 Methodology

There are large differences between farms, not only in the agricultural activities but also in the organisational and financial structure of farms. Due to these differences, farms differ strongly in the possibilities to cope with policy changes. This study looks at the shortfall risk of farms after a policy change. Shortfall risk will be defined as the percentage of farms in a region or in a country that will

have a farm income of less than zero due to a policy change. The farms with a positive income will be further classified based on the distinction between including and excluding opportunity costs. Cost of own labour is calculated as the average of paid labour in a specific region (Niemi and Ahlstedt, 2007), cost of own assets is calculated as a country specific interest percentage on own equity. The country specific interest rate is based on the interest rate of 10 year government bonds (source: Eurostat). Government bonds are considered to be a rather defensive investment opportunity with low risk.

The analysis focuses on farms that were in the sample for three succeeding years 2004-2006. Based on the (financial) structure of the farm, an analysis was made how robust a farm would be to survive a policy change consisting of a partly or complete abolishment of agricultural subsidies. In order to show the robustness of the farm itself, the assumption was made that the policy change does not alter the cost structure of the farm.

The impact of a change in farm payments will be simulated. To establish the financial viability of a farm, after a change in subsidy payments, farms will be categorised in five categories. These categories are:

- Family farm income is positive after policy change, a distinction will be made between:
 - Family farm income is higher than opportunity costs (category 1);
 - Absolute level of family farm income is above zero (category 2);
- Family farm is negative after policy change, but postponing redemption (assumption: redemption equals depreciation) is an option (category 3);
- Family farm income cannot be compensated with postponing redemption. Unless the farmer has liquidities to compensate for the negative income, financial distress will be the result (category 4);
- Family farm income is already negative before change; the change only worsens the situation (category 5).

Opportunity cost for own labour and own assets will be included in the analysis.

- Cost of own labour is calculated as the average of paid labour in a specific region.
- Cost of own assets is calculated as fixed percentage of own equity (based on 10 year government bonds (Eurostat)).

Described from the perspective of the farmer these categories can be more clearly described as:

- *Category 1*
farming provides a positive income higher than opportunity costs. Besides a fair reward for the farmers' labour input and capital input, there is still additional income. This additional income provides opportunities for further investments;
- *Category 2*
farming provides a positive income, but the reward for the farmers' input of labour and capital is less than he/she could earn in other economic activities;
- *Category 3*
farming provides no positive income, but it still provides a positive cash flow. Necessary replacement investments can only be partially made;
- *Category 4*
farming provides no positive income and no positive cash flow. Whether a farm can survive depends on off-farm income, (off-farm) wealth and access to credits;
- *Category 5*
farm income has been negative during the reference period before the reduction of payments. Reduction of payments only worsens the situation;

Farmers in categories 3 and 4 are most clearly affected by the reduction of subsidy payments. These farms had a positive income before the reduction of payments and now end up in a situation with a negative income or even a negative cash flow. Farms in category 1 and 2 are also affected by the reduction of payments but still show a positive income. Category 5 farms obviously depend on non-farm income sources, or have a high chance of being abandoned under the reference situation.

To exclude the impact of year to year fluctuations within farms, the simulation of a change in all subsidies farmers receive is based on a 3-year average. Only the farms that have been included in the sample for all 3 years are included in the analysis. The level of decoupled payments is not based on a 3-year average, but on the values in the year 2006. Due to differences in the implementation year (see next chapter), the value of decoupled payments in 2006 provides a better indication of the impact.

The calculations are conducted at level of individual farms. Results will be presented at group level to comply with the privacy guidelines.

3 Subsidies in European agriculture

3.1 Introduction

Farm subsidies are an important aspect of the Common Agricultural Policy (CAP). During the last decades the system has been reformed a couple of times in order to decrease market distortions and improve the effectiveness in achieving policy objectives. In section 3.2 the current system and recent changes are described. The current system and possible future changes are the basis for the simulation in chapter 4.

3.2 System of subsidies

In the analyses to be presented in chapter 4 we focus on the impact of the abolishment of decoupled (direct) payments. These payments consist of single farm payments, single area payment (in case of new member states) and additional aid due to modulation.

The system of decoupled (direct) payments is the result of the changes in the CAP during the last twenty years. Decisions for different products, e.g. cereals, oilseeds and protein crops, sugar beet, cattle and milk, to decrease the level of market and price support were accompanied with compensation premiums for the farmers. These premiums were linked to the volume of production (acreage of crops, number of cattle, dairy quota, et cetera). So the premiums could have an impact on the decisions of farmers on the use of land, investments, et cetera and prevent the desired improvement of the orientation of farmers on the market. In line with the agreements in the framework of W.T.O. (World Trade Organisation) the EU decided in 2003 to decouple the premiums in the years ahead. In the period 2004-2007 most of the premiums were decoupled. For some products exemptions on the principle of decoupling were allowed. The EU decided later on, in 2008 in the frame of the 'Health Check', to decouple nearly all premiums in the period till 2012.

In this report we distinguish the following categories of payments:

- *Decoupled* payments
single farm payments and single area payments;

- *Decoupled payments plus product related subsidies*
decoupled payments plus subsidies on crops (including set aside premiums), subsidies on livestock and animal products;
- *All farm subsidies*
the previous category plus other subsidies received (in particular for activities relating to forestry and tourism, environmental and forestation programmes, structural aid), environmental subsidies, LFA subsidies, other rural development payments, subsidies on intermediate consumption, subsidies on wages, rents and interests.

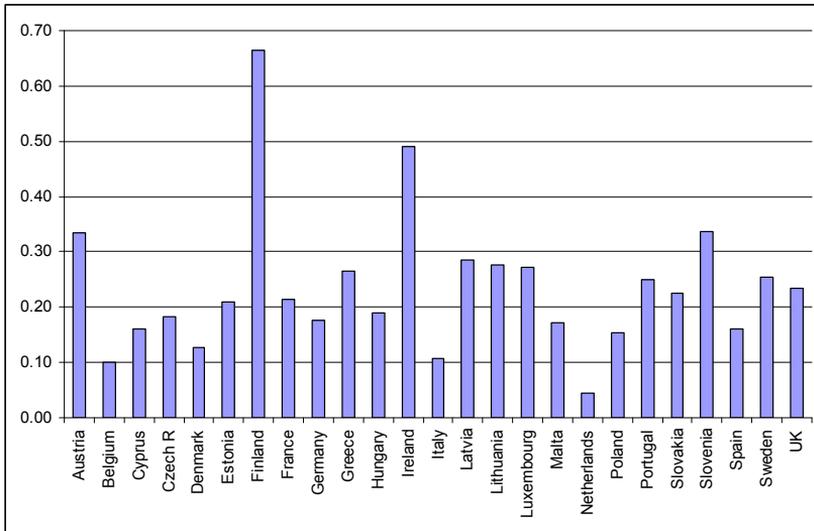
The category of decoupled payments plus product related subsidies is included in the report to take into account the differences in the extent to which countries decoupled their payments (EU, 2008). Countries such as France and Spain are countries that kept high a degree of coupled payments. Countries such as Germany, Ireland, Luxembourg and UK implemented a full or high degree of decoupling. Countries such as Austria, Belgium, Denmark, the Netherlands, Portugal, Finland and Sweden kept some decoupling especially related to suckler cow premiums, slaughter premiums and sheep and goat premiums.

3.3 Importance of farm subsidies in the European Union

Due to the design of the subsidy system and the different structures of agricultural production in different countries, the level of subsidies as a share of total output differs strongly within Europe. Figure 3.1 provides an overview of the importance of agricultural subsidies in the total output value¹ of agriculture on farms in FADN. Due to sample characteristics of FADN and the applied thresholds in the definition of farms, the level of subsidies can differ slightly from other statistics, such as Economic Accounts of Agriculture.

In comparing countries, huge differences can be observed. In the Netherlands the amount of subsidies on FADN farms is less than 5% of the total output value. Also countries such as Italy, Denmark and Belgium show a share of subsidies far below the European average. On the other side countries such as Finland, Ireland, Austria and Slovenia have a very high share of agricultural subsidies.

¹ Total output as defined in the FADN system.

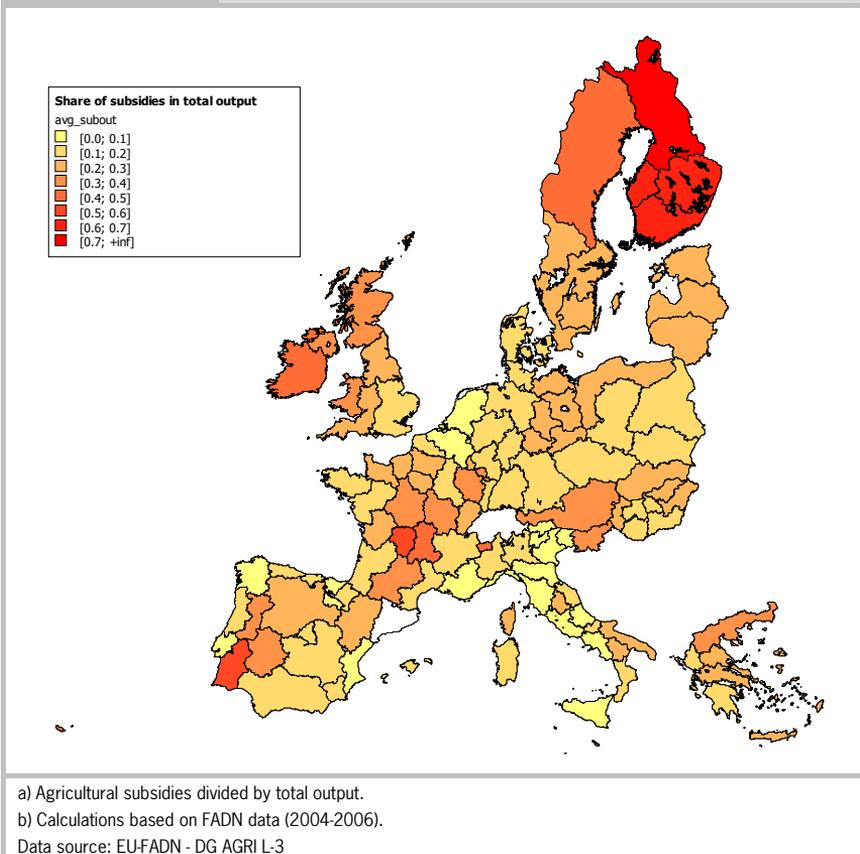
Figure 3.1**Share of all farm subsidies in total output per country on FADN farms**

a) Agricultural subsidies divided by total output.

b) Calculations based on FADN data (2004-2006).

Data source: EU-FADN - DG AGRI L-3

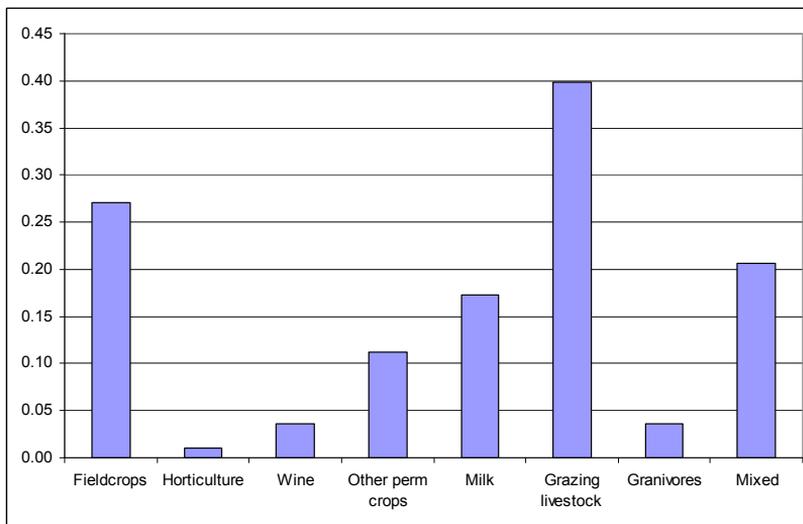
Figure 3.2 provides a more regionalised overview of the importance of farm subsidies. Although there are clear differences between countries, figure 3.2 also shows that there are also large differences within countries with respect to the level of subsidies. These differences can be explained by the type of agricultural production, the structure of farms and the production circumstances (lfa).

Figure 3.2**Share of all farm subsidies in total output per region on FADN farms**

Differences between countries can be explained by taking into account the types of agricultural subsidies and the agricultural production in a country. Figure 3.3 shows the share of agricultural subsidies in total output for the various types of farming. The level of subsidies in the grazing livestock sector is the highest. The second highest level of subsidies can be found in the arable sector. The horticultural sector, and to a lesser extent the wine and intensive livestock sector receive the lowest amount of subsidies. The figures displayed in figure 3.3 portray the EU-25 averages. There are still large differences between countries due to structural differences (e.g. pig farms in Denmark tend to produce a large part of their requirements in feed; therefore they receive subsidies for crop production).

Figure 3.3

Share of all farm subsidies in total output per type of farming on FADN farms



a) Share of subsidies in different types of farming in the EU (2004-2006).

b) Types of farming as defined by the EU FADN system.

c) Calculation based on the field of observation as defined in the FADN system, commercial farms.

Data source: EU-FADN - DG AGRI L-3

4 Impact of changes in farm payments on the viability of farms

4.1 Introduction

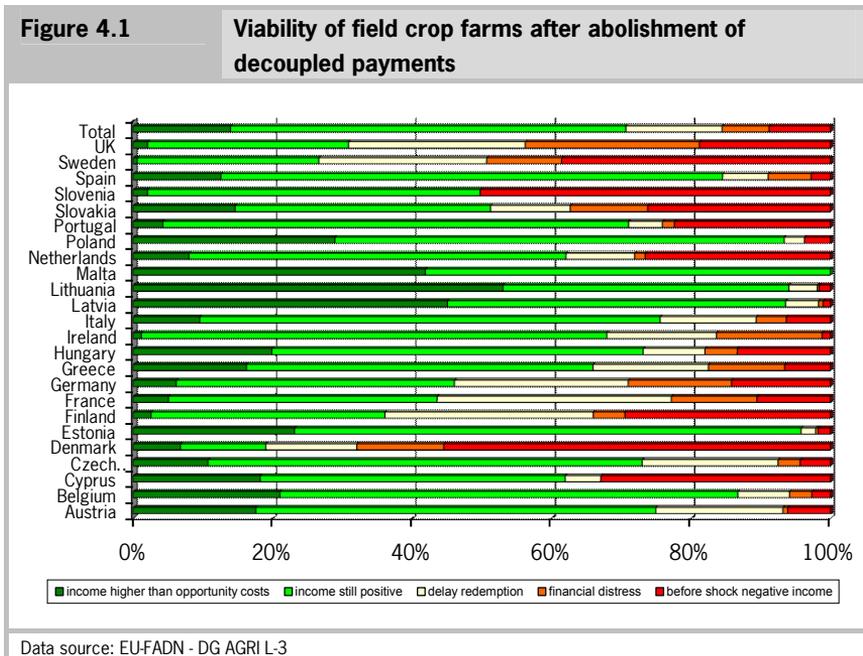
This chapter describes the results of the simulations which were run to estimate the impact of an abolishment of agricultural subsidies. The effects vary strongly because they are dependent on the type of agricultural production. Therefore the results are presented per type of farming. Section 4.2 describes the field crop farms, section 4.3 the dairy farms, section 4.4 the grazing livestock farms, section 4.5 the mixed farms and section 4.6 the other farms,

The figures in this chapter present the results of the impact of the abolishment of agricultural subsidies per type of farm per member country. The results on the viability of farms are given in a subdivision of the farms in five categories, based on the description in chapter 2.

1. Farms in the category with incomes still higher as opportunity costs have good prospects for the future. They are in the position to save money for investments in the farm.
2. Farms in the category with incomes still positive cannot provide a full compensation of costs of labour and capital of the farmer and his family. These farms have rather good prospects.
3. Farms in the category with negative incomes make it necessary to delay depreciation may have problems on the longer run. These farmers have difficulties to modernise and to adjust the farm.
4. Farms in the category with negative incomes, and no adequate opportunities to postpone redemption, need an improvement of income to continue on the longer run. These farms have rather bad prospects.
5. Farms in the category with already a negative income before the abolishment of the payments are in a weak position with bad prospects. Whether financial distress on farm in this category leads to the bankruptcy of the farm or the financial necessity to finish the activities of the farm depends on many other factors such as the farm wealth, off-farm wealth, off-farm income, et cetera.

4.2 Viability of field crop farms

The impact of abolishment of decoupled payments for specialised field crop farms is displayed in figure 4.1. Field crops include a wide range of crops such as sugar beet, potatoes, wheat, barley, maize, rye, colza, sunflower, et cetera. There are clear differences in the impact of policy changes. Figure 4.1 shows that after the abolishment of decoupled payments approximately 14% of the crop field farms belong to category (1), with good prospects, and about 6% is in category (5), with bad prospects. A large part of the field crop farms in the EU is in category (2) with rather good prospects. Denmark, Finland, France, Germany, Ireland, Portugal, Slovenia, Sweden and the UK are the member countries with the lowest share of field crop farms with good prospects after the abolishment. On the other hand some countries have only a small part of field crop farms in category (5) with bad prospects, e.g. the Baltic States, Spain and Poland. Countries with a relatively high proportion of field crop farms in the categories (4) and (5), with rather bad and bad prospects, are Denmark, Finland, Slovenia, Sweden and the UK.



On field crop farms the share of (all) subsidies in total output is relatively high, more than 25% (figure 3.2). A part of these subsidies are the decoupled payments. Abolishment of all subsidies has a more severe impact on the income position of field crop farms than (only) the abolishment of decoupled payments (see figure A2.1 in comparison with figure 4.1). The number of farms with a positive income drop from 70% (in case of abolishment of coupled payments) to less than 60% (in case of abolishment of all subsidies).

About 20% of the field crop farms in the EU are in categories (3) and (4). These are the farms that had a positive income before the policy change, but have a negative income after the abolishment of the decoupled payments. These farmers will have increased financial problems resulting from the abolishment of direct payments and may on the longer run discontinue their production. Finland, France, Germany, Ireland, Sweden and the UK present many farms in these categories. Reasons for this are the dependency on direct payments combined with the way farms are financed (solvability of the farms, level of loans and interest payments).

Figure 4.2 gives a more detailed regional analysis of the impact of the abolishment of the decoupled payments. The figure shows the percentage of farms with a positive income after the abolishment. These percentages are not expressed as the percentage of all farms but of those farms with a positive income before the policy measure. For example, the number of farms with a positive income in the Netherlands who will still have a positive income after the abolishment is high (around 90%). This number is not affected by the high number of almost 30% of farms that already had a negative income before the abolishment. So, although the number of farms with negative results is substantial, the number of farms that will end up with a negative income due to the policy measure is limited. The figures in the map for the other regions/countries should be interpreted in a similar way. The countries with a large share of farms heavily affected by the abolishment of decoupled payments are France, UK, Denmark, Germany, Sweden and Finland. The figure shows that there are still strong regional differences in countries such as Germany, France and Finland. Figure A3.1 in appendix A3 shows a similar map but with the share of farms with a positive cash flow. The farms with negative cash flows will have problems in the short run. France, Germany, Denmark and the UK have a relatively high share of these farms.

Given the analyses based on the (FADN) results of the years 2004-2006 it has to be underlined that with the higher prices of cereals in the years 2007 and 2008 the incomes and prospects of (many) field crop farms may have been improved.

Figure 4.2

Impact of abolishment of decoupled payments on field crop farms (farms with positive income in reference situation)

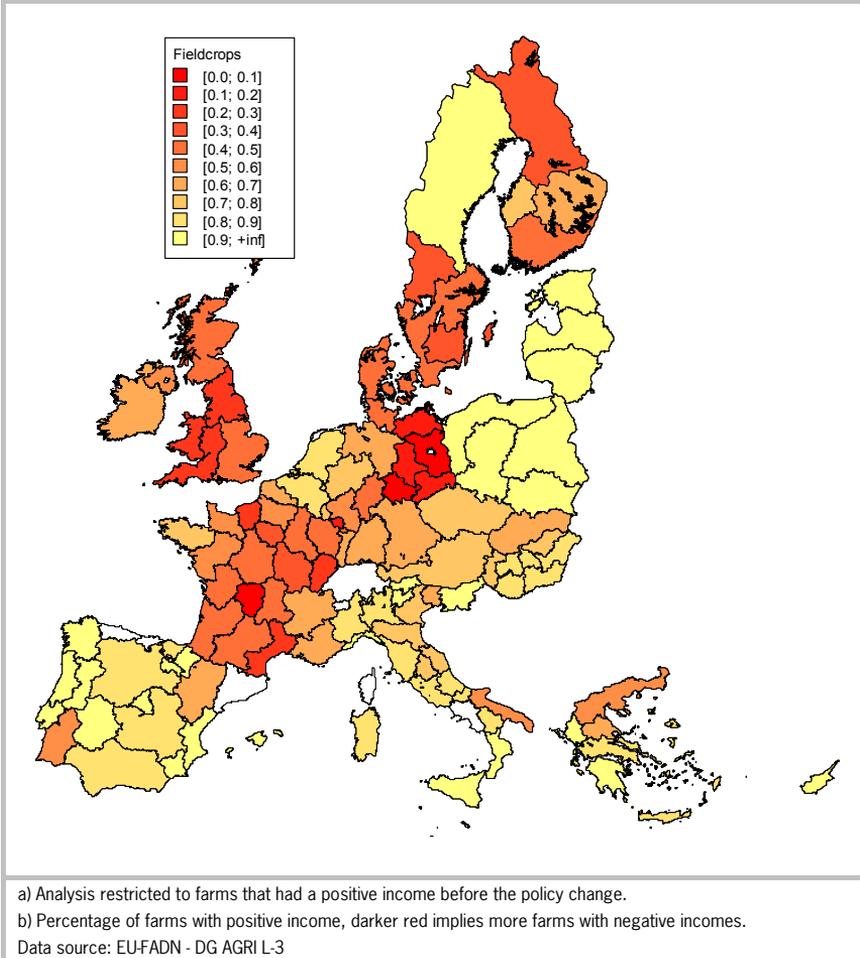
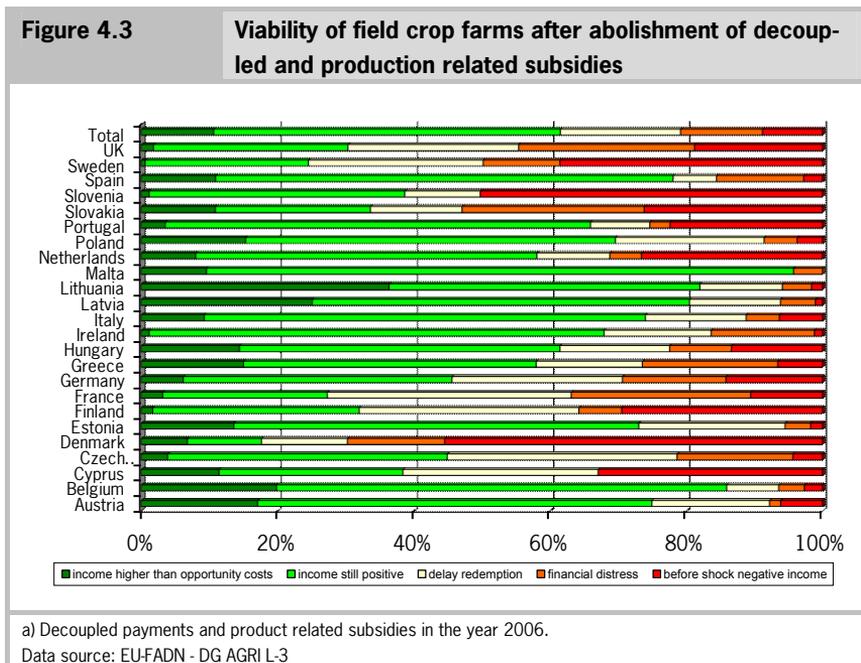


Figure 4.3 shows the results of an abolishment of decoupled payments and the production related subsidies for field crop farms (see section 3.2 for a definition). The viability of farms is weaker than in figure 4.1. UK, Sweden, Slovakia and Denmark still belong to the countries with a small percentage of farms with positive incomes. Countries such as Czech Republic, Poland, Slovenia, France and Cyprus have a much lower percentage of viable farms (in comparison to 4.1) due to the abolishment of product related subsidies. This is due to the

amount of decoupling applied. Countries such as France and Spain maintained a high degree of coupling. Countries such as Poland and Czech Republic maintained specific sugar payments.

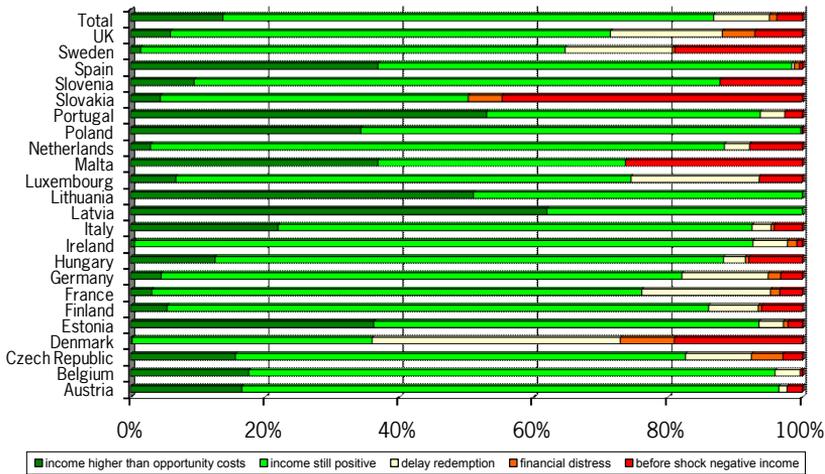


4.3 Viability of dairy farms

On dairy farms the share of (all) subsidies in total output is approximately 18% (figure 3.2). Denmark, France, Germany, Ireland, The Netherlands, Slovakia and Sweden are the member countries with the lowest share of dairy farms with good prospects after the abolishment (figure 4.4). Countries with a relatively high proportion of dairy farms in the categories (4) and (5), with (rather) bad prospects, are Denmark, Malta and Slovakia and to a lesser extent Slovenia and Sweden.

Figure 4.4

Viability of dairy farms after abolishment of decoupled payments



Data source: EU-FADN - DG AGRI L-3

Abolishment of all subsidies has a more severe impact on the income position of dairy farms than the abolishment of (only) decoupled payments (see figure A2.2 in the appendix in comparison with figure 4.2). The share of farms with a positive income is around 75% with a complete abolishment of subsidies. Figure 4.4 shows that after the abolishment of decoupled payments approximately 14% of the dairy farms are in category (1), with good prospects, and about 4% are in category (5), with bad prospects. A large part, even more than 73%, of the dairy farms in the EU is in category (2) with rather good prospects.

Slightly less than 10% of the dairy farms in the EU are in categories (3) and (4). These are the farms that swing from a positive income to a negative income following the change in policy. Denmark, France, Germany, Luxembourg, Sweden and the UK present rather many farms in these categories. In Germany and Denmark in particular there is a substantial share of farms with a deteriorated viability due to the abolishment of decoupled payments. Also France and the UK have regions which are seriously affected (see figure 4.5). Dairy decoupling in Greece, the Netherlands, Austria and Portugal only took place in 2007. The results for dairy farms are therefore to optimistic for these countries.

Given the results based on the FADN data of the years 2004-2006 it has to be underlined that with the higher prices of dairy products and milk in the years

2007 and a part of the year 2008 the incomes and prospects of (many) dairy farms may have improved. The severe fall of the dairy and milk prices in 2008/2009 however has in turn severely weakened the financial position of many dairy farmers. Furthermore the results should be interpreted with care, because of the decoupling of dairy payments in 2007 in several member states.

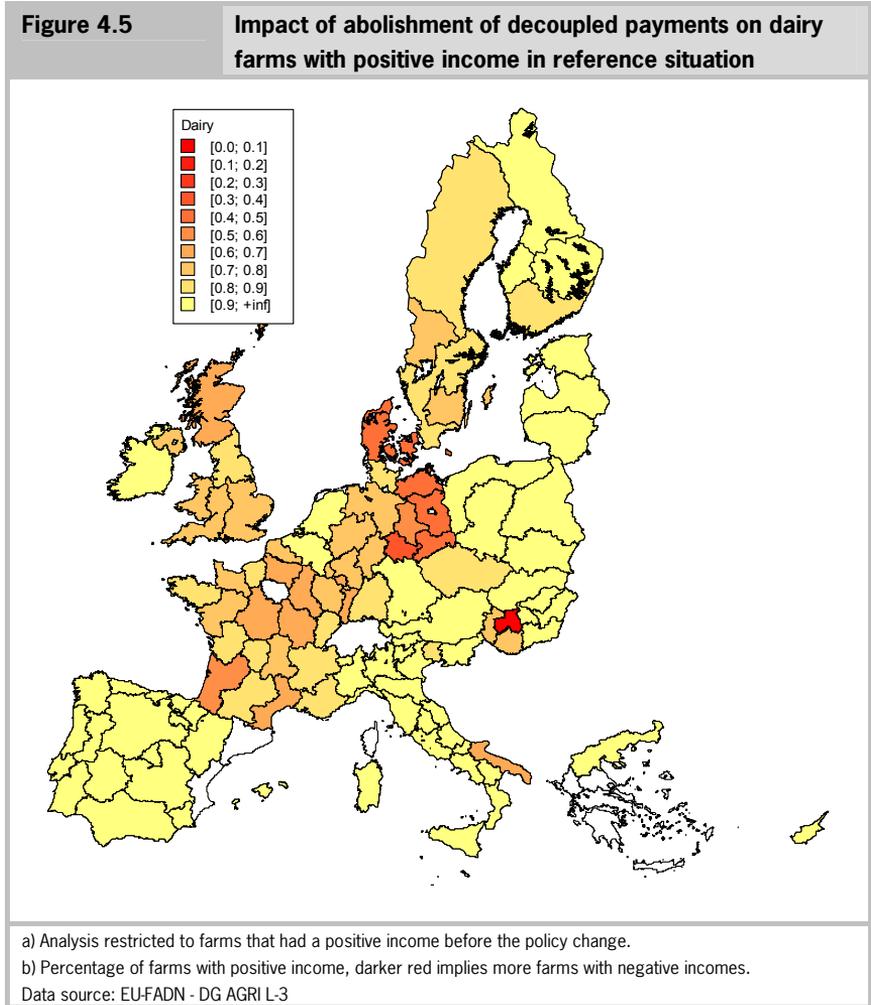
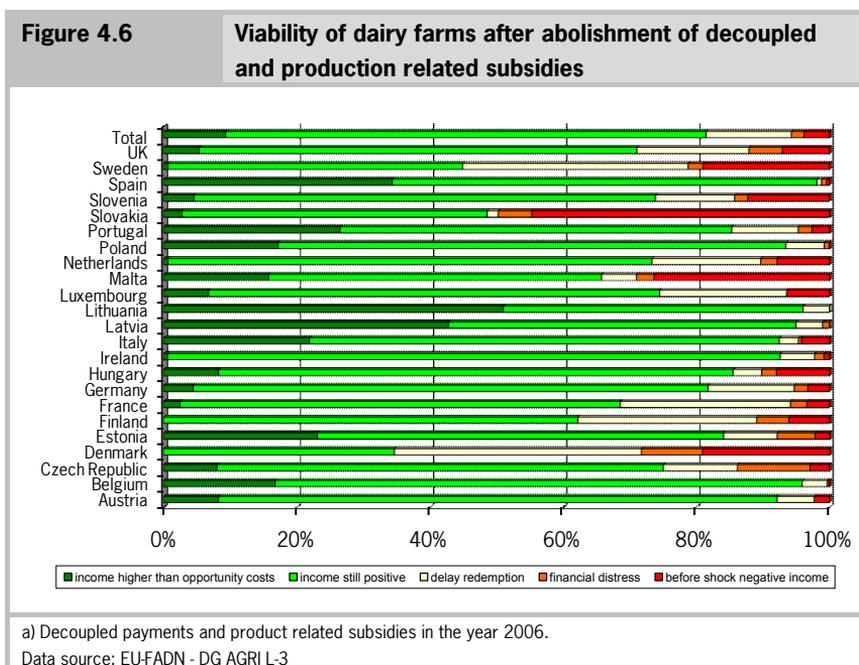


Figure 4.6 shows an additional analysis in which not only decoupled payments but also the existing production related subsidies for dairy farms are

abolished. The viability of farms shows a mixed picture compared to figure 4.4. Slovakia and Denmark still belong to the countries with a relatively small percentage of farms with positive incomes. Sweden, Slovenia, the Netherlands, France and Finland have a much lower percentage of viable farms (in comparison to 4.4) due to the abolishment of product related subsidies. Also several other countries show a small decline.

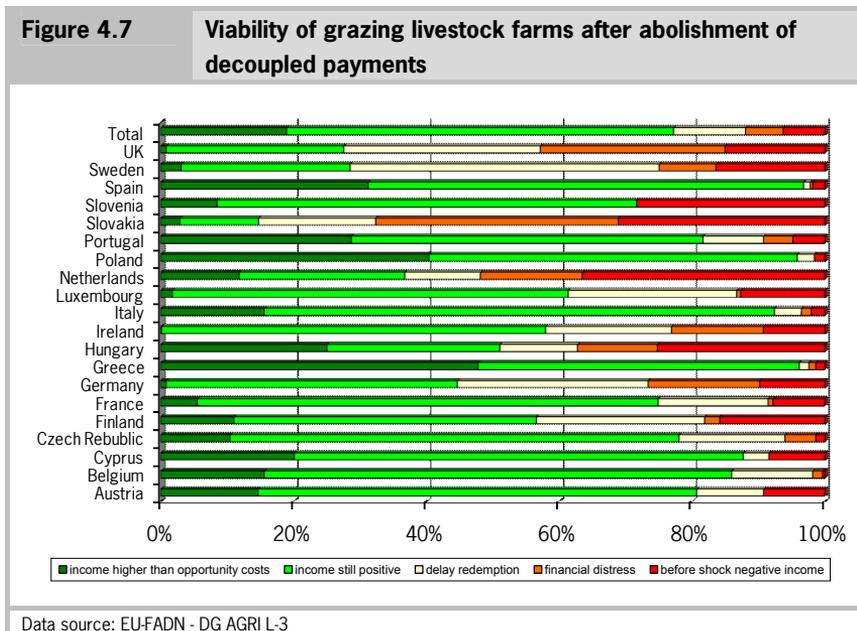


4.4 Viability of grazing livestock farms

Figure 4.7 shows that after the abolishment of decoupled payments slightly less than 20% of the grazing livestock farms are in category (1), with good prospects, and (only) about 9% is in category (5), with bad prospects. A large part, nearly 60%, of the grazing livestock farms in the EU is in category (2) with rather good prospects. The differences between countries are rather large.

Germany, Ireland, Luxembourg, Slovakia, Sweden and the UK are the member countries with the lowest share of grazing livestock farms with good prospects after the abolishment. On the other hand some countries have only a

small part of grazing livestock farms in category (5) with bad prospects, e.g. Belgium, Czech Republic, Greece, Italy, Poland and Spain. Countries with a relatively high proportion of grazing livestock farms in the categories (4) and (5), with rather bad and bad prospects are Hungary, the Netherlands, Slovakia and the UK.



Grazing livestock farms have the highest share of all subsidies in total output of all farming types, about 40% (figure 3.2). Abolishment of all farm subsidies would have a devastating effect. Slightly more than 50% of the farms would have a positive income after abolishment of all farm subsidies (see figure A2.3 in the appendix).

Some 15% of grazing livestock farms in the EU are in categories (3) and (4). These farmers will have more financial problems after the abolishment of the direct payments and may discontinue their production on the long run. Germany, Ireland, Slovakia, Sweden and the UK hold many grazing livestock farms in these categories, but also some other countries have a substantial number of farms in these categories. Reasons for this are the dependency of direct payments combined with the way of financing the farm (loans, level of interest payments). For Finland the large part of subsidies in output will have an influence

(figure 3.1). Figure 4.8 shows that especially in Sweden, Germany, the UK and Slovakia, a large share of farms that had a positive income before the policy change will have a negative income after the abolishment of decoupled payments. Figure A3.2 in appendix A3 shows the share of farms with a positive cash flow. Germany, the Netherlands, the UK and Slovakia have a relatively high share of these farms.

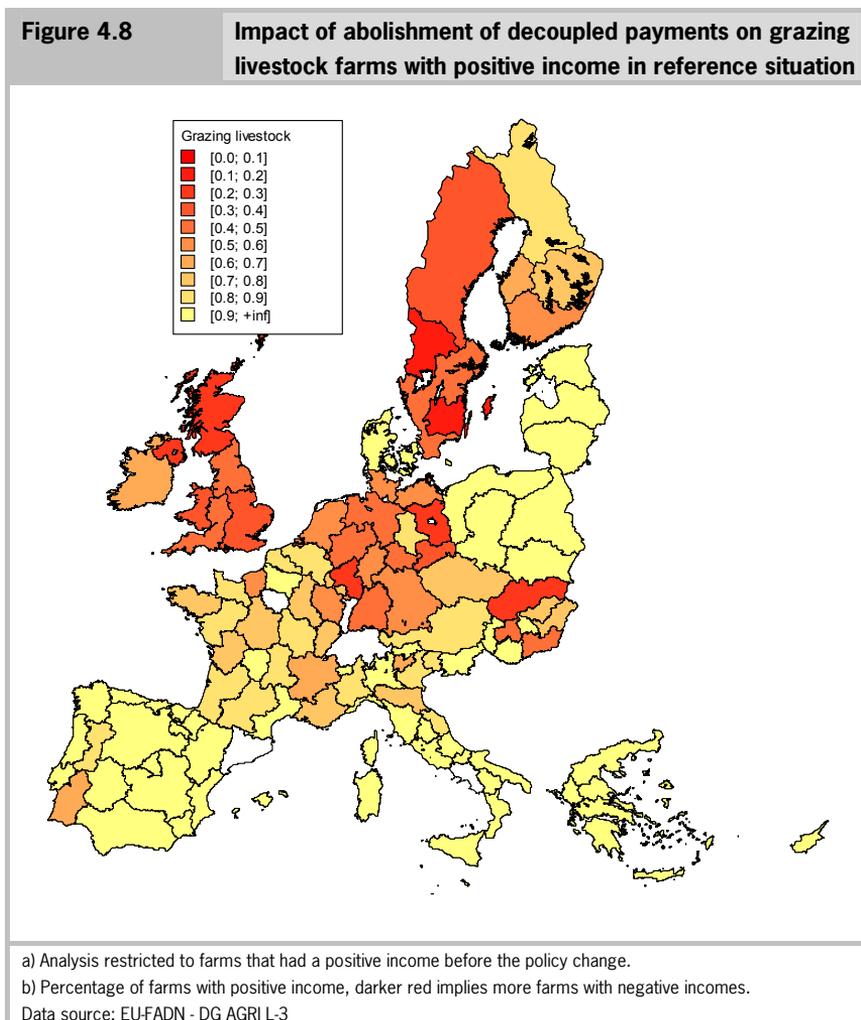
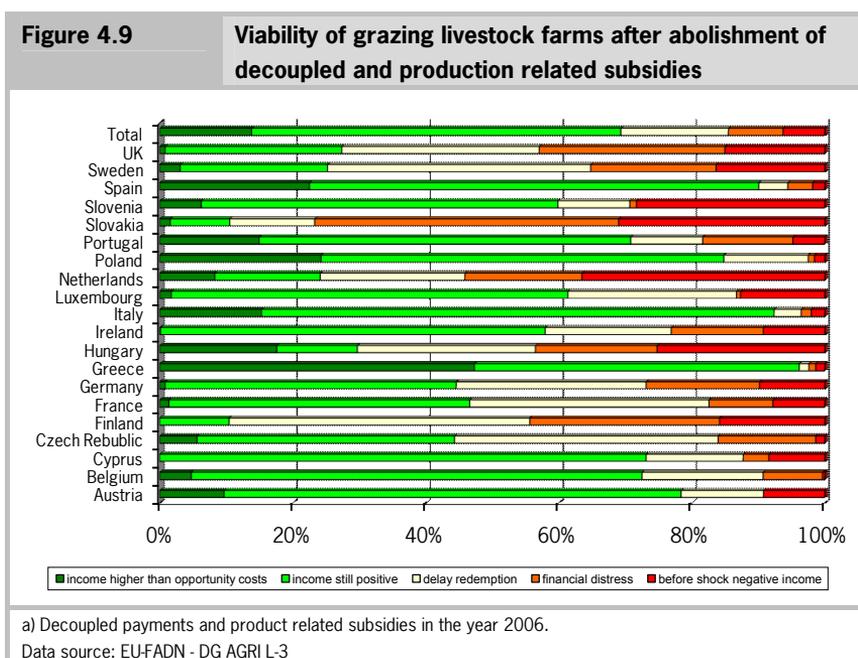


Figure 4.9 shows a further assessment of the impact of the abolishment of decoupled payments and existing production related subsidies for grazing livestock farms. The viability of farms is much worse than in figure 4.7. This is due to the fact that suckler cow premiums, slaughter premiums and sheep and goat premiums have not been fully decoupled in many countries. Not only countries such as Hungary, the Netherlands, Slovakia, Slovenia and the UK but most countries have a large share of grazing livestock farms with negative incomes. Only countries such as Spain, Poland, Italy and Greece still have a large share of farms with positive incomes. The share of farms with a shift from positive incomes to negative incomes due to the policy change are extremely high in the Czech Republic, Finland, Slovakia, UK and Sweden.

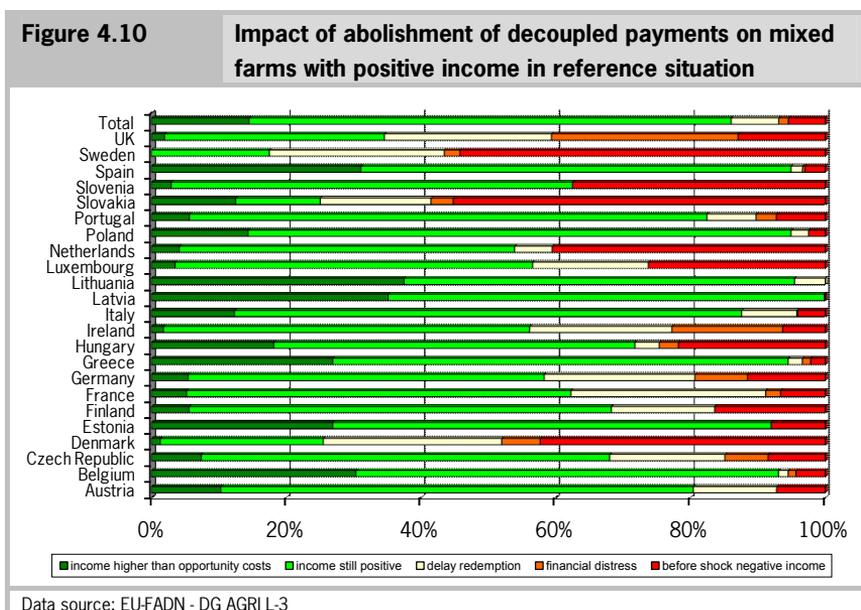


4.5 Viability of mixed farms

Figure 4.10 shows that after the abolishment of decoupled payments less than 15% of the mixed farms are in category (1), with good prospects, and on the other hand nearly 5% is in category (5), with bad prospects. A rather large part,

about 70%, of the mixed farms in the EU is in category (2) with rather good prospects.

Denmark, Ireland, Luxembourg, the Netherlands, Slovenia, Sweden and the UK are the member countries with the lowest share of mixed farms with good prospects after the abolishment. For some countries only a small part of mixed farms turn up in category (5) with bad prospects, e.g. the Baltic countries, Greece, Italy, Poland and Spain. Countries with a relatively high proportion of mixed farms in the categories (4) and (5), with (rather) bad prospects, are Denmark, the Netherlands, Slovakia, Slovenia and Sweden.



On mixed farms the share of (all) subsidies in total output is about 20%; somewhat higher than on dairy farms, but lower than on field crop farms and grazing livestock farms (figure 3.2). Abolishment of all subsidies has a slightly more severe impact on the income position of mixed farms (figure A2.4 versus figure 4.10).

Only 8% of mixed farms in the EU are in categories (3) and (4). Denmark, France, Germany, Ireland, Luxembourg, Slovakia, Sweden and the U.K have a substantial number of mixed farms in these categories. This is also illustrated by figure 4.11 which gives a more regionalised overview of the impact of the abolishment of decoupled payments. The figure clearly shows large regional dif-

ferences within countries such as France and Germany. Figure A3.3 in appendix A3 shows the share of farms with a positive cash flow. Germany and the UK have a relatively high share of farms with negative cash flows due to the policy change.

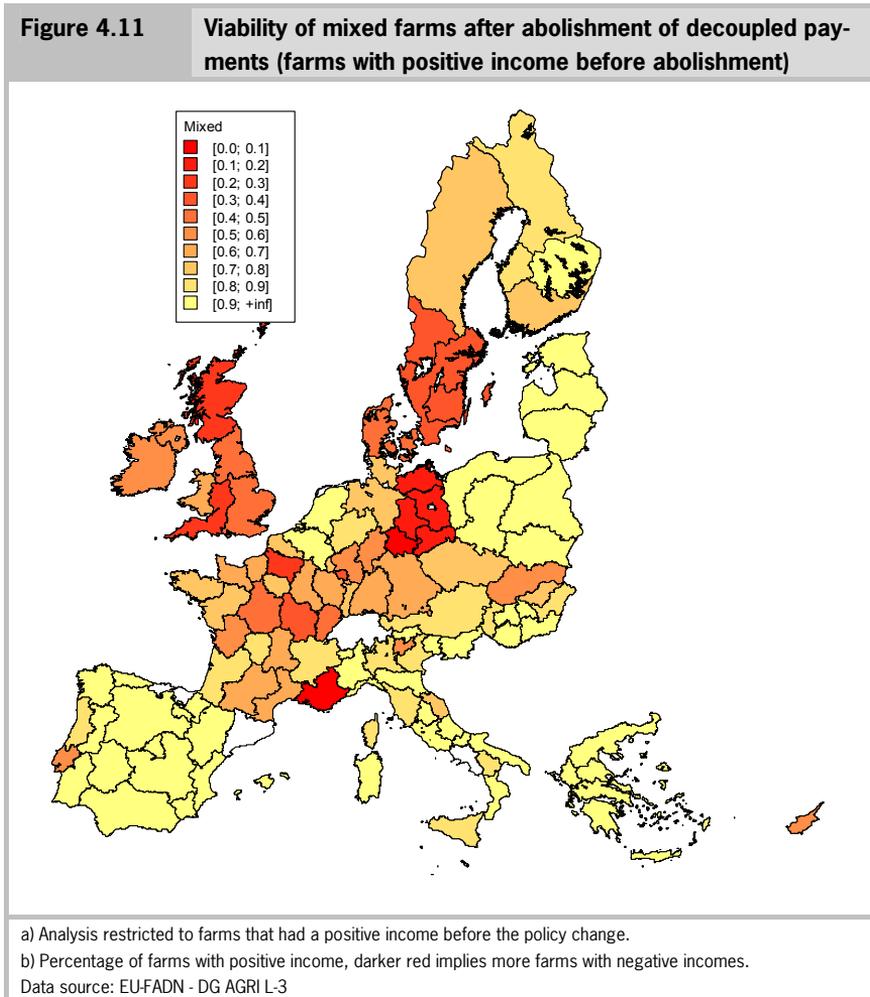
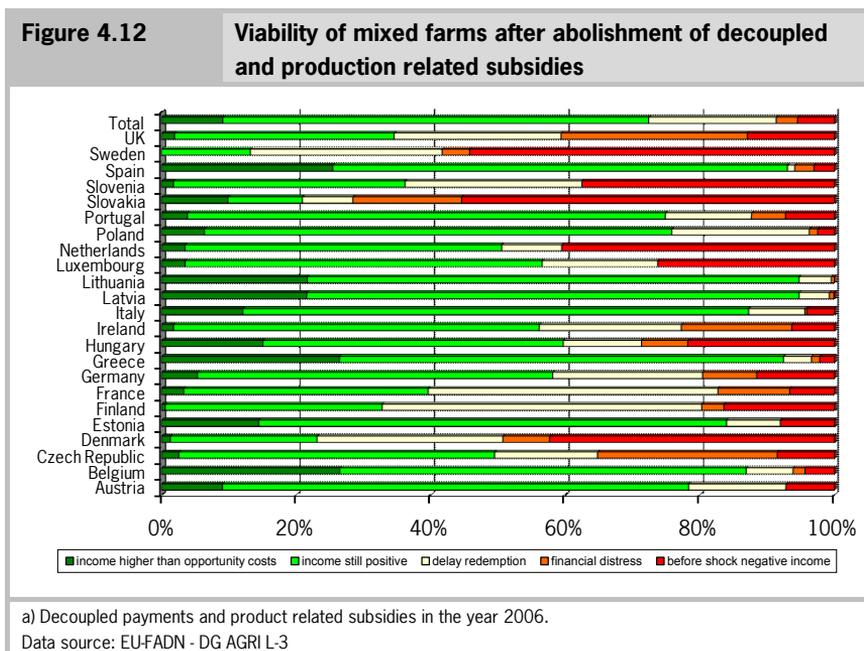


Figure 4.12 shows a further assessment of the impact of the abolishment of decoupled payments and existing production related subsidies for mixed farms. The viability of farms is worse than in figure 4.10. In addition to the Czech Republic, Denmark, Ireland, Slovakia, Sweden and the U.K, countries such as

Finland, France, Poland and Slovenia also have a large share of farms that end up in a negative income situation due to the abolishment of subsidies. Not fully decoupled payments in the arable sector and grazing livestock are the reason for this.

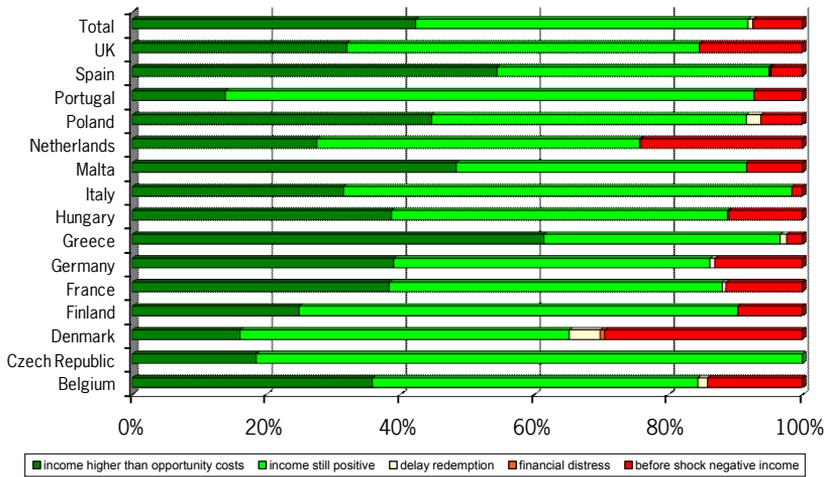


4.6 Viability of other farm types

In general, the remaining types of farms have a low share of subsidies in total output (figure 3.1). These types of farms are horticultural holdings, wine growing farms and farms specialised in (other) permanent crops as well as granivore farms (specialised pigs, poultry and eggs producers). Because of the low share, the impact of the abolishment of subsidies on the income position of these remaining types of farms is smaller than on the types of farms presented in the sections 4.13 till 4.15.

Figure 4.13

Viability of horticultural farms after abolishment of decoupled payments

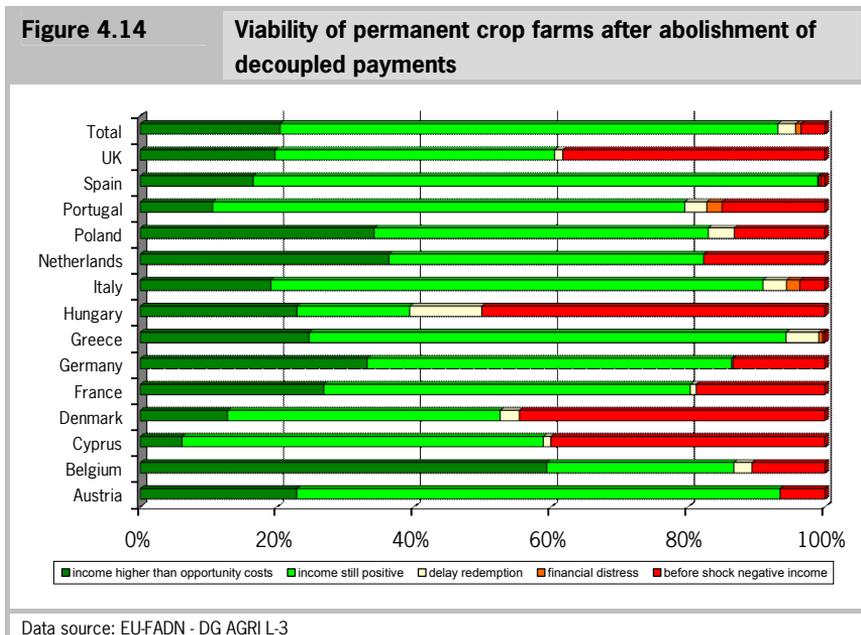


Data source: EU-FADN - DG AGRI L-3

More than 40% of horticulture holdings in the EU have good prospects and, including the farms in category (2), even nearly 90% has rather good prospects after the abolishment of subsidies (figure 4.13). In the southern member countries, Italy, Greece and Spain, the position of horticultural farms is even more favourable. Denmark and the Netherlands show a less favourable picture; a substantial part of the horticulture holdings in these countries has bad or rather bad prospects, but this is not due to an abolishment of subsidies. A large part of horticulture holdings in these northern EU countries are greenhouses using energy sources (oil or gas) in the production process. Prices of these energy products increased strongly in the period 2000-2008. As a consequence of the financial crises from 2008 and onwards, the prices of horticulture products (vegetables, ornamental products) came under pressure. It is expected that this may worsen the prospects of these sectors.

The abolishment of decoupled payments has nearly no impact on the viability of horticulture holdings in the EU. Only a small part of the holdings is in the categories (3) and (4), mainly in Poland and Denmark. In case of abolishment of decoupled payments plus product related subsidies the impact is very similar (not displayed here), except for Finland. In Finland, almost 50% of the farms end up with a negative income due to the policy change.

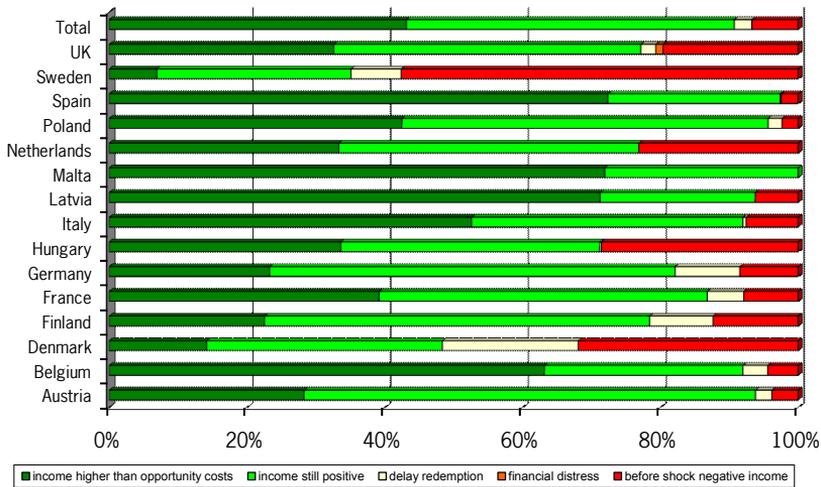
The same situation is found in the sector with farms specialised in permanent crops. Countries such as Hungary, Denmark, Poland and Italy have some farms that end up with a shift to a negative income due to the abolishment of decoupled payments. Abolishment of product related subsidies has hardly any additional effect.



Around 20% of permanent crop farms (mainly wine and fruit producing farmers) in the EU has good prospects and including the farms in category (2) even more than 90% has rather good prospects after the abolishment of subsidies (figure 4.14). In the southern member countries Greece and Spain the position of permanent crop farms is even more favourable. Hungary, Denmark, Cyprus and the UK show a less favourable picture; a rather substantial part of the permanent crop farms in these countries has bad prospects.

Figure 4.15

Viability of granivore farms after abolishment of decoupled payments



Data source: EU-FADN - DG AGRI L-3

About 40% of granivore farms (or intensive livestock farms) in the EU have good prospects and including the farms in category (2) even more than 90% has rather good prospects after the abolishment of subsidies (figure 4.15). In some member countries - Austria, Malta Poland and Spain - the position of granivore farms is even more favourable. In these countries even more than 90% of the granivore farms are found in the categories with good and rather good prospects. Sweden and to a lesser extent the Denmark, Hungary, the Netherlands and the UK show a less favourable picture; a substantial part of the granivore farms has bad or rather bad prospects.

The impact of abolishment of decoupled payments in the granivore sector is larger in some countries than in the horticultural and permanent crop sector. A part of the granivore farms use land to produce cereals and other feeding stuffs for their animals. Based on their land use, they receive decoupled payments. The abolishment of these subsidies may have a serious impact on granivore farms in countries such as Denmark, Finland, France, Germany and Sweden. In case of an additional abolishment of product related subsidies the share of farms affected by the policy changes increases substantially in Poland, Malta, Latvia and Finland (10 to 15% of the farms).

The generally good position of the granivore farms, mainly producing pigs, poultry meat and/or eggs, in the period 2004-2006 is for a considerable part explained by the prices of cereals and other feeding stuff. Prices for these important inputs for the granivore farms were lower during that period than in recent years. As a consequence of mainly the increase of prices of cereals and other feeding stuff from 2006 onwards, it is expected that the prospects of many intensive livestock farms have worsened in recent years. Another reason for the good results of granivore farms during the years 2004-2006 was the recovery of the production of eggs after the outbreak of AI (avian influenza) in some member countries in 2003. Prices of eggs were rather high in the first period after the outbreak, but decreased later on.

4.7 Summary of country results

Figure 4.16 and figure 4.17 shows a summary of the results at national level. Both figures show that farms in the UK, Sweden, Slovakia, Denmark and to a lesser extent Finland, France, Germany and Ireland are most seriously affected by the abolishment of decoupled payments.

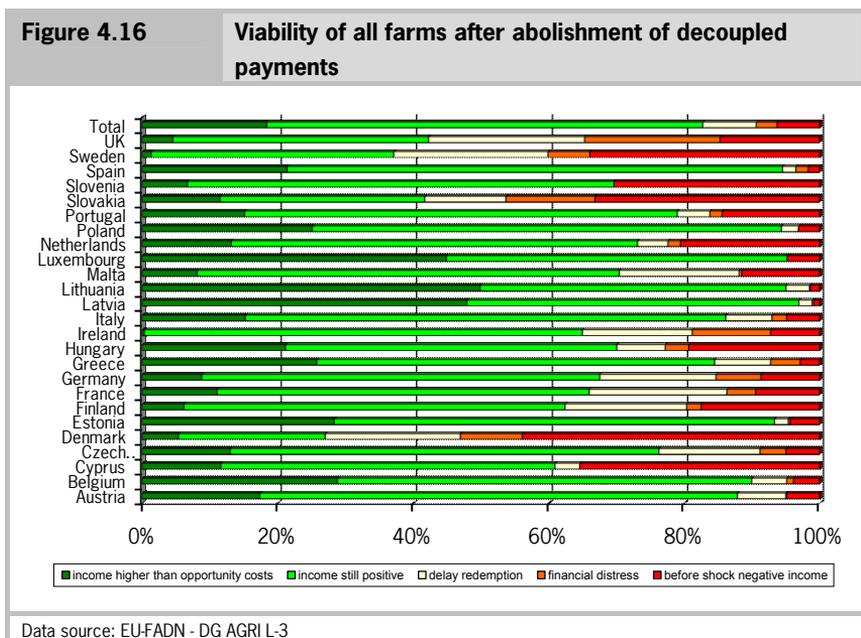
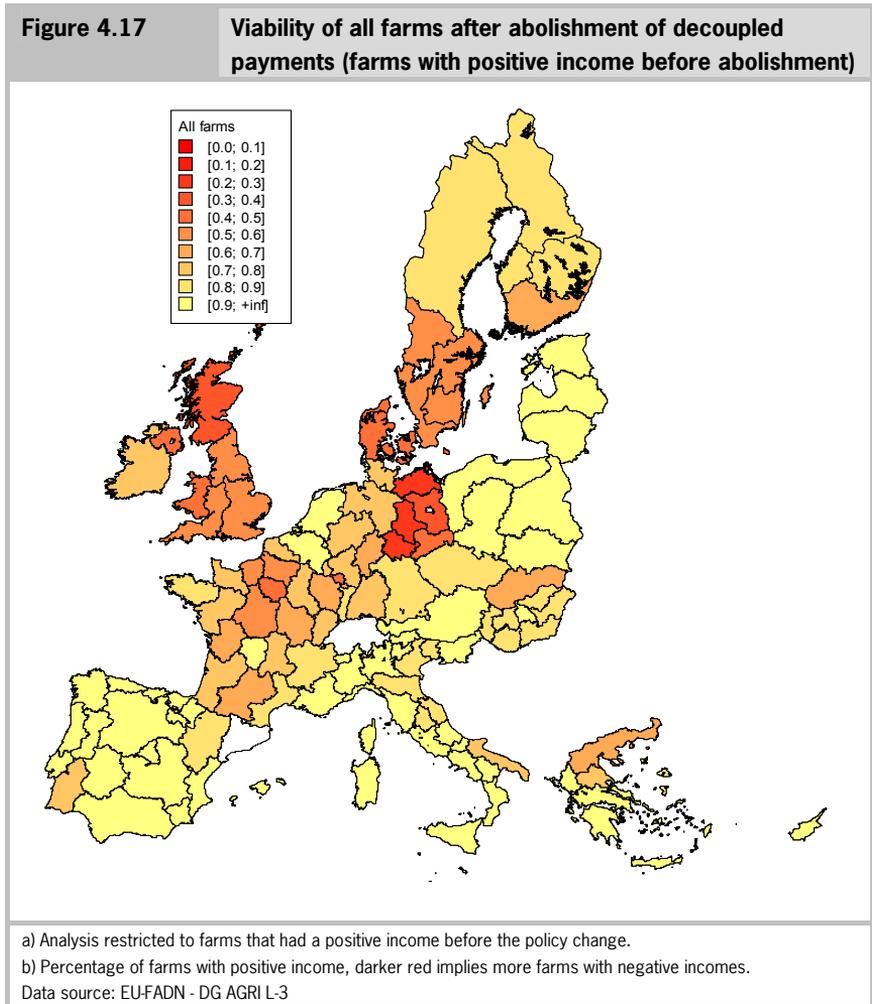


Figure 4.17 shows that there are strong regional differences per country. In France and Germany in particular there are large differences between regions. These differences depend on the regional specialisation and the (financial) structure of farms.



4.8 Adaptations of farmers

The analyses described in the previous sections focus on the first-order effects of an abolishment of agricultural subsidies on the viability of individual farms. This provides insight regarding the pressure on the agricultural sector. This pressure is likely to result in (changing) behaviour of farmers. Behavioural adaptations of farmers can for example consist of discontinuing their agricultural production, changing the products produced or changing the scale of production in order to benefit from economies of scale. A full estimation of these second order effects is beyond of the scope of this research and would require (equilibrium) models to estimate the impacts. Nonetheless, in this section a number of adaptations and second order impacts that can be expected are described.

Response of farmers on the introduction of Single Payments

The analyses in this study illustrate first-order impact of the abolishment of subsidies. It does not take into account the changes in the behaviour of farmers. The past has shown that farmers do adapt to changes in the Common Agricultural Policy. Research has shown that arable and dairy farmers in the Netherlands reacted on the introduction of the single payments and on the reform of the EU dairy and sugar policy (Smit et al., 2006). A part of the arable farmers expressed the opinion to change their cropping pattern; they were inclined to be more market oriented than in the past. Most of the arable farmers preferred to grow more intensive crops such as potatoes, vegetables and flower bulbs and less cereals and sugar beet. Dairy farmers had no clear opinion on their reaction on the introduction of the single payments. A part of the farmers had plans to expand the milk production. Most dairy farmers supported the decoupling of the silage maize premium. This made it easier to have at least 70% of their acreage as grassland as is required for the derogation of the Nitrate directive. The abolishment of subsidies will also influence farm behaviour. It will affect the investments, decisions to continue the farming business, but also the cropping plan due to a change in risk attitude of farmers (Vrolijk et al., 2009).

Land prices, quota prices

Abolishment of farm subsidies will have an impact on land prices as well as prices of quota of milk. Prices of land and quota are related to the level of income of farmers. In a situation of higher incomes, partly by (direct) payments/subsidies, farmers are in a better position to save money for investments and or

to finance the interest payments on loans to buy land or quota (Luijt et al., 2009, forthcoming).

The market value of land is determined by several factors. Research has shown that CAP subsidies do have an impact on land values, but that the impact varies across countries and appears relatively modest compared to other factors, especially in those countries where land prices are high. Other factors influencing land prices are agricultural commodity prices, agricultural productivity, infrastructural expansion and urban pressures (Swinnen et al., 2008). Given this diversity in land markets it is likely that an abolishment of agricultural subsidies will have varying effects in different countries.

Prices of land are partially influenced by the system of direct payments. In countries with a regionalised system (flat rate) single payments have no separate market price. In countries with direct payments based on historic references, these payment rights may have a separate market value. In Europe this market value is 1 to 3 times the amount of the single payments. Abolishment of payments will reduce these market values and in other countries land values. Swinnen et al. (2008) describe several reasons for this short pay back period (i) uncertainty of the future of the single payments, (ii) administrative costs of single payments (iii) taxes and fees imposed on transactions and (iv) credit market imperfections.

Structural change

Structural changes in agriculture are for a large part the result of technological improvements leading to a higher level of productivity in the sector as well as the general socio-economic situation and development (Van Bruchem and Silvis, 2008). In this process there is an interaction between developments in the farm sector and in other sectors of the economy. The influence of farm policy and changes in that policy can be recognized in some cases. For instance the introduction of the dairy quota has influenced the volume of production of milk as well as the herd sizes (number of dairy cows per farm) in EU countries, but it did not slow down the decline of the number of farms with dairy cows. There is some evidence that single farm payments constrain farm exit and increase part time farming. Abolishment of payments will result in a termination of farms. The pressure will especially be on less efficient farms. The termination of farms will provide possibilities for other farms to expand (especially in areas where there is a strong competition for the production factors land and labour). An abolishment of payments will speed up the process of structural change.

Risk exposure

The abolishment of direct payments means that income from farming becomes less stable (the subsidy payments stabilises farm income).

Since farmers lose a stable source of income they might choose for less risk in their agricultural activities and in their investments (Andersson et al., 2005). The lower income and the lower wealth could cause farmers to want to reduce their risk exposure. According to economic theory, lower levels of wealth result in less willingness to accept risk. This could as well result in lower levels of investments but also in a choice of less risky (and less profitable) crops.

Prices of products and developments on markets

If abolishment of direct payments will cause a slow down of investments and, as a consequence, a slower development of production, it may have a (small) positive impact on prices. This would compensate part of the (negative) impact on incomes of the abolishment.

4.9 Sensitivity analysis

The impact of the abolishment of decoupled payments is strongly dependent on other agricultural and economic developments. One of the main driving forces is the development of prices. The development of prices depends for a large part on the development of energy prices. OECD expects price levels which are higher than the prices during the period 2004- 2006. In the sensitivity analysis presented in this section the effect of a 20% price increase is evaluated. This price increase does not only affect the price of outputs but the assumption is made that also the value of intermediate consumption increases with 20%. No additional adaptations or changes by farmers are assumed.

Table 4.18 provides an overview of the results of the sensitivity analysis related to the level of prices. The results of the abolishment of decoupled payments are taken as the starting point. The table shows how the results differ in case of a 20% price increase as described before. The first row shows the results for all countries together. A 20% price increase does not have an impact on the financial class for 84.6% of the farms (although an improvement of the farm income occurs). Only 0.2% of the farms end up in a worse viability class. This implies that for a limited number of farms the increase in costs of intermediate consumption is higher than the increase in revenues. This is especially the case in Finland. 15.2% of the farms end up in a better viability class. To a large extent this is an improvement from the viability class 'farm income larger than

zero' to the 'farm income larger than opportunity costs' class. The last column describes the number of farms for which there is a real shift from the lower viability classes ('farm income plus depreciation larger than zero' or 'financial distress') to the higher viability classes ('positive farm income' or 'farm income larger than opportunity costs'). For countries such as Denmark, France, Germany, the Netherlands, Sweden and the UK this number of farms is substantial.

Country	Remains in the same class	Worse	Better	Of which negative to positive
EU-25	84.6	0.2	15.2	<i>3.5</i>
Austria	83.0	0.1	16.9	<i>1.7</i>
Belgium	81.1	0.1	18.8	<i>4.5</i>
Czech Republic	79.8	2.7	17.5	<i>7.0</i>
Denmark	75.2	0.0	24.8	<i>11.5</i>
Estonia	88.9	0.8	10.2	<i>1.4</i>
Finland	84.1	4.4	11.5	<i>1.1</i>
France	77.7	0.2	22.1	<i>8.2</i>
Germany	79.4	0.1	20.5	<i>8.0</i>
Greece	85.8	0.1	14.1	<i>3.1</i>
Hungary	82.9	0.5	16.6	<i>3.0</i>
Ireland	93.1	2.1	4.7	<i>2.2</i>
Italy	86.6	0.0	13.4	<i>3.5</i>
Latvia	93.5	0.5	6.0	<i>0.4</i>
Lithuania	89.2	0.1	10.7	<i>1.8</i>
Luxembourg	75.0	0.0	25.0	<i>4.6</i>
Netherlands	72.7	0.0	27.3	<i>7.3</i>
Poland	86.1	0.0	13.9	<i>2.1</i>
Portugal	82.0	0.6	17.5	<i>4.7</i>
Slovakia	78.1	2.4	19.5	<i>3.4</i>
Spain	87.1	0.1	12.8	<i>1.0</i>
Sweden	79.4	0.1	20.6	<i>6.1</i>
UK	83.4	0.9	15.7	<i>7.3</i>

Data source: EU-FADN - DG AGRI L-3

This is mainly due to the financial structure of farms. Farms in north western Europe are on average larger, more specialised farms that create farm incomes with lower margins but higher volumes. The low margins are mainly due to a

high level of overhead costs. A 20% increase in the price levels has a substantial impact on the profitability of these farms. So, although most farms end up in the same viability class, a price increase does make a difference for a group of farms, especially in the countries where the impact of an abolishment of subsidies is rather large.

4.10 Factors explaining differences in viability of farms in Europe

There are large differences in the technical and financial structure of farms across Europe. Therefore it is difficult to draw general conclusions on general structural characteristics of farms that determine the viability class. In this section an analysis per country is presented.

The structural characteristics included in the analysis are:

- economic size;
- capital productivity (defined as total output/total assets);
- labour productivity (defined as total output/total labour input);
- land productivity (defined as total output/utilised agricultural area);
- share of paid labour (defined as paid labour/total labour);
- share of liabilities (defined as total liabilities/total assets).

In table 4.19, for each country the 3 variables are listed that discriminate between the viability of farms after the abolishment of decoupled payments.¹ The results are very different per country.

In a number of countries capital productivity is the most important factor in discriminating between vital farm and non-vital farms. In several other countries this factor comes at the second or third place. A higher capital productivity results in general in a higher viability. Economic size is also an important factor in discriminating between vital and non-vital farms. The direction of this relationship differs between countries. In countries such as Germany, Latvia and Hungary larger farms tend to be less vital. In these countries the cooperative farms are an important reason for this. In other countries such as Belgium, Italy, Ireland, the Netherlands and the UK larger farms tend to be more vital. Also the relationship for share of paid labour with viability differs between countries. This is due to the fact that the motivation to use paid labour differs between countries (high share of paid labour on cooperative farms versus high share of paid labour

¹ Discriminant analysis has been used to select the predictors that contribute the most in discriminating between farms with a positive or negative income.

on large modern farms in other countries). Finally, share of liabilities is an important factor in several countries, in all countries (except Cyprus) a large share of liabilities tend to result in a lower viability.

Table 4.19 Predictors explaining viability of farms per country

Country	Most important predictor	Second important predictor	Third important predictor
Belgium	capital productivity	economic size	labour productivity
Denmark	capital productivity	labour productivity	land productivity
Estonia	<i>capital productivity</i>	<i>labour productivity</i>	<i>land productivity</i>
Finland	capital productivity	labour productivity	land productivity
France	capital productivity	labour productivity	land productivity
Hungary	capital productivity	<i>economic size</i>	<i>share of paid labour</i>
Slovakia	capital productivity	<i>share of paid labour</i>	land productivity
Slovenia	<i>capital productivity</i>	share of paid labour	<i>land productivity</i>
Sweden	capital productivity	<i>share of liabilities</i>	labour productivity
UK	capital productivity	economic size	share of paid labour
Germany	<i>economic size</i>	<i>share of liabilities</i>	land productivity
Greece	<i>economic size</i>	<i>share of liabilities</i>	land productivity
Austria	land productivity	capital productivity	<i>share of liabilities</i>
Ireland	land productivity	economic size	capital productivity
Italy	land productivity	economic size	capital productivity
Latvia	<i>land productivity</i>	<i>economic size</i>	<i>capital productivity</i>
Lithuania	land productivity	economic size	capital productivity
Luxembourg	land productivity	economic size	capital productivity
Netherlands	land productivity	economic size	capital productivity
Poland	land productivity	economic size	capital productivity
Cyprus	share of liabilities	labour productivity	land productivity
Czech	<i>share of liabilities</i>	<i>labour productivity</i>	<i>land productivity</i>
Portugal	<i>share of liabilities</i>	<i>share of paid labour</i>	labour productivity

a) Factors displayed in red italics are negatively correlated with the viability of farms in a specific country.

b) Three predictors with the highest structure coefficients are displayed. Structure coefficients, also called structure correlations or discriminant loadings, are the correlations between a given independent variable and the discriminant scores associated with a given discriminant function.

Data source: EU-FADN - DG AGRI L-3

The analysis presented here is only based on structural characteristics as recorded in the FADN. Although some explaining factors can be deduced, it only provides a partial descriptive explanation for the viability of farms. Other factors such as management skills cannot be captured by the FADN dataset and are very important in the success of farms (Poppe and Van Meijl, 2006).

5 Conclusion and discussion

5.1 Introduction

This chapter discusses the value and limitations of the methodology applied in this research. Section 5.2 will provide a short summary of the main findings and conclusions.

5.2 Discussion of methodology applied

The analyses presented in chapter 4 focus on the first-order effects of an abolishment of agricultural subsidies on the viability of individual farms. This provides a good understanding of the pressure on the agricultural sector. The analysis assume a fixed cost structure and abstracts from changes in factor prices, structural change, et cetera. Therefore results give an indication of a worst case scenario for future farm viability. The pressure will result in (changing) behaviour of farmers to improve their situation. As described in chapter 4, farmers' behaviour can for example consist of discontinuing their agricultural production, changing the products produced or changing the scale of production in order to benefit from economies of scale. A full estimation of these second order effects is out of the scope of this research and would require (equilibrium) models to estimate the impacts. Balkhausen and Banse (2006) for example estimate the effects of reduction of direct payments on land use. They show that a substantial reduction of direct payments will have significant effects on agricultural markets. The crop and fodder areas are expected to decrease sharply (up to 10% of total area used for production).

The assumption of a fixed cost structure is more problematic in the scenario of abolishment of all subsidies. Changes in coupled payments can have a more distortive impact on the production incentives. Changes in the production plan immediately result in changes in the direct costs of a farm. Less distortive effects are expected with the abolishment of decoupled payments, although there are some indirect effects on the risk profile of farms.

FADN is a useful and established tool to monitor income and situations of low farm income; however, it is criticised for not providing information on non-farm income and household income (Court of Auditors, 2002). Due to the lack of information on non-farm resources it is hard to predict what will happen on a

farm when it ends up in financial distress (OECD, 2004). The presented analysis focus on the viability of farms. It cannot provide a complete impact on the farmer income or poverty situation of farmers. Off-farm income and off-farm wealth are not covered by the FADN, but are essential in a full understanding of the income situation of farmers and the continuity perspectives of farms.

5.3 Summary and conclusion

This study tries to quantify the effects of changes in policies on farm subsidies on the viability of farms. For this study use is made of the FADN data of EU-25 member countries. FADN provides data for the determination of income of farms per member country and per type of farming. In this study an analysis was made how robust a farm would be to survive a policy change consisting of a partial or a complete abolishment of farm subsidies. To provide this insight, farms, after the change in subsidies, were divided in five categories with a distinction based on their (financial) viability (see section 2.3). FADN data show a large variety in the amount of agricultural subsidies in total output of farms per member country as well as per type of farm (section 3.3). The level of subsidies (as a percentage of farm output) is the highest in the grazing livestock sector (without dairy farms), followed by field crop (or arable) farms, mixed farms and dairy farms. Subsidies on other types of farms, including horticulture, permanent crops and wine as well as intensive livestock (granivore farms) are much lower. The reason for these differences in the importance of subsidies is first of all that the last mentioned farms (nearly) do not produce products related to the system of CAP-premiums. These premiums, e.g. for cereals, sugar beet, cattle and milk are for a large part decoupled after the CAP reform in 2003 and are part of the single payments farmers receive each year.

Table 5.1 presents the percentages of each category of farms within each country after abolishment of decoupled payments. Almost 65% of the farms within the EU-25 belong to the second category with positive incomes but less than opportunity costs.

Country	Percentage of Farms of each Category in each member state (%)				
	Category 1	Category 2	Category 3	Category 4	Category 5
Austria	17.4	70.5	7.1	.1	4.9
Belgium	28.8	61.1	5.2	1.0	3.8
Cyprus	11.6	49.3	3.6		35.4
Czech Republic	13.0	63.3	14.9	3.9	4.9
Denmark	5.4	21.7	20.0	9.2	43.9
Estonia	28.3	65.0	2.0	.3	4.3
Finland	6.2	56.2	17.9	2.2	17.5
France	11.1	54.9	20.3	4.2	9.4
Germany	8.8	58.8	17.1	6.7	8.7
Greece	25.8	58.7	8.3	4.4	2.9
Hungary	21.2	48.9	7.2	3.5	19.3
Ireland	.3	64.6	16.2	11.6	7.2
Italy	15.2	70.9	6.8	2.2	4.8
Latvia	47.9	49.0	2.0	.3	.8
Lithuania	49.9	45.1	3.5	.1	1.4
Malta	8.1	62.3	17.7	.4	11.5
Luxembourg	44.9	50.3			4.8
Netherlands	13.2	60.0	4.5	1.8	20.5
Poland	25.1	69.2	2.5	.0	3.1
Portugal	15.1	63.9	4.8	1.8	14.4
Slovakia	11.5	30.2	12.0	13.2	33.1
Slovenia	6.7	62.9			30.4
Spain	21.4	73.1	2.0	1.8	1.7
Sweden	1.4	35.8	22.8	6.2	33.9
UK	4.5	37.8	23.0	20.0	14.7
Total	18.4	64.4	7.9	3.1	6.3

Data source: EU-FADN - DG AGRI L-3

Table 5.2 and 5.3 presents the five countries with the highest percentage of farms in each category and the five countries with the lowest percentage. The countries with the highest percentage of farms in categories 3 and 4 are heavily affected by the abolishment of subsidies. In these countries many farms that have positive incomes before the policy change have negative incomes after the abolishment of subsidies.

Category 1	Category 2	Category 3	Category 4	Category 5
Lithuania	Spain	United Kingdom	United kingdom	Denmark
Latvia	Italy	Sweden	Slovakia	Cyprus
Luxembourg	Austria	France	Ireland	Sweden
Belgium	Poland	Denmark	Denmark	Slovakia
Estonia	Estonia	Finland	Germany	Slovenia

Category 1	Category 2	Category 3	Category 4	Category 5
Ireland	Denmark	Slovenia	Luxembourg	Latvia
Sweden	Slovakia	Luxembourg	Cyprus	Lithuania
United kingdom	United Kingdom	Latvia	Slovenia	Greece
Denmark	Sweden	Spain	Lithuania	Spain
Finland	Lithuania	Estonia	Poland	Poland

The analysis in the study point out clearly that the viability of the farms (nearly) without CAP-subsidies is better than of the farms with the CAP subsidies if these (decoupled) subsidies would be abolished. In other words the 'non-CAP types of farms' (e.g. horticulture, permanent crops and intensive livestock) have, in general, better prospects than the 'CAP types of farms'. It is expected that farmers of these types of farms will adapt in order to cope with the reduction of payments.

It is obvious that these CAP types of farms (arable, dairy, other grazing cattle and mixed) comprise the majority of farms, and they use a very large part of the agriculture land in the EU (95%). Therefore the deterioration of the viability of these farms as a result of the abolishment of the (decoupled) subsidies may have a serious impact on the structure of the farm sector as well as on the vitality of (many) rural areas.

This study also shows that in some countries the viability of farms is weaker than in general in the EU. These countries are Denmark, Ireland, Sweden and UK, as well as for some types of farms France, Germany, Hungary and Slovakia. In these countries a larger part of the farms have bad or rather bad (financial) prospects after the abolishment of (decoupled) subsidies.

The analyses show that problems with viability are focused in particular areas. The problems associated with non-viability (such as land abandonment) could be addressed by targeted solutions. Furthermore the analyses show that only a minority of farms shift from being viable to non-viable when payments are

abolished, it would be possible to keep all currently viable farms afloat with more targeted payments than currently apply under Pillar 1.

An abolishment of all (farm) subsidies (not only the decoupled single payments) would have a more severe impact on the viability of farms. This depends on the level of (other) farm subsidies and the extent of decoupling of payments. In some countries, e.g. Finland and Austria, these subsidies are relatively high given the natural and climatic conditions. In these and other countries farmers receive compensations for the less favourable situation to compete in the common market.

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Appendix 1

Opportunity costs of captial

Country	Interest rate
Austria	3.77
Belgium	3.80
Cyprus	5.03
Czech R	4.05
Denmark	3.84
Estonia	4.52
Finland	3.75
France	3.77
Germany	3.72
Greece	3.97
Hungary	7.30
Ireland	3.72
Italy	3.95
Latvia	4.29
Lithuania	4.09
Luxembourg	3.82
Malta	4.52
Netherlands	3.75
Poland	5.78
Portugal	3.83
Romania	7.23
Slovakia	4.32
Slovenia	4.11
Spain	3.75
Sweden	3.83
United kingdom	4.59

Appendix 2

Viability of farms after total abolishment of farm subsidies

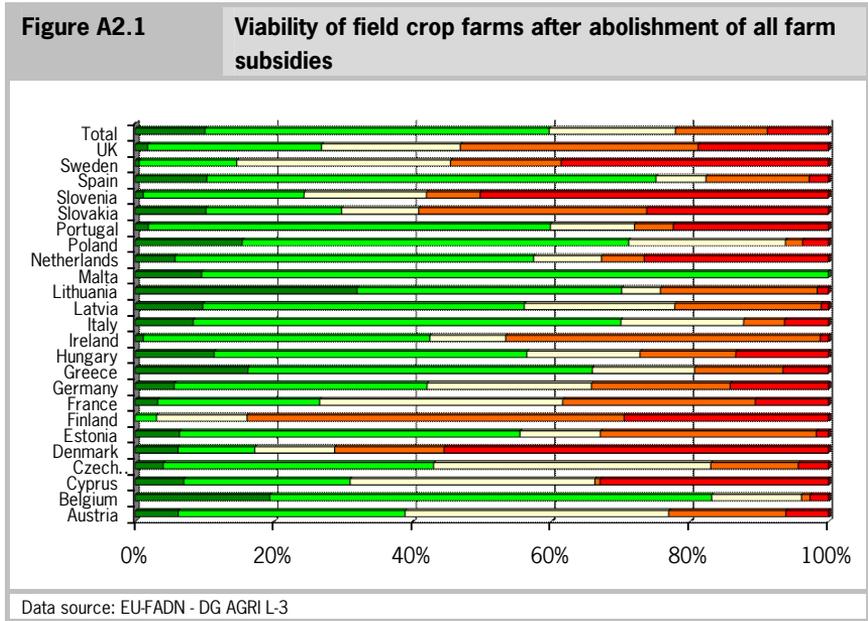
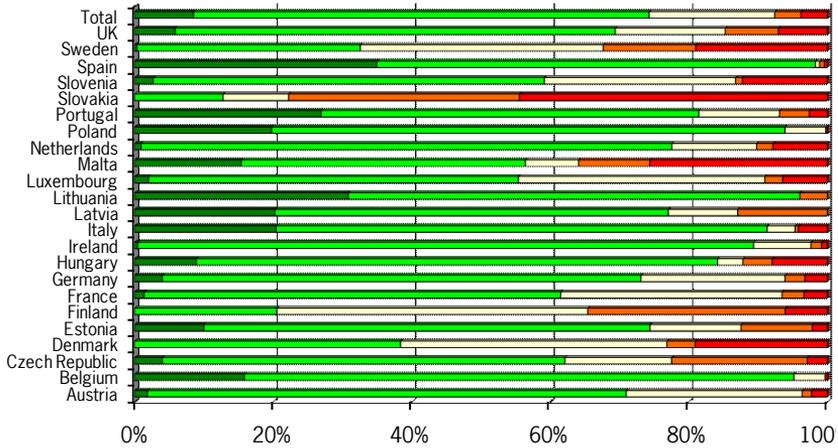


Figure A2.2

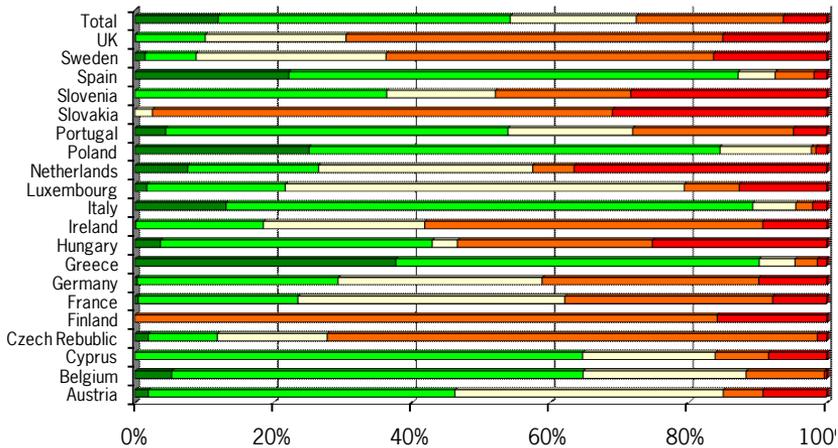
Viability of dairy farms after total abolishment of all farm subsidies



Data source: EU-FADN - DG AGRI L-3

Figure A2.3

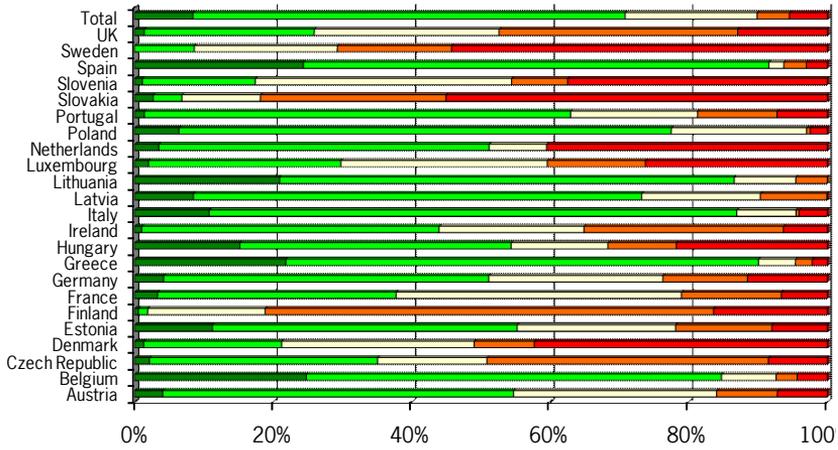
Viability of grazing livestock farms after abolishment of all farm subsidies



Data source: EU-FADN - DG AGRI L-3

Figure A2.4

Viability of mixed farms after abolishment of all farm subsidies



Data source: EU-FADN - DG AGRI L-3

Appendix 3

Impact of abolishment of decoupled payments

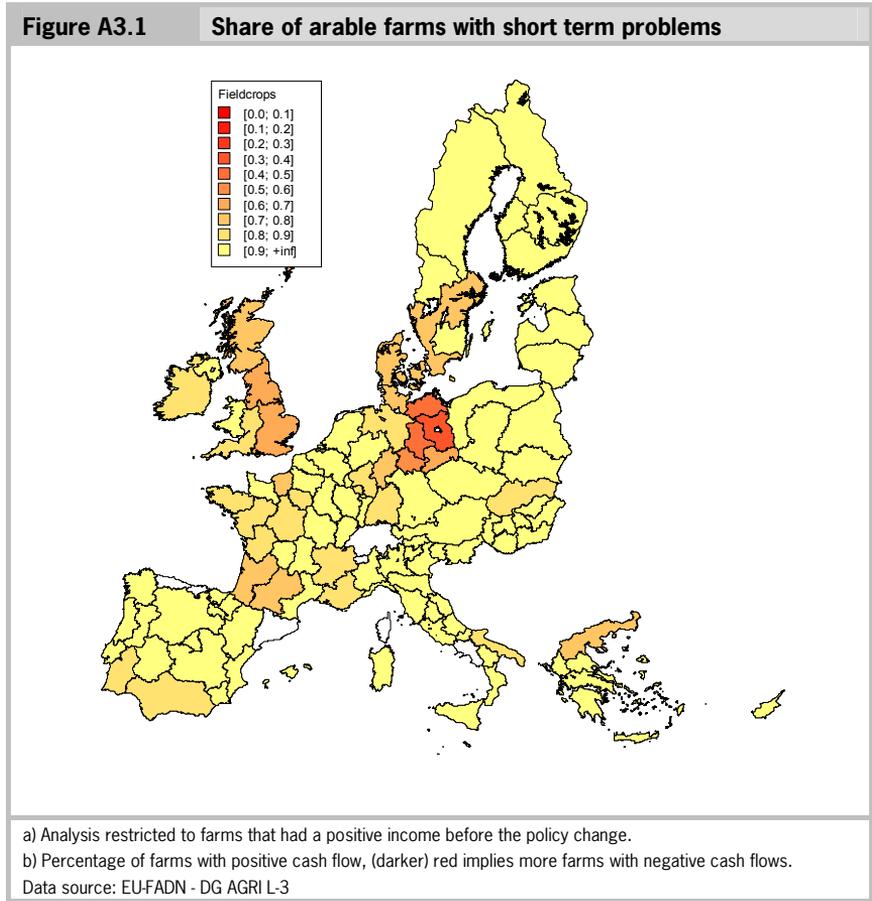


Figure A3.2 Share of grazing livestock farms with short term problems

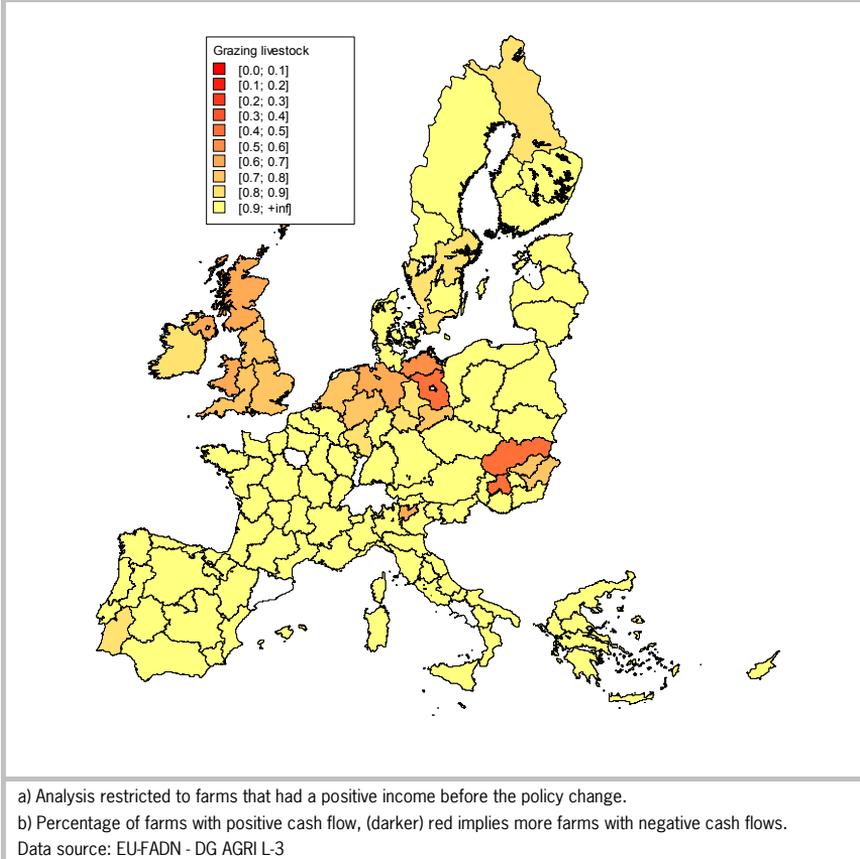
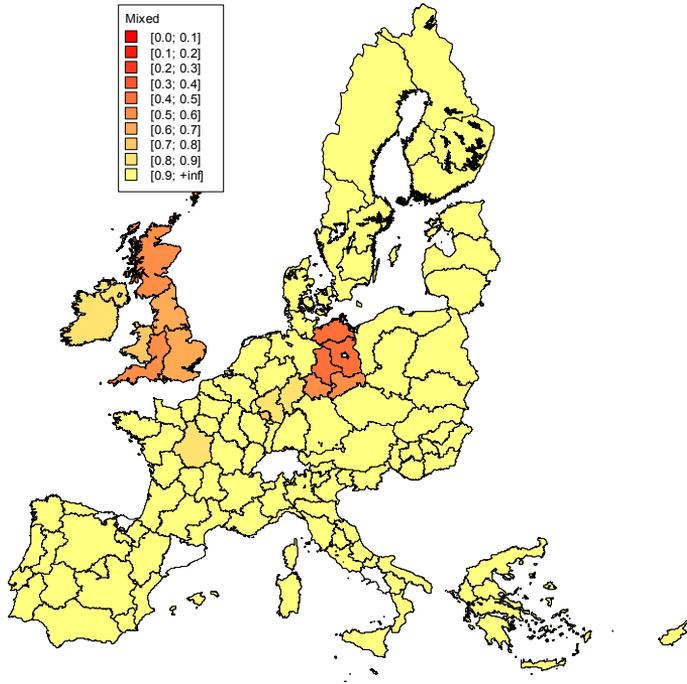


Figure A3.3

Share of mixed farms with short term problems



a) Analysis restricted to farms that had a positive income before the policy change.

b) Percentage of farms with positive cash flows, (darker) red implies more farms with negative cash flows.

Data source: EU-FADN - DG AGRI L-3

Appendix 4

Number of farms and commercial holdings

Table A4.1		Number of farms (2005)	
Country	Population a)	FADN b)	Share c)
Belgium	51,540	34,730	65.7
Czech Republic	42,250	14,370	33.7
Denmark	48,270	36,670	75.6
Germany	389,880	251,710	56.0
Ireland	132,670	115,700	86.2
Estonia	27,750	6,730	24.1
Greece	833,590	534,080	60.9
Spain	1,079,420	827,740	59.3
France	567,140	398,520	61.9
Italy	1,728,530	748,410	40.8
Cyprus	45,170	29,900	62.7
Latvia	128,670	19,200	14.9
Lithuania	252,950	52,390	20.7
Luxembourg	2,450	1,840	70.8
Hungary	714,790	95,930	11.4
Malta	11,070	1,400	15.8
The Netherlands	81,830	62,990	76.5
Austria	170,640	75,950	43.5
Poland	2,476,470	757,670	30.6
Portugal	323,920	142,450	39.3
Slovenia	77,170	39,860	48.8
Slovakia	68,490	3,220	5.4
Finland	70,620	44,740	61.5
Sweden	75,810	28,910	37.6
UK	286,750	94,070	33.8

a) Number of farms according to agricultural.
b) Number of farms covered by FADN sample (commercial farms).
c) Share of farms covered by FADN.
Data source: EU-FADN - DG AGRI L-3

Country	Field crops	Milk	Granivores	Mixed
Belgium	5,250	6,240	2,580	5,970
Cyprus	5,420	160	180	490
Czech Republic	6,500	910	470	2,940
Denmark	18,740	4,440	1,760	5,720
Germany	40,040	63,670	10,380	35,130
Greece	195,440	1,470	1,420	36,970
Spain	168,850	24,190	16,090	43,360
Estonia	3,160	1,300	60	1,430
France	104,560	53,180	7,740	52,130
Hungary	42,550	3,350	4,050	11,710
Ireland	3,400	20,090	-	4,060
Italy	243,460	23,150	6,540	38,270
Lithuania	13,670	8,730	220	12,270
Luxembourg	60	640	20	240
Latvia	6,510	8,370	150	6,270
Malta	340	100	190	60
Netherlands	8,340	19,510	5,520	4,710
Austria	11,960	25,730	4,160	7,600
Poland	206,490	69,460	48,070	327,930
Portugal	27,900	8,450	1,500	14,360
Finland	18,290	11,930	920	4,100
Sweden	11,730	6,450	600	3,530
Slovakia	2,460	320	40	570
Slovenia	6,770	6,670	70	10,280
United Kingdom	28,690	16,210	3,150	7,570

Data source: EU-FADN - DG AGRI L-3

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