



Evaluation of Agricultural Policy Reforms in the European Union



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Foreword

This study seeks to analyse and evaluate successive reforms of the Common Agricultural Policy (CAP). Chapter 1 presents the scope of policies covered by the study. Chapter 2 gives an overview of the agricultural situation in the European Union. Chapter 3 describes the main characteristics of the CAP in 2010 and illustrates how OECD indicators of support to agricultural producers can be used to monitor policy developments over the last 25 years. Chapter 4 analyses the impact of agricultural policy reforms on the economic and environmental performance of agriculture. Chapter 5 draws conclusions concerning the reforms using the principles and operational characteristics established by OECD Ministers for the evaluation of agricultural reform efforts across OECD countries. It makes some recommendations concerning the continuing search for policy measures that are effective and minimally distorting, while also contributing to the achievement of the objectives set for the sector.

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Executive Summary

The Common Agricultural Policy (CAP) is the first common policy adopted by the European Community under the Treaty of Rome. It was originally put in place to regulate agricultural markets and to support domestic commodity prices, while structural and environmental measures were gradually developed afterwards. The 1992 MacSharry reform marked the beginning of a series of reforms by which expected income losses due to reductions in price support and protection were partly compensated by direct payments, originally based on current area and animal numbers. The 2003 reform introduced fixed payment entitlements based on historical, regional or hybrid references, which do not require production of any commodity, to replace part or all of MacSharry payments. Subsequent reforms of commodity sectors and the Health Check of the CAP in 2009 have consolidated the movement towards de-linking payments from current production parameters initiated by the 2003 reform and strengthening measures, whose declared objectives are to contribute to improving the competitiveness of the agricultural and forestry sectors, the environment and the countryside, as well as the quality of life in rural areas.

This study covers the CAP changes that have taken place over the last 25 years. It first highlights main developments in the agricultural sector of the European Union (EU) and its physical environment. Among agricultural policy objectives, resource sustainability has become more prominent, while traditional concerns regarding farm income and competitiveness remain. The EU farm sector has faced variable market conditions, but border protection, domestic market measures and fixed payments have to some extent attenuated farm income variability or the consequences of price variability on income. With successive enlargements, the European Union has grown and become more diverse. The 12 member states that have joined the European Union since 2004 have multiplied the number of farms in the European Union by almost three, but raised the total value of agricultural production by less than 20%. Farms in new member states are characterised by a pronounced dual structure with few, very large farms and many, very small ones. At the same time structural adjustment has occurred in all member states: farm consolidation has occurred while small, subsistence or hobby farms remain; the farm population has declined sharply and has aged; farm productivity has increased; and the share of agriculture in the economy has continued to decrease.

Before analysing agricultural policy developments, the report describes the main characteristics and structure of the current CAP, including border and domestic measures, their implementation and funding arrangements. In 2010, CAP expenditures reached close to EUR 53 billion. Pillar 1 direct payments accounted for three quarters, while market price support measures, which are also funded under Pillar 1, accounted for another 8%. The remaining 16% of CAP expenditures funded Pillar 2 measures, which include a variety of

payments and investment aids to improve the competitiveness of the agricultural and forestry sectors, the environment and the countryside and the quality of life in rural areas. Information is provided on implementation of Pillar 1 payments and national priorities under Pillar 2, by member states. An annex provides an overview of the integration of environmental concerns into EU agricultural policy.

The description of CAP measures is illustrated by the level and type of support they provided to EU producers, using the OECD Producer Support Estimate (PSE) and related indicators. OECD indicators are then used to track developments in the level and composition of support due to CAP reforms over the period 1986-2009. The share of gross farm receipts derived from support to producers decreased from 39% to 22% between 1986-88 and 2008-10. This share is close to the OECD average of 20% in 2008-10. CAP reforms led to successive re-instrumentations, which are well tracked by developments in the composition of the PSE. Following the MacSharry reform, market price support decreased and direct payments based on current production factors increased. This movement was reinforced with the Agenda 2000 reform. With the implementation of the 2003 reform and successive reforms, there was an increase in the share of payments for which production is not required. They are gradually replacing most payments based on current area and animal numbers. As a result, the share of potentially most distorting support — market price support and payments based on output or variable input use without input constraints — in the PSE decreases from 92% to 29% between 1986-88 and 2008-10 (it is projected to decrease to 27% in 2012), while the share of least distorting payments, which place no requirement to produce, increased from zero to 44% over the same periods (and it is projected to reach 46% in 2012). At the same time, constraints on input use and production practices are now attached to most payments. This reflects the generalization of cross-compliance conditions attached to the receipt of most payments, and the development of payments to manage land and improve the environment under Pillar 2.

The impact analyses, which use different modelling frameworks, confirm the gradual reduction of distortions to production and trade in the agricultural sector. Policy Evaluation Model (PEM) analysis estimates that the impact of agricultural support on production is divided by three over the period 1986-2008, with the 1992 MacSharry and the 2003 reforms as the main milestones. In consequence, negative trade effects of the CAP decreased significantly as commodity regimes were gradually reformed. While the policy mix favoured arable crops over livestock at the beginning of the period, successive reforms have increased support to pastures to the extent that more land is used in pasture with the current CAP than would otherwise be the case. According to simulations carried out with the CAPRI model, the 2003 reform resulted in a significant expansion of fodder area and a reduction in land used for arable crops. Combined with lower herd size and fodder yields, this led to an extensification of livestock production (lower livestock density). As production on marginal land is abandoned, cereal yields increased, but production decreased and this led to higher domestic prices for cereals. The same impacts are found for the oilseed sector. The implementation of the Health Check is found to reinforce these effects, in particular in France and Spain, which kept some crop specific payments under the 2003 reform. The Health Check also leads to a sharp decrease in durum wheat, protein crops and tobacco areas, as those crops no longer receive specific premia. The removal of dairy quotas under the Health Check is simulated to result in larger herds and higher milk yields. As a result, milk production increases and milk prices decrease. Overall, beef production continues to decrease and beef prices increase, but there are very differentiated

impacts on beef output per hectare depending on regions and between the 2003 and Health Check reforms. Compared to a continuation of Agenda 2000, recent reforms result in increases in imports and reductions in exports for all products. Both reforms lead to increased farm specialisation. Compared to a continuation of Agenda 2000 and the 2003 reform, highest land rents are found with the Health Check, under the assumption that support from single payments is nearly fully capitalised into land value. However, recent studies suggest that capitalisation into land values is partial. Quota rents disappear with the removal of dairy quotas.

A specific dairy model, EDIM, is used to shed light on the impacts of recent reforms in the dairy sector. A dairy reform scenario results in an initial decrease in milk prices when intervention prices for butter and skimmed milk powder are lowered in 2004. Milk prices start increasing again in 2007/08 as the quota is estimated to be binding. As with CAPRI scenarios, the phasing out of the dairy quota is estimated to lead to an overall increase in milk production (by 3.6% compared to the 2003 reform scenario), with contrasted developments across member states and to a decrease in the milk price both within and outside the European Union. In the scenario analysis, the price of butter in the European Union decreases more than the price of Skimmed Milk Powder (SMP). These scenario results do not take account of other developments that could affect dairy prices. According to OECD and FAO Outlook (2010e), projections, domestic and border milk prices are expected to converge. The 2006 sugar reform has reduced protection and improved the competitiveness and the market orientation of the sector, but the domestic market is still sheltered by market access regulations.

CAP reforms also had an impact on land markets, which varies by country depending on farm structure and regulations governing transfers of land and payment entitlements. Impacts on structural change and farm competitiveness of recent reforms also depend on countries and regions: impacts of reforms on structural change are generally small, mainly because payment entitlements remain linked to land and structural factors such as farmers' age are the main determinants. However the impacts of recent reforms are estimated to be greater in regions with natural handicaps, where they slow adjustment as less profitable farmers may choose to remain in business, reduce production activities and still receive the single payment; or in new member states, not so much because of reform but because support increases with accession and during the transition period. De-linking payments from production factors affects farm dynamics in different and opposite ways. On the one hand, it is expected to have a positive impact, as farmers can better respond to market signals and thus, derive higher average profits per hectare. On the other hand, it may slow structural change and raise land prices, and thus contribute to reducing farm competitiveness. More evidence is thus needed on the impact of policy reforms, in particular to distinguish it from other factors that affect structural change.

In CAPRI simulations, the impact of recent reforms on farm income is moderate except in new member states because payments are increasing during the ten-year transition period following accession. The 2003 reform results in higher income from higher prices, while incomes decrease slightly with the Health Check, mainly due to the phasing out of quota rents. PEM analysis also highlights the increase in the efficiency with which CAP measures deliver additional income to farmers and landowners over the period 1986-2008, as the share of support with lower or no link to commodity production increases and leakages to input suppliers and deadweight losses diminish. As a result, while the level of support decreases, the income transferred to farmers is relatively stable until it increases

from 2005 with the implementation of single payments. However, the growing importance of rented land over the period increases significantly benefits captured by landowners other than farm operators.

Distributional aspects of CAP reform between economic agents and within the farm sector are also considered. The move away from price support towards direct payments has led to transfers to producers from consumers being gradually replaced by transfers from taxpayers. Welfare has increased as deadweight losses were reduced. Support by farm size is unequally distributed in the EU27 as the 25% of largest farms receive 74% of all support (71% of all payments and) 73% of Pillar 1 payments) in 2007. In particular, income support benefits mainly larger farms with higher than average levels of income per farm. The reforms are changing the distribution of support marginally, mainly because direct payments are a little less unequally distributed than market price support. In addition, member states have some flexibility to change the distribution of support since 2003, through regional implementation, Article 68 of Health Check regulation or reinforcement of Pillar 2 funds and some used it. On average in the EU15, the distribution of support by farm size has become less unequal between 2004 and 2007. This is mainly due to the reduction of market price support, but also to a slightly more equal distribution of Pillar 1 payments after the reform. It should however be noted that equal distribution of support is not an objective and that developments in the distribution of support have to be considered in relation to policy objectives. Reforms have affected commodity sectors at a different pace. As a result, the composition and level of support by farm type has changed over the period. Implementing single payments as a per hectare flat rate payment at national level would change significantly the distribution of support and income between farms within countries.

A summary of most recent findings on the impact of reform on the environment is also included. All policies have an impact on the environment to the extent they influence management practices. In addition, impacts are likely to vary within and between regions. Among market measures, the introduction of set-aside, first voluntary in 1988 and compulsory in 1992 has had significant environmental impacts, estimated to be positive overall. De-linking support from current production is expected to be beneficial for the environment as all other things equal, it leads to some extensification of production practices. Cross compliance conditions introduced in 2004 apply to all land and are expected to deliver a minimum level of environmental management across the farmed countryside, but they do not target specific problems. Agri-environmental measures provide incentives to low input, extensive farming systems, particularly grassland systems, or target more complex management requirements needed for the maintenance or restoration of particular habitats, species or geographical areas. The extent of environmental benefits delivered is subject to much debate, as they are difficult to measure. Evaluations of the agri-environment measure under Pillar 2 have shown that its implementation has achieved benefits for biodiversity, or at least reduced the rate of biodiversity loss. Recent evaluations have also showed that the measure has had a generally beneficial impact upon maintaining landscape patterns. In contrast there is less information on the impact of agri-environment schemes on soil and water quality within the evaluation literature, with insufficient data being the main limiting factor. Where benefits have been identified, these are largely delivered through actions requiring reductions in inputs, the use of cover crops on arable land, appropriate arable rotations,

arable reversion to grassland, organic agriculture and the introduction of buffer strips of varying widths alongside water courses.

Finally, some considerations are given on the impact of reforms for some aspects of rural development. As illustrated with CAPRI simulations, reforms are expected to have some impact on the location of production. While direct payments, in particular those which place no requirement to produce, decrease spatial agglomeration of farms, the reduction of commodity-related support is expected to result in a concentration of production in most competitive regions as commodity farming in less competitive rural areas may decrease. This movement should increase with the phasing out of dairy quotas, leading to potential difficulties in regions with natural handicaps where alternative agricultural activities are limited. However, the increase in Pillar 2 funds linked to modulation and the 10% flexibility given to member states within Pillar 1 would allow them to increase support for less competitive regions or production if they wish to do so.

Overall, CAP reforms over the 25 years have substantially and continuously increased the market orientation of the sector, reduced distortions and improved the capacity of the CAP to transfer income to farmers. While deadweight losses have become smaller, an increasing proportion of support is captured by non farming landowners. The level of support received by farmers has decreased, but remains concentrated on larger farms. Large reductions in overall protection have been gradually achieved, with a variable and unequal pace across commodity sectors. Some of them remain sheltered by market access restrictions and provisions for using export subsidies are maintained although they have not been used to a great extent in recent years and expenditures on export subsidies have decreased to 1% of Pillar 1 funds in 2010. Moving funds from Pillar 1 to Pillar 2 has facilitated the move towards policy measures that are better targeted to specific objectives, but they still account for a limited share of support.

Evolving in a gradual and steady way, successive reforms have achieved significant improvement in the performance of European Union's agricultural policies. The reduction in distortions to European Union and world markets has allowed EU farmers to take advantage of market opportunities from stronger and diversified demand for food and non-food use, as well as from higher real prices for a number of major commodities that are expected over the next decade. At the same time, the EU agricultural sector will have to respond to major challenges, including global food security, mitigation and adaptation to climate change, and market volatility. With the reduction of market management, farmers are becoming more exposed to price volatility in agricultural commodity markets.

Future reform should build on past success and continue to increase the market orientation of the sector and reduce distortions, mainly from remaining market price support. Future efforts should focus on improving market access more widely as part of ongoing international trade negotiations and bilateral agreements. Some steps have already been taken with respect to improved market access for least developed countries. Reform should address the remaining market deficiencies that constrain the competitiveness of the EU food and agricultural sector. An effective policy framework should be developed to provide a wide variety of risk management tools for farmers to manage their risk. The scope of agri-environmental measures is expected to increase to better take into account challenges related to climate change. At the same time, improving the environmental performance of agriculture would require better information on problems, demand for public goods and practices and institutional arrangements best able to achieve

requirements. Strengthening the contribution of agriculture to rural economies would require co-ordinated approaches that recognise the diversity of rural areas and draw on local assets. In order to improve the efficiency and equity of agricultural policy, efforts should be made to better target support to specific objectives. A pre-requisite would be to clarify the definition of policy objectives, in particular with regard to income objectives and define measurable targets corresponding to each objective. Improving targeting would require defining the type and level of income to be targeted, as well as using information on the income and wealth situation of the farming community. The optimal precision of targeting would depend, among other things, of the size of transaction costs, which varies with farm structure, relative to other costs and benefits. Clarifying the link between instruments and objectives of agricultural policies is essential to further improve the performance of the CAP and its ability to respond to emerging challenges. It would allow for a comparison of policy options potentially able to meet objectives, taking into account all costs and benefits, including transaction costs and side-effects. The current debate on the CAP post-2013 represents a unique opportunity for the European Union to align future policy instruments with its future objectives.

Chapter 1

Purpose and Scope of the Study

As an introduction to the study, this chapter explains that the analysis covers reforms of the Common Agricultural Policy (CAP) of the European Union over the period 1986-2010 and that these reforms are evaluated using principles for agricultural reform agreed by OECD ministers.

The Common Agricultural Policy (CAP) is the first common policy adopted by the European Union (EU)¹ under the Treaty of Rome. It is based on three principles: common market, community preference and financial solidarity. Since its implementation in 1963, the CAP has evolved in response to domestic pressures, including changes in agricultural policy priorities, efficiency improvements and budget constraints, and to international pressures to reduce trade distortions. Past reforms had to be approved unanimously by the European Council of member states' Agriculture Ministers on the basis of proposals submitted by the European Commission. The European parliament had a consultative role. The Lisbon Treaty, in force since 1 December 2009, introduces the co-decision procedure for the CAP so that the European Parliament is able to propose amendments and veto proposed laws. Depending on their timing, CAP reform discussions take place within a given long-term budget called "financial perspectives" or in parallel with discussions about future ones. Current "financial perspectives" run from 2007 to 2013, while the next one starting in 2014 is under negotiation.

This study covers the series of agricultural policy reforms implemented over the period 1986-2010 and focuses in particular on reforms since 1992. These have led to a gradual re-instrumentation of support from market intervention to direct payments to producers. The first step reduced intervention prices and introduced compensatory payments per hectare of cereals, and increased the rate of payments per head of animal. This was reinforced by the Agenda 2000 reform with further cuts in intervention prices compensated by higher payments. In addition, payment rates were equalised for all cereal, oilseed and protein (COP) crops. The 2003 reform represented another major step with the introduction of single fixed payments with entitlements based on historical payment references, which do not require production of any commodity, to replace part or all of previous area and headage payments.

Since 2003, additional commodity sectors have been reformed (*e.g.* tobacco, olive oil, cotton and hops in 2004, sugar in 2006, fruits and vegetables in 2007, and wine in 2008) resulting in a higher share of direct payments to producers delivered as a single payment with no requirement to produce. The Health Check of the CAP in 2008 resulted in the implementation of further CAP changes at the beginning of 2009, consolidating previous reforms. This stream of reforms has been characterised by a consistent and gradual reduction in domestic market intervention and a loosening of the link between the provision of direct payments and current production (process of decoupling). The integration of environmental concerns in the CAP is briefly described in Annex A.

An analysis of the 2003 CAP reform was published in 2004 (OECD, 2004). It included an evaluation of the main changes agreed to in 2003 via a comparison of policies in place or planned for under Agenda 2000. This evaluation considered the implications of policy changes for production incentives, market developments and levels of support. Information and tools available to the OECD Secretariat were used, notably the PEM and Aglink models and the PSE database.

The general over-arching framework for the OECD evaluation of agricultural policies is the reform principles and operational characteristics as agreed to by OECD Ministers in 1998 and reinforced in 2010.² While evaluations of policy changes are published in the annual report *Agricultural Policies in OECD countries*, the OECD also undertakes specific country reviews when a country adopts a major policy reform or asks for advice.³

This study uses various sources of information to describe and analyse developments in the agricultural sector and its policies. As with previous CAP analysis (OECD, 2004), information and tools available to the OECD Secretariat will be used. In particular, the PEM model and the PSE database are used to consider the implications of policy changes on production incentives, trade impacts and levels of support. The CAPRI model has been used to estimate the impact of reforms on member states and domestic markets.⁴

On 10-11 March 2010, an OECD workshop brought together experts to discuss the disaggregated impact of recent CAP reforms.⁵ The results of the analysis and discussions at the workshop have been incorporated in this report. In addition, proceedings of the workshop have been published.

Chapter 2 gives an overview of the agricultural situation in the European Union. Chapter 3 describes current agricultural policy and reforms implemented since 1992. It illustrates how PSE indicators can be used to monitor policy developments. Chapter 4 considers the impact of agricultural policy reforms on the economic and environmental performance of agriculture. Chapter 5 draws conclusions concerning the reforms using the principles and operational characteristics established by Ministers for the evaluation of reform efforts across OECD countries. It makes some recommendations concerning the continuing search for policy measures that are effective and minimally distorting, while also contributing to the achievement of the objectives set for the sector.

Notes

1. At the time, it was the European Community. Unless specified otherwise, EU data include all member states in a given period. EU27 refers to current members of the EU, EU15 to member states before 2004, EU10 to new member states, which joined in 2004 and EU2 to those joining in 2007.
2. A meeting of the Committee for Agriculture at Ministerial Level was held in Paris on 25-26 February 2010. The Communiqué from the Ministers can be found at www.oecd.org/agriculture/ministerial.
3. The most recent agricultural policy reviews were for Mexico (OECD, 2006), Korea (OECD, 2007a), and Japan (OECD, 2008b), the United States (OECD, 2011c) and Turkey (OECD, 2011d).
4. The CAPRI model has been developed in Bonn University under several EU research projects.
5. The agenda, as well as presentations and papers prepared for the OECD Workshop on the *Disaggregated Impacts of CAP Reform* can be found at: www.oecd.org/agriculture/policies/capreform.

Chapter 2

Overview of Developments in the European Agricultural Sector

As a result of successive enlargements of the European Union, its agricultural sector has become larger and more diverse. The European Union is the largest importer of agro-food products and the second largest exporter after the United States. This chapter begins with a brief look of the evolving role of agriculture in the economy of EU member states. It analyses developments in farm production, land use, productivity, price levels and variability, and provides an overview of developments in the characteristics of farms and farm households. It also provides an overview of EU agro-food trade patterns.

A changing environment

In the past 25 years, the agricultural and agri-food sectors of the European Union (EU) have had to adapt to an ever changing economic, market and policy environment. The Common Market has become larger and more diversified with successive enlargements, which have more than doubled the number of member states in the European Union. It has also become more open to international trade with the implementation of the Uruguay Round Agreement on Agriculture and the conclusion of a number of bilateral trade agreements, notably with developing countries. This has created opportunities and challenges for EU agricultural and food producers as domestic and foreign competition has increased and consumer preferences have diversified. Demand has also evolved: in addition to safe, high quality and affordable food, the sector is expected to provide a wider range of goods and services, including non-food products, land management and environmental services. In general, societal concerns on agricultural production practices and food processes have become more prominent in the policy debate. The recent financial and economic crisis was a deep, sometimes severe, blow to EU member states, but recent upward trends in consumer demand are expected to continue.

While initial objectives for the Common Agricultural Policy (CAP) have not changed fundamentally, these developments have influenced the relative ranking and importance of priorities. While concerns on competitiveness and farm incomes remain, sustainability has become an overarching objective and improving the environmental performance of agriculture and its contribution to rural viability has become crucial (EC, 2009). The need to address consumer concerns on food quality and safety has also been reinforced. Specific objectives have been set for CAP support to rural development in Article 4 of Council Regulation (EC) No 1698/2005, related to improving the competitiveness, environment, countryside and quality of life in rural areas (Box 2.1).

Recent fluctuations in commodity prices have not altered these commitments, but they have placed risk reduction and management, and global food security issues higher on the policy agenda. In this context, policy makers are more aware of the challenges posed by climate change and, generally, the need to use scarce resources more efficiently. They also recognise the importance of research and development (R&D) in fostering innovations that will allow the sector to respond to new challenges.

Changes in priorities have had an impact on the policy environment. Environmental, animal welfare and food safety regulations have been strengthened in response to societal concerns. In some cases, investment support helps them to comply with new regulations. Investment support is also available to accompany structural adjustment and improve competitiveness. These measures are particularly important in new member states (those that joined the European Union after 2004), where farmers have had to adjust rapidly to a new competitive and policy environment. In addition, in the whole European Union, more payments are granted to farmers for services demanded by society, such as landscape maintenance, preservation of biodiversity and rural viability, and payments to regions with

Box 2.1. Objectives of the Common Agricultural Policy

The objectives of the **Common Agricultural Policy (CAP)** set by the Rome Treaty establishing the European Community in 1957 and amended by the Lisbon Treaty of 2009, shall be:

- a) to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour;
- b) thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
- c) to stabilise markets;
- d) to assure the availability of supplies;
- e) to ensure that supplies reach consumers at reasonable price.

According to Article 4 of Council Regulation (EC) No 1698/2005 of 20 September on **support for rural development** by the European Agricultural Fund for Rural Development (EAFRD), support for rural development shall contribute to achieving the following objectives:

- a) Improving the competitiveness of agriculture and forestry by supporting restructuring, development and innovation;
- b) improving the environment and the countryside by supporting land management; and
- c) improving the quality of life in rural areas and encouraging diversification of economic activities.

specific handicaps have been strengthened to maintain extensive farming. Overall, these measure account for an increasing but modest share of support to agricultural producers. The most visible change in support mechanisms is the reduction of market regulation and border protection; the resulting drops in farm receipts have been partially compensated by payments, which were originally based on crop area or animal numbers. These direct payments have become increasingly independent from production to the extent that most are now granted without a requirement to produce, as are single area payments introduced in new member states.

Another remarkable feature of the European Union is its changes in size. In 1995, it included 15 countries (EU15) with the accession of Austria, Finland and Sweden. Ten new member states joined in May 2004 (EU10) and two more in 2007 with the accession of Bulgaria and Romania (EU2), bringing the total number to 27 (EU27). Successive enlargements have increased diversity within the European Union in geographical and economic terms. Regarding primary agriculture, the value of agricultural production rose by nearly 20%, agricultural area by around 40%, the number of farms by over 140% and the number of farmers by over 100% (Table 2.1, Figure 2.1). These changes are obviously important when interpreting developments over time. Moreover, these aggregate figures indicate that the agricultural sectors of new member States have different structural characteristics than those in the EU15 and, in particular, a lower productivity per hectare and per worker. Enlargement has increased diversity within the European Union, as most farms in many new member states are either very large or very small, and this poses challenges to policies.

Table 2.1. **Enlargement and size of the EU agricultural sector, 2007-09**

	Utilised agricultural area	Number of holdings ¹	Average farm size ¹	Number of work units ^{1, 2}	Total value of agricultural production ³
Units	Million ha	'000	Hectares	'000	Million EUR
EU15	128	5 662	23	5 671	274 263
EU10	33	3 614	9	3 326	34 673
EU2	19	4 424	4	2 696	17 265
EU27	180	13 700	13	11 693	326 201
% share of new member states in EU27	29	59	–	52	16
% change EU27/EU15	41	142	–42	106	19

EU15: EU members in 2003; EU10: Members which joined in May 2004; EU2: Bulgaria and Romania, which joined in 2007.

1. 2007.

2. Agricultural Working Units or full-time farmer equivalent.

3. Economic Accounts for Agriculture at producer price.

Source: EUROSTAT.

StatLink  <http://dx.doi.org/10.1787/888932475924>

The agricultural and agri-food sectors of EU countries have shown a remarkable capacity to adjust to changes, to take advantage of new opportunities and to meet new demands from society. The policy developments in agriculture have been accompanied by other adjustments both within and outside the sector.

A changing role for agriculture in the economy

Share of agriculture in the economy

Primary agriculture plays a small and declining role in employment and GDP in most EU regions, and farm households account for only a modest share of the population (OECD, 2009a). While the average share of primary agriculture in rural employment and GDP is low and decreasing in EU member states, agriculture is a large land user and plays an important role in many environmental and other land use issues (Figure 2.1), although land used for agriculture has decreased in the majority of EU countries over the last decade (OECD, 2009b). In some countries, forestry is also a large land user (Figure 2.2).

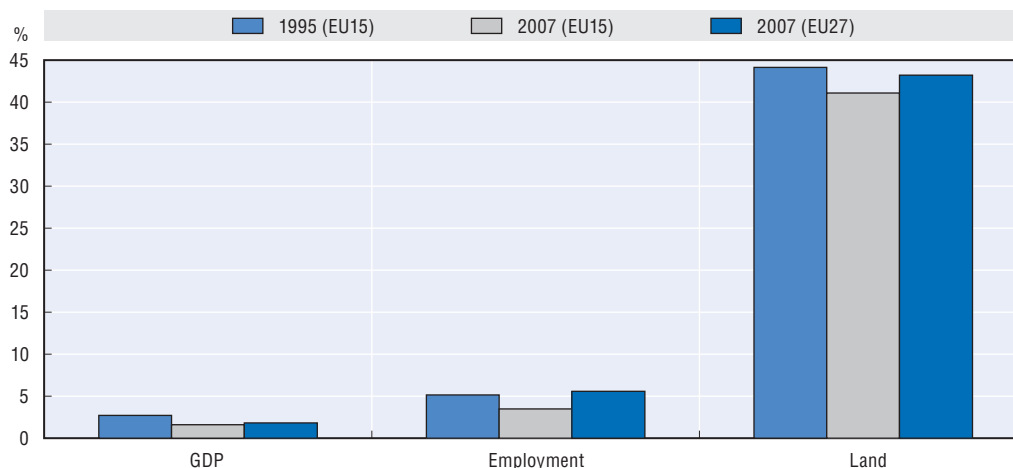
A comparison between EU15 and EU27 in 2007 shows that the share of agriculture in employment and land use is larger in new member states, but not its share in GDP, indicating lower returns to labour in these countries (Figure 2.1). The analysis of the role of agriculture in the regional economy presented in OECD (2009a) shows there are large differences among EU regions and, on average, by member state, in particular regarding land use. The share of agriculture in regional employment also varies, but it is below 10% in most countries and regions (Figure 2.3). The analysis also shows that while agricultural employment decreases in all EU member states, agricultural GDP increases in most of them.¹

The importance of the agri-food system as a whole is likely to be greater than what the available data indicate, as it refers only to food processing industries. At the EU27 level, food industries (food products, beverages and tobacco) accounted for 2.4% of employment and 2.2% of GDP in 2004. In all EU member states, the share of food processing industries in national employment remains lower than that of primary agriculture (Figure 2.3), but is generally more stable. The importance and structure of the whole agricultural and food

complex, including upstream industries and the retail sector, is very diverse among member states and in some of them, it can represent a significant share of net value added in some member states (e.g. 10% in the Netherlands).

This does not capture some of the contributions of farm households to the rural economy, as their role goes far beyond the supply of agricultural and food products. They also provide environmental and recreational services, participate in the off-farm labour force and sustain demand for consumer goods and services locally. As explained in OECD (2009a), these contributions are difficult to measure and evidence on their value is scarce. A recent study of agriculture in the rural economy of selected EU regions (EC, 2010b) has found that multiplier effects of agriculture can be quite large in some of the selected rural areas.² Strong linkages have been found with food processing, hotels and catering and trade, which in turn are well integrated in the rural economy.

Figure 2.1. **Share of primary agriculture in the economy, 1995, 2007**



GDP (Gross Domestic Product) and employment: agriculture, forestry, hunting and fishing.

Land: Utilised agricultural area over land area

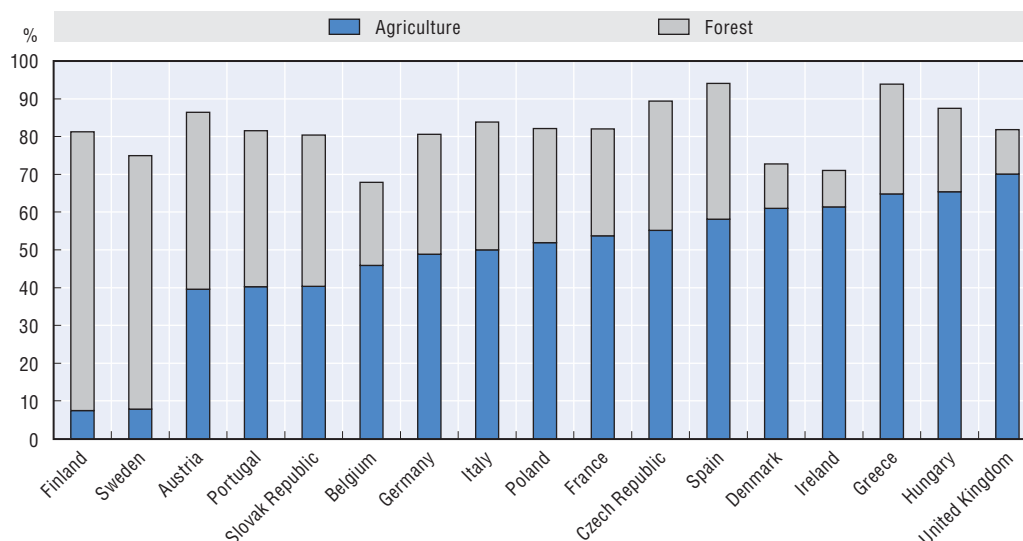
Source: EUROSTAT.

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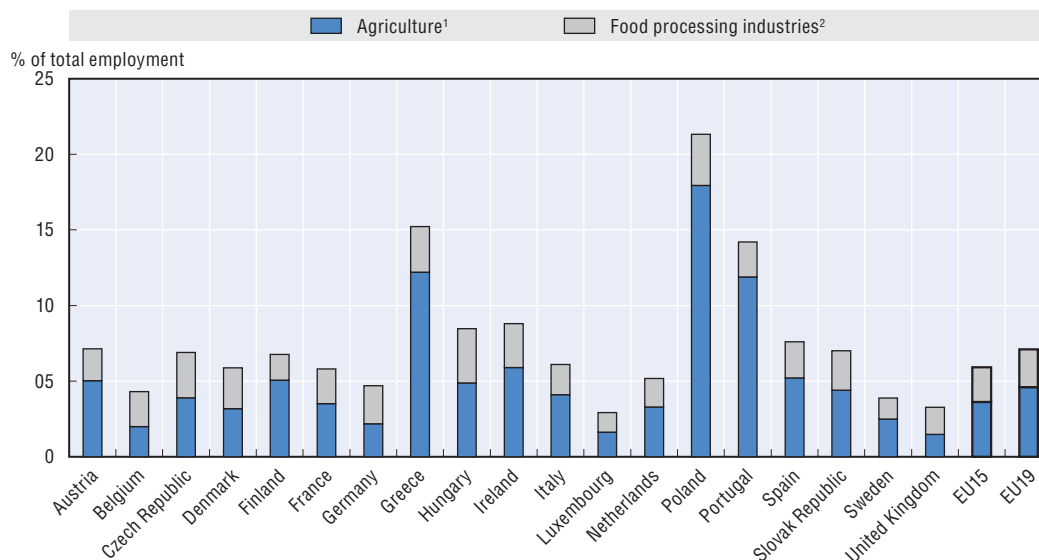
The various outputs of agriculture

Outputs of agricultural industries that are valued by markets (at producer prices) are reported in the Economic Accounts for Agriculture published by EUROSTAT. In addition to the value of crop and livestock outputs, the Economic Accounts for Agriculture report the value of marketed agricultural services output, such as contract work and the renting of milk quota, as well as the value of non separable secondary activities, such as the on-farm processing of agricultural products or recreational activities (See detailed list and definition in Box 2.2).

Over the period 1986-2009, crop output accounted for around 52% of the total value of outputs of the agricultural industries in the European Union, while the share of animal output decreased slightly from 44% in 1987-89 to 40% in 2007-09 (Table 2.2). Half of this decline reflects the lower share of animal products in total agricultural output in new member states as compared to EU15. Together, agricultural services and secondary activities represented 7.2% of the total value of outputs of the agricultural industries in 2007-09 (7.7% in 2009), compared to 3.4% in 1987-89. The value of all components

Figure 2.2. **Share of agriculture and forest area in land area, 2005**

Source: EUROSTAT, land use.

StatLink  <http://dx.doi.org/10.1787/888932474746>Figure 2.3. **Share of agriculture and food processing industry in employment, 2004-05**

1. Agriculture, hunting and forestry, 2005 from Labour Force Surveys.

2. DG-AGRI based on primary Data Source: EUROSTAT, 2004. Food industry corresponds to division 15 and 16 or branch DA of Nomenclature of economic activities in the European Community (NACE) rev. 1.1 (manufacture of food products; beverages and tobacco products)

Source: OECD (2009a).

StatLink  <http://dx.doi.org/10.1787/888932474765>

increased except the renting of quota, which is considered as an agricultural services output as is contract work by farmers.

Among secondary activities (defined in Box 2.2), activities linked to the processing of agricultural products grew less than other activities in the last decade. They accounted for

Box 2.2. **Non separable non-agricultural secondary activity in EUROSTAT Economic Accounts for Agriculture**

Non-agricultural, non-separable secondary activities are defined as activities closely linked to agricultural production for which information on any of production, intermediate consumption, compensation of employees, labour input or gross fixed capital formation cannot be separated from information on the main agricultural activity during the period of statistical observation.*

Two types may be distinguished:

- Activities that represent a continuation of agricultural activity and which use agricultural products. This type of activity can be found in most of the European Union Member States. The processing of agricultural products is the typical activity of this group:
 - Processing of agricultural products.
 - Grading and packaging of agricultural products, *e.g.* eggs and potatoes.
- Activities involving the agricultural holding and its means of agricultural production (equipment, installations, buildings, workforce). These activities are basically the following:
 - Agro-tourism – camping, catering, hotels, various kinds of accommodation, etc.
 - Farm shops – retail trade activities concerning products other than those from the holding. Direct sales of agricultural products raw or processed are recorded in the output of the products concerned.
 - Sports and rural recreation – the use of land for activities such as golf, horse-riding, hunting, fishing, etc.
 - Services for third parties – *e.g.* the renting and repair of agricultural machinery, irrigation projects, agricultural advisory services, product storage, maintenance of farm buildings, commercial services relating to agricultural products, transport of agricultural products, etc. These services are recorded as secondary activities, only if they are performed for a third party.
 - Landscaping services – grass mowing, hedge trimming, snow clearing, laying out, planting and maintenance of green areas and the like.
 - Fish-farming.
 - Other activities involving the use of the land and the means of agricultural production.

* Some secondary activities are always considered separable from agricultural activity, *e.g.* renting out of buildings or dwellings.

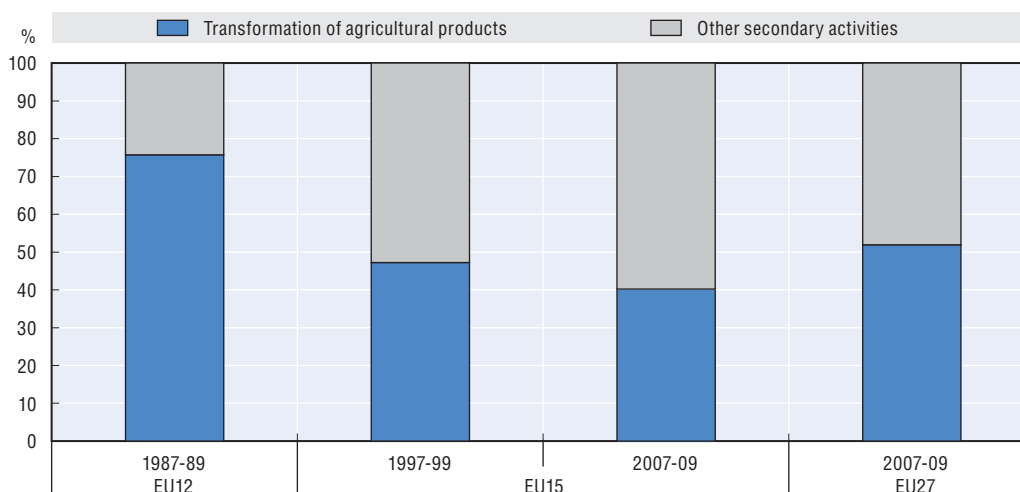
Source: *Manual on the Economic Account of Agriculture and Forestry*, EAA/EAF 97 (Rev. 1.1), http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,1&_dad=portal&_schema=PORTAL.

three quarters of the total value of secondary activities in 1987-89, compared to 40% in the EU15 and 50% in the EU27 in 2007-09 (Figure 2.4).

There is no information on the income generated by various non agricultural on-farm activities carried out by farm households, but the share of farms engaged in one or several activities give an idea of their relative importance. Between 2000 and 2005 the number of farms carrying out other gainful activities³ (OGA) or “diversification” activities directly related to their holdings increased by 4% in the European Union (OECD, 2009a). However, this trend varied across EU countries. Annex Table B.1 confirms the importance of the

Table 2.2. **Composition of the output of the agricultural industry, 1987-89, 1997-99, 2007-09**

		1987-89	1997-99	2007-09	
		EU12	EU15	EU15	EU27
Crop production	% of total	52.2	51.9	52.5	52.9
Animal production	% of total	44.4	42.1	40.3	39.9
Services	% of total	2.4	3.9	4.5	4.3
Secondary activities	% of total	1.0	2.1	2.7	2.9
Total output of the agricultural "industry"	Billion EUR	224.8	253.1	295.4	351.4

Source: EUROSTAT, *Economic Accounts for Agriculture*.StatLink  <http://dx.doi.org/10.1787/888932475943>Figure 2.4. **Changes in the composition of non-separable secondary activities, 1987-89, 1997-99, 2007-09**Source: EUROSTAT, *Economic Accounts for Agriculture*.StatLink  <http://dx.doi.org/10.1787/888932474784>

processing of farm products, followed by contract work. In terms of diversification into "other" activities, farm tourism (tourism, accommodation and other leisure activities) is by far the most important among EU member states. However, there are large differences across countries. Renewable energy production and processing of forest products is significant in some member states.

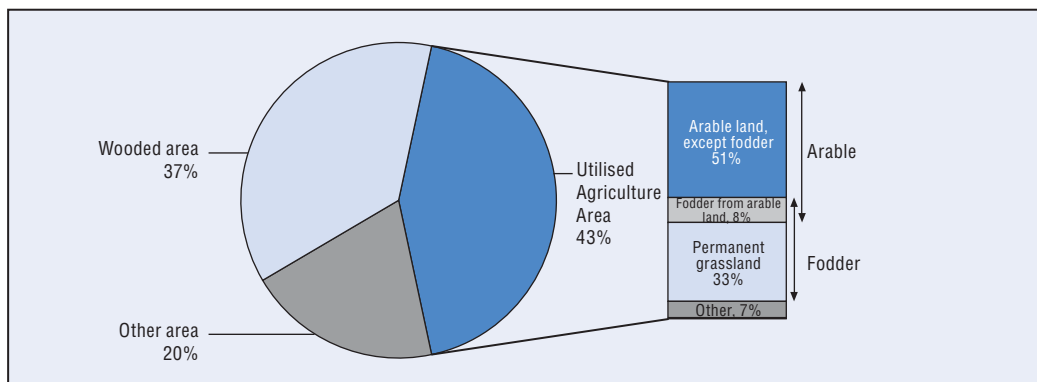
Developments in the farm production economy

Changes in land use and animal numbers

On average for the EU27, agriculture is the main land user as it occupies 43% of land area (excluding inland waters), compared to 37% for forestry (Figure 2.5). Around 60% of agricultural land is arable land and a third is permanently covered with grass. Others uses include permanent crops, greenhouses and gardens. Figure 2.6 shows that agricultural land and arable land areas have followed a similar declining trend since 1990. As a result, at the end of the 2000s they are about 10% lower than in 1990. Less than 10% of arable land is used for the production of fodder. This area decreased until the beginning of the 2000s and then increased. The decline in permanent grassland was more pronounced at the

beginning of the 2000s, but has reversed since 2006, in connection with the implementation of the 2003 reform, in particular the EU cross-compliance condition that total grass area is maintained at national level. After an initial increase at the beginning of the 1990s, land occupied by fallows and green manures fell by about 25% in the late 1990s and by 35% further in the late 2000s as compared to 1990s levels. This land use does not include area set-aside as part of the CAP set-aside scheme, which was abolished in the 2009 Health Check.

Figure 2.5. **Share of various land use in the EU, 2007-09**

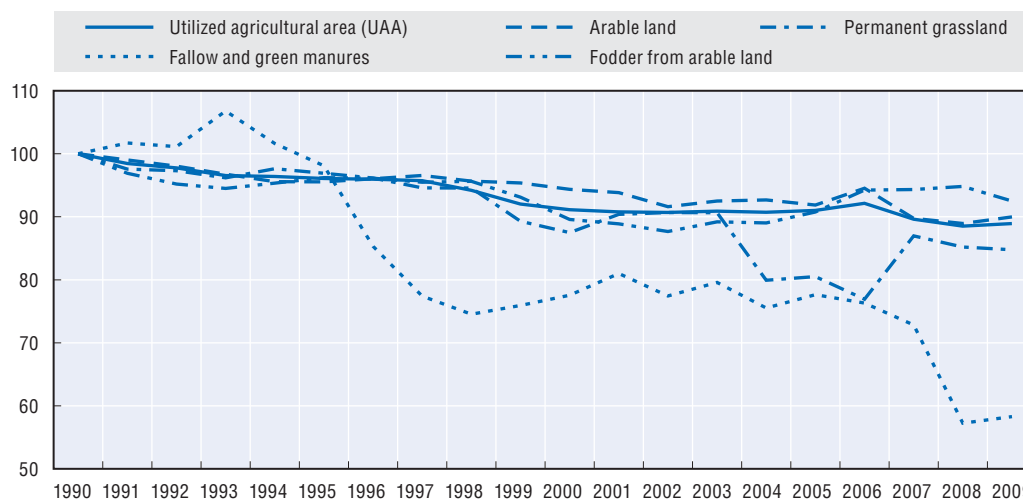


Source: EUROSTAT.

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Figure 2.6. **Developments in land use, 1990-2009**

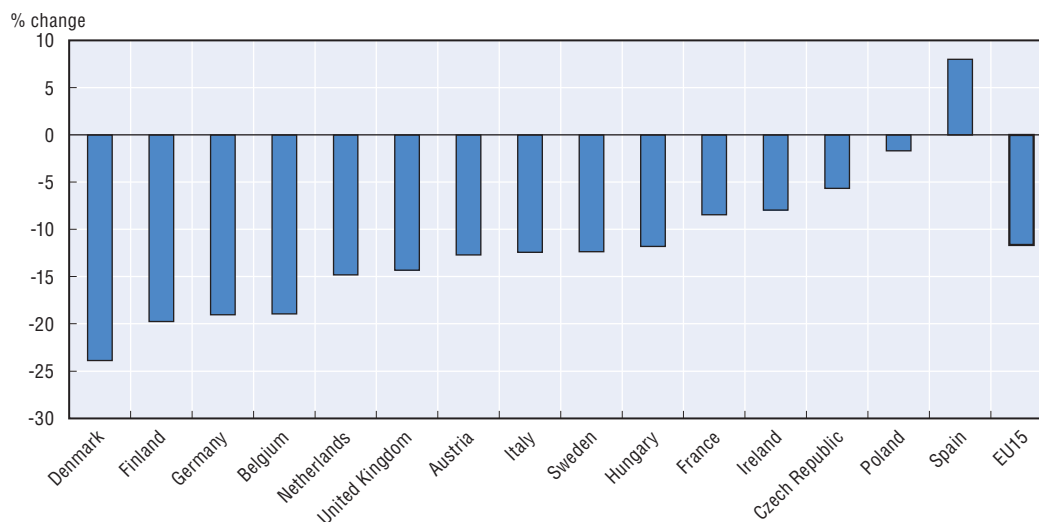
EU15, Indices 1990 = 100



Source: EUROSTAT.

StatLink <http://dx.doi.org/10.1787/888932474822>

Cattle numbers have decreased by over 10% on average in the European Union, with wide variations between member states. The largest declines are in Denmark, Finland, Germany and Belgium, and the lowest in the Czech Republic and Poland, while they have increased in Spain (Figure 2.7).⁴

Figure 2.7. **Change in cattle numbers in selected countries between 1995-97 and 2007-09**

Source: EUROSTAT.

StatLink  <http://dx.doi.org/10.1787/888932474841>

Prices

Domestic producer prices⁵ of individual commodities have fluctuated over the last 25 years. A downward trend can be observed for wheat, maize and rice until 2005, followed by a sharp increase in 2007 and 2008, and a decline in 2009 (Annex Figures C.1 and C.2). A similar pattern is found for sugar beet prices (Annex Figure C.3). Producer prices for dairy products have fluctuated around a flatter trend until 2006, have peaked in 2007 and come down in 2009 below 2006 levels (Annex Figure C.4). Producer prices for beef have been relatively stable around EUR 2 500/tonne until 2000 and from 2002, they have regularly increased, while sheepmeat prices have been steady at EUR 4 000/tonne since 2001 (Annex Figures C.5 and C.6). Pigmeat prices vary to a greater extent than those of products. Their variation is cyclical around a flat trend (Annex Figure C.7).

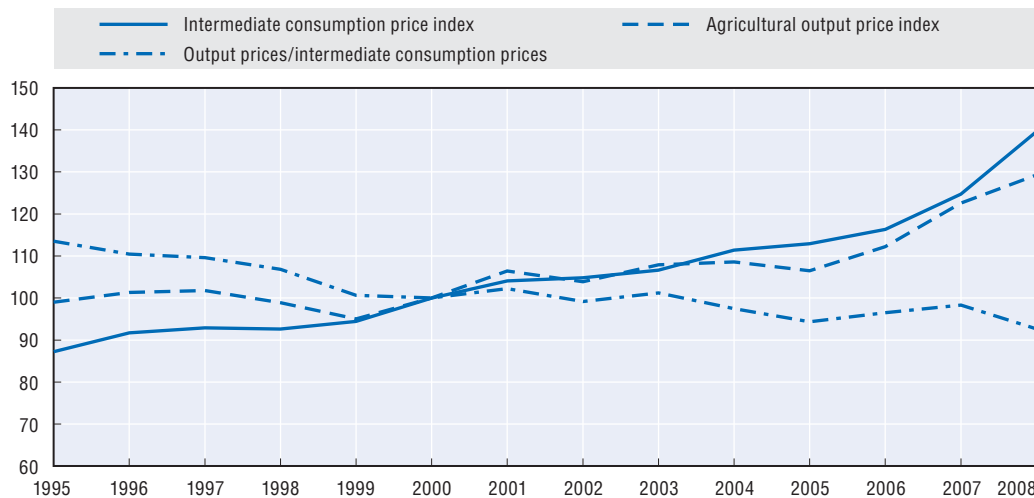
At sector level, nominal output prices have increased less than input prices and the ratio between agricultural output and input price indices follows a downward trend between 1995 and 2008 (Figure 2.8). This indicates that terms of trade, as measured by the ratio of output prices over prices of intermediate consumption, have decreased for agricultural products compared to agricultural inputs.

Commodity outputs

In the European Union, crops make up more than half the total value of agricultural production (Agricultural Goods Output in EUROSTAT Economic Accounts for Agriculture). The shares of various crops vary slightly across periods, with fruits and vegetables showing a clear upwards trend, while the share of cereals decreased between 1987-89 and 2007-09 in the EU15. Among livestock products, pigmeat has maintained a stable share over the last 25 years; poultry and eggs have gained higher shares, while milk and beef production have decreased their respective shares (Annex Table B.3).

New member states produce a relatively higher share of cereals, in particular wheat and maize, oilseeds and poultry and eggs than EU15 countries, a lower share of fruits and

Figure 2.8. **Developments in nominal input and output price indices, 1995-2008**
EU27, Indices 2000 = 100



1. The index of producer prices of agricultural products (output index) is based on the sales of the agricultural products and the input index is based on the purchases of intermediate consumption of agricultural production, i.e. variable inputs and costs of maintenance of machinery and buildings.

Source: EUROSTAT, Price indices of agricultural products.

StatLink  <http://dx.doi.org/10.1787/888932474860>

vegetables, and beef and veal, and an equivalent share of milk and pigmeat. Annex Table B.2 shows that France is the largest producer in the European Union and produces about a quarter of EU cereals, oilseeds and cattle. Germany is the main pigmeat producer. In total, France, Germany, Italy, Spain and the United Kingdom account for around two-thirds of EU agricultural production for most major commodities.

In most European Union member states, the growth in the volume of both crop and livestock production has slowed in the 2000s compared to the previous decade and has become negative in a number of them. This general movement is more pronounced after 2004 (Table 2.3).

Productivity

In the EU15, cereal yields have increased until 1998 and have fluctuated since then around a flatter trend (Figure 2.9). In countries which joined the European Union in 2004, yields went down at the beginning of the transition period (starting in 1989) and only recovered in the mid-2000s, with significant differences by year. In Bulgaria and Romania, fluctuations are larger than in other country groups. In recent years, lower yields are mainly due to catastrophic climatic events such as the 2007 floods. Figure 2.10 shows the large diversity in cereal yield levels and growth rates across member states. Cereal yields are generally lower in new member states and Mediterranean countries of Europe.

Milk yields have also increased in most member states and the growth has in general been more significant than that of cereal yields (Figure 2.11). Again, there is a wide diversity in the level and growth rate across member states. The most productive countries are in the northern Europe and the less productive ones in several new member states. Between 1992 and 2007, growth rates in milk yields have been particularly high in Estonia and Spain.

Table 2.3. **Annual growth rate of agricultural goods output in volume, 1991-2009**

	1991-99	2000-09	2000-04	2005-09
EU27	n.a.	n.a.	n.a.	0.3
EU15	n.a.	0.15	1.1	0.2
Belgium	12.3	1.1	3.1	-0.1
Bulgaria	n.a.	0.6	1.8	1.3
Czech Republic	n.a.	0.6	1.7	0.6
Denmark	0.8	0.6	0.4	1.1
Germany	0.9	0.6	2.4	0.2
Estonia	n.a.	1.7	0.1	2.1
Ireland	1.5	-1.7	1.0	-3.1
Greece	n.a.	-1.1	-0.3	-2.3
Spain	3.4	0.8	2.7	2.2
France	1.8	0.0	0.4	0.2
Italy	1.2	-0.3	0.9	-0.7
Latvia	n.a.	4.9	5.7	2.8
Lithuania	n.a.	4.4	6.0	1.9
Luxembourg	4.4	1.1	1.9	1.6
Hungary	n.a.	1.2	5.9	-0.3
Malta	n.a.	-1.1	-1.1	-1.3
Netherlands	1.4	0.4	-0.1	1.1
Austria	0.7	0.8	0.7	1.3
Poland	n.a.	2.9	4.9	2.2
Portugal	0.3	0.4	2.5	0.4
Romania	n.a.	2.0	10.9	-0.3
Slovenia	n.a.	0.4	3.1	-1.2
Slovak Republic	n.a.	0.3	6.7	-1.7
Finland	-4.2	0.3	-0.1	0.0
Sweden	-0.8	-0.1	0.0	-0.2
United Kingdom	0.1	-0.3	-0.3	-0.5

n.a.: Not available.

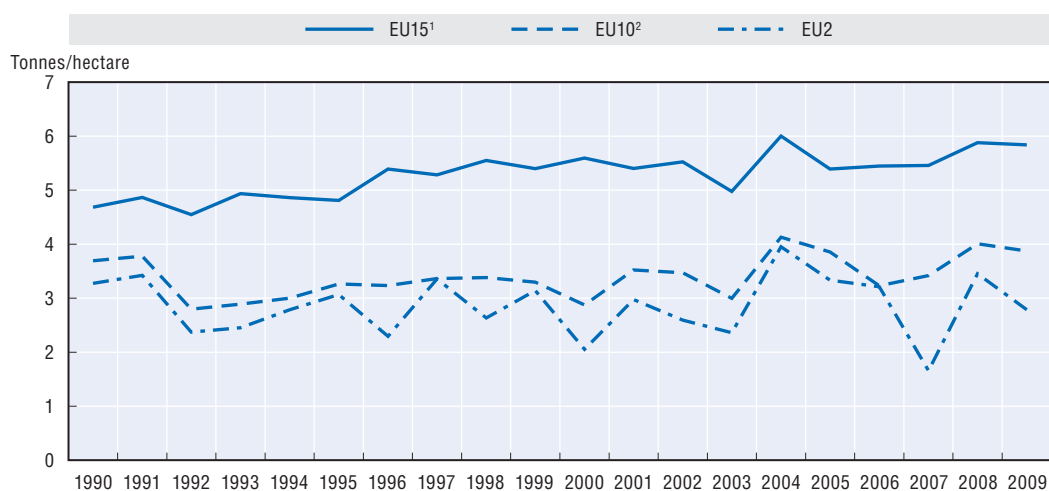
Note: Agricultural goods output is the sum of crop and animal output. Growth rates are based on volume indices.

Source: EUROSTAT, *Economic Accounts for Agriculture*.

StatLink  <http://dx.doi.org/10.1787/888932475962>

On average, the productivity of intermediate consumption, as measured by the ratio between the index of the output volume in the agricultural activities sector and the index of intermediate consumption volume, increased regularly between the mid-1990s and the mid-2000s, but has been stable until 2008 (Figure 2.12). This is due to decreases in the productivity of intermediate consumption in some member states after 2005 (Annex Table B.4).

A number of studies report productivity growth in EU member states using partial measures (yields) or Total Factor Productivity (TFP) measures. The main results are summarised in (OECD, 2010a). They are often expressed in comparative terms between countries. Using price-based indices, Ball *et al.* (2006) found that TFP in 11 EU member states increased consistently between 1973 and 2002. From a lower base, the fastest growth rates were found in Sweden and Spain. In 2002, the highest TFPs were achieved by the Netherlands, Denmark and Belgium, and the lowest by Ireland and Sweden. Using Data Envelopment Analysis (DEA) to compute Malmquist TFP indices, Rungsuriyawiboon and Lissitsa (2006) find that TFP grew by 1.3% per annum in the EU15 over the period 1992-2002, mainly due to an increase in technical change (1.36%), while technical efficiency, which shows whether a firm is able to produce the maximum output from a given set of inputs, decreased by 0.11% (Annex Table B.6). Over the same period, annual TFP growth is higher

Figure 2.9. **Developments in cereal yields (including rice), 1990-2009**

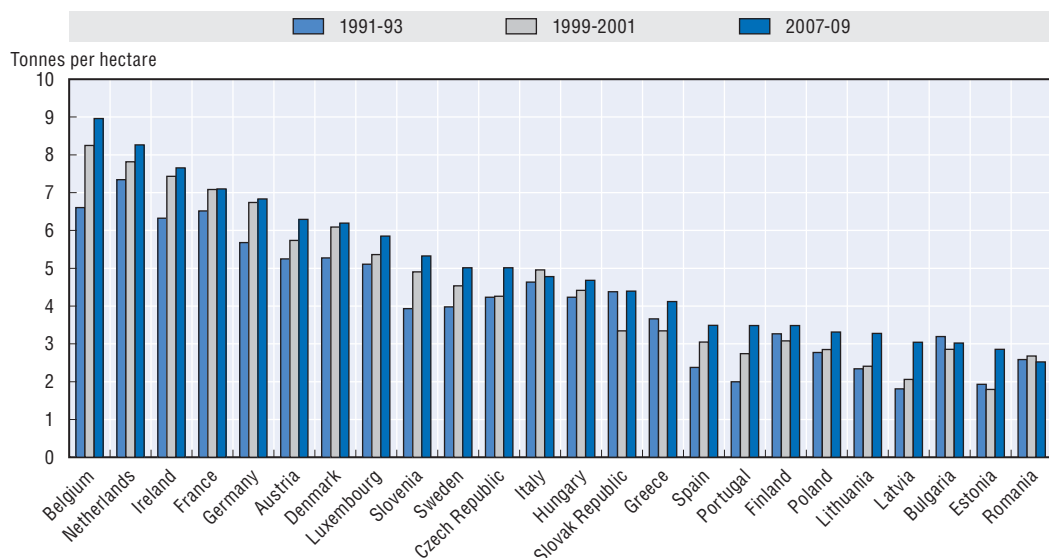
EU2: Bulgaria and Romania.

1. Except the United Kingdom, for which data are missing.

2. Except Malta, for which data are missing.

Source: EUROSTAT.

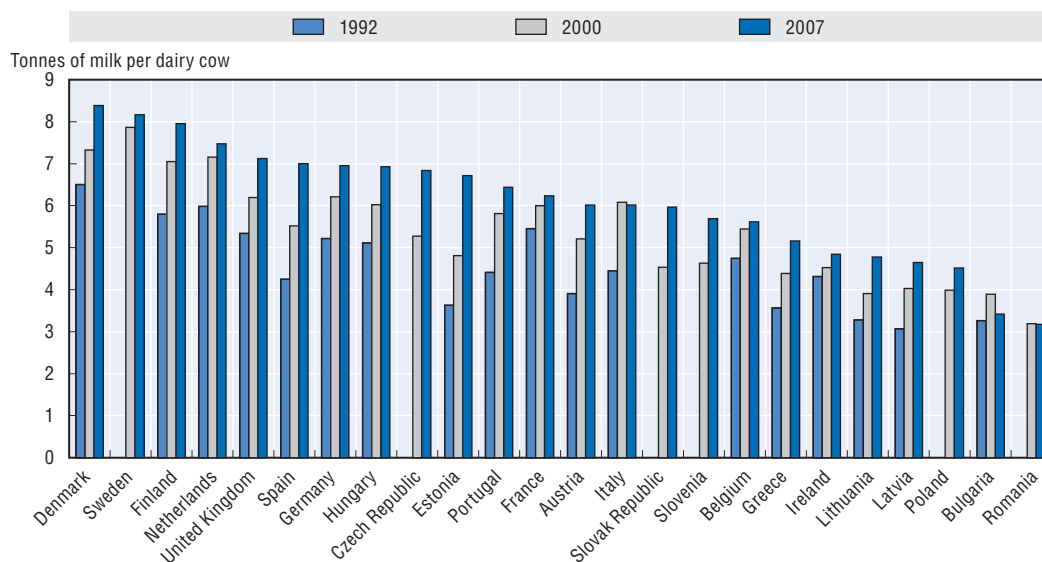
StatLink <http://dx.doi.org/10.1787/888932474879>

Figure 2.10. **Developments in cereal yields in EU member states, 1991-93, 1999-2001, 2007-09**

Source: EUROSTAT.

StatLink <http://dx.doi.org/10.1787/888932474898>

in the EU10 (1.4%) due to increases in both technical efficiency (1.12%) and technical change (1.3%), while scale efficiency⁶ slightly decrease (−0.002%). Again there is a high diversity among member states, with TFP growth ranging from −0.5% in Ireland to 5.3% in Estonia. Applying the same method over a longer period (1980-2000), Coelli and Prasada Rao (2005) also find that TFP growth in EU15 member states is mostly due to technical change, while in new member states technical efficiency change is often a significant factor of TFP growth (Annex Table B.5).

Figure 2.11. **Developments in milk yield in EU member states, 1992, 2000, 2007**

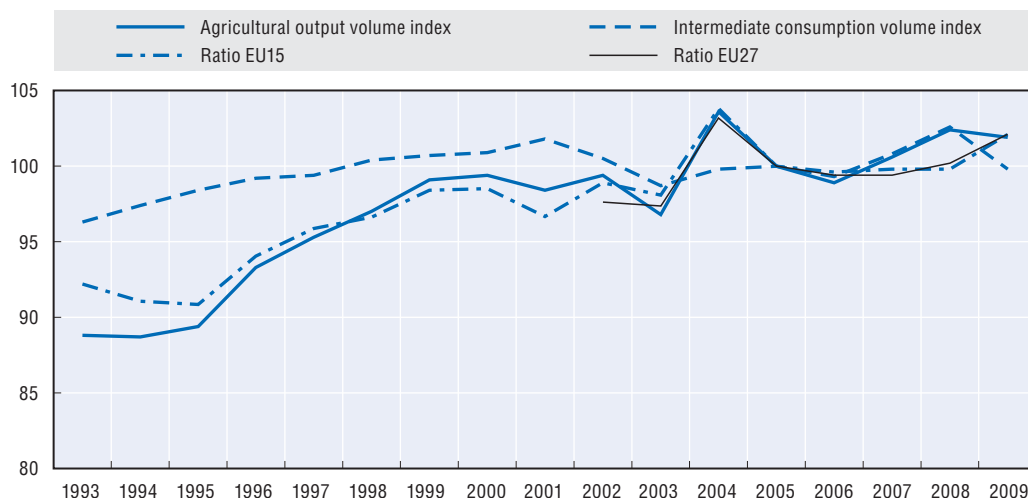
Note: 2001 instead of 2000 for Romania.

Source: EUROSTAT.

StatLink <http://dx.doi.org/10.1787/888932474917>

Figure 2.12. **Developments in the productivity of intermediate consumption, 1993-2009**

Ratio between the index of the output volume in the agricultural activities sector and the index of intermediate consumption volume



Source: EUROSTAT, *Economic Accounts for Agriculture*.

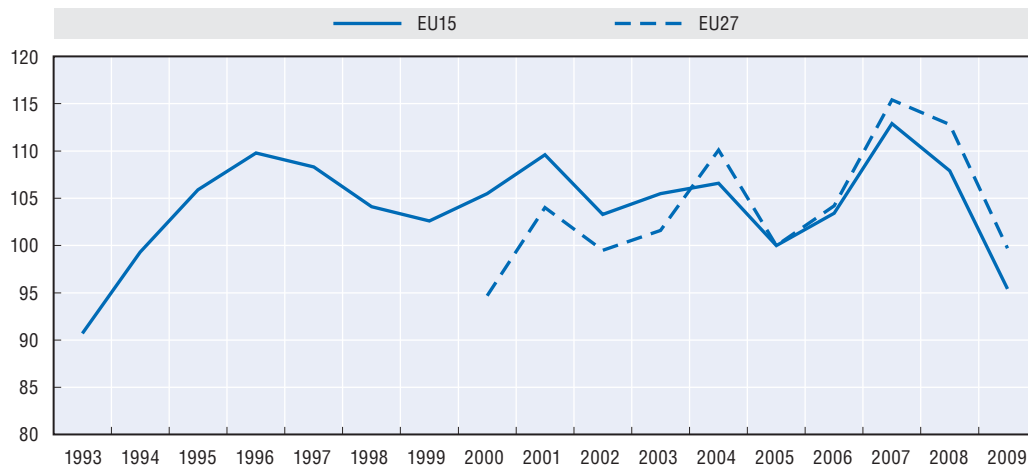
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Farm income

From the mid-1990s to the mid-2000s, farm income per full time farmer equivalent, as measured by the index of real income from agricultural factors per annual work unit, fluctuated within 10% above the 2005 level in the EU15 (Figure 2.13). This income indicator increased to record levels in 2007 and fell below 2005 levels in 2009.⁷ The difference between EU15 and EU27 indices shows that income per full time farmer equivalent in new

member states have increased significantly following accession and have not fallen below 2005 levels in 2009. This is clear for the Czech Republic, Hungary and Poland (Figure 2.14).

Figure 2.13. **Developments in farm income in the European Union, 1993-2009**
Index of real income from agricultural factors per annual work unit (2005 = 100)



Source: EUROSTAT, Income indicator published in the *Economic Accounts for Agriculture*.

StatLink  <http://dx.doi.org/10.1787/888932474955>

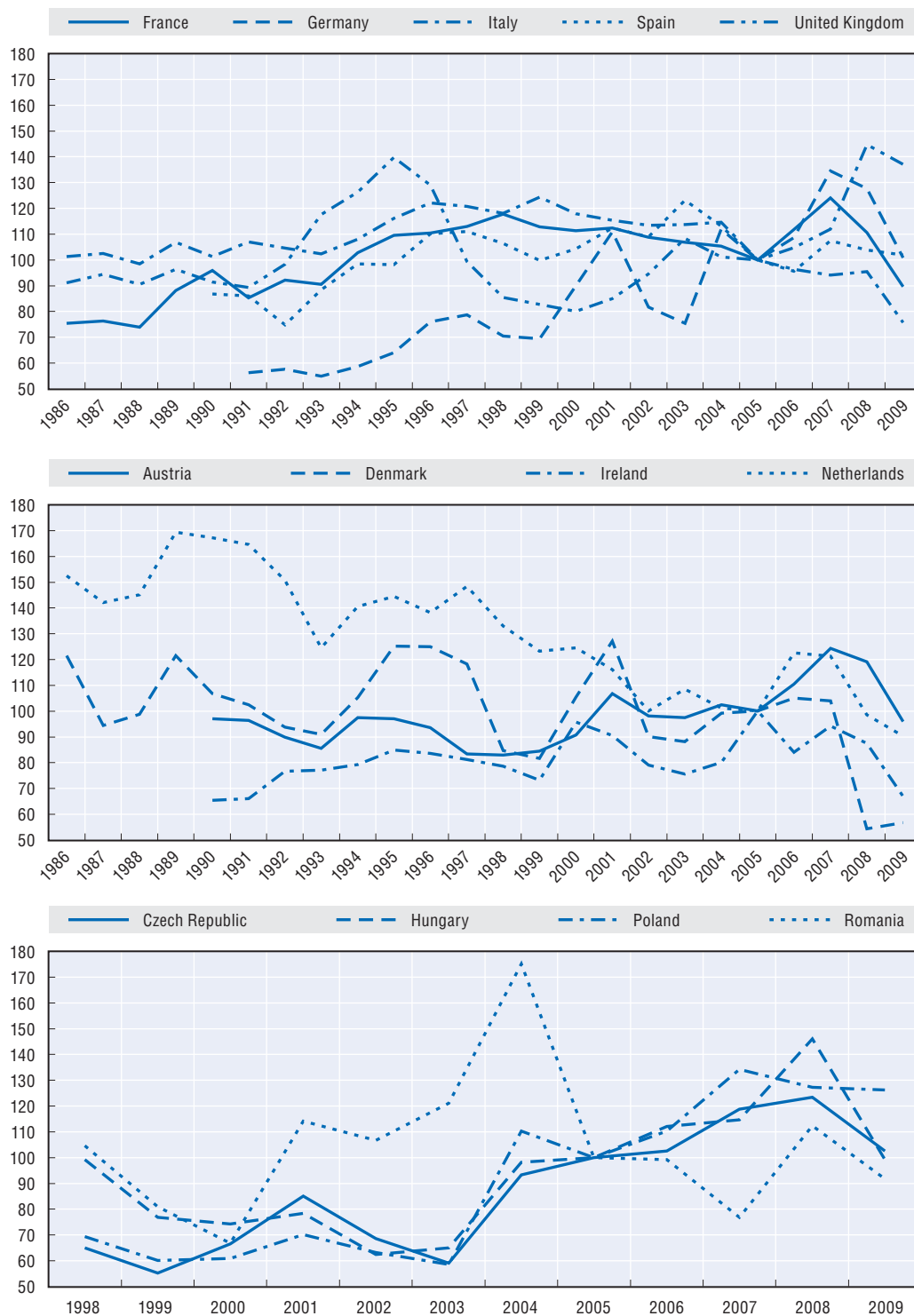
Figure 2.14 shows that the situation varies greatly by member state in terms of trend and variability. With the exception of 2009 when farm income per annual work unit decreased in most countries, there is a clear upward trend in the Czech Republic, Hungary and Poland since EU accession. Since unification, farm incomes in Germany are also on a steep upward trend, with large variations. The largest fluctuations are found in Romania, Denmark and the United Kingdom. Variations are around a much flatter trend in Austria, Denmark and Ireland, while in the Netherlands, farm incomes follow a downward slope. Until the late 1990s, farm incomes increased in France and Spain but have stagnated or decreased since. But in Spain, the decline started later, in 2004.

During the period 2004-09, aggregate farm income variability, as measured by the coefficient of variation of indices of real income from agricultural factors per annual work unit, was lower in the EU15 than in the EU27 (Figure 2.15). This reflects higher variability in new member states, partly linked to the impact of the phasing in of direct payments on income growth. In the EU15, income variability decreased compared to the previous period (1993-2003). There are large differences in income variability by country. Income variability increased in six countries out of ten for which data are available between 1982-92 and 1993-2003, but it decreases in nine EU15 countries out of 15 between 1993-2003 and 2004-09.

According to a decomposition analysis of income variability, the variability of net value added, as measured by variance, is only a small fraction of that of its components (Table 2.4).⁸ This is because the covariance between outputs and inputs reduces total variability. This is also illustrated by coefficients of variation, which are more appropriate indicators for comparison because they take size into account, but are not additive like variances. The coefficient of variation of net value added is lower than that of each of its components.

Figure 2.14. **Developments in farm income in selected EU member states, 1993-2009**

Index of real income from agricultural factors per annual work unit (2005 = 100)

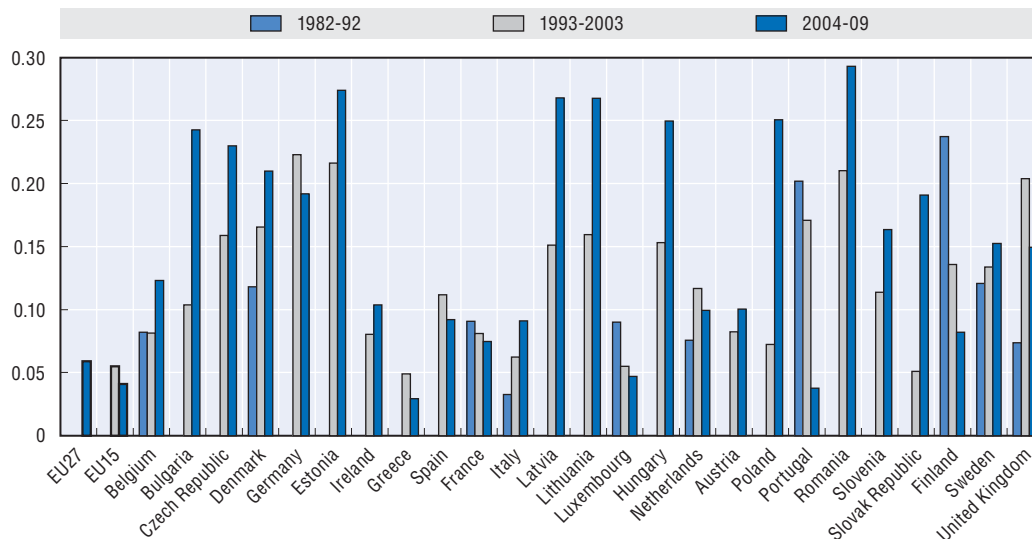


Source: EUROSTAT, Income indicator published in the Economic Accounts for Agriculture.

StatLink  <http://dx.doi.org/10.1787/888932474974>

Figure 2.15. **Farm income variability, 1982-92, 1993-2003, 2004-09**

Coefficients of variation of indices of real income from agricultural factors per annual work unit



Note: 1993-2003 is replaced by 2000-03 for Bulgaria, 1998-2003 for the Czech Republic, Latvia, Poland and Romania, 1997-2003 for Hungary and Lithuania and 1995-2003 for Estonia, the Slovak Republic and Slovenia.

Source: EUROSTAT, calculations based on income indicator published in the *Economic Accounts for Agriculture*.

StatLink <http://dx.doi.org/10.1787/888932474993>

Table 2.4. **Decomposition of income variability in the European Union, 1993-2003, 2004-09**Contribution of variance-covariance matrix to total variability (%)¹

	EU27	EU15		EU27	EU15	
	2004-09	2004-09	1993-2003	2004-09	2004-09	1993-2003
	Contributions to income variability ¹			Coefficients of variation ²		
Variances						
Crop output (CO)	23	21	44	0.12	0.11	0.15
Animal output (AO)	14	14	15	0.12	0.12	0.12
Other output (OO)	1	1	1	0.17	0.16	0.23
Total intermediate consumption (TIC)	59	60	36	0.18	0.17	0.15
Fixed capital consumption (FCC)	3	4	4	0.17	0.17	0.18
A. Total Variance	100	100	100			
Net value added at basic price = A + B - C				0.05	0.06	0.12
Covariances						
2 X CO X AO	34	32	49			
2 X CO X OO	6	6	8			
2 X AO X OO	7	7	14			
2 X TIC X FCC	27	31	23			
B. Total positive covariances	75	77	94			
2 X CO X TIC	-57	-58	-46			
2 X CO X FCC	-13	-15	-15			
2 X AO X TIC	-72	-68	-79			
2 X AO X FCC	-16	-17	-25			
2 X OO X TIC	-13	-13	-13			
2 X OO X FCC	-3	-4	-4			
C. Total negative covariances	-173	-175	-181			

1. Variances and covariances as a percentage of Total Variance (A).

2. Standard deviation divided by average.

Source: Secretariat calculations based on EUROSTAT *Economic Accounts for Agriculture*.

StatLink <http://dx.doi.org/10.1787/888932475981>

In 2004-09, intermediate consumption is the most variable aggregate component of income, but the covariance between crop output and animal output, and the covariance between total intermediate consumption and fixed capital consumption, are also significant factors of variability. In 1993-2003, the main factors were the variance of crop output and the covariance of crop and animal outputs. In both periods, the covariance between crop and animal output, and intermediate consumption is relatively high, indicating that the variability of output and that of intermediate inputs compensate each others. At a more detailed level, there are large differences in the variability of individual crop output. All items of intermediate consumption have a high variability in 2004-09, but that of fertilisers purchased from outside the agricultural “industry”, and of feeding stuffs produced and consumed by the same holding has strongly increased between the two periods, while that of energy and lubricants has been stable.

The variance of intermediate consumption and covariance between output and intermediate consumption is generally high in individual member states, but there are differences in the variance of output items. For example, the variance of crop output is higher in Spain than for the EU average, probably because of the importance of fruits and vegetable, while the variance of animal output is double the EU level in the United Kingdom but much lower in the Netherlands.

The previous analysis is based on the value of agricultural net value added. For each component of net value added, Table 2.5 contains coefficients of variation comparing the variability of volume indices with that of real price indices. The variability of prices is generally higher than that of volumes. At this aggregate level, the variability of values is higher than that of volumes and prices.

Table 2.5. Volume and price variability in the EU15, 1993-2003, 2004-09

	1993-2003			2004-09		
	Volume index	Real price index	Value	Volume index	Real price index	Value
Crop output	0.066	0.083	0.154	0.029	0.056	0.110
Animal output	0.017	0.086	0.115	0.012	0.037	0.117
Intermediate consumption	0.017	0.040	0.147	0.012	0.050	0.175
Fixed capital consumption	0.012	0.014	0.178	0.020	0.011	0.169

Source: Secretariat calculations based on EUROSTAT Economic Accounts for Agriculture.

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Developments in farm structure

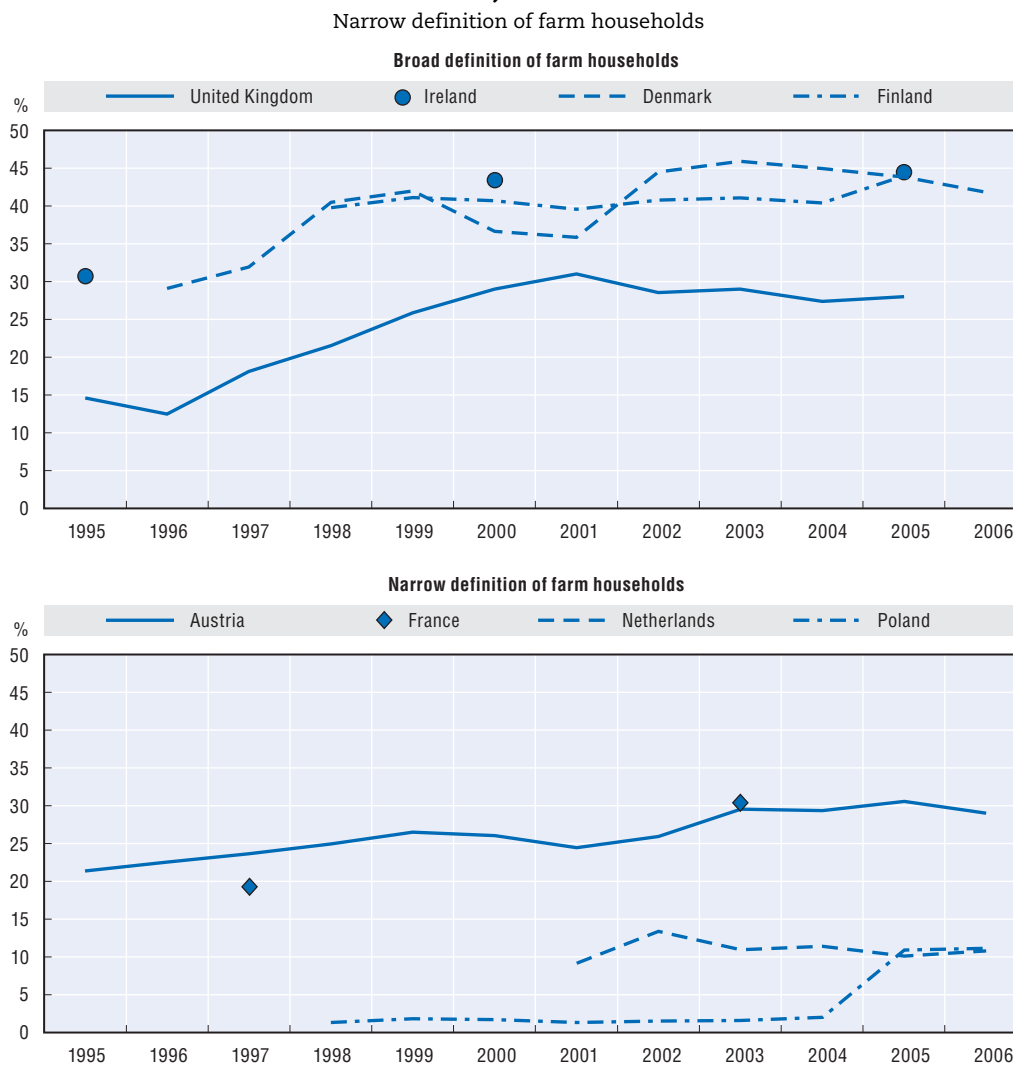
The number of farms decreased in all countries, except Greece and the United Kingdom between 1995 and 2007. The annual decline slowed down in most EU15 countries after 2003, and from 2003 to 2007 the annual decline was particularly significant in new member states and in Portugal (Annex Table B.7). As a result of consolidation, farms are larger, but there remain a significant number of small non-commercial or semi-subsistence farms. For example, the share of farms with more than 100 hectares increased significantly in some countries between 1990 and 2007 (Annex Table B.8). Enlargement has led to a greater diversity of farm structures and systems as some new member states have a pronounced dual structure, characterised by many small semi-subsistence farms and a few large corporate farms. For example in Bulgaria and Hungary, over 80% of farms had less than 2 hectares in 2007, over 95% less than 20 hectares, and less than 1% over 100 hectares.

In Denmark and France, the share of farms with less than 2 hectares is less than 15%, the share of farms with less than 20 hectares is less than 50% and the share of farms with more than 100 hectares is over 15%. In these two countries, as in many other EU15 countries, around 40% of farms are between 20 and 100 hectares, while this share is less than 1% in Bulgaria and Romania (Annex Table B.8).

The number of full-time farmer equivalents fell by 22% between 1995 and 2007. During the same period, agricultural land decreased by 7%. On average, a third of farm holders in the EU15 were over 65 years of age in 2007, and this proportion has been increasing since 1995 on average and in most countries (Annex Table B.9). There are large differences across countries. The share of older farmers is over 40% in Bulgaria, Italy, Lithuania, Portugal and Romania. At the other extreme, it is below 15% in Austria, Finland, France and Germany.

Developments in the characteristics of farm households

Farm households display extremely diverse socio-economic characteristics both between and within member states. On average, farm households increasingly resemble non-farm households. For example, the number of members is no longer much higher than in the rest of society. Reflecting changes in society, the participation of women in off-farm work has increased, as has the share of farms managed by women. Farm households are increasingly engaged in more diversified activities on and off-the farm. A range of economic and social factors and policies, such as financial motives, education, family status and the wish to better integrate the community, affect the attitude of farm households towards diversification. As a result, the share of income from non agricultural activities has increased over time (Figure 2.16). However, data on the extent to which farm households are engaged in diversification activities and the nature of those activities and the income they generate are scarce, as often when farm households become too engaged in other activities or earn too much income from other sources, they are no longer considered as part of the agricultural sector in statistics. Generally, however, farm households derive a significant share of their income from non agricultural sources, mainly off-farm labour activities, and that the importance of their non-farm income tends to increase over time in most countries.

Figure 2.16. **Percentage share of off-farm labour activities in farm household income, 1995-2006**

Note: Income from non agricultural activities received by farm household members includes income from self-employed non-agricultural activities that take place on or off the farm as well as wages and salaries. Data are not comparable across country, as national definitions of farm households and methodologies differ. A farm household is defined narrowly if small farms, and/or income from members other than holder and spouse are not taken into account. Detailed definitions of farm households are given in Annex II.1 of OECD (2009a).

Source: OECD (2009a).

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Consumption

EU consumers have access to a wide diversity of food products in terms of type, quantity, and quality. Changes in consumption patterns are linked to the diversification of available food and to rising incomes. The agro-food industry has developed a large variety of processed products with different attributes, and governments have provided rules to inform consumers, such as minimum standards and labelling. Moreover, agricultural products are increasingly destined to non-food use, *e.g.* biofuels, plastics, drugs or cosmetics.

The European Union was close to or above self sufficiency for most staple products at the end of the 1990s, and probably before (Table 2.6). Exceptions are soybeans, which are mainly used for feed and for which the European Union relies mainly on imports, and sheepmeat. The European Union is generally dependent on imports for feedstuffs other than cereals, in particular protein crops. Ten years later and with the addition of three countries, self-sufficiency rates had increased for many products, with the exception of wheat and milk, for which excess production decreased, and soybeans and sunflower, for which deficits increased. Over the last 25 years, self sufficiency rates for barley have been stable. For the EU15 self-sufficiency rates for wheat, maize, rapeseed, sunflower, milk and sheepmeat decreased in 2007-09, but excess production in new member states have maintained EU27 rates at or above 1995-97 levels. In contrast, self-sufficiency rates for potatoes, pigmeat and poultrymeat have increased in the EU15, but enlargement has reduced these rates. The European Union has become a net importer of beef in 2003. In 2007-09, the European Union was not self-sufficient in, for example, rice, soybeans, beef and sheepmeat (Table 2.6).

Table 2.6. **Self-sufficiency rates¹ for main staple food products, 1987-89, 1997-99, 2007-09**

	1987-89	1997-99	2007-09	2007-09
	EU12	EU15	EU15	EU27
Crops				
Common wheat	127	120	107	121
Barley	122	122	122	125
Maize	98	100	87	111
Rice	98	107	88	91
Rapeseed	101	116	99	116
Soybeans	13	8	4	5
Sunflower	96	62	73	135
Sugar beet	125	132	109	112
Potatoes	99	102	113	107
Livestock				
Milk	116	105	88	108
Beef and veal	104	107	95	96
Sheepmeat	82	82	78	80
Pigmeat	103	109	117	106
Poultrymeat	105	109	118	100
Eggs	97	102	100	100

EU12: EU15 minus Austria, Finland and Sweden.

1. Domestic production as a percentage of domestic consumption.

Source: OECD PSE/CSE Database, 2010.

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Trade

The European Union is the largest importer of agricultural products in the world and is the second largest exporter after the United States. In 2008, the EU27 imported EUR 98 billion of agricultural products and exported EUR 79 billion.⁹ On balance, it has been a net importer of agro-food products over the last 25 years (Figure 2.17).

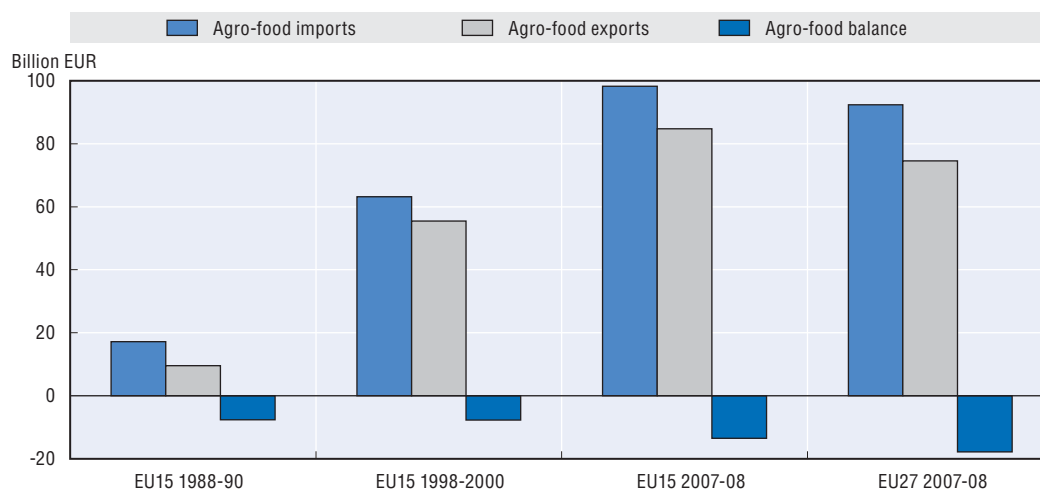
A growing majority of agro-food trade is taking place within the European Union. Intra-EU trade accounted for two-thirds of intra- and extra-EU trade in the EU15. It increased with enlargement and accounted for three-quarters of intra- and extra-EU trade

in 2007-08 (Figure 2.18). Enlargement increased intra-EU trade by 20% and reduced extra-EU trade by 6% for imports and 12% for exports.

Agro-food products account for close to 6% of all EU trade in 2007-08, compared to around 7% in 1998-2000, and 11% for imports and 6% for exports in 1988-90 (Figure 2.19).

Over a quarter of EU agro-food imports are fruits and vegetables, while animal and vegetal oils account for over 16% of the total, and coffee, tea and cocoa close to 12% (Figure 2.20). Among meat imports, the main item is beef and veal, followed by sheepmeat. The main supplier of agro-food products to the European Union is Brazil (close to 15% of EU

Figure 2.17. **Extra-EU agro-food trade balance, 1988-90, 1998-2000, 2007-08**

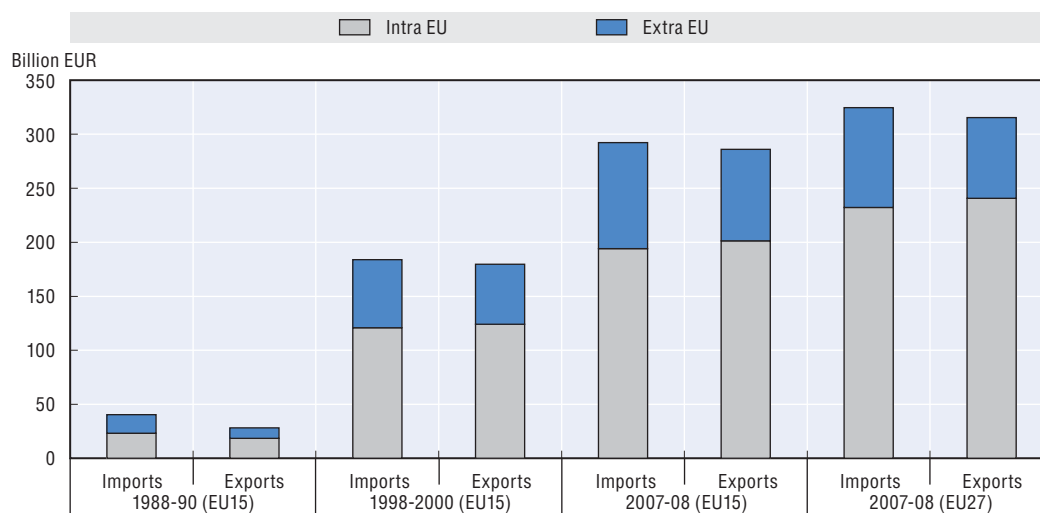


Note: Agro food trade is defined as in the Uruguay Round Agreement (Annex 1) and covers Chapters 1 to 24 of Harmonised System (HS), less fish and fish products (Chapter 3), plus various products such as cotton, hides, wools, etc.

Source: United Nations, UN COMTRADE Database.

StatLink <http://dx.doi.org/10.1787/888932475031>

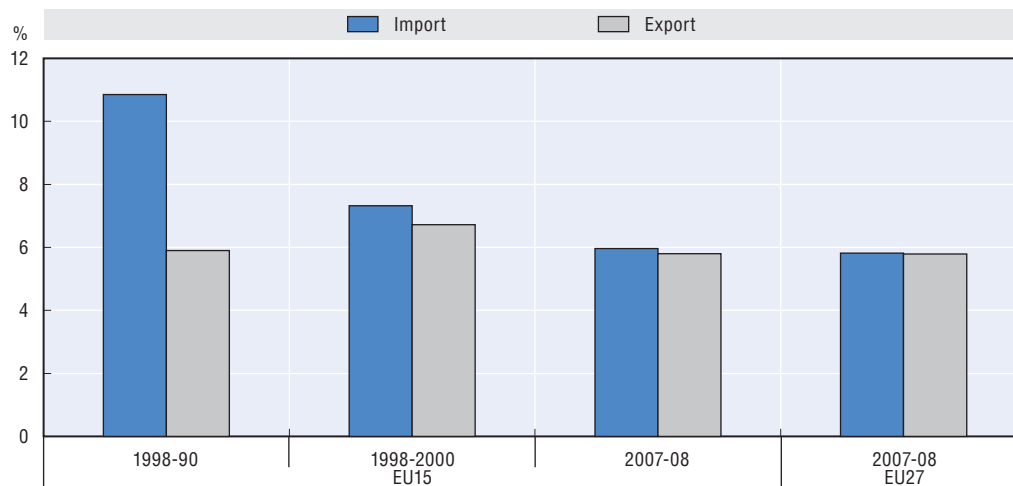
Figure 2.18. **Intra and extra-EU agro-food trade, 1988-90, 1998-2000, 2007-08**



Source: United Nations, UN COMTRADE Database.

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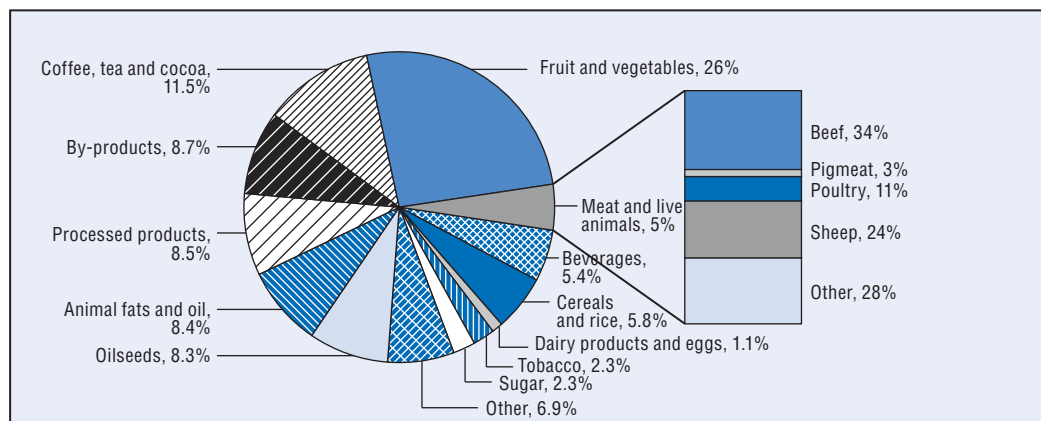
Figure 2.19. **Share of agro-food products in total extra-EU trade, 1988-90, 1998-2000, 2007-08**



Source: United Nations, UN COMTRADE Database.

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Figure 2.20. **Composition of EU agro-food imports, 2007-08**



Source: United Nations, UN COMTRADE Database.

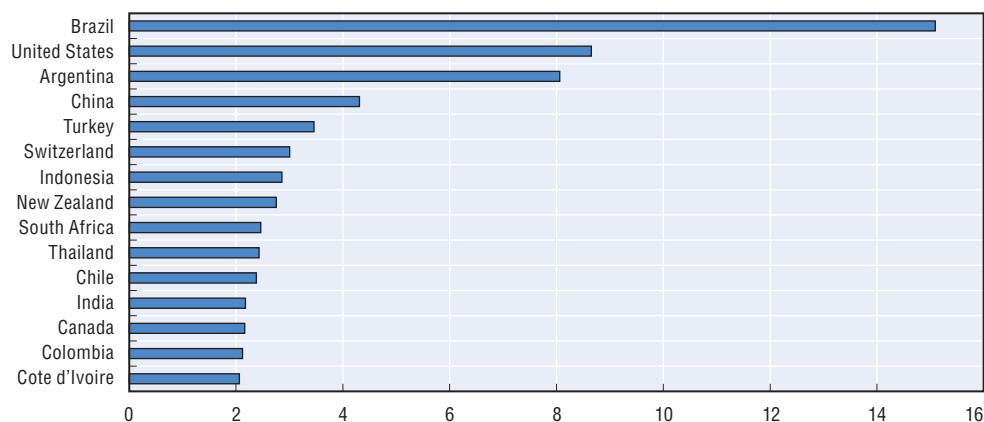
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imports), followed by the United States (around 9%), Argentina (8%) and China (Figure 2.21). The Group of African, Caribbean and Pacific (ACP) countries and Euro Mediterranean partnership (Euromed) countries, which have preferential trade agreements with the European Union, account respectively for 13% and 7% of EU agro-food imports.

Close to a quarter of EU agro-food exports is comprised of beverages, mainly wine and spirits. The second largest item is processed products (17%), followed by fruits and vegetables and dairy products (Figure 2.22). The main destinations for EU agro-food products in value are the United States, Russia, Switzerland and Japan (Figure 2.23). Mediterranean countries receive 13% of EU agro-food exports and ACP countries close to 8%.

Over the last 25 years, the European Union has been a net exporter of most cereals (except maize), sugar, wine, dairy products, pigmeat, poultry and eggs, and a net importer of maize, rice, fruits and vegetables and sheepmeat. From a net exporter of beef and veal until 2002, it has become a net importer since 2003.

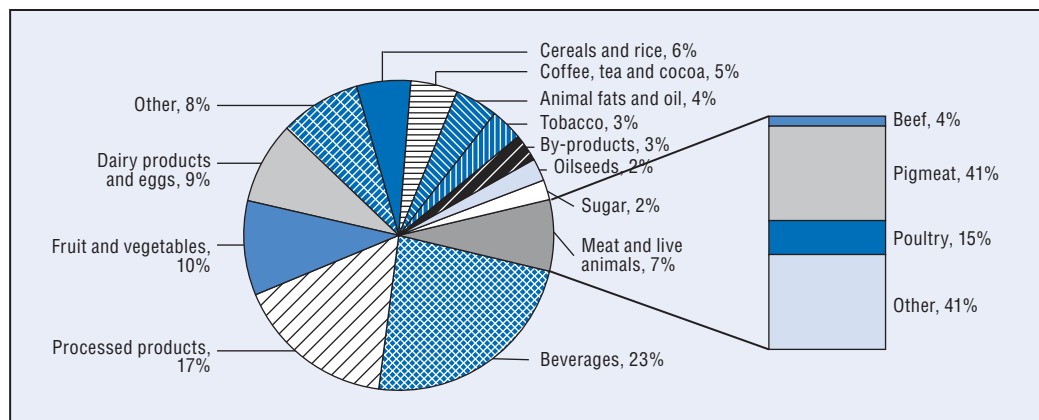
Figure 2.21. **Main suppliers of agro-food products to the European Union, 2007-08**
As per cent of total agro-food imports (extra EU27)



Source: United Nations, UN COMTRADE Database.

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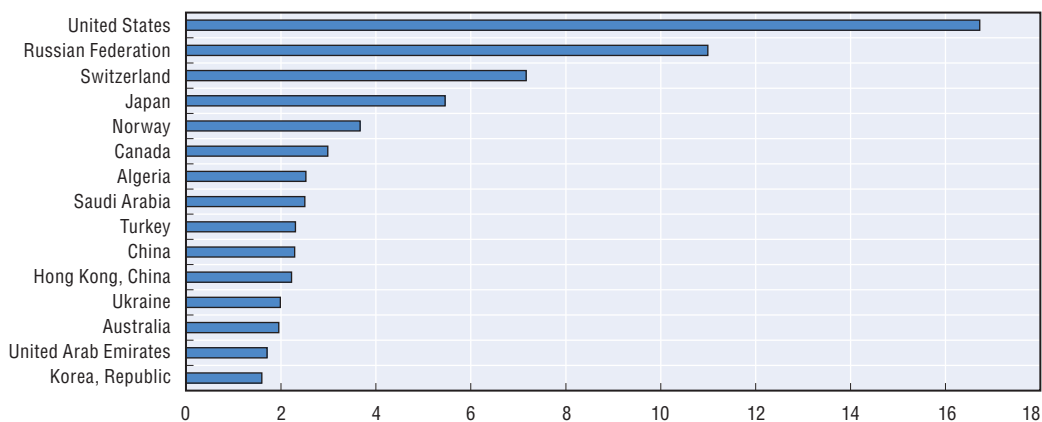
Figure 2.22. **Composition of EU agro-food exports, 2007-08**



Source: United Nations, UN COMTRADE Database.

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Figure 2.23. **Main export markets for EU agro-food products, 2007-08**
As per cent of total agro-food exports



Source: United Nations, UN COMTRADE Database.

StatLink <http://dx.doi.org/10.1787/888932475145>

Notes

1. On average in the EU15, agricultural GDP in current terms increased annually by 1% between 1995 and 2005 while the number of persons employed in agriculture decreased annually by 1.6% (Tables 4.5 and 5.5 in OECD, 2009c).
2. According to EC (2010b and 2010c), it has been estimated that an increase in agricultural output produces and additional 150% increase in output among local purchasers and consumers of that output.
3. In EUROSTAT Farm Structure Surveys, OGAs are defined as “every activity other than activity related to farm work (i.e. work contributing to primary agricultural production), carried out for remuneration (salary, wages, profits or other payments, including payments in kind, according to the service rendered)” (EC, 2002).
4. However, cattle numbers decreased in Spain between 1998-2000 and 2008-09, by 1.5%.
5. For crops, average of selling prices in EU member states published by EUROSTAT, and for livestock products, average EU market prices, published by the European Commission. These are prices used in the PSE database.
6. Scale efficiency gives insights into whether the firm operates at an optimal or sub-optimal size (OECD, 2010a).
7. The direction of changes depends on the choice of a reference year, but the shape of the curve does not.
8. The analysis used EUROSTAT agricultural account data in current prices, deflated by the price of gross value added at basic prices. The income indicator is Net value added (= crop output + animal output + other output – intermediate consumption – fixed capital consumption). The variance of net value added is decomposed into the variance and covariance of its components, which are then divided by the sum of variances, as shown in Table 2.3.
9. Compared to the United States, exports of agro-food products were EUR 82 billion and imports were EUR 63 billion imports.

Chapter 3

Agricultural Policy Reforms in the European Union

Successive reforms of agricultural policy in the European Union (EU) have progressively and significantly reduced levels of protection and changed the way support is delivered to farmers. This chapter first describes the main characteristics of the Common Agricultural Policy (CAP) as applied in 2010, including the various instruments in place, their funding and implementation. It then provides an overview of agricultural policy reforms implemented since the beginning of the 1990s, and analyses resulting developments in the level and composition of support using the OECD indicators of support, in particular the Producer Support Estimate (PSE).

Main characteristics of the current agricultural policy

The CAP includes a mix of policy instruments such as market price support measures, various payments to individual farmers, and support for some general services to the sector. Market price support (MPS) measures include domestic measures and border measures which raise domestic prices above world price levels (Box 3.1). All border measures are applied at the border of the EU Common Market. A remarkable feature of the CAP is that payments to farmers are in their majority fixed and delivered whether production occurs or not. Another specificity of the CAP relates to its financing, with some measures funded exclusively by the European Union, and others co-financed by the European Union and national or regional governments. In addition, member states can to a certain extent implement purely national measures as long as they follow basic principles of the European Community for State Aid on agriculture.¹

Funding and implementation

The CAP is composed of two pillars. Pillar 1 entails a Common Market Organisation (CMO), which lays out rules for providing MPS measures, as well as broad-based direct payments included in the Single Payment Scheme (SPS) and the Single Area Payment Scheme (SAPS). Pillar 1 measures are fully funded by the European Union and the budget cycle is annual (1 November-31 October). However, during the ten-year phasing-in period, new member states have the option of applying national top-ups (see below). Pillar 2, or Rural Development Regulation (RDR) of Agenda 2000, includes a list of available measures from which member states can choose. National (or Regional) Rural Development Plans (RDPs) are the basis for the implementation of RDR measures. They specify the list of measures chosen and the associated EU funding and national/regional co-funding for a period of seven years. Plans established by member states need to be approved by the Commission. Current plans cover the period 2007-13.

Total CAP expenditures were around EUR 53 billion in 2010. Pillar 1 funds come from the European Agricultural Guarantee Fund (EAGF) and accounted for 80% of all CAP EU expenditures in 2010, while Pillar 2 funds come from the European Agricultural Fund for Rural Development (EAFRD). As part of a process known as “modulation”, part of Pillar 1 money in the EU15 is being transferred to fund Pillar 2 measures. All farmers receiving more than EUR 5 000 in direct aid have their payments reduced by 8% in 2010 (9% in 2011 and 10% by 2012).² A further reduction of 4% is made on payments above EUR 300 000 a year. The additional funding obtained this way may be used by member states to reinforce programmes in the fields of climate change, renewable energy, water management, biodiversity, innovation linked to the previous four areas and for accompanying measures in the dairy sector. In addition, member states may apply additional voluntary modulation. The United Kingdom is the only country that currently uses this option. Modulation does not apply to new member states during the phase-in period.

Box 3.1. PSE and related indicators

OECD indicators of support measure monetary transfers arising from agricultural policies to:

- individual producers: Producer Support Estimate (PSE);
- consumers: Consumer Support Estimate (CSE); and
- producers collectively: General Services Support Estimates (GSSE).

The **Total Support Estimate (TSE)** is the sum of the PSE, GSSE and direct budgetary transfers to consumers.

Those indicators do not measure the impact of policies but can be used as input into models that derive these impacts.

The **PSE** estimates transfers to farmers from three broad categories of policy measures that:

- Maintain domestic prices for farm goods at levels higher (and occasionally lower) than those at the country's border (market price support (MPS) estimation).
- Provide payments to farmers based on, for example, the quantity of a commodity produced, the amount of inputs used, the number of animals kept, the area farmed, an historical (fixed) reference period, or farmers' revenue or income (budgetary payments).
- Provide implicit budgetary support through tax or fee reductions that lower farm input costs, for example for investment credit, energy, and water (budgetary revenue foregone estimation).

Each individual measure in the PSE is classified into one of the categories of support defined in Box 2.2, which are based on the following implementation criteria:

- the transfer basis for support: output, input, area/animal numbers/revenues/incomes, non-commodity criteria;
- whether the support is based on current or historical (fixed) basis; and
- whether production is required or not.

The **GSSE** estimates support general services to the sector: research and development, agricultural schools, inspection, infrastructure, marketing and promotion of agri-food products, and public storage.

A **%PSE** of 20% means that the estimated value of transfers to individual producers from consumers and taxpayers is equivalent to 20% of gross farm receipts.

The producer **Nominal Protection Coefficient (NPC)** is calculated by the ratio between the price received by producers (including payments per tonne of current output) and the border price (measured at the farm gate). A producer NPC of 1.2 for a country indicates that domestic producer prices are on average 20% above border prices for the same commodities.

Single Commodity Transfers (SCT) include market price support and payments granted for production of a single commodity.

Group Commodity Transfers (GCT) include payments granted for production of a group of commodities.

All Commodity Transfers (ACT) include payments granted for production of all commodities.

Other Transfers to Producers (OTP) include payments, which do not require any commodity production at all.

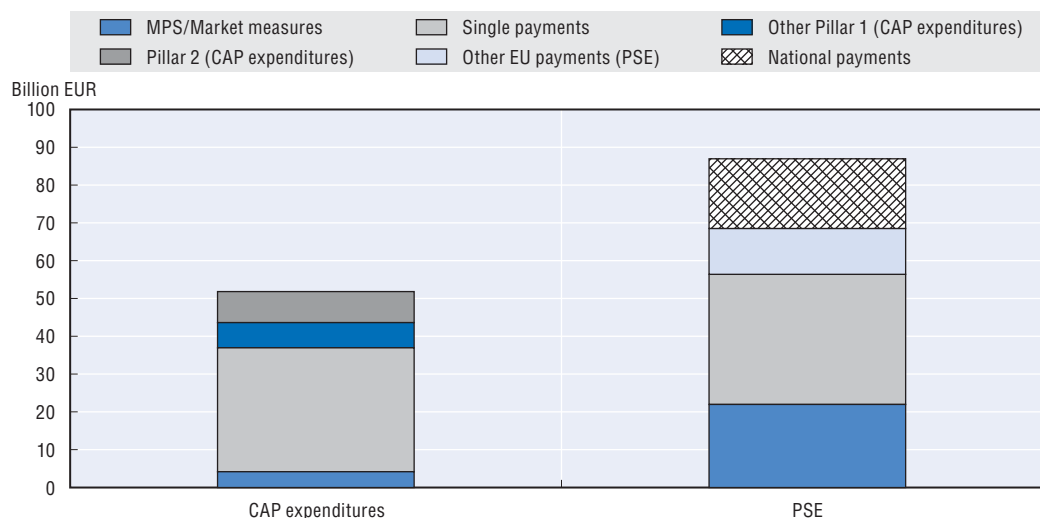
The **%SCT** measures the extent to which production of individual commodities is supported by policy measures. A %SCT of 20% means that the estimated value of transfers to producers of that commodity represents 20% of gross receipts for that commodity.

Source: www.oecd.org/dataoecd/57/5/43411396.pdf.

Pillar 2 funds are complemented by national or regional funds and also by private contributions for investment measures. EU co-financing rates vary by country (they are higher for new member states, 85% instead of 55% for agri-environmental measures) and by type of measure (higher for agri-environmental measures, lower for investment support in EU15). Modulation money must be complemented by national funds covering at least 40% of the total. However, in convergence regions where average GDP is lower, modulation money is co-financed by the European Union at a rate of 75% and 90%. Pillar 2 measures are subject to regular evaluation carried out by member states following precise procedures set by the European Union (OECD, 2009b).

OECD indicators of support estimate all monetary transfers associated with agricultural policy. In addition to EU CAP expenditures, they include national and regional expenditures associated with the CAP (co-financing of Pillar 2 measures), purely national measures such as research expenditures and tax rebates, and transfers from market price Support (MPS) measures, which contribute to maintain domestic prices higher than border prices (Box 3.2). But they exclude CAP expenditures on measures which do not primarily benefit farmers (*e.g.* Leader funds) and on MPS measures (export refunds, intervention mechanisms), which are already reflected in the MPS. In 2008-10, the EU PSE amounted to EUR 84 billion and accounted for 22% of gross farm receipts, compared to 20% for the OECD average. Figure 3.1 compares components of CAP expenditures with the PSE in 2010. Large parts of general services to the sector are funded from national budgets and are not related to the CAP, *e.g.* research expenditures.

Figure 3.1. **Composition of CAP expenditures and OECD indicators of support, 2010**



Source: OECD, PSE/CSE Database, 2011.

StatLink <http://dx.doi.org/10.1787/888932475164>

Policy instruments

Market price support measures

MPS measures include border measures such as import tariffs and export subsidies, and domestic measures such as production quotas, administered prices, intervention purchase, and assistance to private storage. Table 3.1 gives a snapshot of instruments

currently applied in the European Union for selected commodities. The implementation of those measures is governed by a single Common Market Organisation (CMO) of agricultural markets established in 2007 to group the previous 21 CMOs for commodity sub-sector.³ The CMO also include various aid schemes such as aid for processing or for consumption, and provides rules concerning marketing and production standards, the recognition of producer and operator organisations by member states, and competition within the Common market, including rules applying to state aids. In 2010, EU expenditures on MPS measures accounted for 5% of CAP expenditures and 6% of Pillar 1 funds.

The MPS category of the OECD PSE does not consider expenditures on specific measures described below, but calculates support to producers of a given commodity resulting from MPS measures as the difference between observed domestic producer prices and equivalent prices at the border. In 2008-10 MPS estimates accounted for 23% of support to producers, as measured by the PSE (Box 3.2) and which includes EU and national/regional support.

Table 3.1. **Market price support measures in 2009/10**

	Wheat	Other cereals	Rice	Oilseeds	Sugar	Fruits and vegetables	Milk/dairy products	Beef and veal	Sheep meat	Pig meat	Poultry/eggs
Import tariffs	x	x	x		x	x	x	x	x	x	x
Tariff rate quotas	x	x	x		x	x	x	x	x	x	x
Export subsidies	x0	x0	x0		x0		x	x		x	x
Production quotas					x		x				
Public intervention	x ¹	x ¹	x ²		3		x	x0			
Private storage					x0		x0	x0	x0	x0	
Market withdrawals					x0	x					
Commodity specific consumer subsidies						x	x				

x: exist in 2009/10. x0 not currently used.

1. Ceiling set to 3 million metric tonnes for common wheat at a purchase price of EUR 101.31 per tonne, then by tendering; ceiling set to zero for durum wheat, barley, maize and sorghum, abolished for rye (never existed for oats).

2. Ceiling set to zero.

3. Ends with the marketing year 2009/10.

Source: WTO notifications; PSE Database; OECD, 2011.

StatLink  <http://dx.doi.org/10.1787/888932476038>

Import measures

The European Union is a common market and applies common **tariffs** at its borders. Depending on the tariff line, import tariffs can have specific rates in EUR/tonnes or *ad valorem* rates expressed in % of the border price, or both. The WTO calculated that Most-Favoured-Nations (MFN) tariffs for agricultural products, expressed in *ad valorem* equivalent, were on average around 18% compared to around 4% for non-agricultural products (Table 3.2). On average, tariffs are higher for grains and dairy products, but tariffs for live animals and meat products, fruits and vegetables, and beverages have a broader range. Highest individual tariffs are found for sugar products. Average tariffs are lowest for plants, oilseeds, fats and oil.

The European Union also applies Tariff Rate Quotas (TRQ) for tariff lines corresponding to various items of cereals, fruits and vegetables, dairy products, beef, sheep, pigmeat and poultrymeat, eggs and/or their products. They are managed through two methods: first come-first served, and import licensing. Import licenses may be issued on a pro-rata or an

Table 3.2. **Summary analysis of applied MFN tariffs in the European Union, 2008**

	Simple average tariff (%)	Range tariff (%)	Share of duty free imports in %
Total	5.6	0-236	
Non-agricultural products	4.0	0-26	26.2
Agriculture ¹	16.0	0-236	29.6
– Animal products	27.6	0-236	25.3
– Dairy products	64.1	0-205	0.0
– Coffee and tea	7.2	0-99	83.4
– Fruit and vegetables, plants	12.4	0-233	17.5
– Cereals and preparations	22.3	0-123	6.7
– Oil seeds, fats, oils and their products	6.4	0-180	69.7
Sugars and confectionary	33.3	0-143	0
– Beverages and tobacco	20.7	0-203	23.9
– Other agricultural products	5.8	0-133	70.6

MFN: Most Favoured Nation; CV: Coefficient of variation; std-dev: Standard deviation.

1. WTO definition.

Source: <http://stat.wto.org/TariffProfile/WSDBTariffPFView.aspx?Language=E&Country=E27>.

StatLink  <http://dx.doi.org/10.1787/888932476057>

historical basis (WTO, 2009). According to EU regulation (CMO), import licences may be requested by the Commission for imports of: cereals; rice; sugar; seeds; some olive oil and table olives, hemp, bananas; live plants; beef and veal; milk and milk products; pigmeat; sheepmeat and goatmeat; eggs; poultrymeat; and agricultural ethyl alcohol.

Applied tariffs may be lower than MFN rates, as part of preferences granted to specific countries, or in response to market conditions. Under preferential trade agreements (PTA), the European Union grants various tariff preferences on a reciprocal basis on selected agricultural products. As a result of preferential trade agreements in general, 18% of agricultural imports are duty free. Economic Partnership Agreements create a free trade area between the European Union and the Group of African, Caribbean and Pacific (ACP) countries. In the Euro Mediterranean partnership (Euromed) framework, several bilateral agreements have been signed or are being discussed with Mediterranean countries. The European Union has or negotiates PTAs with other countries. Bilateral agreements cover more aspects than market access, *e.g.* mutual recognition of standards.

The European Union also provides tariff preferences under non-reciprocal arrangements (WTO, 2009). The generalised system of preferences grants trade concessions to developing countries, focussing on smaller, more disadvantaged countries. It includes three schemes: 1) the normal Generalised System of Preferences (GSP) provides preferences to 176 developing countries; 2) a GSP+ category offers additional tariff reductions to support vulnerable developing countries in their ratification and implementation of international conventions regarding sustainable development and good governance; and 3) the Everything But Arms (EBA) initiative provides duty-free, quota-free access for all products for 49 least developed countries.

In recent years, the European Union has imposed a number of **import bans** on sanitary and phytosanitary grounds, notably to prevent the spread of epidemic diseases (OECD, 2007b, 2009c). The European Union made use of WTO **special safeguard provisions**.⁴ According to the most recent WTO notifications, the price-based special safeguard system was made operational in 2006/07 and 2007/08 for tariff lines related to cuts of poultrymeat, egg products, and various types of sugar, and volume-based special safeguard actions have been invoked for a number of fruits and vegetables.

Export measures

Export licenses are required to export agricultural products, in order to claim a refund on agricultural goods eligible for export subsidies and for exporting sugar, cereals and rice. The procedure for applying for an export licence is similar to that used for import licences.

Export refunds can be granted to exporters when there is a gap between domestic and export prices. The amount of the refund is fixed periodically by the Commission. Products eligible for export subsidies include wheat and wheat flour, coarse grains, rice, rapeseed, olive oil, sugar, dairy products, beef, pigmeat and poultrymeat, eggs, raw tobacco, alcohol and some processed products. Fruit and vegetables, wine and sheepmeat are not eligible.

Total expenditures on export refunds were about EUR 750 million in 2009, compared to around EUR 3.5 billion at the beginning of the 2000s and around EUR 10 billion at the beginning of the 1990s. These expenditures depend on world price levels, protection rates and exported quantities, but also on political decision to use the mechanism. In 2009, significant levels of export refunds (over EUR 100 million) were granted for exports of sugar, dairy products (except SMP), poultrymeat (and to a lesser extent pigmeat and beefmeat), and processed products. These are products with significant protection for which the European Union is a net exporter (OECD, 2010b).

Export credits, insurance and guarantees are granted at the member state level. The European Union provides assistance to the marketing and promotion of food products in domestic and third markets, with an annual budget of about EUR 50 million. In OECD indicators of support, those expenditures are considered as general services to the sector (Box 3.1).

Production limits

Production quotas for milk are being phased out. From a EU27 level of 146.412 million tonnes in 2008/09, they will increase by one per cent every year between 2009/10 and 2013/14 until they expire in April 2015. A levy of 27.83/100kg is charged for any surplus production above the national quota, to be paid by producers who exceed their individual quota. Farmers who exceed their milk quotas by more than 6% have to pay an additional levy.

There are production quotas for sugar and isoglucose, which are set for each member state. Following the implementation of the 2006 sugar reform, EU27 final quotas in 2009/10 were 13.337 million tonnes for sugar and 690 441 tonnes for isoglucose, and the inulin production quota was zero. A levy is charged for any surplus production to control production above quota.

The set-aside requirement for arable farmers to leave 10% of their land fallow was abolished in 2009. For some products, there were maximum guaranteed areas receiving specific payments (e.g. for the durum wheat quality premium), but those payments were discontinued and integrated in the single payments in 2010 or will be in 2012. New plantings of vines are restricted until January 2016.

Intervention mechanisms

There are intervention prices for common wheat, butter and skimmed milk powder. The intervention price for wheat is set at EUR 101.31 per tonne up to 3 million tonnes. Beyond that, purchase is done by tender. For butter and skimmed milk powder, intervention prices are EUR 221.75 per tonne and EUR 169.80 per tonne respectively, and up to 30 000 tonnes and

109 000 tonnes respectively; intervention for quantities above these limits is by tender. For durum wheat, intervention would be done by tender, but due to a favourable market situation, intervention levels were set at zero as of May 2009. This is the same for rice, but the bidding price should not exceed the intervention price (EUR 150 per tonne).

There continues to be provisions for intervention purchases by the European Union for beef if prices fall below EUR 1 560 per tonne deadweight. This mechanism has not been used since 2001, when it was for a small quantity. The beef market is supported by “basic” prices. Assistance to private storage can be triggered if the average Community market price for carcasses of adult male cattle (grade R3) is below 103% of the “basic” price (EUR 2 224 per tonne deadweight). This has not been the case since 2002 (Annex Figure C.5).

The sugar reform of 2006 established a private storage system in case the market price falls below the “reference” price. The reference price for white sugar replaces the former intervention price and is 36% lower at EUR 404.4 per tonne in 2009/10. At EUR 26.3 per tonne, the minimum price for sugar beet is 40% lower than its predecessor.

There is no intervention for oilseeds, protein crops, poultrymeat, sheepmeat and eggs, and with the implementation of the Health Check and previous reforms,⁵ intervention is abolished for pigmeat, rye, maize and sugar, and set at zero for barley and sorghum.

Other measures affecting market prices

A number of other domestic measures affect market prices, *e.g.* buying back of quota or planting rights, non-harvesting, voluntary market withdrawals and various types of consumer subsidies. In the fruit and vegetable sector, crisis management measures operated by Producer Organisation include green harvesting/non-harvesting, withdrawals with 50% EU co-financing, and free distribution to schools (100% paid by the EU Commission). In the wine sector, distillation subsidies are being withdrawn gradually: funding for emergency distillation falls from a maximum of 20% to a maximum of 5% of the national funding budget over four years to 2012; and funding for distillation into alcohol for use in spirits will be phased out in 2012. As part of the 2008 wine reform, a voluntary withdrawal scheme taking 175 000 ha out of production offers decreasing subsidies over three years. The sugar reform also included funds for buying back sugar quotas and for factory closure available during the period 2006-08.

The EU School Milk Scheme distributes a wide range of dairy products to primary and secondary schools, with EU and national funding of about EUR 75 million. A scheme was introduced in 2009/10 to provide fruit and vegetables to school children, with a budget of EUR 90 million including EU and national funds. The food programme for the poorest people in the European Union has a budget of around EUR 500 million from 2009.

Direct payments in Pillar 1 of the CAP

Direct payments in Pillar 1 amount to around EUR 40 billion and accounted for 94% of Pillar 1 expenditures and 75% of CAP expenditures in 2010. The bulk of Pillar 1 payments to EU farmers is delivered as so-called single payments (see below). Single payments amount to EUR 34 billion and account for about 84% of Pillar 1 payments, 79% of Pillar 1 expenditures and 63% of EU CAP expenditures in 2010. As entitlements per farm are fixed and production is not required to receive single payments, they are classified in the PSE as payments based on fixed entitlements with no requirements to produce. They

Box 3.2. The classification of agricultural policy measures in the PSE

The PSE includes the following categories:

A1. Market price support (MPS): transfers from consumers and taxpayers to agricultural producers from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level.

A2. Payments based on output (PO): transfers from taxpayers to agricultural producers from policy measures based on current output of a specific agricultural commodity.

B. Payments based on input use (PI): transfers from taxpayers to agricultural producers arising from policy measures based on on-farm use of inputs:

- **B1. Variable input use(PIV)** that reduces the on-farm cost of a specific variable input or a mix of variable inputs.
- **B2. Fixed capital formation (PIF)** that reduces the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage, and soil improvements.
- **B3. On-farm services (PIS)** that reduce the cost of technical, accounting, commercial, sanitary and phytosanitary assistance and training provided to individual farmers.

C. Payments based on current A/An/R/I,* production required (PC): transfers from taxpayers to agricultural producers arising from policy measures based on current area, animal numbers, revenue, or income, and requiring production.

D. Payments based on non-current A/An/R/I,* production required (PHR): transfers from taxpayers to agricultural producers arising from policy measures based on non-current (i.e. historical or fixed) area, animal numbers, revenue, or income, with current production of any commodity required.

E. Payments based on non-current A/An/R/I,* production not required (PHNR): transfers from taxpayers to agricultural producers arising from policy measures based on non-current (i.e. historical or fixed) area, animal numbers, revenue, or income, with current production of any commodity not required but optional.

F. Payments based on non-commodity criteria (PN): transfers from taxpayers to agricultural producers arising from policy measures based on the long-term retirement of factors of production from commodity production; the use of farm resources to produce specific non-commodity outputs of goods and services, which are not required by regulations; and transfers provided equally to all farmers, such as a flat rate or lump sum payment.

Definitions of labels attributed to individual measures:

With or without current commodity production limits and/or limit to payments: defines whether or not there is a specific limitation on current commodity production (output) associated with a policy providing transfers to agriculture and whether or not there are limits to payments in the form of limits to area or animal numbers eligible for those payments.

With variable or fixed payment rates: Any payments is defined as subject to a variable rate where the formula determining the level of payment is triggered by a change in price, yield, net revenue or income or a change in production cost.

With or without input constraints: defines whether or not there are specific requirements concerning farming practices related to the programme in terms of the reduction, replacement, or withdrawal in the use of inputs or a restriction of farming practices allowed. The payments with input constraints are further broken down to 1) payments conditional on compliance with basic requirements that are mandatory (with mandatory); 2) payments requiring specific practices going beyond basic requirements and voluntary (with voluntary).

Box 3.2. The classification of agricultural policy measures in the PSE (cont.)

With or without commodity exceptions: defines whether or not there are prohibitions upon the production of certain commodities as a condition of eligibility for payments based on non-current A/An/R/I* of commodity(ies).

Based on area, animal numbers, receipts or income: defines the specific attribute (i.e. area, animal numbers, receipts or income) on which the payment is based.

Based on a single commodity, a group of commodities or all commodities: defines whether the payment is granted for production of a single commodity, a group of commodities or all commodities.

* A (area), An (animal numbers), R (receipts) or I (income).

Source: OECD (2008)

account for 47% of the PSE. For example, the EU PSE was EUR 77 billion in 2010, compared to CAP expenditures of EUR 53 billion.

There are two single payment schemes. EU15 countries, Malta and Slovenia apply the Single Payment Scheme (SPS). Depending on the country, the SPS is based on individual farmers' historical entitlements (historical implementation model) or (in some cases partly) delivered as a uniform payment per hectare within a region (regional model). Hybrid models, where part of the payment is based on historical entitlement and the other part allocated per hectare, can be static, with proportions between the two implementation models remaining fixed over time, or dynamic, in which case the share of regional flat-rate payments increases gradually to reach 100% at the end of the implementation period (Table 3.3).⁶ Under the Health Check, member states are given the flexibility to opt for a regional, flat rate implementation of the SPS from 2010 onwards, but so far no country has used it.

Table 3.3. Single payment implementation model by member state, 2008-09

Historic	Static Hybrid	Dynamic Hybrid	Regional	SAPS
Austria	Luxembourg	Denmark	Malta	New member states other than Malta and Slovenia
Belgium	Sweden	Finland	Slovenia	
France	United Kingdom –	Germany		
Greece	Northern Ireland	United Kingdom – England		
Ireland				
Italy				
Netherlands				
Portugal				
Spain				
United Kingdom – Scotland				
United Kingdom – Wales				

Source: EU Commission.

New member states, other than Malta and Slovenia, apply a transitional system available until 2013, the Single Area Payment Scheme (SAPS). It is paid as a flat rate per hectare. However, payments relating to the reform of the sugar regime may be reserved to those who have historically held sugar production quotas. Similarly, payments introduced by the reform of the fruits and vegetables regime can be paid on a historical entitlement basis. During the ten-year transitional period following accession, payments rates increase gradually to reach 100% of EU15 rates at the end (Annex Table C.3). In 2009,

member states that joined in 2004 received 60% of EU15 rates and those that joined in 2007 received 35%.

Most area and headage payments that EU15 countries had the flexibility to retain as commodity specific or that were kept commodity-specific as part of the 2003-04 reforms are being integrated into the single payment from 2010 or 2012, except for suckler cow, goat and sheep premia, for which member states may maintain previous levels of commodity-specific support (“coupling option”) (Table 3.4). In addition, all member states can use 10% of their national budget ceilings for direct payments for use for environmental measures or improving the quality and marketing of products in that sector, as well as to help farmers producing milk, beef, goat and sheepmeat and rice in disadvantaged regions or vulnerable types of farming; it may also be used to support risk management measures such as insurance schemes and mutual funds (so-called Article 68 measures⁷).

Table 3.4. Options for maintaining commodity-specific payments

Option maintained (% of payment that may remain commodity specific)	Option discontinued in 2010	Option discontinued in 2012
Ewe premium (50%)	Arable crops and hops	Beef slaughter premium and male beef premium
Suckler cow premium (100%)	Olive oil	Fruits and vegetables
Cotton aid payments (35%)	Tobacco	Tomatoes (until 2011)
	Quality premium for durum wheat	Quality premium for rice
		Aid for nuts
		Aid payments for seeds
		Aids for protein crops
		Aids for starch potato growers
		Processing aids for dried fodder, potato starch and flax and hemp

Source: EU Commission, adapted from AgraEurope, CAP Monitor.

As Pillar 1 payments result from historical references depending on past production or hectares, current levels whether expressed as a percentage of gross receipts or per hectare differ by member state (Figures 3.2 and 3.3). Lower percentages or per hectare rates are found in new member states, which are still in the ten-year transition period when payments are being phased in. The highest per hectare rates are in smaller countries with high density of livestock production, but also in Greece because of payments resulting from the tobacco and cotton reforms.

During the ten-year transition period, new member states may complement EU funds with Complementary National Direct payments (CNDPs or top-up payments) from national funds. They are granted as a supplement to the SAPS or, within limits, as commodity-specific area or headage payments. In the first three years after accession, new member states have the possibility to co-finance CNDPs from RDR funds. Table 3.5 provides information on CNDPs paid in 2008 and 2009. CNDPs as a percentage of single payment have decreased in many countries in 2009 compared to the previous year. As expected, CNDPs (included in national expenditures in Figures 3.2 and 3.3) increase payments per hectare or as a percentage of gross value of production in new member states. Pillar 2 funds described below also contribute to lowering the gap between payment rates

Table 3.5. **Main Complementary National Direct Payments in new member states, 2008-09**

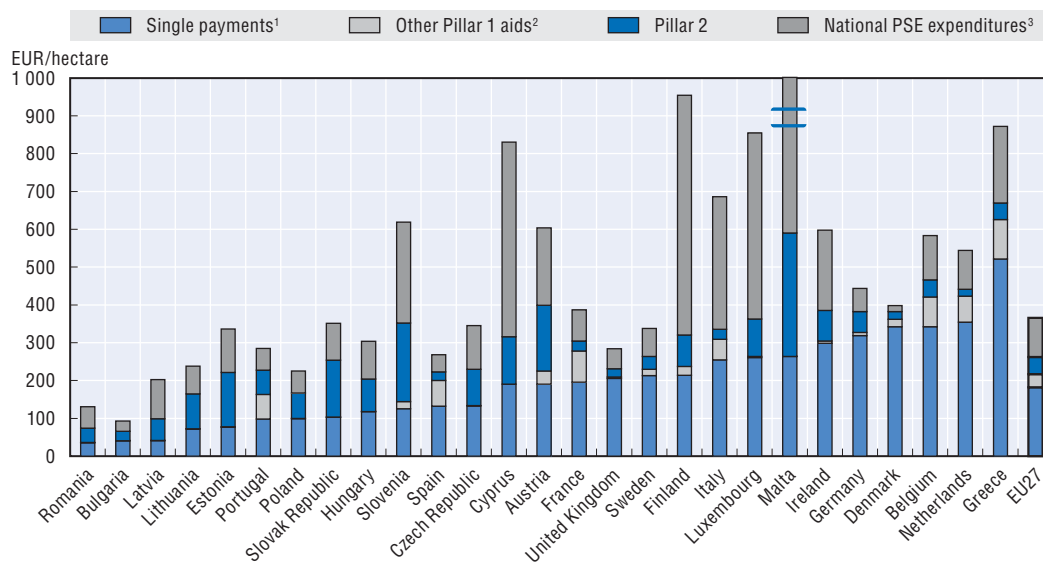
	CNDPs as a % of single payment		Main payments	Distribution of main CNDP as a % of total CNDPs	
	2008	2009		2008	2009
Bulgaria	57	71	Single area payment	78	73
			Milk payment	16	0
			Bovine animals (hist.)	0	20
			Sheep and goat (hist.)	6	7
Czech Republic	65	48	All land	68	66
			Ruminant	23	24
			Suckler cow premium	7	8
			Potatoes and hop	2	2
Estonia	98	47	Milk payment	35	34
			Arable crops and certified seeds (hist.)	17	45
			Arable crops	28	0
			Cattle	15	16
			Suckler cows	4	4
			Ewes	1	1
Hungary	45	39	Arable land	64	48
			Milk payment	21	35
			Cattle	11	11
			Sheep and goats	3	3
			Tobacco	1	1
Latvia	n.a.	n.a.	As SAPS	45	62
			Milk	30	18
			Arable crops	18	12
			Fodder area	4	2
			Suckler cows	1	2
Lithuania	67	49	Arable crops	43	50
			milk cows	27	31
			Suckler cows	6	8
			Slaughter premium	11	6
			Bulls	13	5
Poland	69	61	Crops	66	68
			Pasture payments (hist.)	26	23
			Tobacco	7	8
			Hop and starch potatoes	1	1
Romania	61	39	Cattle	75	58
			Sheep and goats	10	37
			Pigs and poultry	9	0
			Sugar beet	0	2
			Rice	0	2
Slovak Republic	90	40	Payment per Gross Livestock Unit	66	61
			Arable crops	32	39
			Tobacco	2	0
Slovenia	15	15	Special beef premiums (30% in SP)	55	54
			Suckler cow premiums (per head)	37	38
			Sheep and goat (50% in SP)	5	5

n.a.: Not available; Hist.: based on historical references; SP: single payment.

EU10: 10 countries that joined the EU in 2004; EU2: Bulgaria and Romania, who joined the EU in 2007.

Source: PSE/CSE Database, 2011.

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Figure 3.2. **Payments per hectare, by member state, 2009**

EU27: the 27 members of the EU from 2007.

1. Single payment Scheme and Single Area Payment Scheme.
2. Including market measures, commodity-specific payments and funds from modulation not applying to the first EUR 5 000 per farm.
3. National payments to producers including CNDPs and national co-financing of RDP measures.
4. Note by Turkey:
The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
5. Note by all the European Union Member States of the OECD and the European Commission:
The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: EU budget and PSE Database.

StatLink  <http://dx.doi.org/10.1787/888932475183>

in EU15 and new member states. Payments as a percentage of production value are higher than EU average in many new member states.

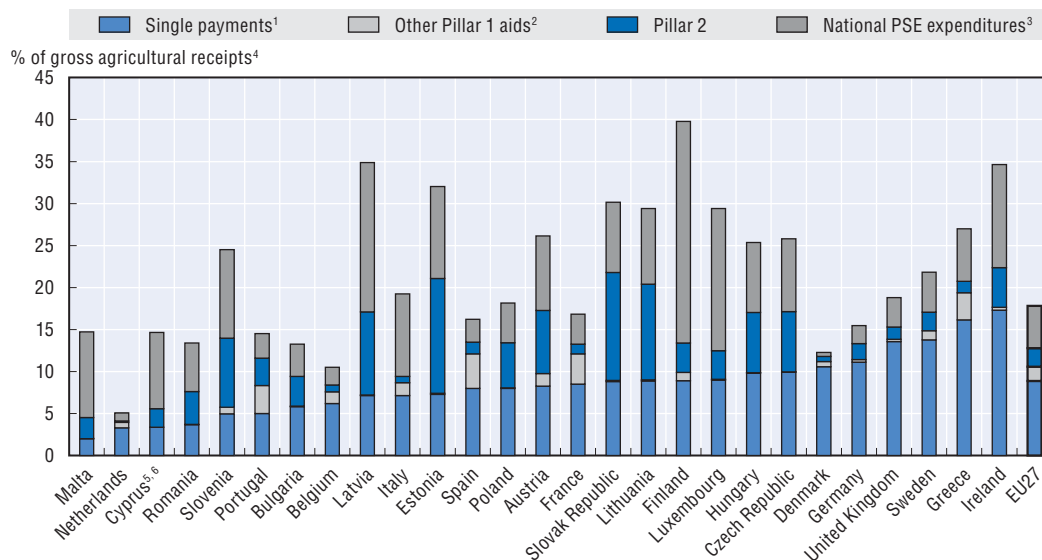
The full granting of all EU direct payments is linked to adherence to environmental standards, as well as standards related to food safety, animal and plant health, and animal welfare. In addition, member states must ensure that all agricultural land is "kept in good agricultural and environmental condition". Minimum standards in this respect are drawn up at the national level. This provision called "cross-compliance" applies to all EU payments, and is briefly described in OECD (2010c).

Measures under Pillar 2 of the CAP

Pillar 2 measures for the programming period 2007-13 focus on three "thematic axes" corresponding to policy objectives attributed to measures within each axis:

- improving the competitiveness of the agricultural and forestry sectors;
- improving the environment and the countryside; and
- improving the quality of life in rural areas and encouraging diversification of the rural economy.

Figure 3.3. **Payments as a percentage of gross agricultural receipts, by member state, 2009**



EU27: the 27 members of the EU from 2007.

1. SPS and SAPS.

2. Including market measures, commodity-specific payments and funds from modulation not applying to the first EUR 5 000 per farm.

3. National payments to producers including CNDPs and national co-financing of RDP measures.

4. Gross agricultural receipts are the sum of the value of agricultural production (agricultural goods output in Economic Accounts for Agriculture), and above-mentioned payments.

5. See notes 4 and 5 of Figure 3.2.

Source: EU budget and PSE Database.

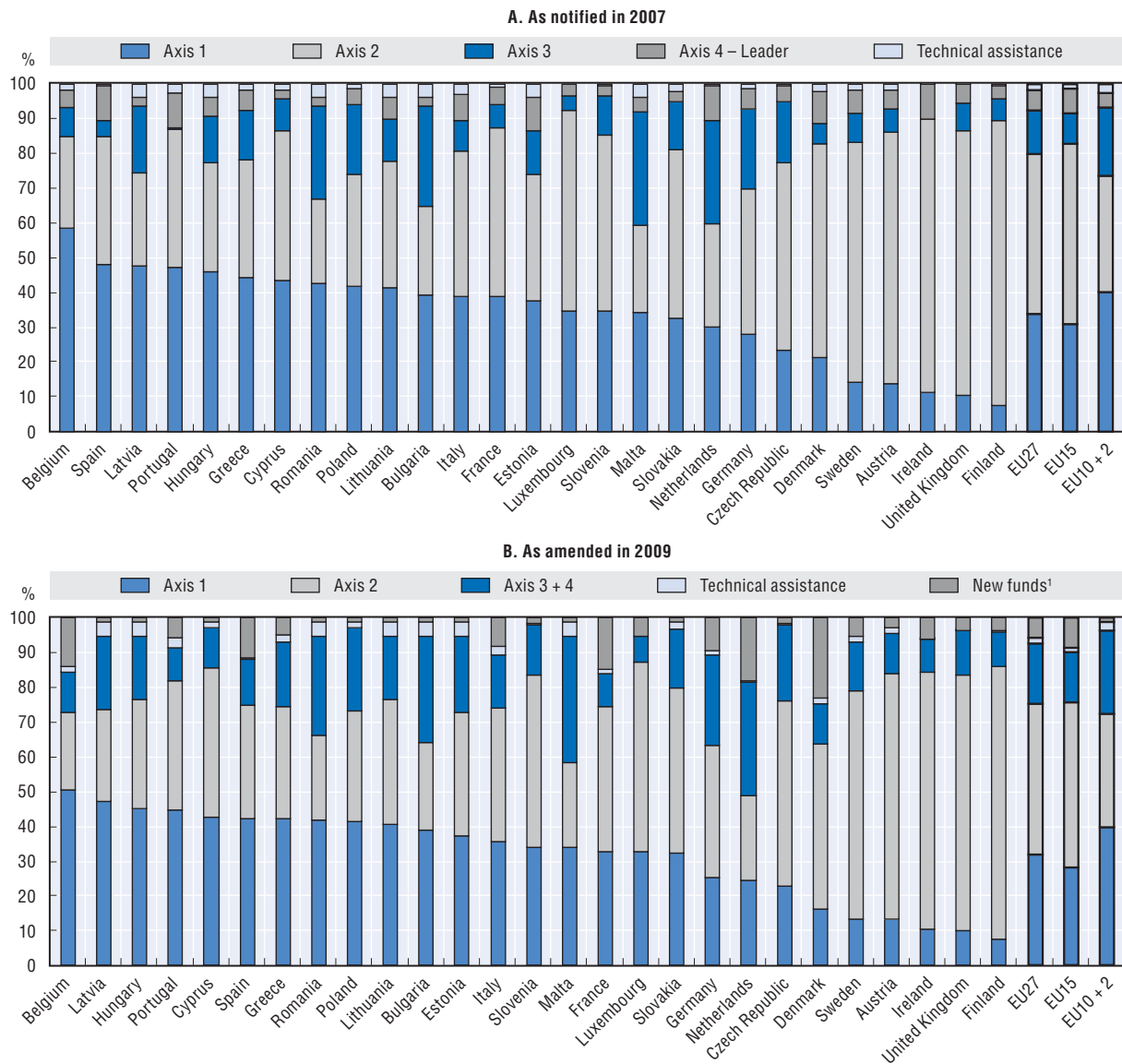
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Axis 1 includes measures for farm modernisation, the setting-up of young farmers, early retirement, semi-subsistence farms undergoing restructuring, vocational training, producer groups, adding value to farm and forestry products, and restoring production potential damaged by natural disasters. Axis 2 includes agri-environmental and animal welfare payments, payments to farmers in areas with handicaps, payments for afforestation, payments for protecting biodiversity in specific sites, and support to non-productive investments. Axis 3 groups measures encouraging the diversification into non-agricultural activities, tourism activities, the creation and development of micro-enterprises, rural services, and the conservation of rural heritage. Pillar 2 also supports a fourth axis of projects using the “LEADER approach” – relying on a multi-sectoral approach and local partnerships to address specific local problems; as well as technical assistance.

Measures in Axis 1 and 2 are almost exclusively for farmers and foresters,⁸ while any local actor can apply for measures in Axis 3 and 4. A provision of the programming was that Axis 1 and 3 should account for at least 10% of EAFRD funds, Axis 2 for 25% and, for EU15 member states, the LEADER axis for 5% (and an average of 2.5% for the period in new member states, which have to reach a 5% rate by the end of the period). Council Regulation (EC) No 1685/2005 sets up rules for the implementation of those measures, from design to control, monitoring and evaluation. Following EC rules, Member states develop Rural Development Programmes (RDPs), indicating the type of measures chosen as well as EU and national or regional funds allocated to each axis. Within EU rules, there is flexibility in the implementation of specific measures.

Figure 3.4.A shows how member states originally chose to allocate funds across the axes over the 2007-13 programming period. On average in the European Union,

Figure 3.4. **Distribution of EU and national RDP funds by axis, by member state, 2007-13**



1. New EAFRD funds became available in 2009 from the Recovery Package and additional modulation introduced by the Health Check. National contributions are estimated using a 75% EU co-financing rate.

EU10+2 : the 12 members of the EU which have joined since 2004 (10 in 2004 and 2 in 2007)

EU15: the 15 member states of the EU between 1995 and 2004.

EU27: the 27 members of the EU from 2007.

2. Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

3. Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: Annex Table C.1.

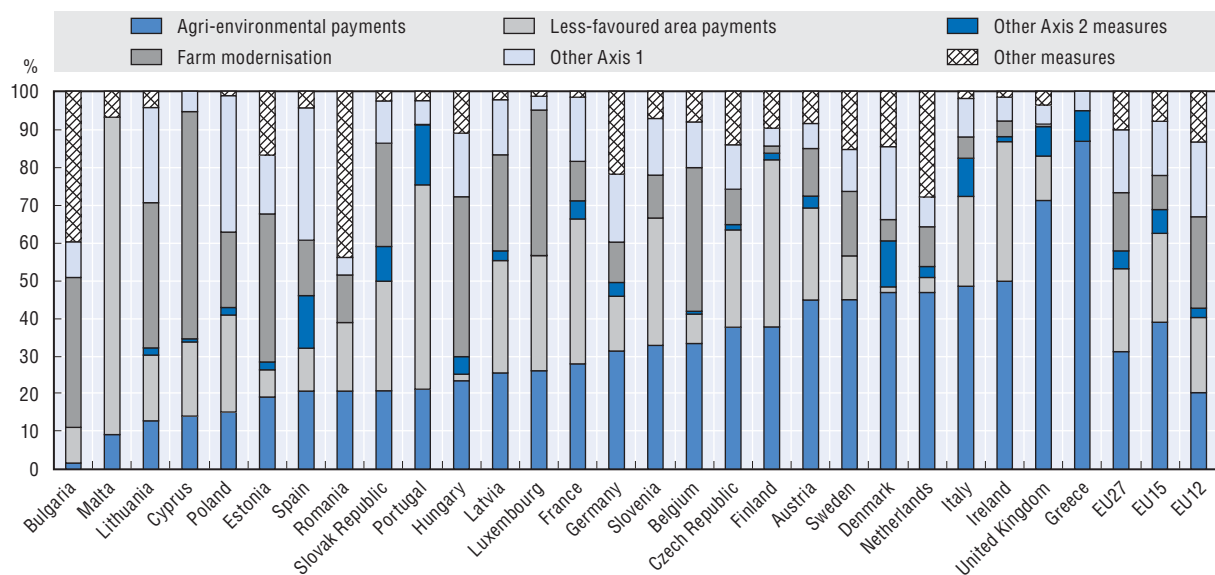
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Axis 1 measures account for about a third of all expenditures, Axis 2 slightly less than 50% and other Axes about 20%. In new member states, the share of expenditures on Axis 1 and Axes 3 and 4 measures is higher (40% and 20% respectively, and that of Axis 2 lower than in the EU15, reflecting their specific objectives. Funding for RDPs increased in 2009 with the EU Economic Recovery Plan allocating EUR 1 billion for rural development projects (mainly for extending and upgrading high speed Internet in rural communities), and higher modulation rates agreed as part of the Health Check (see Table 3.8 below). The increase in funds averages 5% in the EU27 (6% in the EU15 and 1% in new member states). The increase is particularly large in member states with a higher proportion of Pillar 1 to Pillar 2 funds, such as Denmark, the Netherlands and France (Figure 3.4.B and Annex Table C.1).

Annex Table C.1 also shows the respective shares of EU and national funds by axis and by country. On average, for the EU27, 60% of RDP funds come from the European Union. Annex Table C.2 provides the list of measures that member states chose to implement as part of their RDPs. Countries with regional RDPs, like **Germany**, **Italy** and **Spain**, make use of most measures. New member states tend to use fewer measures than EU15 members. Some measures are selected in all member states: vocational training, farm modernisation, payments to farmers in non-mountainous areas with handicaps, and agri-environmental measures, which are the only mandatory one. Others are selected in most member states: setting-up of young farmers (all except **Malta**), adding value to agricultural and forestry products (all except **Ireland** where forestry measures are not part of the RDP), improving and developing agricultural and forestry infrastructure (all except **Bulgaria** and **Ireland**). Measures such as diversification into non-agricultural activities and encouragement of tourism activities are chosen by many countries. LEADER-type measures were often selected, but as of 2008-09 few countries had implemented them.

In 2009, most EU funds under Axis 1 were used to support investments in farm modernisation (Figure 3.5). This measure is particularly prominent in new member states. Figure 3.5 also highlights the importance of agri-environmental payments and payments in areas with handicaps in Axis 2 expenditures and in total RDP expenditures. On average, in the EU15 those measures accounted for respectively 40% and 25% of all EAFRD expenditures. This reflects policy objectives but also the fact that those measures were already well established in the RDPs for 2000-06 and continued to be implemented in the RDPs for 2007.⁹ In new member states, the share of agri-environmental payments in EAFRD expenditures was half that in the EU15 (about 20%), while the share of payments in areas with handicaps was also 20%. In comparison, farm modernisation accounts for 25% of all RDP expenditures and Axis 1 measures 45%. This difference in emphasis between EU15 and new member states may be linked to differences in objectives but also to measures implemented in the previous period. In addition, implementation of new measures has hardly started in some countries, where RDPs for 2007-13 were agreed too late. In Axis 3 and 4 funds are more evenly spread across measures. In Bulgaria and Romania, the high share of “other measures” in RDP expenditures reflects mainly the flexibility they have to use part of EU funds for their CNDPs.

In OECD indicators of support, Pillar 2 measures are scattered among all categories except market price support as they are implemented in very different ways. Table 3.6 provides examples of how EU measures are classified in the PSE and the GSSE (Box 3.2). Measures in Axis 1 are mainly providing investment assistance, in which case they belong to payments based on fixed capital formation, or services to individual farmers (vocational training) or to the sector (support to producer groups). In Axis 2, most less-favoured area

Figure 3.5. **Distribution of EAFRD expenditures by axis and measure in 2009**

EU10+2 : the 12 members of the European Union which have joined since 2004 (10 in 2004 and 2 in 2007).

EU15: the 15 member states of the European Union between 1995 and 2004.

EU27: the 27 members of the European Union from 2007.

1. Note by Turkey:

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

2. Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: EU Commission, EAFRD expenditures in 2009.

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payments are based on current area and impose constraints on farm practices (input constraints). Depending on the type of measure and its implementation criteria, agri-environmental measures are classified in different categories, mainly as payments based on area with voluntary input constraints or as payments based on the provision of non-commodity outputs. Whatever the axis, support to forestry is only included in the PSE if it concerns afforestation of agricultural land, considered as based on the long term retirement of resources. Most measures under Axis 3 and Axis 4 are not included in the PSE as farmers are not the main beneficiaries. The only exception is support for diversification into non agricultural activities.

Overview of CAP developments since 1986

The CAP as applied in 2010 is very different from what it was at the end of the 1980s. Successive reforms initiated since 1992 (Box 3.3) have reduced support and changed the way it is delivered to farmers. Border protection has also decreased with the implementation of the Uruguay Round Agreement on Agriculture (URAA) from 1995 to 2001. Intervention on domestic markets was gradually reduced and replaced by direct payments to producers, which became less and less linked to specific commodities and to current production. Funding for measures to improve competitiveness, the environment, the countryside, and the quality of life in rural areas has slowly increased. These developments are reflected in the level and composition of EU CAP expenditures and OECD indicators of support.

Table 3.6. **Examples of classification of EU measures in OECD support indicators**

EU measures		PSE categories	
Pillar 1 – EAFG		PSE unless otherwise specified	
05 02	Intervention, export refunds	A1	Market price support
	Other domestic market measures	A2	Output payments
		CSE	Consumer subsidies
		GSSE	Marketing/promotion
05 03 01	Single payments	E	Production not required
05 03 02	Other payments	A2	Payments based on output
		C	Current area or animal numbers
Pillar 2 – EAFRD			
Axis 1			
111	Vocational training	B3	On-farm services
112	Setting-up of young farmers	B2	Fixed capital formation
113	Early retirement	GSSE	Structure/Infrastructure
121	Farm modernisation	B2	Fixed capital formation
122	Improving forestry		Not included
133	Supporting producer groups	GSSE	Marketing/promotion
Axis 2			
211	Natural handicap payments	C	Payments based on current area
214	Agri-environmental payments	C/E	Depending on implementation criteria
221	Afforestation of agricultural land	F1	Resource retirement
223	Afforestation of non-agricultural land		Not included
Axis 3 and 4			
311	Diversification into non-agricultural activities	GSSE	Structure/Infrastructure
322	Village renewal and development		Not included
4	LEADER approach		Not included
Others			
Veterinary		GSSE	Inspection

Box 3.3. Successive CAP reforms and main features

1992 MacSharry reform: Cuts of 30% in the cereal intervention price, phased in over three years, together with smaller cuts in the institutional prices for beef and butter; introduction of compensatory payments per hectare for cereals and increase in premiums for beef cows and steers; introduction of a mandatory set-aside scheme; deficiency payments for oilseeds replaced by area payments in 1993; introduction of three accompanying measures, including for early retirement, agri-environment and afforestation schemes.

1995 Uruguay Round Agreement on Agriculture implemented over 1995-2001: Tariffication of border measures (including the replacement of variable import levies by *ad valorem* or specific tariffs and by tariff rate quotas), gradual reductions in bound tariffs, and reductions in ceilings for export subsidies and most distorting forms of support compared to the base period.

Agenda 2000: Further reductions in administered prices for cereals and beef; increase in payments rates; reductions in intervention prices for dairy products postponed to 2005/06; introduction of public storage for beef; introduction of the Rural Development Regulation (RDR) as a Pillar 2 of the CAP, bringing together the accompanying measures of the MacSharry reform plus compensatory allowances under the less favoured areas measure, as well as rural development measures previously financed by the Guidance section of the European Agricultural Guarantee and Guidance Fund (EAGGF); implementation for the period 2000-06 on the basis of Rural Development Plans (RDPs).

Box 3.3. **Successive CAP reforms and main features (cont.)**

2003 “Luxembourg” reform: Rice intervention price divided by two and further reduction in intervention prices for butter and SMP compared to agenda 2000; introduction of the Single Payment Scheme (SPS), from 2005 or 2006 depending on the country, as payments based on fixed 2000-02 entitlements, with no requirement to produce, to replace part or all of previous area and headage payments; introduction of cross-compliance as a condition for receiving full payments; introduction of modulation to transfer funds from Pillar 1 to Pillar 2 of the CAP; introduction of a milk payments to be included in the single payment in 2006 or 2007; flexibility given to countries as to implementation of SPS.

May 2004: With the Accession of 10 new countries, application of SAPS until 2010 and Transitional Rural Development Programme for 2004-06, with four new measures, compared to EU15 programme.

2004 reform of cotton, hop, olive oil and tobacco regimes (adopted in April): From 2006, part or all of the previous production-based payments enter the SPS.

2005: Regulation on support for rural development (RDR) for 2007-13: As for 2000-06, implementation on the basis of Rural Development Plans; additional measures available compared to programming period 2000-06, including technical assistance for the implementation of programmes; LEADER approach included; measures grouped in axes for which the European Union imposes minimum shares of expenditures.

2006 sugar reform (apply from July 2006 to September 2015): Cuts in administered prices over four years, by 36% for white sugar and 40% for sugar beet; abolition of intervention and establishment of a private storage system; introduction of a production charge; merging of quotas A and B into a single quota; introduction of a partial compensation in a form of a payment to be integrated in the SPS; introduction of a voluntary restructuring scheme for the period 2006-08; modifications to preferential import systems.

January 2007: Accession of two new countries, applying the Single Area Payment Scheme (SAPS) and RDR 2007-13.

2007 fruits and vegetable reform (apply from 2008): Transfer of risk reduction and crisis management to producer organisations, partly funded by the European Union; support for processed fruits and vegetables included in the SPS and land covered by fruits and vegetables becomes eligible to SPS; introduction of a school fruits and vegetable scheme; abolition of export subsidies for fruits and vegetables.

2008 wine reform (apply from July 2008): Phasing out of distillation schemes; restrictions on plantings ending from January 2016; voluntary withdrawal scheme; introduction of SPS; simplification of labelling rules, etc.

2009 Health Check (adopted in January): Further reduction of intervention (intervention is abolished for pigmeat and set at zero for barley and sorghum, maximum limit to intervention for wheat, butter and skimmed milk powder, beyond which intervention is by tender); phasing out of milk quotas; abolition of set-aside; integration of all payments into the SPS, except suckler cow, sheep and goat premia; flexibility for 10% of direct payments (article 68) and additional money for new member states for article 68 measures; further modulation, with some link to size; minimum payment limitation; SAPS extended to 2013; new requirement for cross-compliance; abolition of energy crop premium; member states are given the flexibility to modify the distribution of payment entitlements: 1) they can revise gradually up to 50% of payments entitlements (article 45), 2) they have some flexibility to allocate new entitlements from further integration of payments into the SPS, either to favour some types of agricultural activities or to adopt a flat regional rate (article 63); and 3) they can opt for a regional implementation of the SPS from 2010 onwards (article 46).

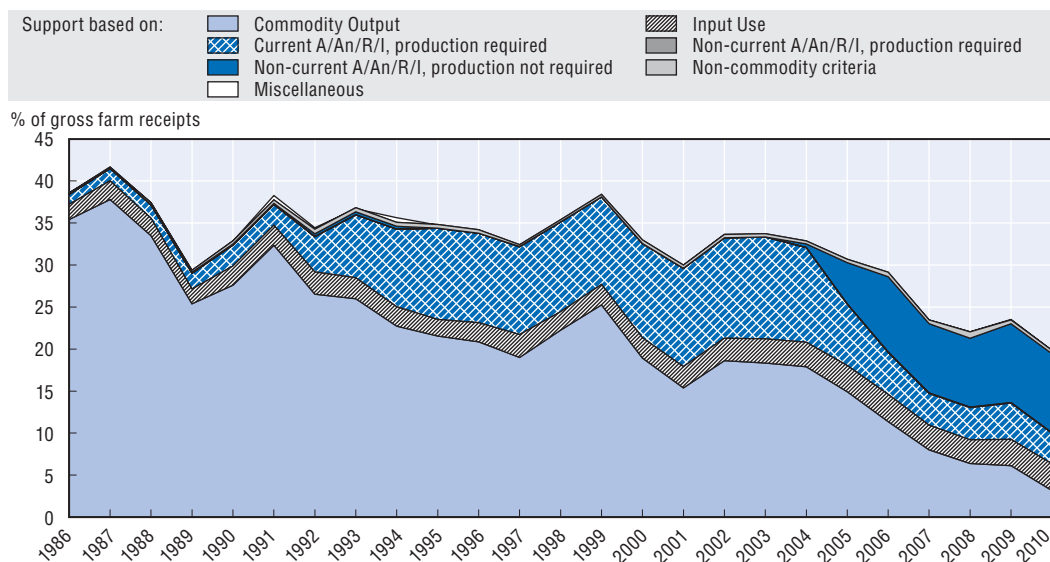
Level of support

While EU total expenditures in percentage of EU GDP have been relatively stable in the last 25 years, the share of CAP expenditures in EU total expenditures has decreased from over 70% in the late 1980s to around 40% in 2010. However, expenditures only reflect support from taxpayers to producers. OECD indicators measure all forms of support to producers individually (PSE) or collectively (GSSE), as well as support to consumers (CSE). Compared to EU expenditures, they include transfers from consumers, as well as expenditures from national and regional taxpayers as part of the CAP (national co-financing) or outside (state aids). As a result, they give a wider picture of transfers to the sector associated with agricultural policies.

The broadest OECD indicator of support is the Total Support Estimate (TSE), which includes support to producers individually (PSE) or collectively (GSSE) and direct budgetary transfers to consumers (Box 3.1). As a percentage of GDP, it measures the total burden of agricultural support for the economy. The European Union TSE decreased from 2.63% of GDP in 1986-88 to 0.84% in 2007-09, a percentage lower than the OECD average.

The %PSE, which relates support to producers to the value of gross farm receipts, also decreased over time from 39% in 1986-88 to 22% in 2008-10 (Figure 3.6). Support remained relatively stable in the first half of the 1990s, indicating that payments introduced in 1992 fully compensated for the decrease in market price support due to gradual cuts in intervention prices. However, the reduction in support in the mid-2000s suggests that cuts in intervention prices introduced in 2004 were only partially compensated by higher or new payments, although relatively high world prices may also have contributed to the decrease in the %PSE.

Figure 3.6. **PSE level and composition by support categories, 1986-2010**



A/An/R/I: Area, Animal numbers/Receipts/Income.

Source: PSE/CSE Database, 2011.

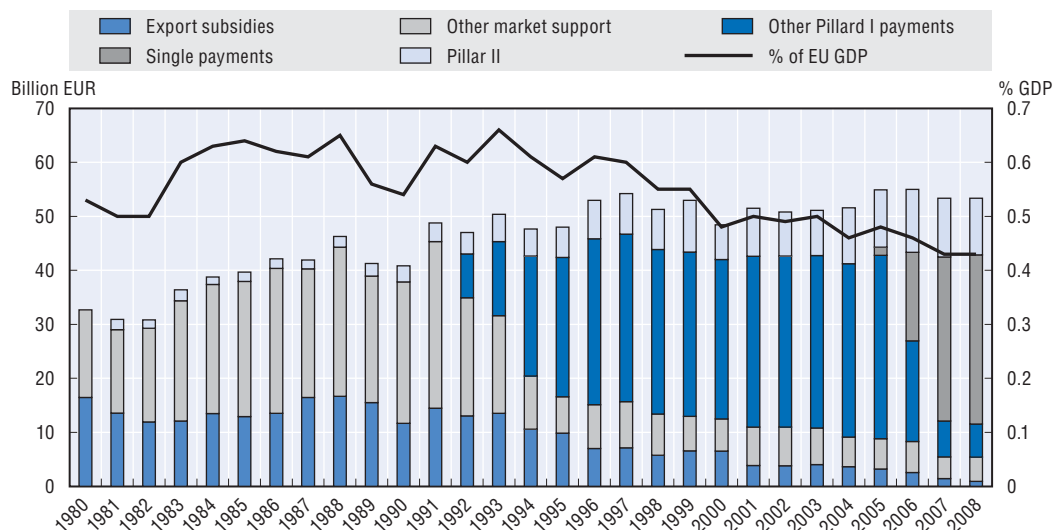
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Pillar 1: From market price support to broad-based direct payments

Changes in the composition of support

While at the end of the 1980s, most CAP expenditures were made to finance market price support measures, in particular intervention and export refunds, the share of those measures in total expenditures decreased gradually as the share of direct payments increased (Figure 3.7). Developments in the composition of the PSE reflect these changes (Figure 3.6). From 1992, the share of MPS decreased and the share of payments based on current area and animal number increased following the implementation of the MacSharry reform. These movements were reinforced with the implementation of Agenda 2000. With the implementation of the 2003 reform as of 2004, MPS continued to decrease while a large share of payments lost their link with current factors of production and did not require any production to be granted. These payments include the SAPS in the ten new member states and the SPS in EU15, Malta and Slovenia. They have been increasing as a percentage of gross receipts since the mid-2000s as more commodity sectors were reformed and included in the SPS, and with the phasing in of payments in new member states (Annex Table C.3).

Figure 3.7. **The evolution of the composition of CAP expenditures, 1980-2008**



Source: EC (2010a).

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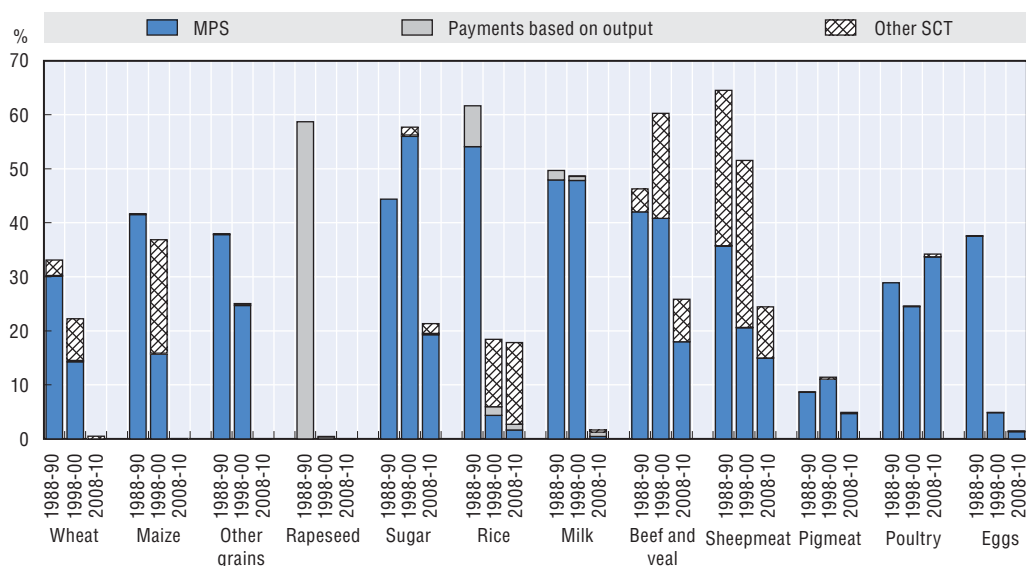
Reduction in intervention mechanisms

Reforms implemented since 1992 have introduced successive reductions in intervention prices or other support prices (Annex Figures C.1 to C.7) and in the scope of intervention; first with limits on the intervention period and/or quantity purchased, followed by the abolition of intervention for some products. Public intervention for sugar was replaced in 2006 with assistance to private storage. Since 2002, public intervention for beef and veal is very limited, but if domestic prices fall below a basic price, aid to private storage is triggered. Intervention has been abolished for some products (oilseeds in 1992, rye in 2004, maize phased out from 2007 to 2009, pigmeat in 2009).¹⁰ In some cases, intervention mechanisms had not been used for a number of years before they were

reformed or abolished (20 years in the case of pigmeat). As a result, market price support significantly decreased in the mid-1990s for all commodities except sugar and milk, which were reformed later (Figure 3.8). For poultrymeat, support comes only from border measures and rose in recent years because domestic prices increased more than world prices.

Figure 3.8. **Producer SCT by commodity, 1988-90, 1998-2000, 2008-10**

As a percentage of gross receipts for each commodity



Source: PSE/CSE Database, 2011.

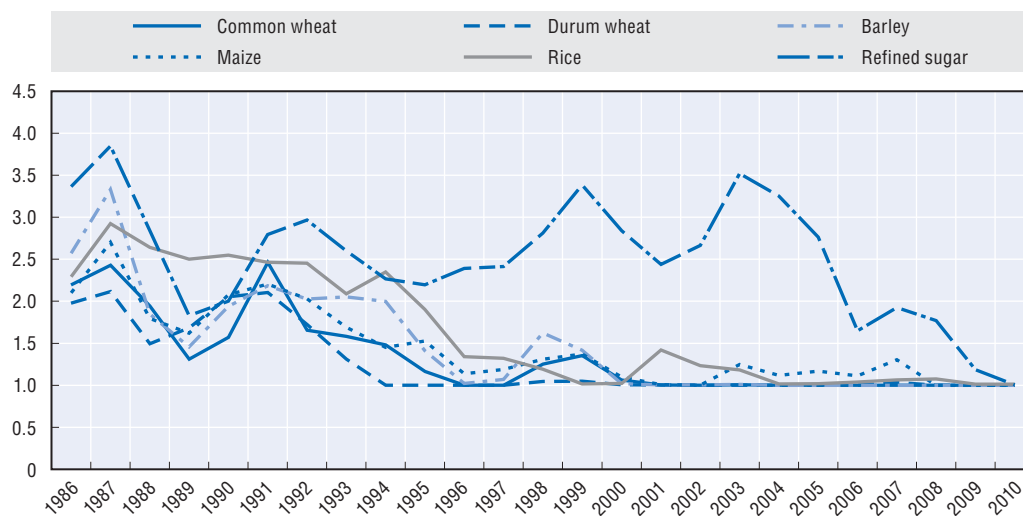
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The Nominal Protection Coefficient (NPC), which measures the ratio between domestic and border prices, also reflects the reduction in intervention on domestic markets (Figures 3.9 and 3.10). The initial decline in domestic producer prices for cereals started in 1994 and since 2004, they have been very close to border prices. The sugar reform has significantly reduced NPCs for that product from 2006. The reduction in NPC for milk is clear from 2004 following initial cuts in intervention prices for butter and skimmed milk powder. Overall, the EU NPC fell from 1.71 in 1986-88 to 1.07 in 2008-10, indicating that domestic producer prices were on average 7% above border prices (Box 3.1).

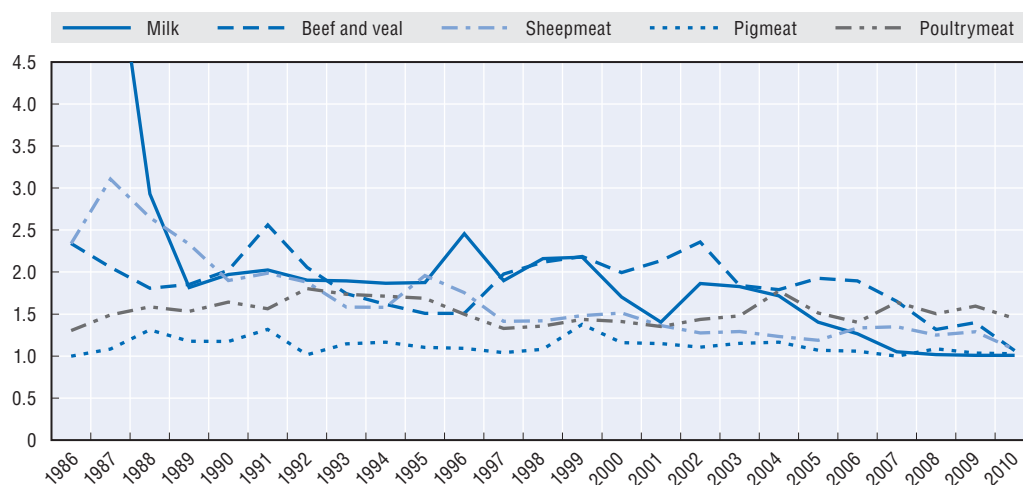
The reduction in export refunds results from both lower price support and, for some livestock products, lower extra-EU exports and political decision (Figures 3.11 and 3.12). Table 2.6 indicates the extent to which enlargement has contributed to a reduction in net exports for some commodities. High world prices in recent years have contributed to the reduction in export refunds, in particular for dairy products (Annex Figure C.4).

Developments in direct payments

Payments introduced or consolidated by the MacSharry and Agenda 2000 reforms were based on area planted in cereals, oilseeds or protein crops (COP), or on animal numbers. Limits on the number of hectares or animal eligible for payments were introduced from 1992. For specific crop payments, such as those for durum wheat or protein crops, maximum guaranteed areas were set, while in order to receive the newly

Figure 3.9. **Producer NPC for selected crops, 1986-2010**

Source: PSE/CSE Database, 2011.

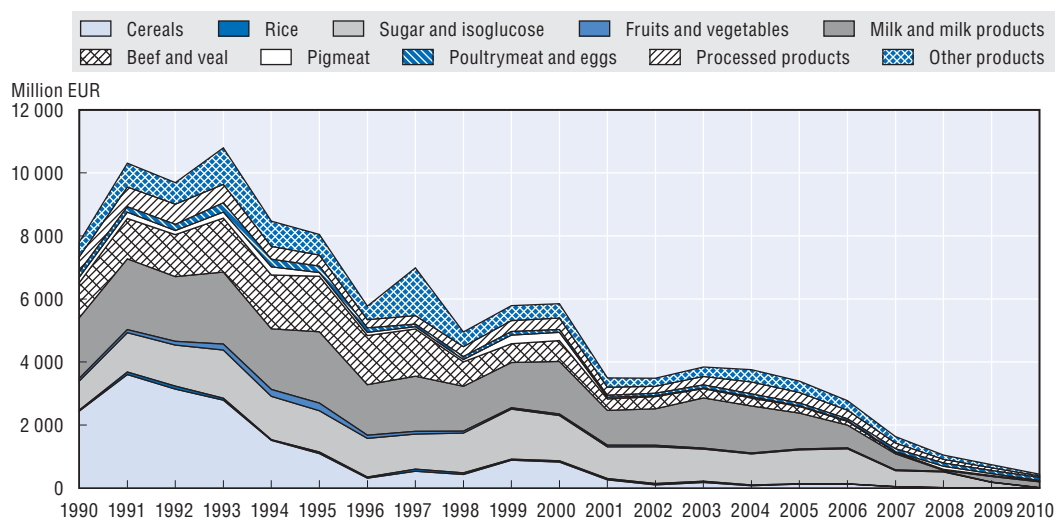
StatLink  <http://dx.doi.org/10.1787/888932475316>Figure 3.10. **Producer NPC for selected livestock products, 1986-2010**

Source: PSE/CSE Database, 2011.

StatLink  <http://dx.doi.org/10.1787/888932475335>

introduced COP payments, farmers were required to set-aside a proportion of eligible land and received a payment per hectare of land set-aside. The proportion of land to set aside was fixed every year depending on market conditions. It was 10% before the Health Check abolished the set-aside scheme. As a result, there were limits on the amount of land or animals receiving support for most payments, as well as limits on market price support for milk and sugar because of production quotas.

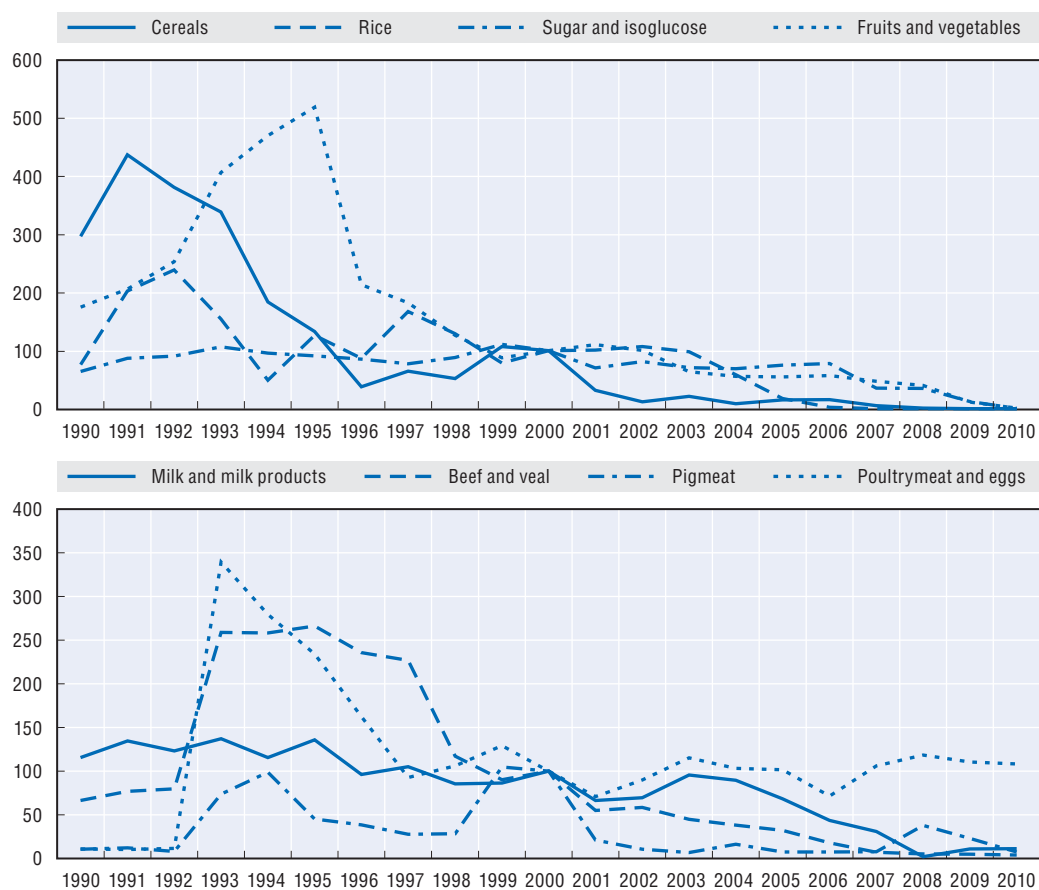
In the PSE classification (Box 3.2), which is based on implementation criteria, MacSharry payment and Agenda 2000, payments are included in the category of “payments based on current area or animal numbers with production required” as they are granted on the condition that areas receiving payments are planted with a specific group of crops or on which specific animals are kept. While COP payments are linked to a group

Figure 3.11. **Developments in export refunds, 1990-2010**

Source: PSE/CSE Database, 2011.

StatLink <http://dx.doi.org/10.1787/888932475354>Figure 3.12. **Evolution of export refunds for selected commodities, 1990-2010**

Index 2000 = 100



Source: PSE/CSE Database, 2011.

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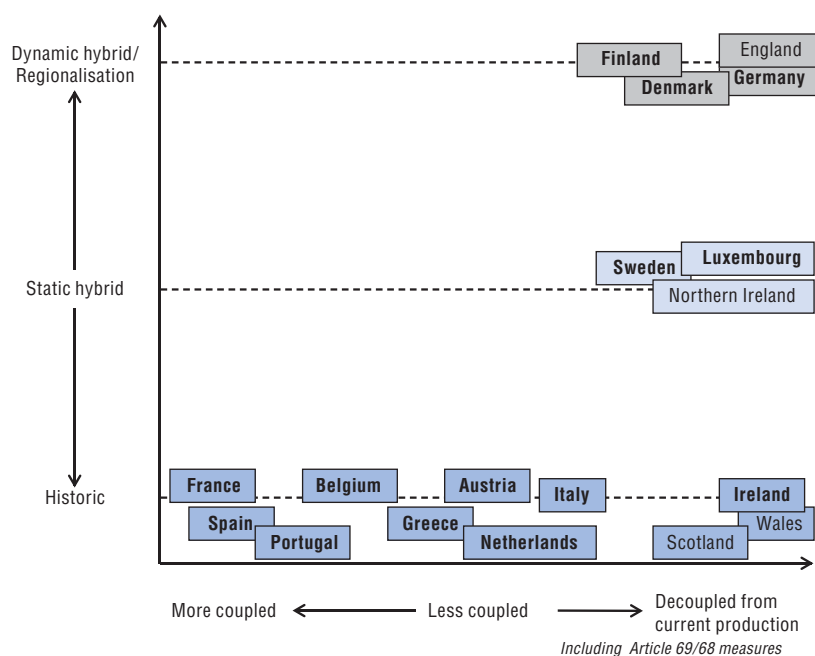
of commodities, livestock premia are specific to single commodities as rates differ depending on the type of animal. The former are thus included in Group Commodity Transfers (GCT), while the latter are considered in Single Commodity Transfers (Box 3.1).

Some crops also received payments specific to a single commodity, *e.g.* the supplementary aid for durum wheat, which makes more than a third of SCT for all wheat in 1998-2000; and quality premiums for rice, which doubled between 1998-2000 and 2008-10 as intervention prices were halved by the 2003 reform (Figure 3.8). Comparison of SCTs for beef and veal and for sheepmeat between 1988-90 and 1998-2000 illustrates the increase in payments per head of beef cattle (suckler cow premium, beef and cow premia, extensification premium from 1993)¹¹ and per head of sheep and goat. The share of these premia in the SCT decreased in 2008-10 as part of them entered the SPS, but remained significant as several member states chose to keep them to the extent possible (see below). Between 2004 and 2006, dairy producers received a payment per tonne of milk quota, which became part of the SPS in 2007 and is thus not shown in Figure 3.8 (see Box 3.3 on the main features of CAP reforms).

The SPS was implemented in 2005 or 2006 depending on the country, while the SAPS was applied in new member states when they joined, *i.e.* 2004 or 2007. Malta and Slovenia had an intermediary scheme until they implemented the SPS in 2007. The SPS provides payments based on fixed entitlements, either depending on individual or regional historic references, while the SAPS is paid as a flat rate per hectare. Both are provided whether production occurs or not. The only condition for receiving full payments is that requirements regarding the respect of EU Directives and the maintenance of land in good agricultural and environmental conditions (cross-compliance) are met. In the PSE, those payments are classified as based on non current area or receipts, for which production is not required and mandatory input constraints apply as cross-compliance is compulsory.

The 2003 reform gave EU15 countries the flexibility to retain some payments based on current area or animal numbers within limits set by Council Regulation (EC) No 1782/2003 and summarised in Annex Table C.4. Figure 3.13 provides a schematic overview of countries' implementation models.¹² Moreover, payments for specific commodities such as durum wheat, protein crops, energy crops, rice, sugar, starch potatoes, tobacco, olive groves, fruits and vegetables, and cotton were introduced or increased as part of the 2003 and subsequent CMO reforms. Most of these payments will be phased out before 2013 as agreed in the CAP Health Check of 2009.

Before 2009, member states could retain 10% of their national budget ceilings by sector for direct payments used for environmental measures or the improvement of the quality and marketing of products in that sector (Article 69 of Council Regulation (EC) No 1782/2003). With the Health Check, this provision was modified as laid out in Article 68 of Council Regulation (EC) No 73/2009. In particular, the money no longer has to be used in the same sector, but can be used to help farmers producing milk, beef, goat and sheepmeat and rice in disadvantaged regions or vulnerable types of farming; it may also be used to support risk management measures such as insurance schemes for natural disasters and mutual funds for animal diseases; and countries operating the Single Area Payment Scheme become eligible for the scheme. There is additional funding for EU12 farmers of EUR 90 million are allocated to the 12 countries that entered the European Union in 2004 and 2007 to facilitate the implementation of measures under Article 68 until their farmers receive full direct payment rates at the end of the ten-year transition period

Figure 3.13. **Models of SPS implementation**

Note: More coupled indicates that the country uses the flexibility to retain coupled payments to the maximum extent allowed.

Source: Renwick et al. (2011).

following accession. Member states applying the SPS are allowed either to use currently unused money from their national envelope for Article 68 measures or for Pillar 2 measures. Within Article 68, only 3.5% of the national ceilings can be used for coupled forms of support.

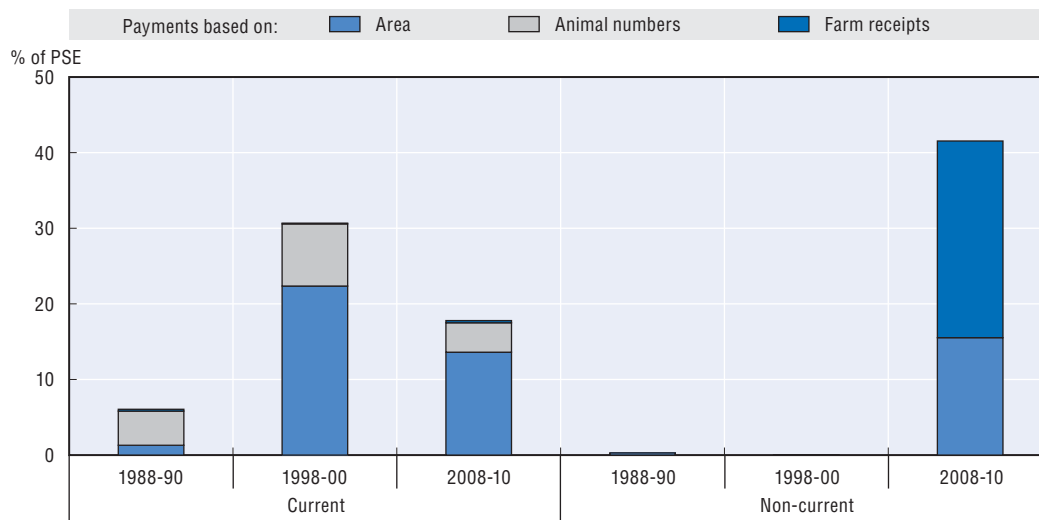
As explained earlier, until EU payments are fully phased in, new member states have the flexibility to provide additional payments (CNDPs) to specific sectors (Table 3.5 and Annex Table C.3). From 2007, a large share of CNDPs is paid as supplements to the SAPS and is thus de-linked from commodity production.

From current to non-current base for payments

Successive reforms have reduced the link between payment entitlement and commodity production as illustrated by the move from payments based on current factors to those based on non-current factors, which in the European Union are granted without any requirement to produce (Figure 3.14). As a result, the share of payments with no requirement to produce has increased in the PSE and in EU Pillar 1 expenditures, as indicated in the section describing the current CAP. The description below includes developments in Pillar 2 payments, which will be mentioned where relevant, while developments in those measures are described later. As Pillar 2 accounted until recently for less than 10% of CAP expenditures, developments in Pillar 1 payments dominate the broad picture described in the figures below.

Figure 3.14 shows that before the MacSharry reform, direct payments were mainly based on animal numbers. As COP payments were introduced, payments based on current area made up more than two-third of payments. In 2008-10, they represented more than

Figure 3.14. **Changes in the current or non-current base for payments, 1988-90, 1998-2000, 2008-10**



Source: PSE/CSE Database, 2011.

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three-quarters of payments based on current factors (including Pillar 2 payments), while most payment are based on non-current factors. Among the latter, the SAPS and the regional implementation of the SPS are considered as based on fixed area, while the part of the SPS implemented based on farm entitlements is considered as based on former farm receipts. Payments based on current area in 2008-10 include those for production in less-favoured areas, for agri-environmental purposes, and payments maintained for crops in France and Spain as a part of flexibility in implementation of the SPS.

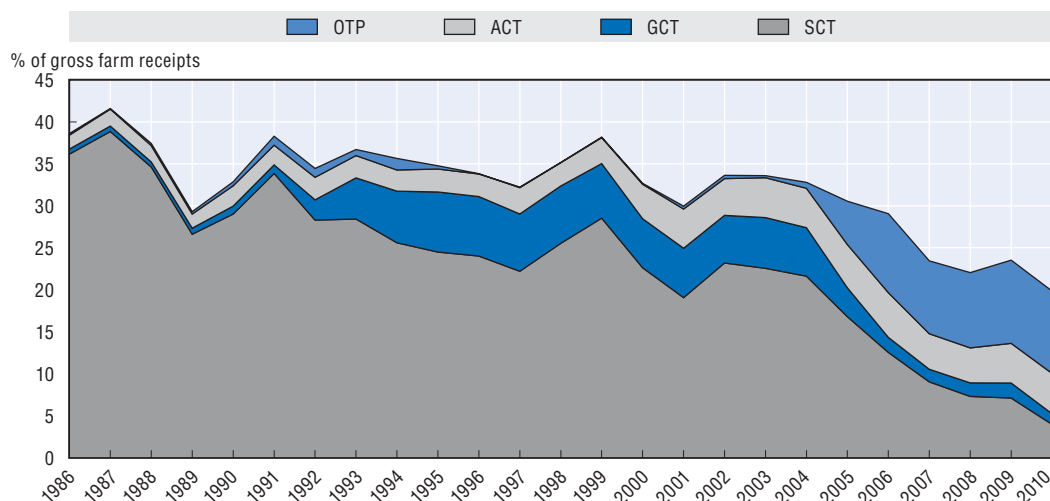
Decreasing link with specific commodities

At the same time, payments became less commodity specific. Developments in the commodity specificity of CAP support are shown in Figure 3.15. While before the MacSharry reform, most support was linked to domestic prices or based on animal numbers and thus was specific to single commodities (SCT), COP area payments were based on groups of crops and thus fall in the GCT. Between 2003 and the implementation of the SPS (from 2005 or 2006 depending on the country, the rate of payments based on current COP area was equalised between cereals, oilseeds and protein crops so although the area payment remained in the GCT, it moved to a larger group and commodity specificity was thus lessened. Single payments are not linked to any commodity so they are considered in Other transfers to producers (OTP). Payments to all commodities (ACT) have also increased over time. They include Pillar 2 measures, such as less-favoured area payments or farm investment support, as well as services to individual farmers.

While the SPS has no link to current production, land planted with commodities like fruits and vegetables (before reform included them in the system) in the historical implementation model was not eligible for triggering payments and those commodities could not be planted on eligible land. In the PSE classification, this constraint is called a “commodity exception.” The SAPS and regional implementation of the SPS have no such exceptions. Since SPS was implemented, the share of payments delivered without commodity exceptions has increased as the SAPS is phased in, the share of regional

payments increased in countries with a hybrid, dynamic system, and the fruits and vegetable reform and wine reform have been implemented (Figure 3.16). Member states have chosen when they will remove restrictions on planting fruits and vegetables within the transition period (2008-12). With the wine reform, planting restrictions will be abolished by 2016. At the end of the transition periods, payments with commodity exceptions will have disappeared in the European Union.

Figure 3.15. **PSE level and commodity specificity, 1986-2010**

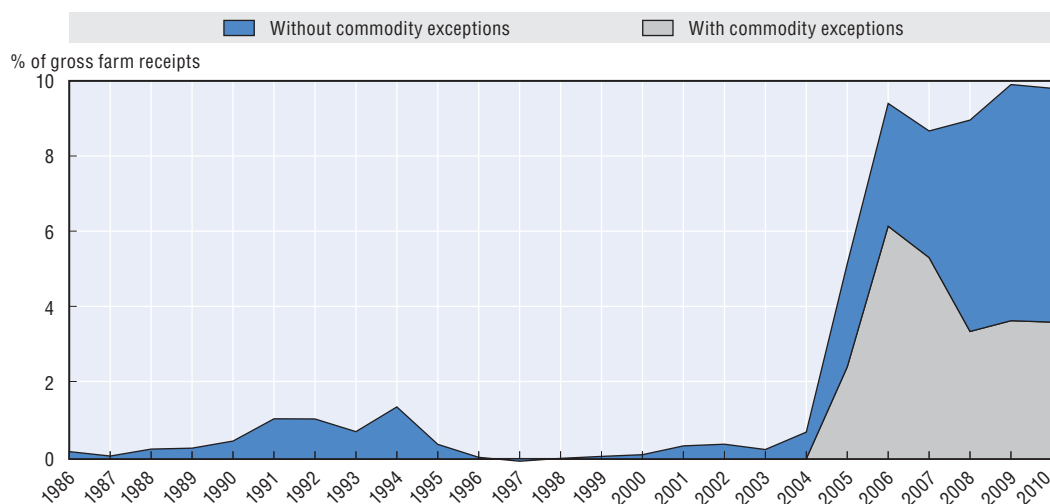


SCT – Single Commodity Transfers; GCT – Group Commodity Transfers; ACT – All Commodity Transfers; OTP – Other Transfers to Producers.

Source: PSE/CSE Database, 2011.

StatLink  <http://dx.doi.org/10.1787/888932475430>

Figure 3.16. **Commodity exceptions for Other transfers to producers, 1986-2010**



Note: Other Transfers to producers (OTP) include payments based on non-current A/An/R/I, production not required, with fixed rates plus Payments based on non-commodity criteria plus Miscellaneous payments.

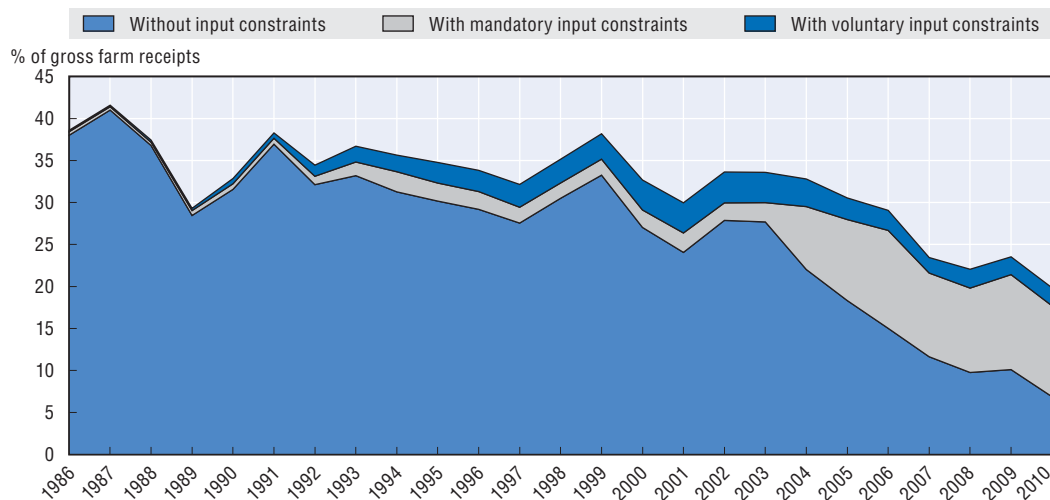
Source: PSE/CSE Database, 2011.

StatLink  <http://dx.doi.org/10.1787/888932475449>

Generalisation of input constraints

Another clear movement within EU policies is the increasing scope of input constraints that are attached to payments. The share of support with mandatory input constraints becomes significant with the introduction and generalisation of cross compliance to all CAP payments after the 2003 reform (Figure 3.17). The decline in support without input constraints is mainly related to that of MPS and output payments (Figure 3.18). Some national payments, including CNDPs remain free of input constraints,

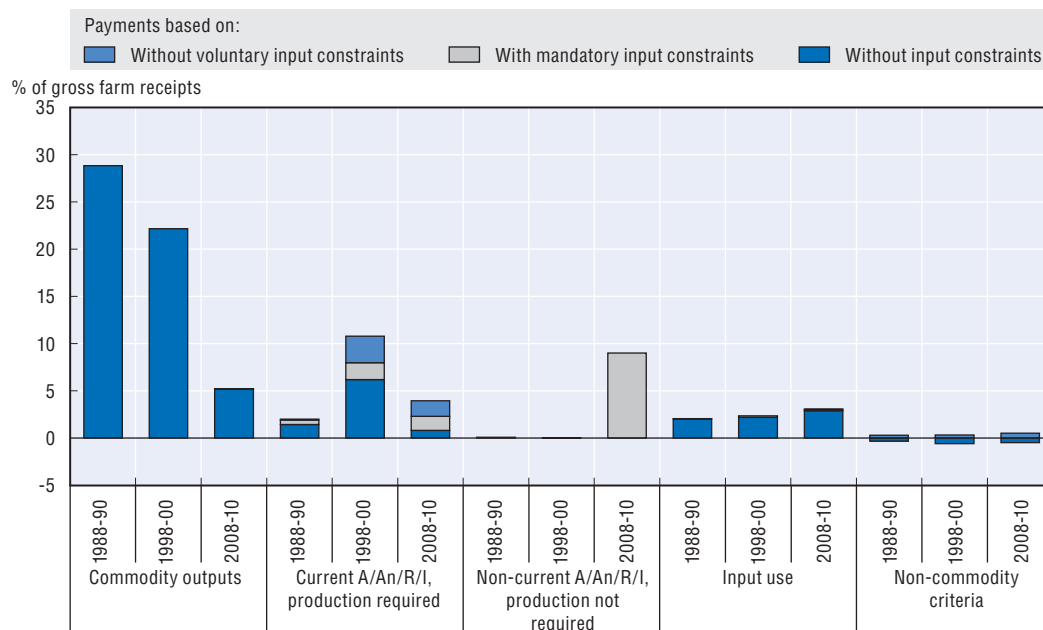
Figure 3.17. **Share of payments with input constraints, 1986-2010**



Source: PSE/CSE Database, 2011.

StatLink  <http://dx.doi.org/10.1787/888932475468>

Figure 3.18. **Share of payments with input constraints in each PSE category, 1988-90, 1998-2000, 2008-10**



A/An/R/I: Area, Animal numbers/Receipts/Income.

Source: PSE/CSE Database, 2011.

StatLink  <http://dx.doi.org/10.1787/888932475487>

as well as payments based on input use. Developments in payments with voluntary input constraints are linked to Pillar 2. The progression of payments with voluntary input constraints reflects the development of agri-environmental measures and less-favoured areas payments, which are granted on conditions that farmers change their farming practices (usually to adopt more extensive ones). In addition, investment programmes are available to help farmers comply with EU regulations regarding production practices, in particular in new member states. This is related to developments in Pillar 2 measures described below.

Pillar 2: From structural to Rural Development Regulation (RDR) measures

Developments in Pillar 2 of the CAP are characterised by institutional changes, and increases in the number and variety of measures being offered, in the rate of EU co-financing, and in EU funds available, including through transfers from Pillar 1.

The historical CAP included only measures to support commodity prices. By 1992, “structural” measures included support for the modernisation of farm holdings and the setting up of producer groups, early retirement assistance and extension measures introduced in 1972. In 1975 specific measures for farms in less favoured areas, including mountains and hills were introduced. EU co-funding for afforestation of agricultural land, compensatory payments for less favoured areas and investment support related to extensification of agricultural practices and environmental protection was introduced in 1987, but these measures remained optional. The reform of the structural fund reform in 1988 introduced the pluri-annual programming of rural development plans, which integrated agricultural measures funded by the “guidance” section of the European Agricultural Guarantee and Guidance Fund (EAGGF), with other rural development measures funded by the European Regional Development Fund (ERDF) and the European Structural Fund (ESF). Rural development plans were prepared for the 1989-93 and 1994-99 periods.

The 1992 reform introduced “accompanying measures”, i.e. measures to accompany commodity support comprising early retirement, afforestation and compulsory agri-environmental schemes. Following the Cork Declaration of 1996, Agenda 2000 integrated agricultural structural funds into Pillar 2 of the CAP. As Pillar 1 measures, “accompanying measures,” which by then also included less favoured area payments, became funded by the “guarantee” section of the EAGGF in most regions, while objective 1 regions remained funded by the “guidance” section, as former investment measures in the farm and agri-food sectors. Agenda 2000 also increased the number of co-funded measures available. For the programming period 2000-06, member states had to choose between a list of 22 measures (listed in Annex Box C.1), most of which were optional although some were compulsory (agri-environmental measures and less-favoured area payments). EU co-financing varied by region (whether in objective 1 or not, whether new member states or EU15) and by type of measure (Table 3.7).

During 2004-06, the ten new member states that joined the European Union in May 2004 implemented a special rural development regime based on a new Temporary Rural Development Instrument (TRDI), funded by the EAGGF Guarantee. This instrument funded the four so-called “accompanying measures” (agri-environment, early retirement, afforestation and compensatory payments for less favoured areas and areas subject to environmental constraint) and the following specific rural development measures: semi-subsistence farms undergoing restructuring, producer groups, compliance with

Table 3.7. **EU co-financing rates, 1984-2013**

	1994-99	2000-06 Reg. No. 1257/2005 Reg. No. 1260/2005	2007-13 ¹ Reg. No. 1698/2005
Competitiveness			
– General rate	25-50	25-50	50
– Objective 1 ² /Convergence ³	> 50 ⁴	> 50 ⁴	75
Agri-environment and less-favoured area			
– General rate	25-50	50	55
– Objective 1 ² /Convergence ³	> 50 ⁴	75	85

1. EU contributions may be increased to 90% for convergence regions and to 75% for non-convergence regions for specific operations related to priorities defined by the Health Check for additional modulation funds (Council Regulation (EC) No 74/2009).
2. Objective 1 promotes the development and structural adjustment of regions whose development is lagging behind (Objective 1 regions); i.e. whose average per capita GDP is less than 75% of the European Union average. This objective also covers the most remote regions (the French overseas departments, the Azores, Madeira and the Canary Islands) as well as the areas eligible under the former Objective 6 (areas with low population density) created by the Act of Accession of Austria, Finland and Sweden [Council Regulation (EC) No 1260/1999] laying down general provisions on the Structural Funds].
3. Convergence regions are regions at level 2 of the NUTS classification whose GDP (Gross Domestic Product) per inhabitant is less than 75% of the Community average are eligible for funding under the Convergence objectives.
4. The Community's contribution rate can be increased to 80% for the regions located in one of the Member States eligible for assistance from the Cohesion Fund (Greece, Spain, Ireland and Portugal), and to 85% for all the most remote regions as well as the smaller islands in the Aegean Sea in Greece.
http://ec.europa.eu/regional_policy/policy/region/index_en.htm

Source: European Union web site.

StatLink  <http://dx.doi.org/10.1787/888932476152>

Community standards, technical assistance, complements to direct payments. All other non-accompanying measures that were already a part of the *acquis communautaire* also became available to the new member states (see list in Annex Box C.1).¹³ It should be noted that prior to accession, the EU Special Accession Programme for Agriculture and Rural Development (SAPARD) provided funds in those countries for four broad groups of measures: investments in agricultural holdings; improvement of the processing and marketing of agricultural and fishery products; development and improvement of rural infrastructure; and diversification of activities in rural areas.

The rural development programme for the programming period 2007-13 applies to the 27 member states. Its main features are described in the section above on the current CAP. Compared to the 2000-06 period, the number of measures increased (see list in Annex Table C.2) and some have changed names. Measures are grouped under three thematic axes plus a separate axis which applies the multi-sectoral approach and the principles of LEADER. The European Union has set minimum contributions for each axis (at least 10% for Axis 1 and 3, 25% for Axis 2 and for EU15 member states, 5% for the LEADER axis (and an average of 2.5% for this period in new member states, which have to reach a rate of 5% by the end of the period).

While in 2000-06, funds were available under either the guarantee section or the guidance section of the EAAGF, depending on the region, as of 2007 they are under a new single European Agricultural Fund for Rural Development (EAFRD). The existing three types of programming (rural development programmes, LEADER and Operational programmes in Objective 1 areas) and the two types of financial management and control systems (guarantee and guidance sections of the EAAGF) were simplified and brought under a single

funding, programming, financial management and control framework. In addition, monitoring, control and evaluation rules have been reinforced.

Over the years, EU rates of co-financing have increased (Table 3.7). For agri-environmental measures, for example, it rose from 25% before the MacSharry reform to 50% in non-objective 1 regions and to 55% in the period 2007-13 for non-convergence regions. At the same time, maximum amounts of support per hectare and rates of EU support per hectare or as a percentage of investments have increased. This was made possible by the increase in RDR funds between each programming period. From 2003, the increase in RDR funds came from transfers from Pillar 1 through a mechanism known as “modulation.”

Modulation was introduced as part of the 2003 CAP reform. It consists in shifting a percentage of direct payments from Pillar 1 to supplement Pillar 2 funds. Modulation rates rose from 3% in 2004 to 5% in 2006. From 2004, the first EUR 5 000 received by farmers are excluded from modulation. This means that all farmers receiving more than EUR 5 000 in direct aid had their payments reduced by 5%. This rate was constant until 2008, but by 2012 the Health Check will have increased it to 10% (Table 3.8). Moreover, an additional cut of 4% is made on payments above EUR 300 000 a year. The funding obtained this way may be used by member states to reinforce programmes in the fields of climate change, renewable energy, water management, biodiversity, innovation linked to the previous four areas and for accompanying measures in the dairy sector. In convergence regions where average GDP per capita is lower than 75% of the EU average (they are defined in Note 3 to Table 3.7), this transferred money is co-financed by the European Union at a rate of 90% and of 75% in non-convergence regions for measures related to these priorities.

Table 3.8. **Modulation rates, 2003-12**

Thresholds	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Compulsory modulation rates										
EUR 1-5 000	0	0	0	0	0	0	0	0	0	0
EUR 5 000- 299 999	0	3%	4%	5%	5%	5%	7%	8%	9%	10%
Above EUR 300 000	0	3%	4%	5%	5%	5%	11%	12%	13%	14%
Voluntary modulation rates										
England	0	3%	5%	10%	12%	13%	14%	14%	14%	14%
Scotland	0	3%	4%	5%	5%	8%	8.5%	9%	9%	9%
Northern Ireland	0	3%	4%	5%	4.5%	6%	7%	8%	8%	8%
Wales	0	3%	4%	5%	2.5%	4.2%	5.8%	6.5%	6.5%	6.5%

Source: Adapted from AGRAEUROPE CAP Monitor.

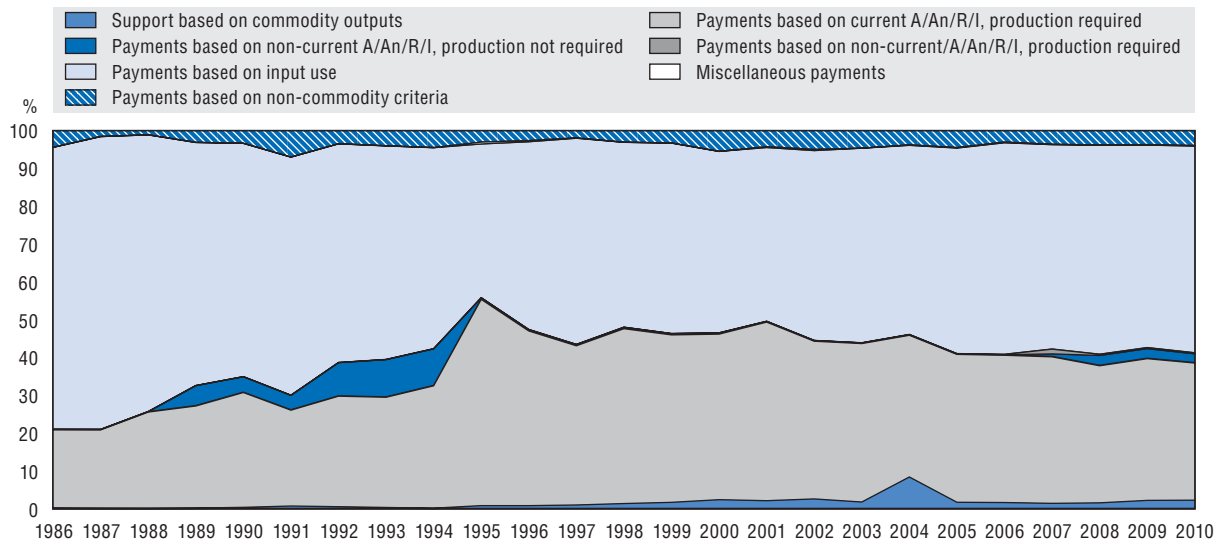
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As a result of these changes, rural development measures, which represented less than 5% of CAP expenditures at the end of the 1980s, reached 20% in 2008 (Figure 3.7) and this share is expected to increase as modulation brings more funds into Pillar 2. As Pillar 2 measures are co-financed, contributions by member states also increase, although less than if EU contributions had kept the same rate between the last two programming periods.

It should be noted that national expenditures in the PSE also include funding for purely national measures, which typically consist of investment assistance, services to farmers (pest and disease control, extension) and disaster related assistance, which are

often included in the PSE in payments based on input use. This category makes about half of national expenditures to farmers. The remainder is payments based on area, which include national co-financing on less-favoured area payments and most agri-environmental measures (Figure 3.19), as well as CNDPs in new member states. It should be noted that general services to farmers collectively (included in the GSSE) are mainly funded by national governments, in particular research, development and technical assistance.

Figure 3.19. **Distribution of national expenditures in PSE categories, 1986-2010**



1. A/An/R/I: Area, Animal numbers/Receipts/Income.

Source: OECD PSE/CSE Database, 2011.

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Notes

1. Community policy in respect of State aids seeks to ensure free competition, an efficient allocation of resources and the unity of the Community market, whilst respecting the international commitments of the European Union. http://ec.europa.eu/agriculture/stateaid/index_en.htm.
2. Developments of modulation rates are presented later in Table 3.8.
3. Council Regulation (EC) No 1234/2007 of 22 October 2007 establishes a common organisation of agricultural markets and specific provisions for certain agricultural products (Single CMO Regulation).
4. A WTO member may restrict imports of a product temporarily (take “safeguard” actions) if its domestic industry is injured or threatened with injury caused by a surge in imports. www.wto.org/english/thewto_e/whatis_e/tif_e/agrm8_e.htm.
5. Listed in Box 3.3.
6. Details of country implementation can be found in OECD (2007b), Table 6.4 or at: http://ec.europa.eu/agriculture/markets/sfp/pdf/2008_01_dp_capFVrev.pdf.
7. Article 68 of Council Regulation (EC) No 74/2009 (Health Check).
8. Agri-environmental measures are open to other land managers.
9. In 2005, the land area subject to agri-environmental measures was 28% of EU15 land area and 23% in EU27.
10. In addition, the implementation of the Uruguay Round Agreement on Agriculture between 1995 and 2001 has secured or increased market access.

11. The slaughter premium was introduced in 2000.
12. Details of country implementation can be found in OECD (2007b), Table 6.4 or at:
http://ec.europa.eu/agriculture/markets/sfp/pdf/2008_01_dp_capFVrev.pdf.
13. http://ec.europa.eu/agriculture/rur/access/index_en.htm.

Chapter 4

Impact of Agricultural Policy Reforms on the Economic and Environmental Performance of Agriculture

This chapter aims to estimate the impact of successive CAP reforms on the agricultural sector, in particular commodity and land markets, farm structure, farmers' income and welfare, the environment, and some aspects of rural development. Implications of CAP reforms on markets, farm income and welfare are explored using two partial equilibrium models: the OECD Policy Evaluation Model (PEM) and the Common Agricultural Policy Regionalised Impact (CAPRI) modelling system. The analysis also draws on findings discussed at the OECD Workshop on the Disaggregated Impacts of CAP Reforms, held in Paris on 10-11 March 2010.

The focus of this chapter is on the reforms implemented since 2004 (Box 3.3), including the 2003 reform and the 2009 Health Check. However, reforms over the last 25 years are also considered in a model-based analysis of impacts on production and income, and in the section on environmental impacts. Aspects of CAP reforms specifically considered include:

- the decoupling of policies from commodity production, i.e. the move away from market price support (MPS) measures to area and headage payments and then to single payments without any requirement to produce any commodity;
- the introduction of cross-compliance;
- the removal of land set-aside and phasing out of milk quotas;
- the sugar reform;
- the transfer of funds from Pillar 1 to Pillar 2 known as modulation; and
- developments in Pillar 2 measures.

Several sources of information are explored, including recent *ex ante* and *ex post* evaluations carried out as part of the policy implementation process by member states and the European Commission, and previous OECD studies, in particular an analysis of the 2003 CAP reform (OECD, 2004), an evaluation of the sugar reform (OECD, 2007c) and the environmental performance of agriculture in OECD Countries (OECD, 2008c).

As part of the OECD project on CAP reform evaluation this report belongs too, an OECD Workshop was organised in Paris on 10-11 March 2010 to discuss the disaggregated impacts of recent CAP reforms. The workshop was intended to feed the OECD report with information on aspects that available OECD tools cannot capture. Expert contributions provided useful information, which is summarised and referenced in this chapter. Papers included in the Proceedings of the OECD Workshop are quoted in the body of this report as (Author, 2011) and as [Author (2011), “title of the paper,” in OECD (2011a)] in the list of references. All papers presented at the workshop are published in OECD (2011a). Each paper describes the context of the study, explains the methodology and data used, and reports main results. Wherever possible, comments are drawn from empirical observations on changes in land use, the regional distribution of production, productivity, income levels and variability, and the environmental performance of agriculture, and the extent to which they relate to policy changes. Implications of reforms for the distribution of support and income is explored using farm level data, including contributions from the OECD Network for farm level analysis (OECD, 2011b).

Two specific modelling studies were also carried out to explore the implications of CAP reforms using partial equilibrium models: the OECD Policy Evaluation Model (PEM)¹ and the Common Agricultural Policy Regionalised Impact (CAPRI) modelling system.² The OECD PEM is used to simulate changes in production, trade, income and welfare over time (1986-2008) to take account of successive CAP reforms in the crop and livestock sectors represented in PEM, including changes in level and composition of support as measured by

the PSE. PEM simulations are used to estimate the impact of changes in policy mix, in particular the movement towards decoupling support from production, on production, trade, income transferred and welfare. The CAPRI modelling system is used to analyse in detail the impact at regional level of recent CAP reforms (from 2003 to 2009) on EU domestic markets (production, farm revenues, trade, prices), land use, welfare and two environmental indicators compared to a continuation of Agenda 2000 (base scenario). In order to focus on the impact of moving towards more decoupled forms of support, the analysis assumes zero set-aside in the base scenario. Policy reforms include the 2003 reform, successive reforms of commodity sectors, including sugar, fruits and vegetables, and the Health Check of the CAP. It also explores the implications of regional *versus* historical implementation of single payments. Other model results are also reported.

Models are a simplification of reality. The models used in this chapter assume that all represented markets function perfectly and thus cannot reflect the effect of factors outside their scope. For example, they do not consider the effects of activities outside the agricultural sector and do not include non-price effects such as externalities. The results of scenarios also depend on the structural and behavioural characteristics of the model, and the way policies are represented. In particular, the estimated impacts of changing the payment system depend on how the different types of payments are represented, and how the rental and sales markets for land are constructed in the model. For the PEM model, payments based on land are assumed to have their first incidence in the land market. As a result, they are nearly fully capitalised into the value of land. This is true as well of single payments. The distribution of the benefits of this capitalisation depends on the proportion of land that is owned (where the benefits accrue to farmers) *versus* the share of land that is rented from non-farming landowners (where the benefits accrue to those landowners). The modelling of payments is similar in CAPRI. In both models, elements such as effects on risk or health are not included, and transfers of premium entitlements are not modelled. In the CAPRI model, there are some uncertainties in the database regarding land price developments. It is important to take into account these limitations when interpreting results.

Impact of successive CAP reforms on land use, production and commodity markets

Impact of CAP reforms on production, trade and land use over the period 1986-2008

This section reports results from an analysis carried out with the OECD Policy Evaluation Model (PEM) to estimate the impact of CAP reforms on production and trade and land use over the period 1986-2008, corresponding to the OECD PSE/CSE Database (2009 version). Income and welfare impacts are discussed in another section below. The main characteristics of the PEM are described in Box 4.1. Estimates of the production and income impacts of the CAP are made using index numbers of the impact of support on production and farm household income.³ These estimates show that the impact of support on production and on the income of farm households has changed significantly over the study period. While the effect of support has evolved over time according to a number of factors, the MacSharry reform of 1992 and the 2003 CAP reform stand out as particularly important drivers of changes in the impact of the CAP on the agricultural sector over the period.

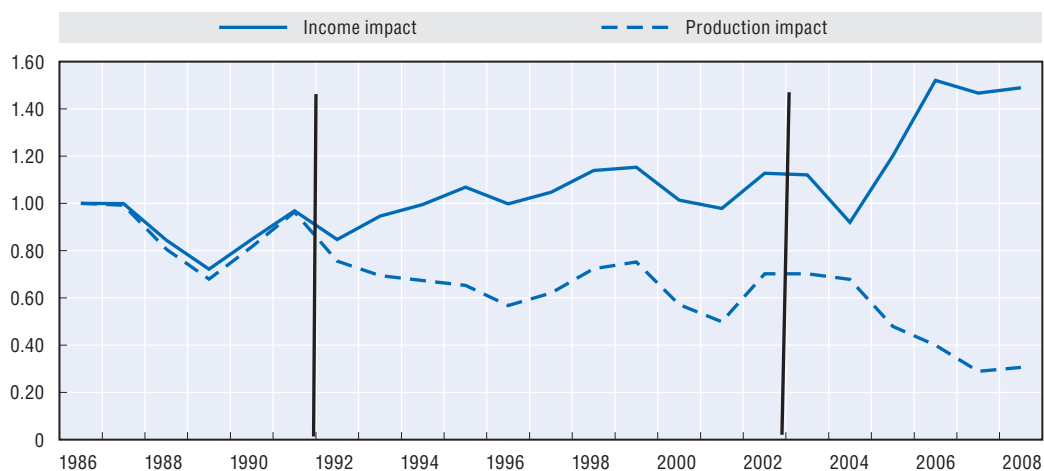
Impact on production

The distortive impacts of the CAP on agricultural production have consistently decreased over the study period (Figure 4.1). At the same time, the efficiency of policy measures under the CAP to deliver increased income to farm households and landowners has increased.⁴ These two effects share a common root. Policies that influence agricultural commodity markets directly tend to provoke the greatest changes in production. These policy-induced distortions away from market equilibrium provoke “deadweight losses”—the extra costs incurred by producers who increase production in response to policy signals, or by consumers who consume less at a higher price. These deadweight losses mean that the result of some of the policy “effort” undertaken by the CAP is simply lost to transactional losses that benefit neither the intended recipient of support nor other agents in the economy. When deadweight losses are significant, less remains to be transferred to producers, and the income benefits of the policy are weak. As will be discussed in the section on income and welfare impacts below, a significant share of commodity-related support also leaks outside the farming sector to input suppliers, non-agricultural land owners, and along the downstream food chain.

The results are reported in Figure 4.1 with respect to the policy situation in 1986. In that year, MPS dominated, at about 80% of all support. Reforms have progressively reduced the share of MPS in support as well as the overall level. These reforms have had two effects which together explain the relative changes in the production and income impact of the CAP — reduced market distortions and resulting deadweight losses, and increased income transfer efficiency. MPS is one of the most distorting forms of support, and moving to less-distorting forms reduces the CAP’s impact on production. The production impact is further reduced by the lower overall level of support relative to the size of the farm sector. Thus, the production impact index shows in 2008 the production effect of the CAP was about 30% of the production impact in 1986.

Figure 4.1. **Effect of the CAP on production and income, 1986-2008**

1986 = 1



Note: Income is defined as producer surplus accruing to farm owned inputs, which include the farmer’s own labour, quota rents, the livestock herd, and land (which for this figure is assumed owned by farmers).

Source: OECD PEM model.

StatLink  <http://dx.doi.org/10.1787/888932475525>

While the production impact has reduced, the impact of the CAP on farm income has increased. This is because the reduced deadweight losses allow for producers to reduce their costs and allow them to have a larger net benefit of support. It is also because of the fact that the transfer efficiency of the CAP has improved as well. That is, not only is less of the value of support lost to deadweight losses, it is also the case that less value is captured by input suppliers and the downstream food chain. By more efficiently targeting the intended beneficiaries of support, the net result is more income transferred from the CAP, even as total support has declined. This effect is broken down explicitly in the section on income and welfare effects that follows.

The best way to reduce deadweight losses is to reduce the direct effect of a policy on prices, in particular commodity prices — the price that farmers receive for selling their production. The MacSharry reform was an important first step in this process. Before 1993,

Box 4.1. PEM features

The Policy Evaluation Model (PEM) was developed by the OECD to relate the information in the PSE database to specific economic outcomes. It is designed to complement the information in the PSE database with a basic economic structure and underlying data to allow aggregate representations of seven OECD countries (including the European Union as a single region with two productive zones, the EU15 and EU12).

The PEM provides a static, partial equilibrium view of the impact of agricultural policies, with elasticities intended to represent a medium-term adjustment of approximately five years. The PEM models aggregate production of wheat, coarse grains, oilseeds, rice, milk, and beef that are produced with a combination of farm-owned factors of production and purchased inputs.

The PEM is an equilibrium displacement model; that is, it is calibrated such that for each year all markets are in equilibrium given observed data on prices, quantities, and support. Policy simulations disturb this equilibrium by introducing a shock to the level of support in one or more PSE categories. The model then is solved by finding a new economic equilibrium post-shock. Results have a comparative static interpretation. The model can be run for any year in the 1986-2008 PEM database, or all of them at once. When run over all years, the model reports the policy impetus on various economic elements of the model for each year — it is not a dynamic simulation of how markets would unfold over the study period. This view allows for an estimation of the medium term impact of the policy in each year and to track how that medium-term impact changes over time as the policy set and underlying economic situation changes.

Policies are implemented in PEM according to the PSE classification. Each of the main kinds of support defined in this classification appears in the model with a specific initial incidence on producer and consumer incentive prices. The aim is to represent the incidence of support measures in the model in the same way as is implied by the classification of support measures for the PSEs. So, payments based on variable input use appear as a wedge between the supply and demand price of inputs, payments based on land between supply and demand price for land, and so on. Payments not requiring production or other payments with broad eligibility are modelled with price wedges designed to cause a uniform inflation in supply prices. That is, such policies do not affect the relative choice between eligible commodities or land uses.

Source: For more information on the PEM, see OECD (2010d), “Long-Term Trends in Policy Performance”, (TAD/CA/APM/WP(2010)19/FINAL).

support to commodities in the form of market price support (MPS) made up around 80% of total support included in PEM.⁵ This form of support directly targets output prices and is relatively distorting of production. After 1993, the level of MPS was reduced and replaced with payments based on area used in production of crops and headage payments for livestock. This reduced the market impact of the CAP without significantly reducing the level of income transferred to producers overall.

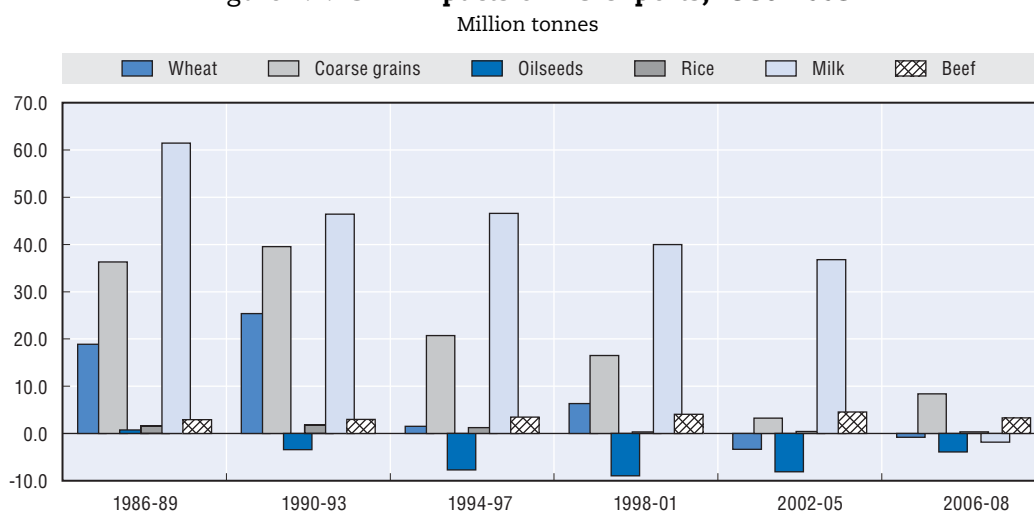
The area or headage payments provoke less market distortions than MPS because these inputs into the production of crops or livestock are inelastically supplied — the amount of land or animals used by farmers responds relatively less to changes in prices. This lack of responsiveness to price changes reduces the distortions caused by the policy. At the same time, these factors of production are owned by the farmer — any increase in the value of land or animals prompted by the policy will accrue to farmers, increasing their income.

While area or headage payments reduce market distortions, they continue to have some market effects. They make eligible land or animals relatively more attractive than other inputs in production, and to the extent they are directed at particular commodities, they can cause re-allocation of production between commodities by favouring supported commodities over those not receiving payments.

The CAP reform of 2003 brought another significant change in how direct payments affect producer decisions. The Single Payment Scheme includes payments based on land (connected to entitlements) as did the area payments they replace in part or in full depending on the country and the period (Box 4.3). The important difference is that the payment is not contingent on production of specific commodities, and so is non-distorting of commodity choice by producers. Moreover, as it is very broadly-based in terms of eligible land, it encompasses nearly all land uses, resulting in a very neutral impact on land allocation decisions and the substitution of land for other factors of production.

To get another view of how CAP reforms have changed how support influences producer decisions, consider how the estimated effect of the CAP on exports of selected commodities has changed over time. For many commodities, the impact of the CAP on exports was significant, but this impact has declined over time (Figure 4.2).⁶ For example, the CAP was estimated to result in an estimated increase in exports of wheat of 19 million tonnes. That is, net exports of wheat in 1986-89 were about 16.5 million tonnes, but in the absence of the CAP it is estimated that the European Union would have imported 2.5 million tonnes of wheat, changing from a net exporter to a net importer. Only milk, which receives mainly MPS and operated under a quota system during the study period, has a persistent trade impact over most years of that period. High prices for dairy products, along with the phasing out of milk production quotas by 2014/15 and the reform of intervention pricing schemes, reduce the impact of MPS in the most recent years of the study period. In 2009, domestic producer prices for milk were aligned with border prices. In addition to the integration of the milk payment into the single payment, this removed specific incentives to milk production.

The reduction in the impact of the CAP on wheat and coarse grains, due to the reduction in intervention prices and the introduction of area payments from 1992, and the integration of most crop payments in the single payment from 2005, is particularly evident, while oilseed exports are reduced by policy measures affecting other commodities. This is a result of substitution effects between commodities and the fact that oilseeds, whose

Figure 4.2. **CAP impacts on EU exports, 1986-2008**

Note: Additional exports that can be attributed to policies in place during the period.

Source: OECD PEM model.

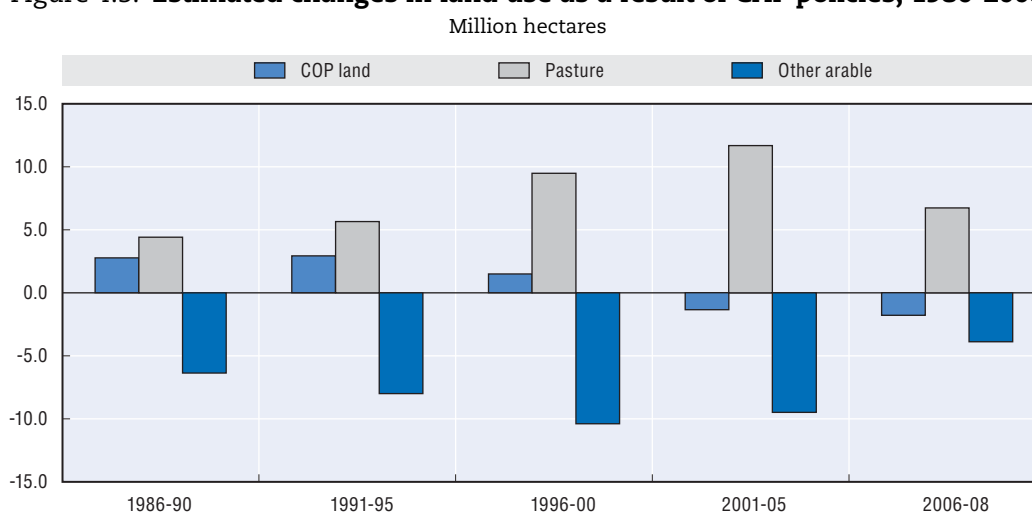
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prices are not supported over the study period, are an important feed crop for dairy production in the form of meal.

Impact on land allocation

Changes in the policy mix also had impacts on relative incentives to commodities and thus on land use allocation. In the early years of the study period, the CAP promoted production of major grains, livestock and milk through a system of market interventions. This had the effect of drawing land from other arable uses into the production of these commodities (Figure 4.3). Subsequent reforms removed much of the market interventions promoting crops, replacing them with area payments for cereals, oilseeds and protein (COP) and later single payments. However, the overall effect of the policy was to draw land into production of supported grains and oilseeds from other arable uses until around the year 2000. The reported results do not show changes in land use over time — they are the difference between the actual land use in a specific year and the land use that would prevail under an estimated equilibrium situation with no CAP in place, averaged over four-year intervals for presentational clarity. That is, the results shown are a series of comparative-static analyses, not a dynamic simulation.⁷

The CAP results in more land in use for pasture than would otherwise be the case. In the earlier years, distortive support was more evenly distributed across grains and livestock, such that the CAP resulted in approximately 4.4 million hectares (11%) more land in pasture use in the 1986-90 period (the increase in COP land was 2.8 million hectares or 37%). By the year 2000, payments based on animal numbers and MPS for milk and beef provided greater incentive to use land for livestock production relative to supports for other commodities, and land begins to be shifted not only from other arable uses into pasture land, but also from production of major grains and oilseeds, and the CAP resulted in an estimated 12 million extra hectares of land in pasture. Subsequent reforms shifted some of this coupled support to livestock into the single payments. This and the fact that land in other arable uses is also eligible for the single payments reduced the induced

Figure 4.3. **Estimated changes in land use as a result of CAP policies, 1986-2008**

COP crops: Cereals, Oilseeds and Protein crops.

Source: OECD PEM model.

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change in land use by nearly half. In 2008, the set of agricultural policies still induces increases in pasture land over what would prevail with undistorted markets, at the expense of field crops.

Summary of impacts

The results indicate that the impact of budgetary payments on production and trade in the European Union is now relatively minimal. Remaining distortions now come mainly from MPS, which is one of the most distorting forms of support and still makes up a significant share of the total. While in the past the policy mix favoured field crops, the reforms favour pasture over arable land, to the extent that the share of pasture land is now higher than it would be in the absence of such policies.

Impact of post 2003 reforms on regional land use and herd size and EU domestic markets⁸

The CAPRI model was used to simulate the impact of the 2003 reform and the 2009 Health Check of the CAP (Box 3.3) on land, animal numbers, production and trade, domestic prices. Other parts of the CAPRI analysis on income, welfare, environmental and distributional impacts are included in later sections of this OECD report (on income and environmental impacts). CAPRI is a partial equilibrium model, with a detailed representation of regional supply combined with global markets (Box 4.2).

The quantitative analysis presented below draws on comparative-static counterfactual runs against a three-year average (2003-2005), the so-called “2004 base year.” CAPRI is calibrated to the Agenda 2000 policy package, including the set-aside rates observed in 2004, i.e. zero. As the study focuses on the effect of increasing decoupling, an Agenda 2000 implementation without set-aside is chosen as the comparison point in order not to have results determined by set-aside effects. Changes in administrative prices as decided in the 2003 reform and the sugar market reform are taken into account in the 2003 reform and Health Check scenarios (Table 4.1). Both scenarios integrate a re-distribution

Box 4.2. The CAPRI modelling system

Overview

The Common Agricultural Policy Regionalised Impact (CAPRI) modelling system is an economic simulation tool with a matching database for analysis of the European agricultural sector (Britz and Witzke, 2008). CAPRI functions as a pair of linked partial equilibrium models — programming models on the supply side and a market model — which iterate to a convergent solution between EU agricultural supplies and global agricultural markets. The supply side maintains prices as exogenous for any particular iteration and is comprised of 280 non-linear regional programming models (at NUTS 2 level)* covering land use for arable cropping, grassland, and animal production in EU member states, as well as Norway, Turkey, and the Western Balkans. A recently developed extension of the model allows each region to be disaggregated into a maximum of ten farm types according to their economic size and specialisation, used for the analysis presented in the following. Global markets are captured in a spatial Multi-Commodity Model for raw agricultural products and some first stage processing products such as dairy and vegetable cakes and oil.

CAPRI is built in a combined top-down and bottom up approach and thus contains information about agricultural technology and physical input use, covering about 50 primary crop and animal production activities and 50 inputs and outputs. This is an essential feature in evaluation of the policy influence on environmental indicators. Originally developed in a EU funded research project in 1996-1999, CAPRI has been continuously improved and adapted to include new member states and represent policy developments. It is used for scenario analysis related to trade liberalization and EU policy reform.

The modelling of payments

Generally, all farm payments are represented in CAPRI as a rate per hectare or per head. Payments per tonne or per animal slaughtered are converted using technical coefficients. The model does not cover national support, with the exemption of complementary national direct payments in new member states. Pillar 2 payments are not included in this study, but a module is currently being developed to cover Pillar 2 measures. Single payments are treated as a uniform per hectare payment. The regional and farm type differentiation combined with the detailed activity/product list allows to define regional or farm type envelopes for the single payment entitlement.

Depending on the implementation chosen by the member states, it is a flat rate payment to all eligible crops under the specific implementation scheme (SAPS, regional, farm premiums) or a flat rate differentiated by arable and permanent grass lands. For the historical implementation, all entitlements – corrected for the part remaining commodity specific – are converted in a farm type specific payment rate per hectare for all eligible crops in a region. The regional implementation will lead to a uniform per hectare payments to either all crops, or differentiated by arable and grass lands at NUTS 2 level[†]. Hybrid implementation systems are a mix between the two. The remaining commodity-linked support generates a top-up for the per hectare payments for specific crops or to a per head payments for specific animal herds.

Ceilings in values or physical entitlements are incorporated in the sequential solution algorithm. If such ceilings are overshoot, average payments per activity in the farm type are scaled down as to ensure that budget ceilings are not exhausted. This represents constraints attached to pre-2003 area and headage payments. Payment entitlements under the Single Payment Scheme are incorporated differently in the model such that the marginal premium per hectare drops to zero when the number of entitlement is reached.

Box 4.2. The CAPRI modelling system (cont.)

The Health Check reduces further coupling possibilities (Box 3.3). It also phases out dairy quotas. It allows however still some coupled payments to suckler cows and sheep and goat. Further on, article 68 (former 69) gives member states some freedom in using 10% of payments entitlements, including for coupled payment, an element currently not implemented in the CAPRI analysis.

* NUTS 2: Macro-regions in the EU Nomenclature of Territorial Units for Statistics (NUTS).

Source: Britz and Keeny (2010).

Table 4.1. Overview of CAPRI scenarios

Scenario name	Scenario year	Scenario characteristics
Base scenario (BAS): Agenda No Set Aside	2004	Agenda 2000 policy reform package with set aside rate at zero
A. 2003 reform	2004	Introduction of single payments and limits on the type or share of payments that can remain linked to specific commodities, reduction in administrative prices and sugar market reform as introduced in the 2003 reform, single payment implemented differently in member states (SAPS in new member states, historical or regional implementation, or hybrid systems, share of payments remaining linked to specific commodities.
B. Health-Check as implemented	2004	Abolition of dairy quotas and reduction in sugar quotas as introduced in the Health Check policy package, commodity-specificity only allowed for suckler cows and sheep and goat, more crop sectors covered by single payments, abolition of energy premium.
C. Health-Check with uniform country per hectare rate	2004	As above, but all single payments paid as a uniform per hectare rate for each member states

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and reduction in sugar quotas, the Health Check scenario covers additionally the abolition of dairy quotas. Where countries opted for commodity specific payments, they are maintained where allowed in the Health Check scenario (suckler cow, sheep and goat premia). In addition, an alternative Health Check scenario considers a regional flat-rate at member state level. Impacts of this alternative implementation method are discussed in the section on income effect below, as they mainly relate to distribution among farms.

In all scenarios, all but two of the new member states that joined the EU in 2004 and 2007 operate under the so-called Single Area Payment Scheme (SAPS). For the continuation of Agenda 2000 scenario, national top-ups are taken into account. For the 2003 reform and Health Check scenarios, payments in new member states are fully phased in and the top-ups abolished. The 2003 reform and standard Health Check scenario implement the single payment as decided upon by the different member states.⁹ The historical implementation (or hybrid system with a share of historical payments at farm level) is implemented at the level of farm groups differentiated by economic size and specialisation inside NUTS2 regions (Gocht and Britz, 2010). The scenarios take modulation into account, but do not re-distribute the money via Pillar 2 measures, because currently, no data for Pillar 2 budget at regional NUTS 2 level are available in CAPRI.

All results presented in this sub-section are compared to the Agenda 2000 package without obligatory set-aside (referred as BAS in the tables, for “base situation”). This section focuses on impacts of reforms on land use, herd size, prices, production and trade under Scenarios A (2003 reform) and B (Health Check as implemented), while impacts on support, income and welfare are discussed in a later section, which includes results from

Scenario C (Health-Check with uniform country per hectare rate), which mainly affects the distribution of support and income compared to Scenario B.

Impact on land use and herd size

The introduction of the SPS leads to higher payments per hectare especially for fodder areas including grassland (Table 4.2), whereas per hectare payments in average for arable crops are generally less affected. The increase in receipts per hectare for cereals and oilseeds is mostly due to the phasing in of single payments in new member states. The moderate increase for cereals and oilseeds is due to the fact that cereals and oilseeds, which account for a large share of arable land in many regions, were already receiving uniform per hectare payments in EU15 member states in the Agenda 2000 package. While specific payments for protein crops are continued in the 2003 reform, they are abolished by the Health Check.

The implementation of the single payment with uniform rates for arable and grass lands in countries, which opted for the regional model and the dynamic hybrid model leading to a regional flat rate, typically resulted in a comparative advantage of grasslands and other fodder crops over arable crop production compared to the Agenda 2000 situation. CAPRI simulates hence a sizeable expansion of fodder areas lands in the range of 8.6% for the 2003 reform scenario and 11.2% for the Health Check scenario, whereas arable land decreases by 4.6% and 5.2%, respectively. These estimates seem to be consistent with land use developments observed since 2006 in the EU15 (Figure 2.6). Despite the fact that many member states kept some coupled support for suckler cows and beef cattle, and also for sheep and goats, overall support for ruminants dropped considerably so that herd sizes are somewhat reduced. As a response to these smaller ruminants herds in combination with increased fodder areas, fodder yields drop, so that total fodder production (grass, hay, silage, silage maize, fodder root crops etc.) only

Table 4.2. Change in income, area/herd size, yields and production per activity

	Base scenario: Agenda No Set Aside (2004)				A. Scenario 2003 reform (2004)				B. Scenario Health Check (2004)			
	Income	Area/ Herd sizes	Yield	Supply	Income	Area/ Herd sizes	Yield	Supply	Income	Area/ Herd sizes	Yield	Supply
	EUR/ha	'000 ha	kg/ha	'000 t	% change compared to base scenario				% change compared to base scenario			
Cereals	302	61 053	4 911	299 832	14.1	-7.3	2.5	-4.9	13.2	-8.8	3.3	-5.8
Oilseeds	270	9 203	2 392	22 017	25.3	-3.8	0.3	-3.5	25.1	-4.6	0.5	-4.1
Other arable crops	1 182	9 210	22 399	206 289	31.7	-9.0	-4.2	-12.9	35.7	-10.1	-3.2	-12.9
Vegetables and permanent crops	4 068	14 949	10 643	159 100	1.9	-2.3	1.8	-0.5	2.4	-2.4	1.9	-0.5
Fodder activities	24	84 650	21 708	1 837 551	439.7	8.6	-6.0	2.1	478.9	11.2	-6.8	3.6
Set aside and fallow land	63	11 808			104.3	-9.7	0.0	0.0	107.8	-8.5	0.0	0.0
Utilised agricultural area ('000 ha)		190 872				0.1				0.7		
	EUR/head	'000 head	kg/head	'000 t	% change compared to base scenario				% change compared to base scenario			
All cattle activities	384	96 369	89	8 619	-5.3	-1.6	-0.3	-1.8	-17.1	-1.0	-0.4	-1.4
Beef meat activities	155	29 652	358	10 617	-20.1	-3.5	0.1	-3.4	-24.2	-4.9	-0.3	-5.3
Pig fattening	36	239 801	88	20 986	-0.2	-0.2	0.0	-0.3	-0.2	-0.3	0.0	-0.3
Sheep and Goats	31	57 431	14	795	-12.0	-3.2	0.7	-2.5	-14.1	-3.7	0.7	-2.9
Poultry fattening	437	5 644	1 847	10 427	-0.9	-0.5	0.0	-0.5	-1.1	-0.6	0.0	-0.7

Source: CAPRI model.

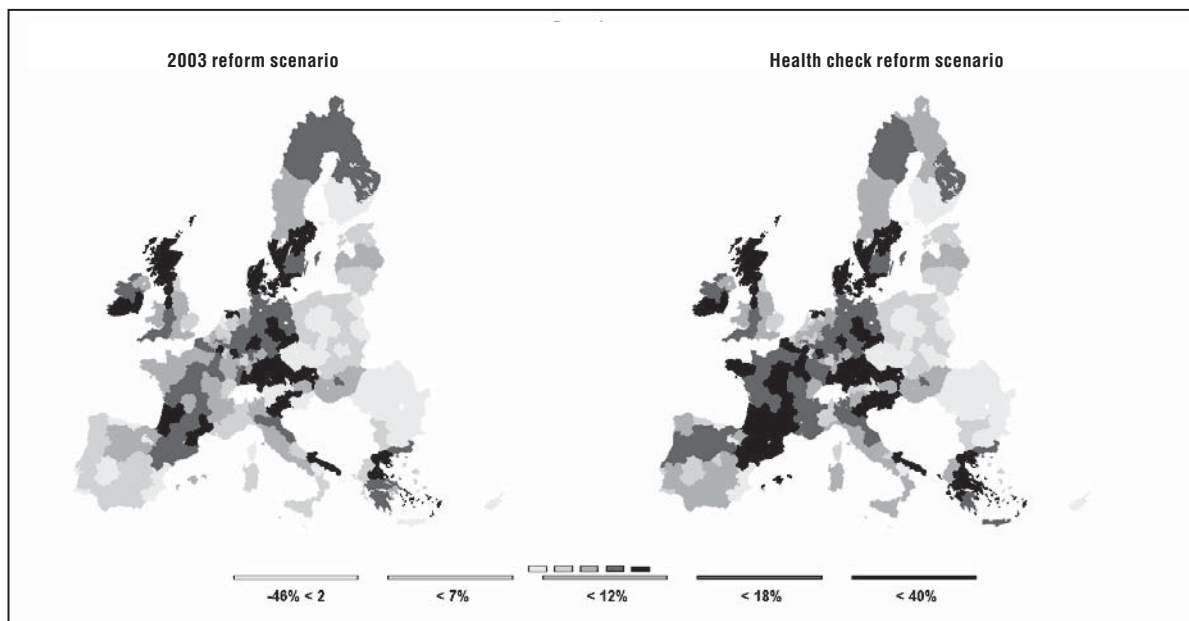
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increases by 2.1% and 3.7% respectively, measured in dry matter terms. The increase in energy and protein is even less, as the production of silage maize decreases whereas the production of grass (silage) and hay increases. The largest increase can be observed for extensively managed grass lands (23% and 29%), whereas intensively managed grass lands are reduced by about 5.5% (Annex Table D.1).

As seen from Figure 4.4, fodder areas are expanded in all old member states and in most new ones, with the exemption of Bulgaria, Romania, Czech Republic and Poland. Larger expansion for fodder areas in the 2003 reform scenario (left map) can be observed in some traditional arable crop regions such as the centre of France, Denmark, Eastern United Kingdom or parts of East Germany. However, in these regions, fodder production often accounts for only small shares of agricultural land use, so that the accompanying reduction in arable cropping is not substantial. The expansion of fodder areas is reinforced with the Health Check, especially in France and, two countries which opted to keep 25% of arable crop premiums coupled in the 2003 reform. In all Mediterranean member states, including fruits and vegetables in the single payment with the Health Check reinforces the expansion of fodder areas (see right map).

The biggest change in relative terms can be observed for durum wheat which received considerably higher premiums compared to other cereals before the 2003 reform. Areas are simulated to drop by almost 42% respectively 45% and account alone for 50% of the total reduction of around 5 million hectares in cereal areas. The model does however not distinguish between soft and durum wheat in the market model, so that the effect is probably overestimated as durum wheat prices are not increasing stronger compared to soft wheat prices. Cereal yields increase in EU average by 2.6% and 3.3%, partly due to larger reduction in minor cereals found mostly in more marginal areas, partly as a response to

Figure 4.4. **Change in fodder areas in relative terms compared to Agenda 2000 without set-aside**



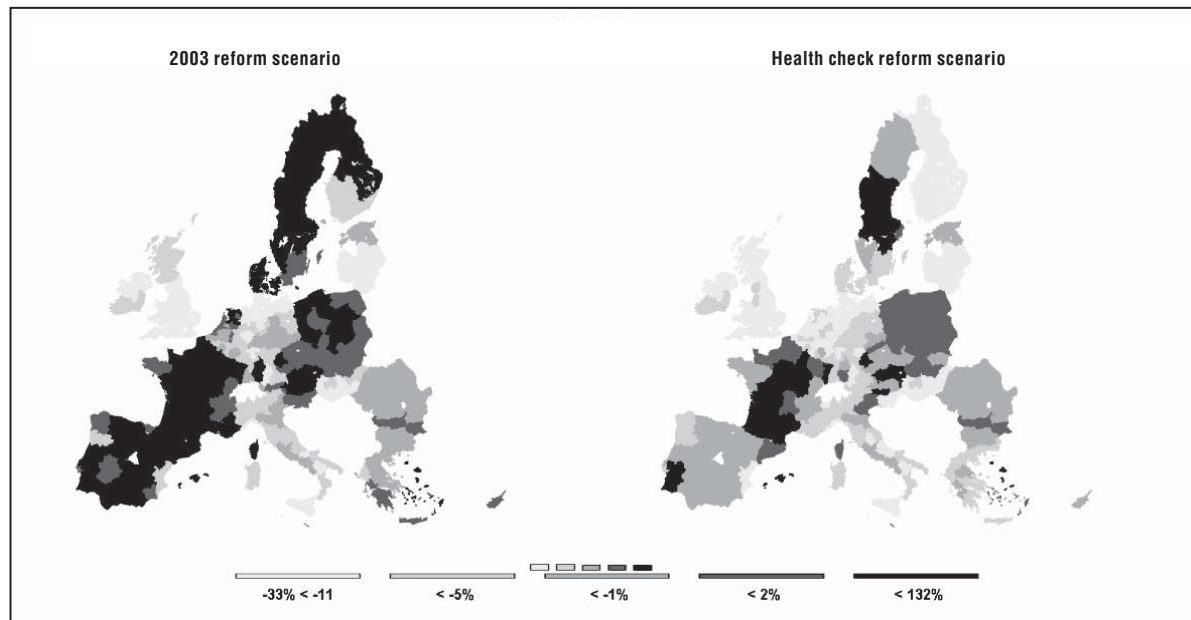
Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.
Source: CAPRI model.

increasing prices. The removal of the protein crop top-up with the Health check leads to a sharp drop in protein crop areas (24%) compared to the Agenda 2000 situation. An equally strong decrease can be observed for tobacco (35%).

The dairy cow sector responds to the removal of dairy quotas in the Health Check with an increase in herd size (2.8%) and slightly higher milk yields (0.2%). More dairy cows leads to greater availability of calves and placed further pressure on suckler cow herds (6.8%), the numbers of which were already reduced in the 2003 reform scenario due to reduced payments. The reduction is clearly concentrated in those EU member states which integrated suckler cow premiums into the single payment. Given that payments for beef fattening are fully integrated into the single payment, there is a shift inside the cattle chain towards calves fattening.

Figure 4.5 shows the impact of reforms on the amount of beefmeat produced per hectare. The effect of keeping commodity-specific support for suckler cows in some member states (even in the Health check for France, Spain, Greece and Austria) can clearly be seen. It should be kept in mind that the number of dairy cows increases at EU level in the Health Check, countervailing to a certain extent the reduction in beef cattle due to some cattle premiums being integrating into single payments. Beef production drops in the Health Check scenario in those countries where some coupled support to beef cattle (other than suckler cow premiums) was maintained in the 2003 reform scenario (Sweden, Denmark, The Netherlands, Austria, Spain and Portugal), an option removed with the Health Check.

Figure 4.5. **Change in beef output per hectare compared to Agenda 2000 without set-aside**



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.
Source: CAPRI model.

Market prices, supply quantities and trade

The effect on market prices is generally moderate, with the exemption of sugar in the Health Check reform scenario which drastically lowered administrative prices. Cereal prices increase by about 4.9% and 5.7%, respectively due to a decrease in cereal production, mainly driven by lower supply of minor cereals in marginal areas and the sharp reduction in durum wheat supply. Oilseed prices rise by about the same percentage. The redistribution of payments from arable cropping to all types of land leads to a reduction in outputs of arable crops and price increases (Annex Tables D.2 and D.3).

The abolition of dairy quotas leads to higher supplies of raw milk (3.1%) accompanied with a price decrease of 9.5% (Annex Table D.4). Beef prices increase compared to the Agenda 2000 package by about 2.6% (2003 reform) and 2.1% (Health Check) due to decreased output of beef (–1.8% and –1.4%, respectively) (Annex Table D.5). The sheep and goat sector produces about 3% less meat due to adjustments in animal numbers, so that prices increase by about 4%. Pigmeat prices increase also by about 1% due to higher feed costs and a slight reduction (0.3%) in supply; a similar effect can be observed for poultrymeat by supply reduction around 0.5%.

As a consequence, EU reduces exports and increases imports in almost all markets. Net trade of cereals drops by about 23% respectively 30%, meat net trade by 9.7%. The reduction in net cereals imports is dampened by reduced feed demand (3.6% and 3.8%). Intervention stocks drop considerably, however from rather small levels (Table 4.3).

Table 4.3. **Change in net trade for selected commodities, compared to Agenda 2000 without set-aside**

	Agenda no set-aside	2003 reform scenario		Health Check scenario	
	Net trade	Net trade	Change in net trade	Net trade	Change in net trade
	'000 t	'000 t	%	'000 t	%
Cereals	25 271	19 400	–23	17 588	–30
Oilseeds	–15 432	–15 622	1	–15 708	2
Other arable field crops	–641	–459	–28	–614	–4
Vegetables and permanent crops	1 038	227	–78	250	–76
All other crops	4 444	4 427	0	4 425	0
Fodder	–175 150	–164 075	–6	–161 790	–8
Meat	1 881	1 700	–10	1 697	–10
Other animal products	440	434	–1	430	–2
Dairy products	1 399	1 411	1	1 713	22

Source: CAPRI model.

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Sensitivity to assumptions

Compared to results obtained with earlier version of CAPRI (*e.g.* those published in 2003 by Jansson *et al.*), the allocative response simulated when introducing the 2003 reform package is now much stronger, mainly due to the introduction of substitution between arable and grass lands. The latter were treated as two separate fixed resource endowments in earlier version of CAPRI. If substitutions between arable and grass land is switched off, the model reacts much more conservatively: fodder areas continue to increase, but with grass lands treated as a fixed endowments, the increase can only stem

from arable lands, so that the increase for permanent grass land drops from around 10% to only 2.5%. As a consequence, changes for cereals, oilseeds and other arable crops areas besides fodder are also much smaller, whereas beef herds drop further due to less fodder availability. As the substitution elasticity between arable and grass land is taken from the GTAP database¹⁰ and is not based on new empirical work for the European Union, the results without land expansion and substitution between arable and grass land might serve to provide upper and lower bounds of the results.

Summary of impacts

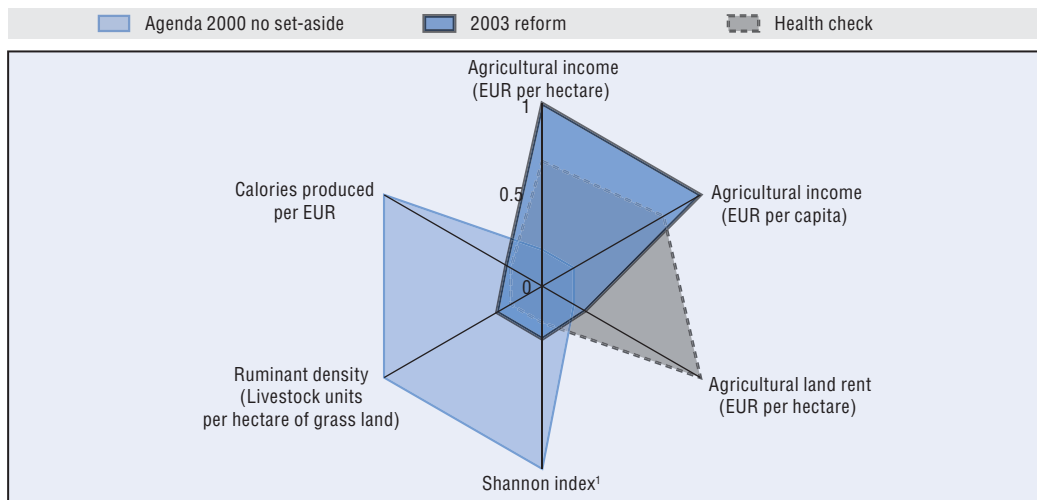
Being based on comparative static analysis, the results simulated by CAPRI should be interpreted as medium-term adjustments of the European Union's agricultural sector to the policy changes. The results show moderate effects of decoupling on production, major changes occur in some relatively small sector such as durum wheat, protein crops or tobacco which received differentiated payments in the pre-2003 reform Agenda 2000 policy. Results suggest that the introduction of the SPS, especially the incorporation of supports to ruminants into single payments, subsidises generally land use in agriculture, but especially fodder production.

The chart below gives an overview on the three policy options analysed in this section (Figure 4.6). It includes impacts on income and welfare, which are discussed in detail in another section below. The Agenda 2000 package – characterised by the highest level of coupled support – shows the lowest impact on agricultural income per hectare and the lowest land rents, the highest stocking density, but also the highest amount of calories produced per EUR of support. The indicators hence clearly show the effect of coupled payments which boost production, but lead to lower agricultural income due to lower output prices and by maintaining inefficient production compared to more decoupled support. The Shannon index¹¹ of diversity indicates that maintaining the link between support and specific commodity production decreases farm specialisation. This is because the production of specific commodities is required to receive support. When the link is broken, farms or regions tend to specialise in most profitable commodity production (this impact is discussed in the section on rural development). The Health Check, which includes dairy market liberalization, has the lowest calorie production per euro and the lowest stocking densities, but generates the highest land rents. In contrast with the 2003 reform, most of the payments that are integrated in single payments after 2006 (sugar, dairy, fruits and vegetable reforms, slaughter premium) are new or were not previously based on area. Moreover, the level of SAPS in new member states increases, while commodity specific top-ups decrease, and the SAPS applies in Bulgaria and Romania when they join the European Union. It should be noted that support is assumed to be nearly fully capitalised in land values. The 2003 reform package leads to highest agricultural incomes (see section on income impact below).

Impact of higher modulation under the Health Check of the CAP

Nowicki et al. (2011) investigate the impact of increased modulation as part of the Health Check on land use, production and income. Model (LEITAP) results show that with additional modulation from the Health Check, more land is under production than would be the case otherwise, as increased funding for Pillar 2 measures, in particular for agri-environment and Less Favoured Area (LFA) measures, more than compensate the reduction in land use due to reduced Pillar 1 funding. National co-financing reinforces this

Figure 4.6. **Summary of impacts on various variables in the EU27: comparison of 2003 reform and Health Check scenarios compared to Agenda 2000 base scenario (year 2004)**



Note: For each variable, impacts are normalised to the same scale varying from zero to one. This is done by dividing the impact in each scenario by the difference between the maximum and the minimum value of the three scenarios.

1. Index of diversity. A lower Shannon index indicates a higher degree of farm specialisation.

Source: CAPRI model.

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effect. The impact of modulation differs for crop and grass land: crop land decreases by 0.3%, while grass land increases by 0.6%, mainly because agri-environment and LFA measures mainly benefit grassland.

Impact of recent reforms on the dairy sector

This sub-section focuses on the dairy sector as its support system has its own specificities, such as production quotas. The dairy sector is closely linked to other commodity sectors such as beef production, forage and feed crops, and recent reforms have brought major changes to the policy environment of dairy farms: crop, forage and beef payments have been replaced in part or fully by single payments; a single payment has been introduced to compensate partially for the reduction in intervention prices for butter and skimmed milk powder; and milk quotas are being phased out from 2009 to 2015.

Jongeneel (2011) discusses the impact of the 2003 CAP reform and the 2009 Health Check reform on the dairy sector on the basis of work using the European Dairy Industry Model (EDIM).¹² The 2003 reform included:

- a 25% reduction in intervention prices for butter over four years from 2004/05 to 2007/08;
- a 15% decrease in the intervention price for skimmed milk powder (SMP) over three years from 2004/05 to 2006/07;
- a 1.1% increases in milk quota implemented during the period 2006/07 to 2008/09 in EU15; and
- the introduction of direct payments in 2004/05, which were included in the single payment in 2005 or 2006 depending on the country.

The Health Check reform includes a gradual increase in dairy quota until the quota system expires in April 2015.

EDIM simulates an initial sharp decline in the EU milk price till 2005/06 in response to the decrease in the intervention prices of butter and SMP. The EU milk price then remains stable despite further cuts in intervention prices as domestic demand increases. From 2007/08, it then increases as EU supply is still restricted by milk quotas, which are still binding for a majority of member states. At the same time the demand for dairy protein products increases over time. This induces an increase in the SMP price while the butter price remains constant and very close to the intervention price. The evolution in SMP and butter prices in turn explains the increase in farm milk price. These impacts assume that there are no export subsidies and market access is improved, compared to the current situation. In consequence, border prices also increase from 2007/08.

The phasing out of the dairy quota is estimated to lead to an increase in EU milk production (by 3.6% compared to the 2003 reform scenario)¹³ and a decrease in the milk price both within and outside the European Union. Relative to the 2003 reform scenario, the EU's milk price is estimated to decline by a further 9% in 2014/15. The decline in milk prices will erode the quota rents, with the average quota rents in the EU25 being close to zero in 2014/15. In the European Union, the price of butter decreases more than the price of SMP, as butter cannot be exported without export subsidies, assumed to be zero in the scenario. On the contrary the simulated increase in SMP production is absorbed by a higher EU consumption as well as through an increase in EU exports without export subsidies. Because of higher EU exports, the world market price for dairy products decreases by 3% to 6% depending on the type of product. In the scenario, the gap between EU domestic and border prices continues to narrow. The simulated impacts of the dairy reform obtained using scenario analysis with the EDIM and CAPRI models do not take account of other developments that have affected dairy prices. OECD and FAO outlook projections (OECD, 2010e) show a gradual increase in world markets for butter, cheese and SMP, mainly due to higher demand. When applying these projections to PSE calculations, the Nominal Protection Coefficient (NPC) for milk becomes equal to 1 in 2012, meaning that domestic and border prices would be aligned, as was the case in 2008 and 2009. This convergence reflects both EU policy reform and market developments outside the European Union.

When looking at developments in dairy markets between 2000 and 2007, Jongeneel (2011) finds that until 2007, milk prices did not decrease as much as expected because the intervention prices was no longer binding, in particular for SMP. He also finds that the income of dairy farms increased as the decline in milk prices was more than compensated by the introduction of a dairy premium and higher farm productivity due to the increase in farm size. However, since 2007, incomes of dairy farmers have strongly fluctuated as both milk and feed prices have been highly variable in opposite directions.

The 2003 reform was expected to affect land use, as payment entitlements became independent from commodity production. Using mathematical Programming Models for four types of French dairy farms (grazier; semi-intensive; milk and cereals; and milk and young bulls), Lelyon *et al.* (2011) find that, in the absence of changes in relative market prices, the 2003 reform would have led dairy farms to adopt a more extensive production system, using more grass to the detriment of cereals and silage maize in the diet. It would also affect negatively beef fattening activities as the male beef premium is integrated into the single payment. But in all farm types, income remains stable as farmers adjust their system to incentives, and the reduction in gross farm receipts (including payments) is compensated by lower variable costs as grass is cheaper than cereals.

Sugar reform

Except for changes in the preferential import regime, the sugar regime established in 1968 had remained largely unchanged until 2005. As a result of border protection, export refunds, price guarantees and production quotas in place, domestic producer prices were on average 2.8 times higher than border prices over the period 1986-2005 and up to 3.5 times higher in 2003 (Figure 3.9 and Annex Figure C.3). Domestic production exceeded consumption by over 20% most years and exports had to be subsidised at an annual cost of over EUR 1 billion most years.

The objectives of the reform adopted in 2006 include: bringing the sugar sector into line with the 2003 CAP reforms that applies to most other sectors based on a support price cut and partial compensation for the revenue loss to sugar beet growers with a direct income payment granted with no requirement to produce; allowing a smooth implementation of the Everything-But-Arms (EBA) initiative; taking account of the export constraints arising from the WTO Appellate Body's decision; being consistent with the European Union's negotiating position in the Doha Development Round of multilateral trade negotiations; and, to provide a long term policy framework to the sector with an extension of the new regime to 2014/15 (OECD, 2007c). To that end, guaranteed prices were reduced by 36% over four years, starting from 2006/07; state intervention was replaced by a system of private storage, with farmers using the scheme receiving a private storage aid; direct payments were introduced to compensate farmers for 62% of the income loss due to reductions in guaranteed prices, and a two year restructuring fund providing payment per tonnes of quota renounced to sugar beet growers and to sugar companies giving up their rights to quotas and stopping production in at least one factory was created. The reform also simplified the production quota system by merging "A" and "B" quotas into a single quota.

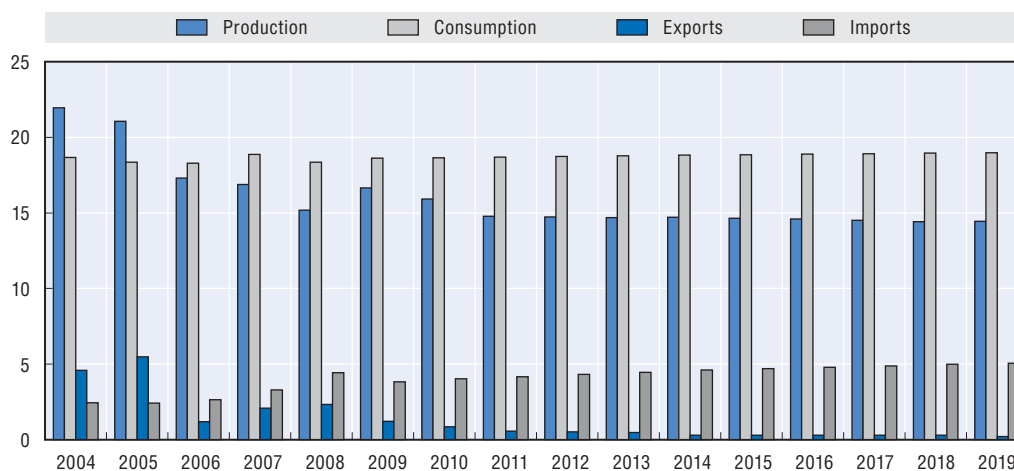
When it became apparent that the restructuring programme would not meet its target of 6 million tonnes of quota renounced (only 2.2 million tonnes had been renounced during the first two years), incentives were increased and, by 2009/10, 5.2 million tonnes had been renounced (Gudoshnikov, 2011). As a result, EU sugar production decreased and the European Union became a net importer as shown in Figure 4.7.

EU sugar imports are mostly of raw sugar and take place within preferential agreements. They increased after the reform from 2.4 million tonnes in 2005/06 to 4.4 million tonnes in 2008/09. The reform also led to a significant decline in EU exports from 5.5 million tonnes in 2005/06 to 1.2 million tonnes in the following two years. As a result, export subsidies fell to about EUR 400 million in 2007 and 2008 and 150 million in 2009. Moreover, they were not used in 2009/10 because of high world prices, which led to higher planted area (including for beet used for ethanol production), production and out of quota exports. After the 2006 reform, domestic prices remained higher than border prices, but to a much lesser extent than before (by 60% in 2007-09 and by 20% in 2009). World sugar prices fluctuated in recent years to reach high levels in 2009/10, mainly due to poor harvests in India and lower availabilities in Brazil and Thailand (OECD, 2010e). It is difficult to isolate the contribution of EU reform on world market price changes, without using model scenarios.

An OECD report published in 2007 (OECD, 2007c) estimated that the reduction in historical EU export volumes following the 2006 reform would lead world sugar prices to increase strongly in the early years of the reform. With market adjustments over time,

Figure 4.7. **EU27 sugar balance, 2004-19**

Million tonnes of refined sugar equivalent



Source: Aglink projections (OECD, 2010e).

StatLink  <http://dx.doi.org/10.1787/888932475639>

mainly higher production from competitive exporters such as Brazil, it projected world prices would fall back, to average only 1.1% higher than its 2005/06 level by 2015/16.

According to recent OECD-FAO projections (OECD, 2010e), the EU sugar deficit is expected to increase further (Figure 3.7). Imports would be stimulated by higher domestic demand, reaching 4.5 million tonnes in 2019/20. Exports are projected to further decline to reach 0.2 million tonnes in 2019/20. Given the projected decline in exports and higher world price levels compared to last decade, EU export refunds are expected to remain low.

The reform has improved the competitiveness and market orientation of the sugar sector of the European Union. With assistance from significant restructuring funds (EUR 5.4 billion over three years), consolidation has taken place within the EU market and the target to curb EU production has been met within three years. As a result, from being a major net exporter, the European Union has become a structural net importer of raw sugar. Protection has been significantly reduced, but domestic producers still operate in a sheltered environment, with market access still restricted to preferential agreements and mechanisms to maintain domestic prices above border prices still in place. The projected reduction in export subsidies is expected to lower further trade distortions.

Impact of the Single Payment Scheme on land markets

Depending on how it is delivered, agricultural support affects markets for agricultural inputs, notably land. This in turns affects the income transfer efficiency of support¹⁴ and structural change. It is thus important to consider the impact of reforms on agricultural inputs markets. This section focuses on impact of changes in the way support is delivered on land values.

Support to farmers is partly capitalised into land values, which are also influenced by many other factors within or outside the agricultural sector, including regulations on land use and transfers, and land taxation, which vary by member state. Capitalisation of agricultural support into land values has been the subject of many theoretical and empirical studies, in particular in the United States. In the European Union, this issue has

been of particular concern in the context of the introduction of the Single Payment Scheme (SPS), and in particular the single payment, from 2005. There are two main questions: is the SPS more capitalised into land values than previous types of support; and is there a difference between the historical implementation model and the regional model?

Ciaian *et al.* (2011) explore these issues by confronting theoretical expectations to empirical evidence from previous analysis and land price developments. From a theoretical point of view, payments based on current area are partially capitalised into land values to a greater extent than headage payments. A shift from those more coupled payments to single payments should reduce land values in the short run. In the long run, the effect on land values depends on the tradability of entitlements, but one should expect lower capitalisation with the single payment than with the previous payment system. The regional (and hybrid) model is expected to lead to greater capitalisation than the historical model because, for a given land base, under the regional model more entitlements are allocated than under the historical one.

As demonstrated by Kilian and Salhofer (2008) and Courleux *et al.* (2008), the impact of the single payment depends on the ratio between the eligible area and the total number of entitlements. If the number of entitlements is larger than the total eligible area, then the single payment is capitalised into land values. When the initial number of entitlements is lower than or equal to the number of hectares that would be demanded by farmers for cultivation in a regime where no support is granted, single payment entitlements are not capitalised into land values but the price of entitlements goes up.

If single payments are capitalised into land values, it may lead to changes in relative land prices for different types of land, and the regional and hybrid models may change the relative prices of land among regions. This may occur because the impact of the single payment entitlement is expected to be uniform across all eligible land as it can be activated for various land types. In addition, under the regional and hybrid models, there is a redistribution of support among regions, and consequently an increase in land values in regions that obtain more support through the single payment relative to the previous support system (Ciaian *et al.*, 2011).

Besides any impact on capitalisation, the introduction of the single payment may lead to higher land prices because farms can better respond to market signals and increase farm profitability. Higher farm profits would increase competition for land and lead to higher land prices (Ciaian *et al.*, 2010).

Several models have been used to simulate the impact of policy reform on land values. Model results depend on how the different types of payments are represented, and how the rental and sales markets for land are constructed in the model. Using the AgriPolis model in six regions of the European Union, Brady *et al.* (2011) report increases in arable land rental prices in three regions of Germany and Sweden when simulating a move from Agenda 2000 area and headage payments to 2003 reform single payments, while grassland rental prices increase significantly in regions that had large cattle payments before the reform.¹⁵ They conclude that the introduction of single payments did not overcome the problem of capitalisation of payments into land values, but they find that if it were not necessary to have land to collect the payment, land rental prices would fall significantly in all regions, except in Brittany because of French land market regulations.

Using data from FADN and regional surveys on developments in land rental and sales prices in various EU15 member states, Ciaian *et al.* (2011) find from preliminary evidence that:

- On average, the introduction of single payments to replace former area and headage payments has not had a significant negative impact on land prices and thus on capitalisation of support.
- There has been variation among the member states and regions.
- The introduction of the single payment appears to have had a larger impact on land rents than on farmland sales prices.
- The relative weight of the single payment in determining farmland prices against that of other drivers of land values seems to be higher for rental than for sales prices.
- As expected, the historical model led to lower capitalisation of the single payment into land values than the regional or hybrid models. In countries with the hybrid model, capitalisation appears to be driven by the low amount of naked land.¹⁶ In countries with the historical model, the impact of the single payment appears to be substantially weaker.
- Where land capitalisation occurs with the single payment, the most influential factor tends to be structural change combined with constrained entitlement trading (most notably in Belgium). In countries such as Greece, there is little activity on the land market and hence there is little capitalisation of the single payment. In Ireland, the possibility to consolidate entitlements has reduced the pressure of the single payment on land markets and single payment land capitalisation appears to be minimal.
- In the least productive regions, the introduction of single payments appears to have increased capitalisation instead of reducing it. The single payment seems to have put a floor on land values in less productive regions (*e.g.* in Sweden and parts of the United Kingdom). The clearest evidence of the influence of the single payment on land values is higher land values for less fertile land (*e.g.* grassland). But this finding could also be caused by the redistribution that came with the hybrid model.
- In countries with regulated rental prices, implementation of the SPS seems mainly to affect unofficial markets. In these member states, there is little effect on official prices (since these are regulated), but where regulations lead to the existence of unofficial markets for agricultural land, the single payment tends to increase both rental prices (*e.g.* Belgium) and volumes on the unofficial market (*e.g.* Belgium and the Netherlands).

Looking at new member states, Ciaian *et al.* (2011) provide evidence of higher land prices following EU accession, which can be linked in part to the implementation of the Single Area Payment Scheme (SAPS), which increase support levels in many countries.

Impact of the Single Payment Scheme on structural change and farm competitiveness

Structural change

Structural change is a long term phenomenon, which is affected by many factors including agricultural productivity growth, market developments in the supply and demand side, competition among sectors for resources, and domestic and foreign competition among farms. As seen in Chapter 3, long-term structural change has resulted in a reduction in the number of farms and in the share of agriculture in employment.

Scenar 2020 predicts a continuation in the decline of farm numbers between 2003 and 2010, with an annual rate of 2.5% in the EU15 and 4% in new member states (Nowicki et al., 2011).¹⁷ This includes the impact of market drivers and policy changes, including the introduction of single payments.

Agricultural and other policies affect structural change to the extent they affect production incentives, output and input markets, and farm household income. Production or income related support slows adjustment as it allows inefficient farmers to stay in business. As seen in the previous section, support also affects adjustment through its impact on land prices and the requirement to hold land in order to receive payments. As part of Pillar 2, EU member states may implement specific policies to encourage or slow adjustment. Policy reforms are thus likely to affect structural change. However, when looking at developments in farm structure, it is difficult to identify the impact of policy reforms as many factors affect structural change simultaneously.

A large project (IDEMA) covering several EU regions explored the impact of the introduction of the SPS and modulation on farm adjustment (among other aspects).¹⁸ To that effect, researchers used three complementary approaches: surveys of farmers' intentions, sector modelling (ESIM) and agent-based models of regional structural change (AgriPoliS). This section focuses on the impact of combining former area and headage payment into the SPS and applying modulation on exit strategies, farm structure, land use and income as reported by Brady et al. (2011). Environmental impacts will be included in a later section.

The results of surveys carried out in England, France, Lithuania, Slovak Republic and Sweden provided no strong evidence that farmers would change their strategic decisions to exit agriculture in response to the reform, except in Sweden depending on the details of policy implementation. While few Swedish farmers intend to keep some land in Good Agricultural and Environmental Conditions (GAEC) without producing on it, very little land is likely to be abandoned as the demand for farm growth persists after the reform. Some adjustment is expected in terms of production choice (reduction of cattle herd in England, more time allocated to diversification activities in England and France). Attitudes in new member states (Lithuania and Slovak Republic) reflect more the introduction of higher support as a result of accession than the switch to single payments. Surveying Irish beef and barley producers, Hennessy and Thorne (2005) found that a majority of farmers intended to maintain or increase 2004 production levels, even if not profitable at market prices. As the IDEMA project, they found that exit decisions are influenced by structural factors such as age, farm size and profitability rather than policy changes. Renwick et al. (2011) reports that in the first year after the implementation of the SPS in the United Kingdom, production levels were virtually identical to the pre-reform situation despite the fact that a number of enterprises were clearly unprofitable.

AgriPoliS represents a population of individual farms in their market and spatial environment, and is thus able to model farm adjustment in space and time (Brady et al., 2011). For IDEMA, it was adapted to 11 regions of the European Union: 4 livestock/arable regions of England, France and Germany; two marginal regions of Sweden; two Mediterranean regions of Italy; and three regions of new member states (Czech Republic, Lithuania and Slovak Republic). The model was used to simulate a continuation of Agenda 2000; the 2003 reform as implemented in each member state in 2005; and an alternative reform where the obligation to keep land in GAEC is removed; i.e. the link

between the SPS and land is cut. The reform scenario results in a lower decrease in the number of farms from 2004 to 2013 than the continuation of Agenda 2000, implying that the 2003 reform slows down structural change. This is because farmers with grassland remain in the sector as for them maintaining part of grassland in GAEC is more profitable than off-farm work. As a result of the introduction of single payments, average farm income increases: average profit per hectare is higher in all regions because farmers have more freedom to choose whether or what to produce depending on market signals and because producer prices increase as a result of lower production volumes.¹⁹

According to simulation results, de-linking payments from land would lead to a faster rate of farm exits and a strong increase in average farm size, compared to the current system of single payments. Many farmers would leave the sector if off-farm jobs were available, as they could still receive the payment.²⁰ Average profits per hectare would increase due to lower land rental prices and economies of scale with higher farm size. However, in the absence of changes in Pillar 2 measures, this alternative would result in significant abandonment of agricultural land in almost all regions.

Farm productivity and competitiveness

The impact of policies on farm productivity and competitiveness is also difficult to disentangle from that of other factors. Reviewing evidence on determinants of productivity and competitiveness in agriculture, Latruffe (2010) reports a number of studies looking at the impact of support in EU member states (e.g. Denmark, England, France, Germany, Hungary, Ireland and Slovenia). The impact of support on technical efficiency is almost consistently negative across the literature, but the impact on Total Factor Productivity (TFP) growth can be positive, negative or negligible depending on the country, the sector and the period.

Regarding the effect of policy reforms on farm technical efficiency or productivity change, theory suggests that decoupling increases land extensification. Compared to price support, area payments de-link yields from support level. With payment with no requirement to produce, low quality land is expected to be kept out of production. This is expected to increase farm efficiency as farmers' can choose what to produce or not to produce based on market signals. At the same time, payment with no requirement to produce can be used to maintain inefficient farm operations in business. Evidence on the impact of the reform is scarce as other developments, in particular in the market situation and support level, interfere with the impact of decoupling on production decisions. Brady *et al.* (2011) conclude from IDEMA findings that the 2003 reform has not improved farm competitiveness as, although it results in higher average profits per hectare, it also tends to slow structural change and raise land prices.

Latruffe (2010) mentions two empirical studies pertaining to CAP reforms, where dummy variables for specific years or periods capture policy changes. However, results provided by this type of approach are difficult to interpret as many other economic or institutional changes may be captured by the year or period dummies. Lambarra *et al.* (2009) investigate the impact of the Agenda 2000 on Spanish field crop farms during 1995-2003. They estimate a negative impact on technical efficiency, as a response to the lower rents derived from producing. They conclude that the increase in inefficiency levels coupled with an increase in subsidised set-aside land suggests that the reform has somewhat created an early retirement option for farmers.

Carroll et al. (2009) estimate the determinants of Irish farm efficiency during 1996-2006, including the introduction of the SPS using a dummy variable for farms that are surveyed in either 2005 and/or 2006. They find a positive, but not significant, effect of the introduction of the single farm payment on farm efficiency in the cattle rearing, cattle finishing and sheep systems. For the dairy and cereals systems, they find that mean efficiency has declined in these years, but only in the dairy system is the effect significant. They conclude that although predominantly insignificant, results suggest that “the production effects of decoupling are expected to be larger in the both cattle and sheep systems where the reliance on direct payments is considerably higher. Given that only these systems display the expected relationship (despite insignificance) may suggest a possible causal relationship. However, notwithstanding the above evidence, the overriding hypothesis has in general not been realised – it appears decoupling has not brought significant system-wide improvements in technical efficiency.”

In the context of the Health Check, which allows member states to move further towards a regional implementation of the SPS, Arfini and Donati (2011) have investigated what would be the effect of regionalisation of SPS on farm competitiveness using Positive Mathematical Programming applied to FADN data. In this case, each hectare within a region would have the same rate of payment entitlement. Compared to the historical model, this implies a redistribution of entitlement across farms and sectors, affecting relative competitiveness between them. In regions with land without entitlements under the historical system, regionalisation will reduce the rate of entitlements per hectare. Additional modulation will reduce this rate further, in particular in regions with large farms. In the three regions studied (Veneto, Ile-de-France and Belgium), regionalisation has no impact on land allocation between various crops except for a decrease in rice area as the Health check integrates rice specific payments in the SPS. The impact on gross margin (negative in Veneto and Ile-de-France, positive in Belgium) is mainly due to changes in the payment rate per hectare.

Impact of reforms on support, income and welfare

Impact on farm income and welfare, 1986-2008

As seen in Figure 4.1, PEM simulations have demonstrated that the effect of the CAP on farm income has been increasing over time, and that increase has accelerated with the introduction of single payments. Underlying this trend is a movement away from MPS towards budgetary payments that are more effective at transferring income to their intended recipients. The proportion of transfers that ultimately end up in the pockets of farmers and landowners increased from just over 50% in 1986 to 90% by 2008, with single payments responsible for a considerable proportion of the increase (Figure 4.8).

Most of the budgetary support provided to the sector after the MacSharry reforms is directed at land. An important question is how much of this support benefits farm households and how much benefits generally non-farming landowners. The income impact index reported in Figure 4.1 treats returns to land the same as returns to other farm-owned inputs. That is, no correction is made to the measured income transfer to reflect whether income accruing to land that is rented should be counted or not.²¹ In PEM most of the payments based on land are capitalised into land values and are reflected in land rental rates. While the presumption is that farm households are the intended beneficiaries of CAP payments, the fact that single payments are directed at land and do

not require a marketed commodity to be produced, only that it be held in good agricultural and environmental condition presents a challenge to this assumption.

Land in the PEM is not differentiated between that which is owned and that which is rented. To determine who benefits from the program value accruing to land, average rental rates are used to disaggregate this into farmers who own their land and landowners who rent to farmers. The share of land that is rented has increased over time, from 29% in 1986 to 50% in 2008. That is, half of the increase in producer surplus to land in 2008 was assumed to accrue to farmers, and half to landowners who generally do not farm. This can be considered a lower bound, as it is likely that some rental arrangements are between farmers, such that the landlord and renter are both farmers. This is for example the case when the farm business is organised as a company renting land that belongs to the farming family. To the extent that this is the case, the rental rate overestimates the amount of benefit accruing to non-farmers.

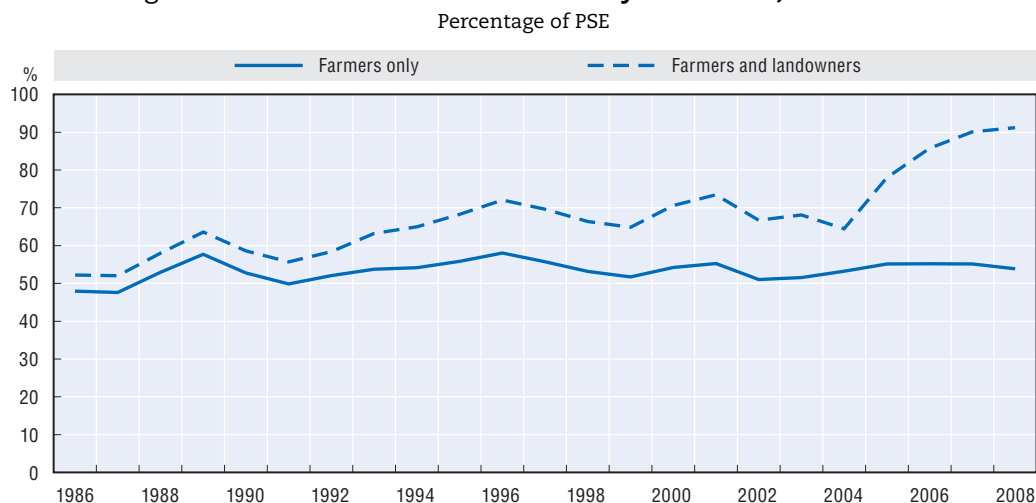
In the early years of the study period, MPS was the main support instrument, and this form of support accrued more strongly to farm-owned inputs other than land. This, combined with lower rental rates generally, meant that farmers captured a large share of the overall support relative to landowners. As land-based payments are introduced and grow in importance, the share of policy benefits captured by landowners who generally do not farm increases steadily. The introduction of single payments also saw the reduction of payments based on animal numbers; animal herds are assumed to be an entirely farm-owned input where some proportion of land is owned by non-farmers. Finally, the growing importance of rental arrangements over time increases the share captured by landowners who generally do not farm. It is this fact more than anything else that determines the rather flat trend in transfer efficiency to farmers shown in Figure 4.8.²²

The design of single payments under the Single Payment Scheme in particular makes them a very transfer-efficient measure. Single payments have their primary impact in the land market and their broad application does not provoke many market distortions, so farmers are not taking on additional expenditures as they adjust to policy incentives. The lack of market distortions imposed by single payments means that over 99% of their value is captured in land markets, with very little deadweight losses.

The gradual introduction of single payments from 2004 provoked a significant change in the impact of the CAP on farm incomes. While the income effect of the CAP is relatively constant between 1986 and 2002, it increases significantly from 2004 onward. At the same time, the level of production distortion introduced by the CAP continues to trend downward. While the CAP still contains a large component of MPS, the production impact of the CAP is nevertheless reduced by two-thirds between 1986 and 2008, while the amount of income transferred increased by more than 50% over the same period.

At this point, around the year 2004 and beyond, picking apart the effects of the multiple forces at work in the agricultural sector becomes complicated. An inventory of important facts suggests the following:

- The PSE, at least as recorded and used in PEM, is fairly constant over the period; it varies mostly in response to border price changes impacting MPS, in particular for milk.
- Enlargement of the European Union to include 10 and then 12 new member states significantly expands the number of farmers and the agricultural area covered by the CAP. There are some differences in policy implementation in new member states, including lower support rate under Pillar 1.

Figure 4.8. **Estimated transfer efficiency of the CAP, 1986-2008**

Source: OECD PEM model.

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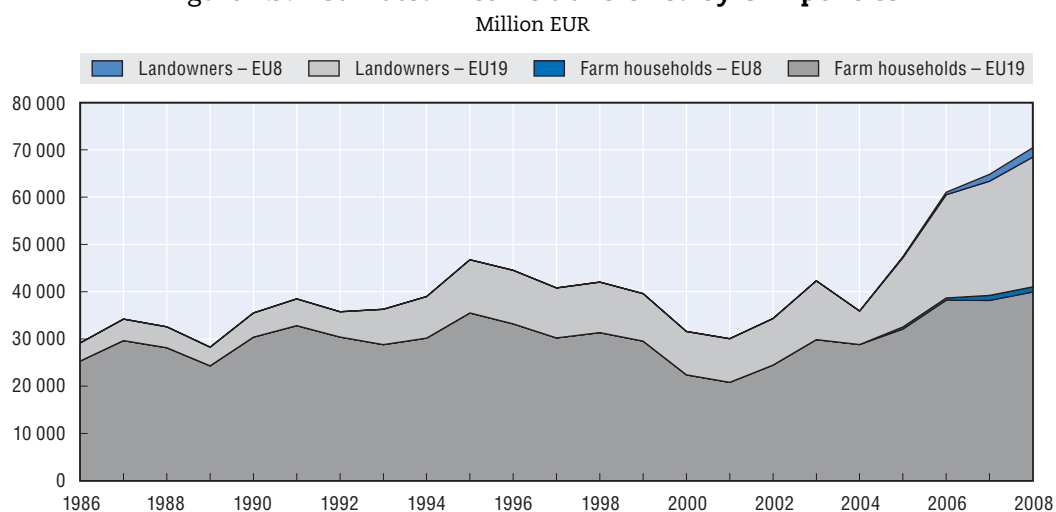
- Market prices rise strongly in 2007 and 2008. This increases the “size” of the agricultural sector in terms of value of production in a way that is difficult to separate from the changes resulting from the enlargement of the European Union.
- Policy changes, notably the introduction of single payments, fundamentally changed the composition of budgetary support under the CAP. This has strong implications for the transfer efficiency of support and potentially as well for the beneficiaries of support.

The above list includes three things that are changing at approximately the same time (the number of EU member states, market prices, and the form support is delivered) and one that is not (the trend in the level of the PSE). The amount of income transferred is increasing, but this is being distributed to more producers as the European Union enlarges.

The evidence suggests that the change in prices over this period is more important than the enlargement of the European Union in explaining these results. Moreover, the amount of support received by the new member states is not enough to change the overall result (Figure 4.9). While the data underlying the model is based on a EU15 and EU12 definition of old and new member states, the PSE data is divided into OECD (EU19) and non-OECD members (EU8).²³ This inserts a note of caution when deciding how important enlargement is compared with the other factors like prices and composition, but would probably not result in a change in the overall view or conclusions coming from the simulation results.

All policies impose deadweight losses due to market distortions. Income transfer efficiency is never perfect and other actors in the agricultural sector are able to capture some of the benefits of support. In the European Union, the trends in the distribution of the costs of the CAP have been moving from consumers to taxpayers, while farmers have been able to capture an increasing share of the amount transferred (Figure 4.10). Deadweight losses have been trending down over the period as distortions are reduced, but remain significant at 13% of total transfers in 2008 (Figure 4.11).

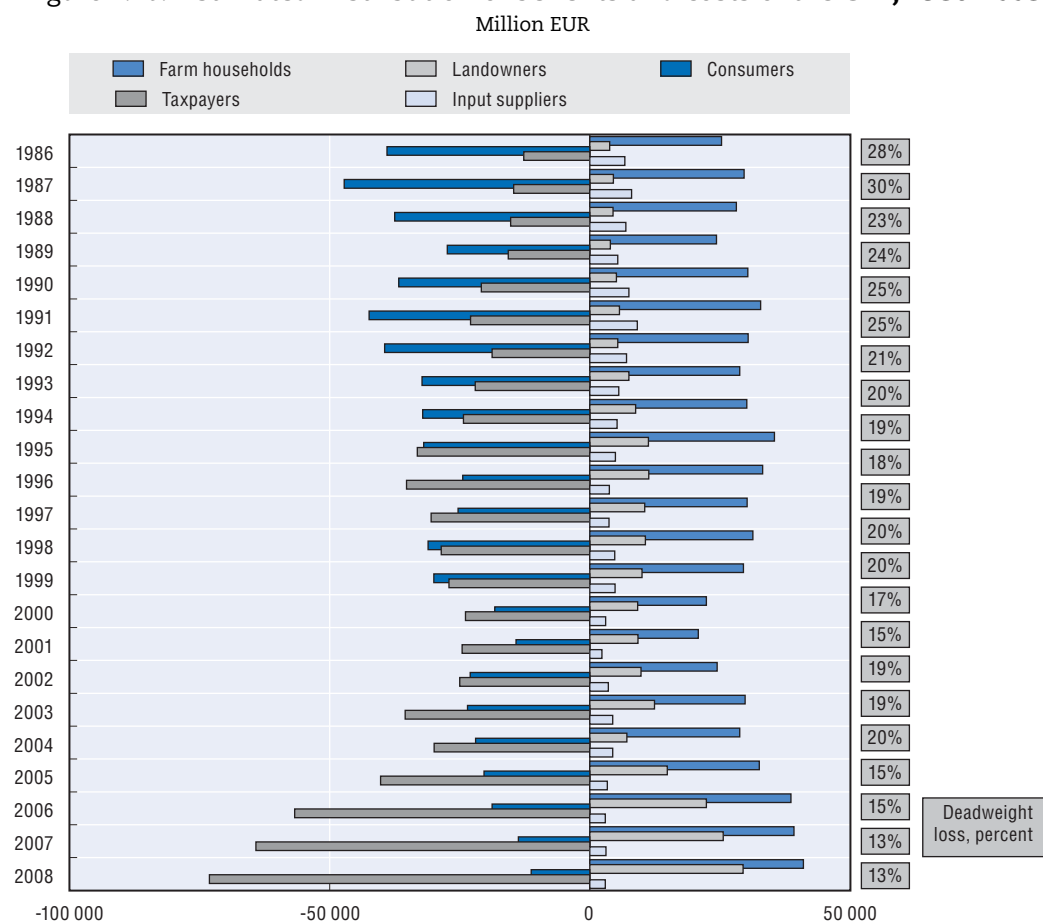
As seen above, the distribution of single payment benefits between farmers and landowners depends on the share of land owned by farmers, which varies a lot by member

Figure 4.9. **Estimated income transferred by CAP policies**

1. The version of the PSE database used for PEM reports data for the EU19 (OECD member countries) and EU8 (EU members that are not also OECD members). The results for EU15 and EU12 would not be dramatically different.

Source: OECD PEM model.

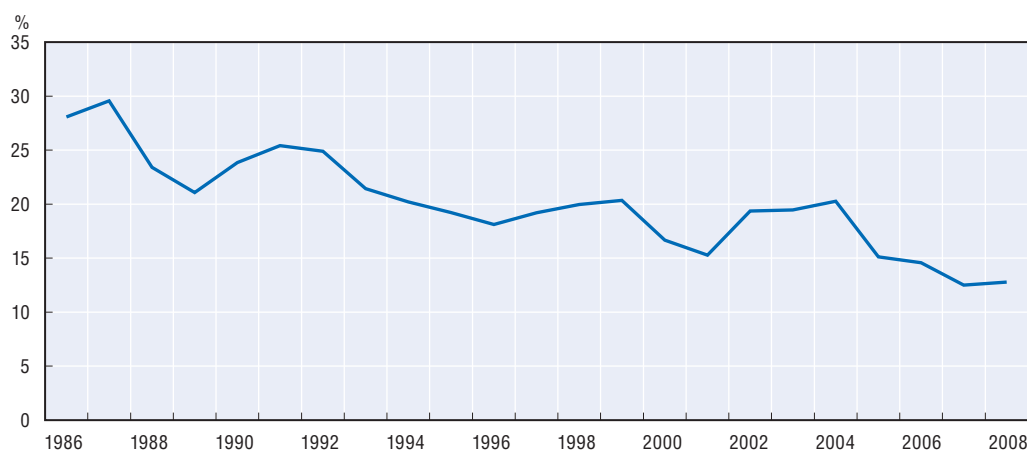
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Figure 4.10. **Estimated Distribution of benefits and costs of the CAP, 1986-2008**

Source: OECD PEM model.

StatLink <http://dx.doi.org/10.1787/888932475696>

Figure 4.11. **Estimated Deadweight loss resulting from policy transfers, 1986-2008**
Percentage of PSE



Source: OECD PEM model

StatLink  <http://dx.doi.org/10.1787/888932475715>

state (Figure 3.11 in Ciaian et al., 2011). In some countries, this share may be underestimated to the extent rental land may belong to farmers in the context of arrangement between farmers, or legal status of farm businesses. The implementation model also matters: landowners tend to benefit more from the regional model than from the historical model as it allows non-farming landowners to obtain entitlements for themselves. Evidence from Ciaian et al. (2011) suggests that in Germany, Northern Ireland and Sweden, a substantial share of the SPS goes to non-farming landowners. This is also true, but to a lesser extent for England, Finland and Scotland. In other countries where renting is less common or there is little capitalisation of the single payment into land values, farmers appear to gain the largest share of the single payment.

Farm income and welfare effects from CAPRI scenarios²⁴

2003 reform and Health Check as implemented

Farm income is only moderately affected in CAPRI scenarios of recent reforms (Tables 4.4 and 4.5, Figure 4.12). The major change compared to the base scenario (Agenda 2000 in 2004 with no set-aside) is due to higher direct payments in new member states, where the simulations for the 2003 reform and Health Check scenarios assume the final implementation rates while abolishing any national complementary direct payment.

Consumers lose in the range of EUR 7 billion (–0.1%) in the 2003 reform scenario and EUR 4 billion (–0.07%) in the Health Check scenario due to higher prices (Table 4.5). The larger losses in the Health Check scenario are due to the effect of the dairy market reform. Farm income increases, but mainly in new member states where single payment is fully phased-in in both scenarios.

De-linking support from current production parameters can lead to costs savings on the farm and to increases in farm revenues due to higher prices. Lower income in the Health Check compared to the 2003 scenario is linked to the fact that quota rents from milk production vanish.

Table 4.4. **Changes in income components for selected activities in the EU27**

	Base scenario: Agenda No Set Aside (2004)				Scenario 2003 reform (2004)				Scenario Health Check (2004)			
	Receipts	Premiums	Costs	Income	Receipts	Premiums	Costs	Income	Receipts	Premiums	Costs	Income
	EUR/head				% change compared to base scenario				% change compared to base scenario			
Rapeseed	694	304	648	350	6	-11	-1	5	10	-6	1	14
Oats	405	194	381	217	-19	-2	-17	-8	12	18	2	34
Barley	447	219	392	274	9	2	7	6	12	0	4	14
Soft wheat	640	270	577	333	-1	-9	-6	2	9	-1	1	15
Rye and meslin	311	186	355	142	-11	1	-15	15	9	11	1	31
Maize	994	318	697	615	-13	-31	-18	-16	7	-11	0	5
Pulses	391	322	357	357	10	-26	-2	-11	13	-18	5	-8
Sheep and goats	72	0	37	35	-10		0	-20	5		21	-13
Beef meat	740	130	711	159	-4	-58	-10	-22	-2	-70	-8	-33

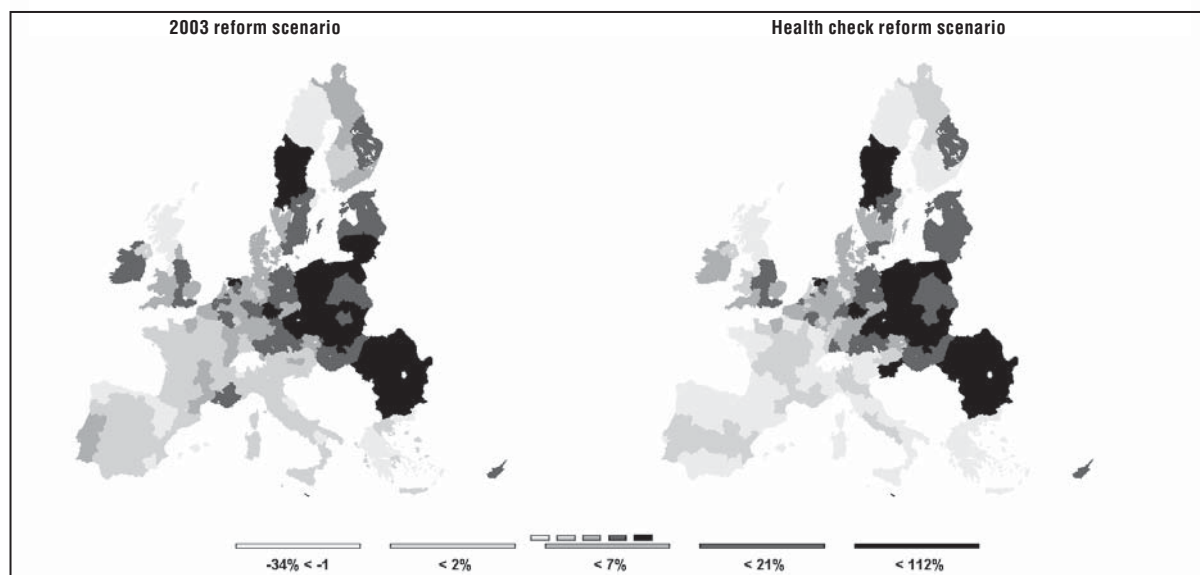
Source: CAPRI model.

StatLink  <http://dx.doi.org/10.1787/888932476247>Table 4.5. **Changes in welfare components for selected activities in the EU27**

	Base Scenario: Agenda No Set Aside (2004)				Scenario 2003 reform (2004)				Scenario Health Check (2004)			
	Taxpayers cost	Consumer costs	Agricultural income	Total	Taxpayers cost	Consumer costs	Agricultural income	Total	Taxpayers cost	Consumer costs	Agricultural income	Total
	Billion EUR				Change in billion EUR	% change compared to base scenario			Change in billion EUR	% change compared to base scenario		
EU15	35	5 638	141	5 771	1.4	-0.1	3.7	-0.04	1.8	-0.1	1.6	-0.05
EU10	3	292	11	303	2.7	-0.2	27.4	-0.01	2.8	-0.1	25.7	0.00
EU2	0.2	57	6.7	65	2.5	-0.2	38.2	-0.01	2.5	-0.1	37.5	-0.05
EU27	37	5 987	159	6 139	6.5	-0.1	6.9	-0.04	7.1	-0.1	4.9	-0.05

Note: Money metric measures consumer welfare; agricultural income represents farmers' welfare.

Source: CAPRI model.

StatLink  <http://dx.doi.org/10.1787/888932476266>Figure 4.12. **Relative change in agricultural Gross Value Added plus Pillar 1 support**

Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: CAPRI model.

Effect of uniform single payment rates at member state level

An additional scenario simulates the impact on the distribution of payments and income of a switch to a kind of “SAPS” implementation of single payments in all EU member states. This would result in an equal national per hectare rate for types of agricultural land use in all farm groups country-wide. It is compared to the original Health Check scenario. The allocative responses at EU27 level are relatively minor: all types of land use drop very slightly (between -0.1% and -0.5%). These results clearly reflect the fact that agricultural land in new member states was operating under a uniform premium scheme at the country level (SAPS) – except in Malta and Slovenia – and that some old member states applied flat-rate schemes at the regional level. The uniform rate scenario leads to adjustments in flat rates at the regional or farm type level, depending on the implementation chosen by the different member states, but the allocative response in CAPRI is mostly limited to reaction on the land supply curve for those regions losing premiums, and to slight substitutions effect where premiums were differentiated by arable and grass lands. Regions where premiums increase are bounded by the entitlements.

Given that historical and regional single payments rates are strictly linked on how much coupled payments and other types of support under Pillar 1 (*e.g.* for fruits and vegetables) were paid under Agenda 2000, single payment rates reflect to a larger extent the productivity of the regions and their specialisation. Regions with high historical yields for cereals and larger ruminant stocking densities also show higher single payment rates. Uniform premiums at country level tend to decrease hence support in more productive and increase it in more marginal regions. Price changes are moderate (below +/-1%) but mostly positive as areas, and, hence production, is decreased.

One might conclude that as long as the majority of Pillar 1 is paid as a more or less flat rate per hectare, with some GAEC conditions, the impact of the scheme is mostly on distribution within the EU agricultural sector. The effects on production are very moderate, so that consumers and trade in agricultural products are hardly affected.

For the sum of all farm types in EU25, gross value added plus premiums would increase by about EUR 1.5 billion if the SPS was implemented with flat national rates compared to the Health Check as implemented. This change would be caused by moderate price increases, due to reduced output as support is shifted from productive to marginal areas (Table 4.6). On average, dairy farms, grazing livestock farms and vineyards would receive additional income, while arable crop farms would lose income. This scenario also has strong distributional impacts within member states, especially those which implement the single payment using the historical model. Table 4.7 indicates that the income changes for the different farm groups can be very high mainly due to the premium redistribution, whereas price changes have only a moderate impact.

For 30% of all farm groups (*all type of farming*), income decreases; for 15% the change is a small, whereas for 55% higher incomes are predicted (Table 4.7). A large majority of grazing livestock farms (dairying, cattle, sheep and goats, and the residual farm groups) gains income, due primarily to higher grass land premiums. In contrast, field cropping farm groups (cereals, oilseed and protein crops, general field cropping and mixed cropping, and mixed crop livestock) lose income on average, although around 40% to 50% have higher income. Vineyard farms did not receive direct payments and benefit from the flat-rate payment per hectare. As a result, 95% have stable or higher incomes. This contrasts to olive farms which average income decrease as their previous high support is averaged out over the national utilised area.

Table 4.6. **Agricultural income change compared to Health Check scenario per farm type at EU25 level (year 2004)**

Farm Type	Health Check as implemented	Health Check with flat national rates	Absolute change	% change
	Million EUR	Million EUR	Million EUR	%
Cereals, oilseed and protein crops	15 179	13 969	-1 210	-8
General field cropping + Mixed cropping	18 566	18 364	-202	-1
Horticulture	802	804	2	0
Vineyards	4 123	4 308	185	4
Fruit and citrus fruit	2 498	2 498	-1	0
Olives	4 694	4 042	-652	-14
Various permanent crops combined	1 057	1 028	-29	-3
Dairying	22 488	23 665	1 177	5
Cattle-rearing and fattening	6 568	6 826	257	4
Sheep, goats and other grazing livestock	8 704	9 747	1 043	12
Granivores	7 771	7 741	-30	0
Mixed livestock holdings	4 277	4 300	23	1
Mixed crops-livestock	15 279	15 085	-194	-1
Residual	45 570	46 681	1 111	2
Total EU25			1 481	1.46

Source: CAPRI model.

StatLink  <http://dx.doi.org/10.1787/888932476285>Table 4.7. **Distribution of absolute income changes in the EU25 per farm type (year 2004)**

Health Check with flat national rates compared to Health Check as implemented

Farm Type	% of farms with decreasing income	% of farms with stable income	% of farms with increasing income
Cereals, oilseed and protein crops	43	18	38
General field cropping + Mixed cropping	45	10	45
Horticulture	20	0	80
Vineyards	5	9	86
Fruit and citrus fruit	62	8	31
Olives	56	4	40
Various permanent crops combined	56	6	38
Dairying	10	18	72
Cattle-rearing and fattening	42	13	45
Sheep, goats and other grazing livestock	26	9	65
Granivores	30	31	39
Mixed livestock holdings	31	29	40
Mixed crops-livestock	34	17	49
Residual	27	5	67
Total EU25	31	15	54

Source: CAPRI model.

StatLink  <http://dx.doi.org/10.1787/888932476304>**Full integration of all payments in the single payment**

Renwick et al. (2011) also use the CAPRI model to simulate the integration of all payments in the single payment compared to the pre-Health check situation where some EU15 member states used the flexibility to maintain some area or headage payments. He also finds that further inclusion of commodity-specific payments in single payments

would increase aggregate farm income (measured by the gross value added of agriculture) in all member states (except Greece, which no longer receives specific cotton and tobacco payments). In most cases, any projected fall in livestock numbers seems to be more than offset by higher prices. Higher agricultural income would lead to large welfare gains for producers, in particular in countries that had not integrated all payments into the single payment. The bulk of total welfare gains is for the EU15. There is little change for new member states, which did not have the flexibility to maintain commodity-specific EU payments as part of the SAPS.

Changes in the composition of support and share in farm receipts

Projected PSE in 2012

OECD indicators of support cover the period 1986-2009, and thus do not include the Health Check. Up to 2009, successive reforms of the CAP have reduced the level of support to EU agricultural producers from 39% of farm receipts in 1986-88 to 22% in 2008-10 (Chapter 2). At the same time, the share of most distorting forms of support in the PSE has decreased from 92% to 29% of farm receipts and that of the least distorting support (payments which place no requirement to produce) reached 44% in 2008-10 (OECD, 2011e).

The level and composition of the PSE after full implementation of recent reforms (e.g. in 2012) can be extrapolated using market projections from Aglink-Cosimo and changing the classification of payments to reflect Health Check decisions. The total PSE is projected to amount to around EUR 87 billion. This is similar to the 2009 level, but 4% lower than the 2007-09 average. The PSE is expected to account for slightly less than 23% of gross farm receipts, compared to 24% in 2009. The gradual decline in market price support continues but it is compensated by an increase in the level of payments, which is mainly due to the planned increase in single payments in new member states during the ten year transition period following accession (100% of EU15 rate instead of 70% in 2010; 70% instead of 40% in Bulgaria and Romania). At the same time, national top-ups are limited to 10% instead of 30%. The share of single payments in the PSE increases from 40% in 2009 to 45% in 2012, while the share of single payments in total payments to producers increases from 52% to 60%. This is the result of the inclusion in the single payment of payments, which remained based on current area or animal numbers after the 2003 reform. The single payment is then reduced by 3 percentage points to take account of additional modulation. Article 68 payments are assumed to remain unchanged, but modulation funds (about EUR 1 billion) are assumed to benefit farm investments, including in the dairy sector and irrigation (30% in B2), environmental extension (10% in B3), agri-environmental schemes, including biomass (30% in C) and public goods (10% in F) and research (20% in GSSE). National funds are added to co-finance RDR measures. The share of most distorting support in the PSE decreases from 33% in 2008, to 30% in 2009 and 27% in 2012 (compared to 92% in 1986-88).

Support by farm type and farm size

Reforms have changed the way support is delivered, with the aim to compensate, at least partially, farmers for income losses expected to result from the reduction of former support instruments. On that basis, reforms are not expected to significantly modify the distribution of support between farms.²⁵ However, recent reforms have introduced several mechanisms by which the distribution of support can be modified. These include options for the implementation of SPS entitlements; EU and national rules governing tradability or

transfers of entitlements, including the management of national reserve (Boulanger, 2011); the flexibility given to member states to use part of SPS funds to favour some types of agricultural activities or regions, which are important for the protection or enhancement of the environment and other priorities, and modulation (Box 3.3).

Work undertaken as part of the OECD Network for Farm level analysis covers a year preceding the implementation of the 2003 reform (2004) and two years following it (2006, 2007). It sheds some light on changes in the distribution of support and income which may be attributed in part to the 2003 reform.

Dependence on support varies by farm type. On average for the EU27, the share of support in gross receipts is lowest for horticulture farms and highest for cattle farms and sheep and goat farms, which receive both significant MPS and payments, including from Pillar 2 (Table 4.8). Support to poultry farms is mainly in the form of MPS, while crop farms mainly receive Pillar 1 payments. Share of payments and MPS, change from 2004 to 2007 in the EU15 (Table 4.9). In EU member states included in the analysis carried out by the OECD Network for Farm Level Analysis, the share of support in farm receipts varies from less than 5% in fruits and vegetables farms to more than 50% in farms raising cattle or sheep and goats in 2007 (OECD, 2011b). For dairy farms, there is a large diversity by member state. The share of support in gross farm receipts varies between around 15% in the Netherlands to close to 40% in England (around 20% in Estonia and Germany).

The decline in average support per farm in the EU15, before and after implementation of the 2003 reform, is largely due to a decrease in MPS as the gap between domestic and border prices narrows. The increase in Pillar 2 payments may reflect the transfer of funds from Pillar 1 to Pillar 2 with the introduction of modulation. The dairy reform is reflected by a reduction of market price support and an increase in Pillar 1 payments between 2004 and 2006. This affects mainly dairy farms, but may also affect other livestock farms with some dairy production. The increase in average Pillar 1 payments in field crop farms may reflect the sugar reform, but also the increase in farm size, as for other farm types.

In all EU member states included in the analysis, support accounts for a larger share of gross farm receipts in smaller farms than in larger ones.²⁶ This is true for both market price support and Pillar 1 and 2 payments (OECD, 2011b).

According to Figure 4.13, inequality in the distribution of support, including MPS and total payments, by farm size decreases after the implementation of the 2003 reform in the EU15. This is due to the decrease in MPS between 2004 and 2007, partly due to the sugar

Table 4.8. Share of support in gross receipts by farm type, EU27, 2007

Farm type	All	Field crops	Greenhouse, nursery and floriculture	Fruit and vegetables	Dairy	Cattle	Pigs	Poultry/eggs	Sheep/goats	Others
Share of total support in gross receipts	20	25	3	8	21	45	5	20	34	17
Total payments	14	19	1	7	14	29	4	2	25	12
First pillar payments	12	17	1	6	11	22	3	2	17	10
Second pillar payments	2	2	0	1	3	7	1	0	8	2
Other payments	0	0	0	0	0	0	0	0	0	0
Market price support	6	6	2	1	7	16	1	18	9	5
Share of support in farm income	71	81	19	20	75	166	36	136	102	65

Source: OECD (2011b).

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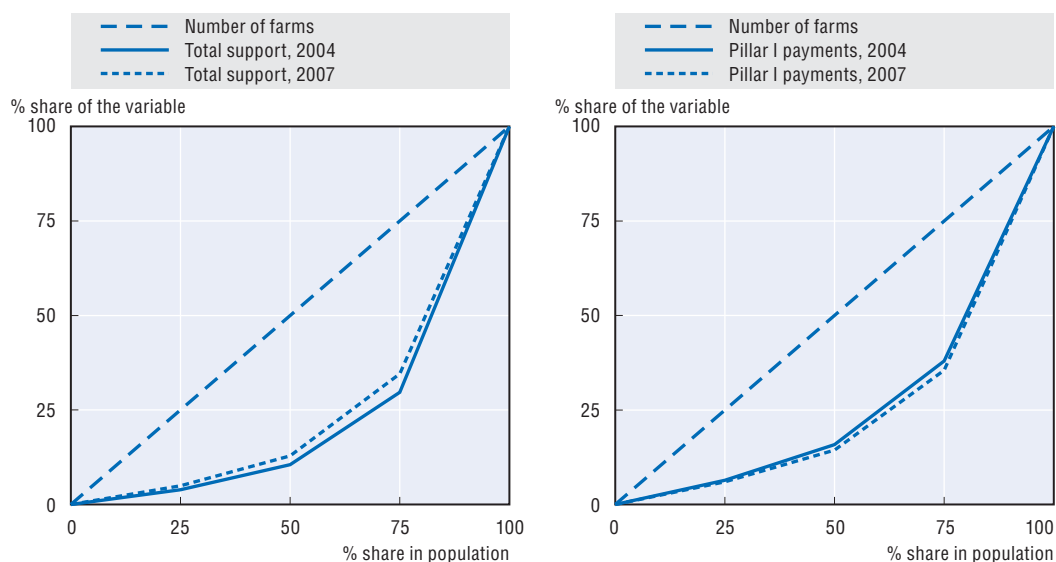
Table 4.9. **Average support per farm by farm type in the EU15, 2004, 2006, 2007**

	All farms			Field crop farms			Dairy farms			Beef cattle farms			Sheep and goat farms		
	2004	2006	2007	2004	2006	2007	2007	2004	2006	2007	2007	2004	2006	2007	2007
Total support	22 625	20 996	19 061	21 811	21 748	24 068	58 113	51 940	37 994	33 871	38 303	35 223	21 494	24 519	23 704
Total payments	12 233	13 724	13 300	16 192	18 398	18 276	18 892	25 614	25 168	20 761	22 510	22 348	16 280	17 974	17 600
First pillar payments	10 302	11 488	11 117	14 729	16 442	16 289	14 049	20 364	20 058	16 451	17 171	17 006	11 693	12 510	12 027
Second pillar payments	1 932	2 236	2 183	1 463	1 956	1 987	4 843	5 250	5 110	4 309	5 339	5 342	4 586	5 464	5 573
Market price support	10 391	7 273	5 761	5 619	3 350	5 792	39 221	26 326	12 826	13 111	15 793	12 875	5 214	6 545	6 104
Gross receipts	82 038	86 779	95 762	73 352	80 005	94 303	138 314	156 413	179 752	64 972	75 284	74 354	59 708	64 905	67 033

Source: OECD (2011b).

StatLink  <http://dx.doi.org/10.1787/888932476342>

and dairy reforms, but also higher border prices. There is no noticeable change in the distribution of Pillar 1 payments at EU15 aggregate level. This reflects the fact that a majority of Pillar 1 payment entitlements remain based on historical entitlements (historical or hybrid models) and that those implemented as a single, regional per hectare payments (regional or hybrid models) remain based on farm size. Moreover, structural change, which increases the concentration of land and agricultural production, tend to increase inequality in the distribution of payments. As a result, the 25% largest farms (size being measured as the value of gross agricultural output) receive 65% of total support in the EU15, and 74% in the EU27 as enlargement increased diversity within EU farms. They concentrate an equivalent proportion of total farm income. It should be noted that equal distribution of support is not an objective and that developments in the distribution of support have to be considered in relation to policy objectives (Chapter 5).

Figure 4.13. **Comparison of distribution of support and payments by farm size, EU15, 2004, 2007**

Note: Curves were constructed from quartiles based on gross agricultural output.

Source: OECD (2011b).

StatLink  <http://dx.doi.org/10.1787/888932475753>

As can be seen in Kleinhanss (2011), the example of Germany illustrates the impact of regional versus historical model for SPS implementation, as the country adopted a dynamic hybrid system, where the share of payment entitlement delivered under the regional model increases gradually up to 2013 when historical entitlements disappear (Figure 9.2 in Kleinhanss, 2011). Looking at changes in the distribution of payment entitlements by farm size for four farm types specialised in arable crops, beef fattening, dairy cows and grazing cattle, respectively, he finds that over the period 2004-13, there are significant transfers of entitlements from intensive beef fattening and dairy farms to extensive, grazing cattle farms, as well as a moderate regional redistribution in favour of regions with natural handicaps. There are also differences depending on farm size. Entitlements decrease in smaller arable farms, but increase in small dairy farms, mainly due to the upgrading of grassland entitlements. But entitlements are expected to decrease in larger dairy farms with 25 to 100 cows. The analysis of income developments over 2004-09 suggests some influence of SPS developments on income until 2007, for example, the income of dairy farms increases with the implementation of the dairy payment. However, from 2008 changes in income levels are mainly driven by price developments, and larger farms appear to adjust better to price decreases than smaller ones.

The example of France illustrates how the flexibility within the SPS regulation can be used to alter the distribution of payments. France adopted the historical model where entitlements are initially kept within the same farm, but uses article 63 and 68 of the Health Check regulation (Council Regulation 73/2009) to favour areas with natural handicaps. Chatellier *et al.* (2011) show that measures introduced by France in the context of the Health Check are expected to result in a transfer of direct payments from regions specialised in arable crops to regions with natural handicaps, including mountainous areas, where extensive farms with grazing animals dominate. The analysis also shows that direct payments per farm would decrease in the 30% largest farms but would increase in all other smaller size categories.

Boulanger (2011) reports that over half of entitlements resulting from the full integration of arable crop specific payments in single payments will be redistributed to support grass-based livestock systems and fodder; rural development, risk management schemes and sustainable development. However, arable farms are expected to benefit from risk management and investment measures.

In a study of the impact of additional modulation from the Health Check, Nowicki *et al.* (2011) report changes in income by farm size and farm type. In the EU15, the share of farms with a higher income as a result of modulation is relatively stable across farm size groups and ranges between 9% and 18%. But the share of farms with an income loss seems to increase with farm size, except for the highest income group (Figure 15.5 in Nowicki *et al.*, 2011). The impact of modulation by farm type depends on the share of Pillar 1 payments in gross farm receipts and the extent to which they can benefit from LFA and agri-environmental payments. Horticulture, wine, permanent crops and pig and poultry farms are hardly affected. Two-thirds of field crop and grazing farms have a stable or increasing income, with a higher proportion of increases on grazing farms. About half of milk and mixed farms also face a stable or higher income, while the other half faces lower farm incomes. The model results suggest that modulation will lead to a significant redistribution of farms between farms of different types and size.

Income variability

Chapter 2 contains an analysis of aggregate variability of farm income and its components during three periods divided by the MacSharry and the 2003 reforms: 1982-92; 1993-2003; and 2004-09. In brief, there is no strong evidence that income variability increases, except in new member states because incomes increase with accession (Figure 2.15). The main factor contributing to income variability post 2004 is intermediate consumption with much higher coefficients of variation for fertilisers and feedstuffs after 2004. For the EU15, price and volume indices of crop and animal outputs are less variable in 2004-09 than in 1993-2003. But these aggregates may mask differences across countries and agricultural products, which partially compensate each others. In both periods, price variability is higher than production variability. These development can, however, not be attributed to CAP reforms.

Price variability

As seen in Chapter 2, farm income variability is the result of commodity and input price and output variability. The example of wheat and barley prices illustrates changes in the transmission of price variability from international to EU domestic market with successive reforms. Intervention mechanisms are expected to reduce the variability of domestic prices relative to that of international prices as intervention prices act as a price floor. Reforms implemented since 1992 successively reduced the level of intervention prices. Table 4.10 shows that the variability of domestic prices of wheat and barley is lower than that of international border price in all four periods covering 1990-2008, implying that the price intervention mechanism mitigated the transmission of price risk from international to domestic markets. The coefficient of variation of international prices of wheat and barley is particularly high in two periods: 1995-99 and 2005-08. Despite an increase in the variability of international price, the variability of domestic producer prices is almost unchanged between the 1990-94 and 1995-99 periods. However, the variability of domestic price increased significantly between 2000-04 and 2005-08, responding to the increase in international prices. This implies that the Agenda 2000 reform may have increased the degree of price transmission between international and domestic cereal markets, but also illustrates the fact that intervention limits price decreases but transmits price increases.

The degree of co-movement of international and domestic prices can be inferred from the lagged correlation of two price series. Table 4.11 presents developments in the correlation between domestic and international prices in four periods between 1995 and 2008, using both monthly and quarterly data.²⁷ The coefficient of correlation between domestic and international prices in 1990-94 was the lowest in all countries, while it was the highest in the most recent period of 2005-08 for both Spain and France, with or without time lag. The analysis implies that the successive CAP reforms implemented after 1992 have increased the price transmission between domestic and international markets for wheat and barley. The convergence between domestic and border prices is also illustrated by the reduction in nominal protection coefficients (NPCs), the ratio between domestic and border prices, which has averaged one in the last few years. It should be noted, however, that the results of this analysis report correlations but do not prove any causality between developments in two price series. More rigorous econometric work is required to investigate causality and take account of other factors such as exchange rate.

Table 4.10. **Developments in wheat and barley price variability, 1990-2008**

		1990-94	1995-99	2000-04	2005-08
Coefficient of variation of monthly international price					
Wheat		0.16	0.32	0.19	n.a.
Barley		0.20	0.29	0.22	n.a.
Coefficient of variation of quarterly international price					
Wheat		0.16	0.32	0.19	0.39
Barley		0.19	0.29	0.22	0.39
Coefficient of variation of monthly domestic price					
Wheat	Germany	0.10	0.09	0.11	n.a.
	Spain	0.10	0.10	0.10	n.a.
	United Kingdom	0.09	0.08	0.13	n.a.
	France	0.12	0.10	0.04	n.a.
Barley	Germany	0.10	0.09	0.12	n.a.
	Spain	0.10	0.10	0.10	n.a.
	United Kingdom	0.09	0.08	0.13	n.a.
	France	0.12	0.10	0.11	n.a.
Coefficient of variation of quarterly domestic price					
Wheat	Spain	0.10	0.10	0.10	0.22
	France	0.12	0.10	0.09	0.35
Barley	Spain	0.10	0.10	0.09	0.24
	France	0.12	0.10	0.12	0.35

Note: The Coefficient of variation is the standard deviation divided by the mean.

Note: Monthly nominal domestic producer price data between 1990 and 2005 are taken from Eurostat. The data series between 2005 and 2008 are calibrated from the quarterly producer price index in the Eurostat. International prices are border reference prices used in the PSE database to calculate market price support, i.e. the fob price of French (Rouen) from the International Grain Council for both wheat and barley. The domestic and international prices are denominated in EUR and USD, respectively.

Source: Secretariat's calculations based on Eurostat and International Grain Council prices.

StatLink  <http://dx.doi.org/10.1787/888932476361>

Table 4.11. **Correlation between domestic and international prices of wheat and barley, 1990-2008**

		Lag	1990-94	1995-99	2000-04	2005-08
Coefficient of correlation of international and domestic price (monthly)						
Wheat	Germany	0	0.40	0.72	0.55	n.a.
	Spain	0	0.06	0.82	0.58	n.a.
	United Kingdom	0	0.10	0.75	0.55	n.a.
	France	0	0.31	0.86	0.81	n.a.
Barley	Germany	0	0.54	0.62	0.54	n.a.
	Spain	0	0.33	0.71	0.54	n.a.
	United Kingdom	0	0.35	0.73	0.51	n.a.
	France	0	0.49	0.83	0.32	n.a.
Coefficient of correlation of international and domestic price (quarterly)						
Wheat	Spain	0	-0.05	0.84	0.59	0.96
		1	-0.17	0.63	0.60	0.81
	France	0	0.17	0.87	0.77	0.97
		1	0.13	0.73	0.54	0.73
Barley	Spain	0	0.38	0.73	0.55	0.96
		1	0.40	0.59	0.62	0.85
	France	0	0.42	0.84	0.66	0.98
		1	0.50	0.71	0.41	0.74

n.a.: Not available.

Source: Secretariat's calculations based on Eurostat and International Grain Council prices.

StatLink  <http://dx.doi.org/10.1787/888932476380>

Impact of successive CAP reforms on the environmental performance of agriculture²⁸

Agriculture has a significant impact, both positive and negative, on the environment mainly through land use for the production of food, fibre and fuel and the range of management practices required to achieve this. Agriculture currently accounts for 44% of the land area of the EU27. Of this area, arable and cereal crops account for 62%, with pasture accounting for 31%, and permanent crops accounting for a further 6% (Eurostat, 2009). Agricultural land use affects the functioning of natural systems and the availability of natural resources. The range of farming systems and agricultural management practices, farm sizes and structures that exist in the different regions of the European Union combine with local biophysical and climatic characteristics to affect the environmental condition of the farmed landscape in many different ways. As well as creating pressure on the environment, agriculture has an important role to play in meeting Europe's environmental targets in relation to biodiversity, water quality, water availability and climate change and in maintaining aspects of the environment for which there are no formal targets, such as cultural landscapes, carbon storage or soil functionality, for example.

CAP reforms have affected the environmental performance of agriculture to the extent that policies influence producers' choice in terms of production mix and management practices. Over the last 25 years, a series of CAP reforms has led to most of the central policy instruments being altered and several new policy instruments adopted in such a way that environmental concerns can be better accommodated. These have included the introduction of measures to limit production (for example quotas, set-aside) and the shift away from price support to area and headage payments, and then single payments; the introduction of environmental conditionality through the use of instruments such as cross compliance; and the introduction of incentive payments to encourage the use of management practices that are environmentally beneficial. At the same time, nutrient balances, pesticide, energy and water use, and ammonia and greenhouse gas emissions trends all decreased in the EU15 (OECD, 2008c). The purchase of agricultural inputs, however, such as mineral fertilisers, pesticides, energy and water, is expected to increase considerably in certain new member states. This could lead to increased risks for water pollution and biodiversity, although the intensity of input use in the new member states is likely to remain lower than in most EU15 countries. Environmental pressure on water resources may increase as the share of irrigated land increases, although the increase in irrigated area and the investment in irrigation are increasingly associated with the rationalisation of water use, with a view to more efficient uses. Despite policy changes and lower input use, however, a number of the environmental media affected most by agricultural practice continue to deteriorate. There have been improvements in air quality, some regional improvements in soil functionality and reductions in greenhouse gas emissions from agriculture experienced more recently, but it is clear that there is still a long way to go to meet European targets on climate change and biodiversity. The status of most species and habitats is still giving rise to concern and significant problems remain in relation to water scarcity and achieving good soil management (Cooper *et al.*, 2010; EEA, 2009a; EEA, 2009b; JRC, 2009; OECD, 2010f, 2010g).

Agriculture, particularly the changing pattern of management practices, has an important role in contributing to environmental outcomes although it is not always easy to distinguish precisely. Although situations clearly vary within and between regions and

even farms, the two broad trends with the biggest environmental consequences in agricultural areas are marginalisation or abandonment and intensification or concentration of production. Indeed, a recent review of the impacts of agricultural practices on the terrestrial and aquatic ecology of a number of EU27 member states concluded that “despite successive reforms of the CAP, efforts to improve the environmental sustainability of agricultural systems are compromised by intensification and abandonment” (Stoate *et al.*, 2009). Nonetheless, isolating the role of specific CAP measures in determining particular outcomes in empirical terms continues to be challenging, not least due to the range of exogenous factors that also influence agricultural management, such as the prices of commodities and inputs, technological developments, market requirements, environmental regulation and pressures such as climate change, as well as the variability in the way that different farming systems in different parts of Europe will react to signals from different policy instruments (Baldock *et al.*, 2002).

This section looks back over the CAP reforms of the last 25 years to review and synthesise some of the existing evidence on the impact of these reforms on the environmental performance of agriculture. Drawing on the available literature, including evaluations of different CAP measures, it examines the evolution of the range of different policy instruments that have been introduced and the degree to which they have contributed towards improving agriculture’s environmental footprint. Annex D provides a brief overview of the integration of environmental concerns into European agricultural policy, summarising elements of CAP reforms that have influenced the environmental performance of agriculture.

The degree to which the changes brought about by CAP reforms have led to an improvement in the environmental performance of agriculture is a matter of continued debate. Not only is it difficult to disentangle the impacts of specific policy measures from the range of other external drivers affecting agricultural management, but the variability in the way that certain CAP policy measures are funded, designed and implemented nationally and regionally (particularly those under Pillar 2) can lead to a range of impacts in different parts of the EU27. Added to this is the issue of evidence and data availability. The lack of requirements to monitor and evaluate the impacts of the main CAP support instruments, now within “Pillar 1” policy instruments means that there is an absence of up to date data on their impacts on the environment. Indeed where analysis of impacts is available, this tends to be prospective in nature (see, for example, GFA-RACE and IEEP, 2003; CSL and CCRU, 2006; Sahrbacher *et al.*, 2007; Brady *et al.*, 2009; Brady, 2011; Schmid *et al.*, 2010; Sinabell and Schmid, 2011). More information is available in relation to the environmental impacts of Pillar 2 measures in recent years in particular through mid-term and *ex post* evaluations of past and current Rural Development Programmes and data on indicators within the Common Monitoring and Evaluation Framework, as required under Council Regulation 1698/2005. However, the level of detail of the evidence provided varies considerably between member states, making EU wide assessments problematic.

From production support to single payments

Over time the design and mix of instruments used has changed in order to reduce and then progressively remove the link between payments and current production. This in turn has resulted in both positive and negative impacts on the environment. Where payments are linked to production, these payments can act as incentives to produce, exerting considerable influence over the farming systems and practices adopted (Baldock *et al.*,

2007) and giving rise to both positive and negative consequences for the environment (Tucker *et al.*, 2010). In relation to the arable sector, it was anticipated that changes in market and price support in the MacSharry reform should reduce some of the pressures for continued expansion of production (Baldock *et al.*, 2002) and that this would lead to some indirect environmental benefits, for example through reducing the use of inputs such as inorganic fertilisers. However, high cereal prices in the early 1990s served to counteract this anticipated effect to a large extent and production continued to grow. In 2000, the removal of price support and the introduction of area payments for arable crops should have reduced the incentive to convert grassland to arable, particularly since land that had not been under arable production previously was not eligible for payments. However, as a result of difficulties distinguishing land used for growing grain maize from that producing forage maize it was agreed that support for forage maize should be introduced. This contributed to the expansion of the area of forage maize, largely as feed for the dairy herd, with associated impacts on soils, water quality, biodiversity and landscape and led to fresh pressures on grassland (Baldock *et al.*, 2002). However, perhaps the most significant CAP measure for the environment in relation to arable farming was the introduction of set-aside as a supply control measure in the late 1980s (see below).

In the livestock sector, for beef cattle, sheep and goats, the transition from price support towards direct payments has been more complex. In an initial step, from 1992, headage payments became the prime means of support, with some variations in payment levels for beef cattle linked to the farm's stocking densities, partly because of concerns about the environmental impact of high stocking densities and partly to contain costs. These were superseded in the 2003 reforms by the Single Payment Scheme, although member states were permitted to continue to use headage payments for a number of years and several have chosen to do so. Many argued that the provision of support through headage payments, despite the stocking density conditions attached which were not particularly effective, continued to create an incentive to graze land above its environmental carrying capacity, leading to environmental degradation of valuable habitats in some upland areas, *e.g.* in parts of Ireland and the United Kingdom where stock numbers had risen considerably in response to headage payments (Brown *et al.*, 2001). In addition there were issues of water pollution from livestock waste and fodder production and greenhouse gas emissions. However, from a more positive perspective, these payments supported the continuation of grazing in economically marginal farming areas, which, as long as stocking densities were at an appropriate level, helped maintain semi-natural grassland habitats, with associated biodiversity and landscape benefits (Alliance Environnement 2007, 2009).

The removal of headage payments under the 2003 reforms and their replacement with single payments with no requirement to produce any commodity in many, but not all member states, has led to accelerated declines in the numbers of livestock, particularly within the beef sector, with a mixture of environmental impacts not yet well documented. However, several studies have sought to predict the likely impacts of the introduction of single payments on the environment (see, for example, Alliance Environnement, 2007, 2009; Brady, 2011; Schmid *et al.*, 2010; Sinabell and Schmid, 2011). These studies suggest the impacts are likely to be more significant in less productive regions, while land use in productive regions will stay largely the same. In particular they highlight that, alongside reductions in grazing livestock numbers, there would be likely to be a small decrease in the arable area, with concomitant increases in grassland due to a reduction in the profitability

of cereal crops. The decrease in grazing livestock is not predicted to be accompanied by increases in other livestock sectors, such as pigs or poultry. The environmental benefits that are thought to ensue from these anticipated changes include reduced greenhouse gas emissions, reductions in nitrogen surpluses, reduced grazing pressure and increased soil organic matter. However, in some regions under-grazing and the first stages of abandonment are causing concern.

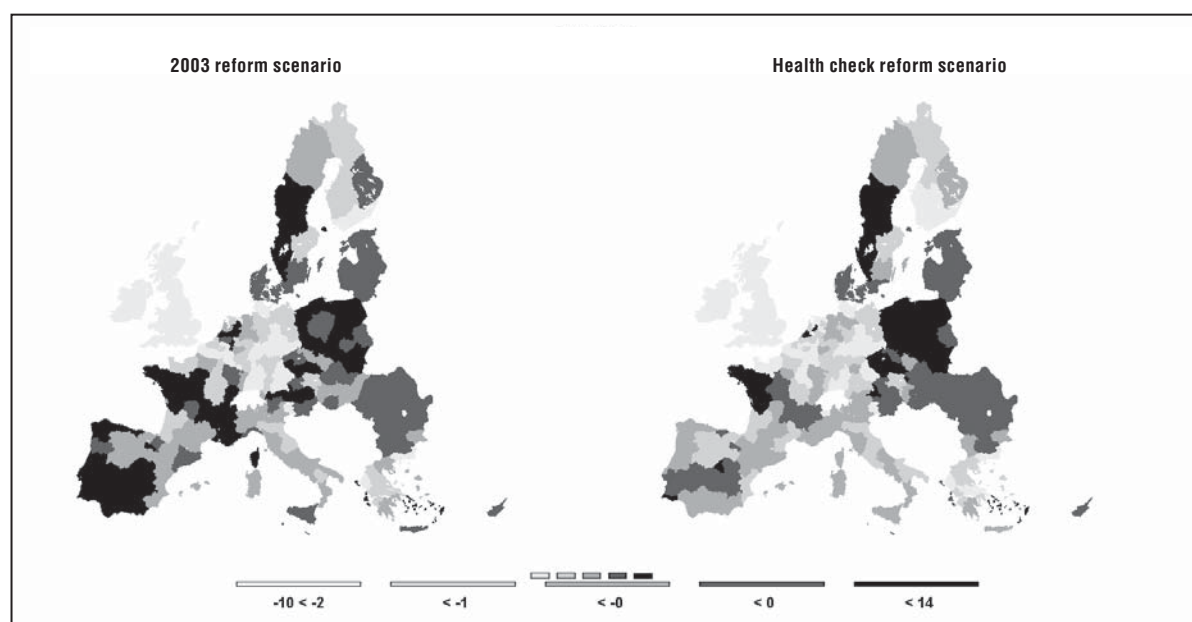
With regard to the sustainable use of water resources, decoupling payments from commodity production is also expected to have positive effects (OECD, 2010h, Box 4.2). A number of crops with high water requirements were supported by the CAP before the 2003 reform. Maize, which is considered a water demanding crop in temperate countries, used to receive specific payments. Since area payments were defined to deliver equivalent levels of income support to all cereal, oilseeds and protein crops, they favoured crops such as maize, rice, cotton or tobacco, that demand much more water than oilseed crops such as sunflower or rapeseed. With the introduction of single payments, this inconsistency was eliminated, and farmers' use of water will not be driven by differences in support across crops. Garrido and Varela-Ortega (2008), for example, have reported the gradual but steady changes of irrigated land allocation that have occurred in Spain since the 2003 CAP reform. The most significant changes were that more irrigated land resources have been allocated to vineyards, olive trees and citrus (especially in Andalusia), and less irrigated lands allocated to water-consuming crops such as maize and other reformed sectors, including sugar beet, cotton and tobacco. When decisions made under the Health Check are fully implemented in 2012, the economics of irrigation will be guided more by the relative productivity of crops and water accessibility than by relative agricultural support granted to the crops.

CAPRI has been used to simulate the impact of the 2003 reform and Health Check agreement on two indicators of environmental pressures: Nitrogen surplus at soil level and greenhouse gas emissions.²⁹ As explained in the first section, the scenarios focus on the impacts of decoupling support from production, as well as quota removal in the Health check scenario. Compared to the continuation of Agenda 2000 without set-aside, the 2003 reform and Health Check would result in a decrease in Nitrogen surplus at soil level (–2.2 % and –1.7%, respectively) and greenhouse gas emissions (–1.6% and –1.05%, respectively). This is mainly due to reduction in stocking densities for cattle. The lower reductions in the Health Check scenario are due to the increase in milk output.

The reduction in nitrogen surpluses comes both from reduced manure (–1.0% and –0.5%, respectively) and from reduced mineral fertiliser use (–3.5%) as a consequence of lower arable land and expansion of extensive fodder production. The redistribution of beef production in the 2003 reform scenario is due to the fact that some countries kept specific suckler cows or feed cattle premiums. It explains why in some regions of the old member states nutrient surpluses still slightly increase (Figure 4.14).

Article 68 – Support for specific areas

Concurrent to the establishment of single payments, the 2003 CAP reforms introduced flexibility on how direct payments could be targeted by allowing EU15 member states, Malta and Slovenia to divert up to 10% of their Pillar 1 budget to provide “special support” to particular sectors, including for the protection and enhancement of the environment.³⁰ Initially, the rules governing the use of this mechanism were restrictive which meant that relatively few member states chose to implement them. Within the eight member states

Figure 4.14. **Absolute change in nitrogen surplus at soil level [kg/ha] compared to base scenario**

Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.
Source: CAPRI model.

that did use this option, a range of sectors were supported, including the beef, arable, sugar, sheep, dairy, tobacco, olive oil and cotton sectors. Due to the lack of reporting requirements there is little published information on the outcome of this measure, although a survey carried out in 2008 indicated that support did not have any significant environmental benefits (Hart and Eaton, 2008).

The 2009 Health Check agreement also introduced greater flexibility into how Pillar 1 direct payments could be used,³¹ by expanding the options for which a proportion of the Pillar 1 budget could be redirected and by making the measure applicable to all member states. From an environmental perspective, up to 3.5% of Pillar 1 payments can be used to support specific types of farming which are important for the protection or enhancement of the environment, or to improve marketing and/or the quality of agricultural products; up to 10% of Pillar 1 payments can be used to fund additional agri-environment measures. Although the majority of member states have chosen to make use of this measure which requires no national funding (unlike Pillar 2 measures), most propose to use it to introduce support for specific types of production either through supporting sectors deemed to be economically vulnerable, particularly the dairy sector, or providing aid for risk assurance. A small number, however (*e.g.* Italy, Portugal, Denmark, Spain and France), intend to use it to introduce new agri-environment type measures or to introduce payments to support specific types of production which are judged important for the environment, notably organic farming or extensive grazing (for example, Ireland, France, the Netherlands, Poland, Portugal and Finland) (Hart *et al.*, 2010). Reporting, monitoring and evaluation requirements associated with this measure are expected to provide evidence on the environmental outcomes.

Supply control measures

Set-aside

Mandatory set-aside was not initiated for environmental reasons in the European Union; it was introduced purely as a supply control measure. However, in practice it has had a significant environmental impact (Table 4.12).

Set-aside was initially introduced as a Five-Year Voluntary Set-Aside Scheme in 1988, under which producers could retire 15% or more of their land from arable rotation for a period of five years in return for an annual payment. Uptake was low and in 1992 an “obligatory” requirement was introduced that required most farmers to set aside a fixed proportion of the land under cereals, oilseeds and proteins as a prerequisite for obtaining direct payments. The level of the set-aside obligation changed from year-to-year depending on cereal markets and ranged from 0% to 17.5%. Obligatory set aside could either be rotated around the farm or be kept on the same area of land. Beyond this, farmers could enter up to 50% of the land on which payments were claimed into voluntary set-aside (Hodge *et al.*, 2006). Some land could be cropped if sold to industrial markets leading to significant area of oilseed rape being grown in some member states, such as Germany. Although the impact of set-aside on the environment has been mixed, studies have

Table 4.12. **Summary of the main environmental benefits of set-aside in the European Union**

Environment indicator	Set-aside attributes benefiting the environment (type, location and management)
Biodiversity	
Plants	Naturally regenerated rotational and non-rotational set-aside increased species diversity and wildlife benefit compared to arable crops. Species diversity of naturally regenerated, non-rotational set-aside increases over time, becoming typical of grassland. Botanical value of sown cover depends on seed mix, management and natural conditions. Strips buffer hedgerow plants and other habitats from spray fertiliser drift. Non-selective herbicide used for weed control kills all plant life and reduces environmental value of set-aside.
Birds	Naturally regenerated set-aside provides winter food for birds such as Skylark and Linnet. Densities are higher than on conventional crops. Naturally regenerated rotational set-aside provides important breeding habitat for a range of bird species. More species breed there than on arable land. Longer-term non-rotational set-aside is favoured by different species such as Little Bustard, which are characteristic of meadows. Field margin strips benefit some species such as Yellowhammer but are not used by species such as Skylark and Lapwing which prefer whole field set-aside. Food sources for birds can be enhanced by sowing wild bird seed mixes.
Mammals	Mammals benefit much more from non-rotational set-aside where the habitat is more representative of grassland. Voles and mice benefit from uncut, non-rotational set-aside and themselves provide food for predators higher up the food chain, <i>e.g.</i> birds of prey.
Invertebrates	Set-aside supports more invertebrate species than cropped land and invertebrate diversity and density increases with set-aside age. Spiders use set-aside as winter refuge habitat. Non-rotational set-aside appears to benefit large populations of butterflies which feed on pollen and nectar from plants growing on set-aside. Grass margins are significantly beneficial to overall butterfly abundance with margins with wildflowers supporting greater butterfly abundance and species richness.
Water	Set-aside reduces input levels of pesticides and fertilisers. Non-rotational, long term set-aside almost completely removed nitrate leaching on non-manured soils and is associated with a reduced level of P loss (15-10%), through reduced detachment, which increases as set-aside becomes long term (up to 50% reduction). Large areas of set-aside in sensitive water catchments appear to yield significant benefits. Permanent buffer strips alongside watercourses reduce nutrient run-off and prevent pesticide drift.
Soil	Set-aside can reduce soil erosion risk, but only where cover crops required and appropriate management rules in place. The greatest erosion benefits are provided by non-rotational grass cover located in areas of high erosion risk.
Climate change	Long term set-aside may contribute to reductions in greenhouse gas emissions, <i>e.g.</i> CO ₂ and N ₂ O. Set-aside strips and field margins are likely to help to improve the connectivity of habitats, thereby facilitating the movement of species which may be necessary as species adapt to climate change.

Source: IEEP (2008).

suggested it has led to significant environmental benefits, particularly in member states where large areas of land have been subject to set-aside obligations, for example Germany, England and Spain (IEEP, 2008). The main benefits have included the introduction of wildlife habitat in the farmed landscape, increasing heterogeneity, and providing habitat and feed sources for farmland birds (Colston and Perring, 1995; Bracken and Bolger, 2006; Sotherton, 1998; Henderson and Evans, 1999; Henderson *et al.*, 2000a,b; Firbank *et al.*, 2003; Vaughan *et al.*, 2003; Hodge *et al.*, 2006; Curry, 2008), the reduction of diffuse pollution as a result of reduced inputs such as pesticides and fertilisers and actively buffering watercourses from nutrient leaching (Cumulus Consultants, 2007), the prevention of soil erosion and improving soil structure and fertility (Boellstorff and Benito, 2005; Cumulus Consultants, 2007; Oreade Breche, 2002), and contributing to climate change mitigation and adaptation. The nature of the environmental impacts associated with set-aside depend on a variety of factors, including whether set-aside is rotational; whether the land remains bare or vegetation is allowed to naturally regenerate or is sown during the fallow period; where it is located within the farm and whether it is applied as whole fields or as part-fields (in blocks or strips); and the way in which set-aside is managed, for example if herbicides are used to control weeds or vegetation is cut (IEEP, 2008).

Following the 2003 CAP reforms, the justification for set-aside as a production control measure was effectively removed and the measure abolished during the 2009 CAP Health Check. This resulted in a significant loss of environmental benefits, particularly within predominantly arable regions, as a result of a large area of land being taken out of fallow and brought into cereal production. This has led a number of environmental organisations and governments to look at alternative policy measures that might be introduced to compensate for this loss or retain some of the benefits.

Quota

Milk production has been subject to quotas in the European Union since 1984 and there has been extensive intervention in the sugar market, amounting effectively to a system of quotas. Neither of these regimes was inspired for environmental reasons, although undoubtedly there have been environmental consequences. In the dairy sector the most important of these has been the way in which quotas have constrained the farmer and the regional level concentration of milk production similarly to the United States for example. Production has been relocated to a certain extent within member states, although this has been regulated in many countries such as France, with the intention of retaining milk production in some of the less competitive regions, including the mountains. Greater concentration would have created more environmental pressure at a local level, particularly on water quality and it may have accelerated the decline in outdoor grazing already apparent in much of Europe. At the same time, it might have permitted more investment in manure and nutrient management on larger and more profitable farms.

In most of Europe, dairy production is now intensive, whatever the scale, and more traditional forms of grazing associated with High Nature Value are now rare. It is unclear what the environmental impact of the removal of quota by 2015 will be. It will almost certainly lead to a substantial redistribution of production patterns within Europe, with increased concentration of production in the most productive regions and continued decline in grass based systems (Alliance Environnement, 2009).

The development of environmental conditionality within the CAP

The debate on placing environmental conditions on the receipt of agricultural support payments, otherwise known as "cross compliance" started in the 1990s, the main aim being to improve adherence to environmental standards at farm level. The CAP reforms in 1992 and 2000 provided member states with the ability to make the receipt of certain CAP payments conditional on meeting specified environmental standards if they wished. For example, under the 1992 MacSharry reforms, member states were permitted to withhold headage payments for beef cattle and sheep if the recipient failed to comply with "appropriate environmental measures," as defined by the member state (Council Regulation 125/93). This option was little used by national governments (Table 4.13).

As part of an effort to encourage more extensive beef and veal production, the Agenda 2000 reforms introduced a maximum stocking density limit on all premia. Farms that met an average density of 1.4 Livestock Units per hectare or less could also qualify for an additional extensification premium (Baldock and Lowe, 2000). In addition, Agenda 2000 introduced requirements for all member states to apply "appropriate" environmental measures to the receipt of all direct payments under the European Agricultural Guidance and Guarantee Fund (in accordance with Council Regulation 1259/99) in order to ensure a certain degree of environmental protection, extending the scope of conditionality beyond the arable, beef and sheep sectors for the first time. Member states were provided with some discretion in determining what sort of requirements to introduce "in view of the situation of the agricultural land used or the production concerned" (Article 3 of Council

Table 4.13. The development of environmental conditionality within the CAP

Date	Type of Support	Sectors	Conditionality
1992 MacSharry CAP Reform Implemented from 1994	Livestock headage payments; Set-aside.	Beef cattle and sheep	<i>"Appropriate Environmental Measures"</i> Member states given the option to attach "environmental measures" to receipt of payments. <i>Maximum Stocking Densities</i> Recipients of beef payments required to comply with maximum stocking densities.
		Arable crops	Member states to apply appropriate measures to ensure set-aside is managed with a view to protecting the environment.
1999 Agenda 2000 CAP Reform Implemented from 2000	Payments based mainly on crop area or livestock numbers	All those in receipt of direct payments.	<i>"Environmental Protection Requirements"</i> Member states to introduce appropriate environmental measures, which could include: – General mandatory environmental requirements. – Specific environmental requirements constituting a condition for direct payments. Member states were permitted to introduce penalties (reduction or withdrawal of payments) for not complying with environmental requirements.
		Farmers benefiting from the Less Favoured Area (LFA) Compensatory Allowance or an agri-environment payment.	<i>"Usual Good Farming Practice"</i> Farmers benefiting from either payment were obliged to "apply usual good farming practice compatible with the need to safeguard the environment and maintain the countryside, in particular by sustainable farming".
2003 2003 reform Implemented from 2005	Single Payments	All those in receipt of direct payments under the Single Payment Scheme and Single Area Payment Scheme	<i>"Cross Compliance"</i> Farmers receiving direct payments required to respect: – Statutory Management Requirements (SMRs). – Standards for Good Agricultural and Environmental Condition (GAEC). Direct payment is reduced or withdrawn if the farmer is found to be non-compliant with SMRs or GAEC.

Source: Hart et al., (2011).

Regulation 1259/99). Also for the first time, all farmers in receipt of payments under the Less Favoured Areas (LFA) and agri-environment measures under Pillar 2 of the CAP were required to meet a set of "usual good farming practice" standards. With respect to land entered into the set-aside scheme (see above), member states were required to apply "appropriate measures ... to ensure the protection of the environment" (Commission Regulation 2293/92) and to reduce or withdraw benefits received through the scheme for those found not to be compliant.

Cross compliance requirements were made compulsory for member states to apply as part of the 2003 reform of the CAP. The rationale for the introduction of cross compliance as a compulsory measure was not only to improve compliance with basic standards enshrined in EU legislation. It also included the desire to promote more sustainable agriculture, as well as to act as a flanking measure to address unwanted side-effects of the introduction of single payments, most notably the cessation of the active management of farmland and the risk of land abandonment, by trying to ensure that agricultural land was maintained in good agricultural and environmental conditions (GAEC). Member states were provided with the authority to reduce or withhold direct payments made under the CAP if the farmer failed to comply with any of these requirements.

The early attempts to attach environmental conditions to direct payments have been shown to have had a limited impact on the environmental performance of agriculture, partly because they relied on the active willingness of member states to utilise the options available to them.

For example, despite the attempt to establish a higher environmental baseline through the use of "Usual Good Practice" standards as part of the Agenda 2000 reform, these were introduced without a systematic European framework. As a result, member states chose a diverse range of standards, variously covering nutrient management, pesticide use, irrigation, soil management, animal husbandry and biodiversity and landscape, mainly items of national or EU legislation with which farmers already needed to comply (IEEP, 2006a). The introduction of this requirement increased the pressure on a proportion of farmers to comply with baseline environmental standards and raised their awareness of environmental legislation (Hart *et al.*, 2010).

The application of cross compliance since 2005 has undoubtedly expanded the area of land subject to basic environmental management requirements and been more concrete and specific than the reliance on "Usual Good Practice." Awareness of environmental requirements has increased and some member states have extended the baseline of environmental standards considerably, utilising their flexibility to determine "Good Agricultural and Environmental Conditions" to some degree according to national or regional priorities. England and France are amongst the examples. This has not made cross compliance popular. On the one hand farming organisations have expressed dissatisfaction with the burdens that they feel that it has introduced (Alliance Environment, 2007a). On the other hand environmental organisations have argued that the potential of the cross compliance mechanism to deliver environmental benefits has not been maximised, with a number of reports setting out its shortcomings in this respect (for example BirdLife International, 2009). In particular, issues have been raised in relation to levels of compliance and enforcement and the lack of monitoring and evaluation (ECA, 2008). In a more general context than that of the European Union, OECD (2010c) identifies a series of potential advantages and disadvantages of cross compliance. For example, some

issues related to environmental performance include "the extent to which cross compliance approaches influence ... the certainty of environmental outcomes if cross compliance measures are more general and less targeted to the situation on each farm; ... the environmental performance if there are homogeneous requirements across all farmers, yet individual farmers have different compliance costs."

Simulation results reported by Brady (2011) imply that the introduction of the SPS with cross compliance conditions had small impacts in relatively productive regions, since land use remains largely unchanged. In marginal agricultural regions, however, this would have a negative impact on biodiversity and landscape mosaic because of the homogenisation of land use that results from land being taken out of production. He concludes that compared to a flat rate payment, specific, targeted measures would be more effective than cross compliance to improve the environmental performance of agriculture given the immense heterogeneity of agri-environmental conditions in the enlarged EU. In the Scenar 2020 scenario that explores the impact of removing Pillar 1 payments and associated GAEC, it is found that structural land abandonment would occur and be accompanied with environmental decline. Moreover, Pillar 2 measures aiming to enhance the environment would not find addressees to provide the ecological services associated with extensive farming practices on that type of land.³²

Incentives for environmental management

Measures that allow for the provision of incentive payments to farmers to encourage management practices that benefit the environment have been possible under the CAP since 1985 when member states were first given the ability to introduce agri-environment schemes, albeit initially only using national budgets. Since then the range of incentive measures available and the size of the budget available to them has increased significantly (particularly since the introduction of compulsory modulation in 2005), with concomitant effects on the environmental performance of agriculture.

The **agri-environment measure**, now sitting within Pillar 2 of the CAP alongside other land management measures in Axis 2, is the oldest and the single most significant measure for pursuing environmental objectives across the farmed landscape, both in terms of the spatial coverage of schemes and the resources allocated to them. Starting from small beginnings in a few countries where environmental issues were particularly sensitive, it has become a cornerstone of rural development policy applied throughout the European Union and supporting the management of landscape, biodiversity, natural resources, the soil and genetic diversity.

First introduced in 1985 as a voluntary measure under pressure from the United Kingdom and the Netherlands, the agri-environment measure has gradually assumed greater prominence within the CAP. Since the 1992 MacSharry reforms, it has been compulsory for all member states to apply, and is the only compulsory measure within rural development policy. The rules at the EU level are relatively few although they do include the requirement that payments to farmers are based on the principles of compensating for income foregone and costs incurred and, in recent years, an element of transaction costs. Detailed schemes are established at national or regional level, with co-funding from the CAP budget for those approved through an EU process. With a high level of subsidiarity the agri-environment measure is a means of addressing both the Community's environmental priorities and the diversity of environmental situations, natural conditions, agricultural structures and types of farming. Over time, the budget

available for funding the agri-environment measure has grown, and is now the major source of environmental funding in many member states, with total planned public expenditure for the 2007–13 programming period amounting to EUR 34 billion (including national co-financing), 23% of the total Pillar 2 budget. Over the 2007–13 programming period, it is estimated that nearly three million farms will enter into agri-environment agreements, bringing approximately 39 million hectares (22% of total utilised agricultural area) under some form of environmental management (Cooper *et al.*, 2010).

The design, targeting and delivery of schemes and the calculation of payment rates is made by member states, reflecting their differing needs and environmental priorities and indeed their varying institutional capacity to apply to the measure. This freedom of choice is important, because achieving the intended environmental objectives depends on matching the incentives offered to a wide range of local factors, which can vary enormously even within one region (OECD, 1993; OECD, 2010g). As a result there is considerable diversity amongst the range of agri-environment schemes currently operating in the EU27. This is appropriate, but the downside is that it can permit the design and implementation of schemes that have limited environmental benefits in practice. Comprehensive scrutiny at the EU level is not practical. The variations between the schemes tend to centre around a number of key parameters, including:

- The resources devoted to agri-environment schemes within rural development programmes.
- The aims and objectives of the scheme in relation to its environmental priorities and the nature of the management required (for example, maintenance of existing habitats or landscape features, enhancement, or restoration and creation).
- Geographic coverage of the scheme, for example whether it is available to all farmers across the country/region or targeted to particular areas, habitats or farm types.
- Definition of the regulatory baseline, where there are differences between member states in relation to national legislation and GAEC standards.

Schemes developed under the agri-environment measure tend to fall into two main groups: those that are focused on maintaining low input, extensive farming systems, particularly grassland systems, often covering whole farms; and more targeted schemes that focus on the often more complex management requirements needed for the ongoing maintenance or restoration of particular habitats, species or geographical areas. In many member states, these two approaches are used in combination, with schemes becoming increasingly “multi-tier” in nature, including both “broad and shallow” and more targeted elements (for example, schemes in Germany, France, Italy, Sweden, Czech Republic and the United Kingdom).

Over time the environmental priorities addressed by agri-environment schemes have expanded and the articulation of priorities at the European Union level has strengthened. Maintaining and enhancing the character of cultural landscapes and protecting farmland biodiversity have been core priorities of the majority of agri-environment schemes operating in the European Union from the 1980s, as well as some of the more recent schemes, which have also been specifically designed to target biodiversity, for example to protect High Nature Value farmland in Romania and Bulgaria, or to improve the conservation status of rare species (for example the conservation of farmland birds in Poland and the Czech Republic). The majority of member states also use the agri-environment measure to encourage organic farming practices. Other priorities, such as

improving water quality and soil functionality as well as the maintenance of sustainable water resources, have gradually become more widespread within schemes. For some member states, improving water quality or soil functionality is the key priority for their agri-environment scheme (for example, Finland, Greece, Hungary, Czech Republic), whereas in others, the sustainable management of natural resources has been added to the existing landscape and biodiversity objectives (for example Austria, Sweden, France, Ireland and England) (OECD, 2008c; RDPs 2007–13).

Although many management practices that are already incentivised through cross compliance conditions and agri-environment schemes do help achieve climate objectives (for example reduced fertiliser inputs, raising water levels on peat soils), they have not necessarily been developed with this aim in mind (Cooper *et al.*, 2010). However, the inclusion of climate change as a "new challenge" to be met through RDPs as part of the CAP Health Check agreement in December 2008 means that this priority is likely to gain increased prominence in the future.

There is a system of monitoring and evaluation in place which has been strengthened over time. Nonetheless, the extent of environmental benefits delivered in practice, particularly in the challenging realm of biodiversity, is the subject of much debate (see, for example Bocaccio *et al.*, 2009; Kleijn and Sutherland, 2007). Much of the uncertainty is due to the difficulties inherent in quantifying the environmental benefits achieved (ECA, 2005; Kleijn *et al.*, 2006; CSL and CCRI, 2008). In general, however, evaluations of the agri-environment measure have shown that its implementation has achieved benefits for biodiversity, or at least reduced the rate of biodiversity loss, largely due to the focus of many schemes on the maintenance of existing low intensity systems, extensifying production and on reducing agrochemical inputs (EPEC, 2004; Oréade-Brèche, 2005; Kleijn *et al.*, 2006; CSL and CCRI, 2008). Recent evaluations (Oréade-Brèche, 2005; Natural England, 2009) have also showed that the measure has had a generally beneficial impact upon maintaining landscape patterns, particularly through the maintenance, restoration and recreation of landscape features, the maintenance of habitat mosaics, the reversion of arable land to grassland, the maintenance of extensive grassland, and the prevention of land abandonment in some cases. In contrast there is less information on the impact of agri-environment schemes on soil and water quality within the evaluation literature, with insufficient data being the main limiting factor (EPEC, 2004). Where benefits have been identified, these are largely delivered through actions requiring reductions in inputs, the use of cover crops on arable land, appropriate arable rotations, arable reversion to grassland, organic agriculture and the introduction of buffer strips of varying widths alongside water courses (Primdahl *et al.*, 2003; EPEC, 2004; Agra CEAS, 2005; JRC, 2009; Oréade-Brèche, 2005).

The unsuitability of indicators for measuring scheme success has been a key criticism of the European Court of Auditors in relation to agri-environment schemes (ECA, 2005), although the recent development of new indicators to facilitate greater integration of environmental concerns within agriculture (ECE, 2010), together with the introduction of the Common Monitoring and Evaluation Framework (CMEF) as part of rural development policy will go some way to address this as baseline indicator data, as well as data relating specifically to measure and programme impacts, are collected over time. This is one important strand of a process of developing agri-environment policy into a tool that combines sufficient flexibility and effectiveness while maintaining an acceptable degree of transparency.

Summary of impacts

Looking back over the past 25 years demonstrates that while considerable environmental challenges remain, progress has been made in improving the environmental performance of agriculture, albeit incrementally. Removing the link between support and current production parameters has a positive impact on extensification, but may also increase geographical concentration with potential threats for the environment in the absence of other measures. Over time cross compliance has developed as a policy tool that is relied upon to an increasing extent to deliver a minimum level of environmental management across the farmed countryside, with tensions arising between all farmers being legally required to undertake some form of basic environmental management and the pressures of the simplification agenda, calling for a reduction in the regulatory burdens placed on farmers. Over time the application of the agri-environment measure has broadened significantly both in terms of geographic scope, its environmental objectives, and funding available. As agri-environment schemes mature they will need to evolve, building on their achievements and improving their design, targeting and implementation so that they can deliver the scale of environmental improvements that are needed across the farmed landscape. In all cases, it is important to monitor the environmental impacts of all policy changes and learn from experience.

Impact of recent reforms on some aspects of rural development

The impact of the SPS and strengthening of Pillar 2 measures on the rural economy depends on the pre-reform situation of agriculture in the region and its links with upstream and downstream industries and other sectors. OECD (2009a) contains an overview of the role of agriculture and related activities in the rural economy of OECD countries, which highlights regional diversity. The number of farms and agricultural employment decreases, while agricultural GDP increases, with wide variations by country. At the same time, the share of agriculture in regional GDP and employment is small and decreasing in most regions, but there are still regions where a significant proportion of the rural population is dependent on agriculture. Moreover, agriculture is a main land user in most regions.

This section discusses the impact of CAP reforms on some aspects of rural development such as the regional location of agricultural and agro-food industries, regional employment and income diversification by farm households. Regional location of agriculture is related to changes in land use and consequences for the landscape and the environment, which are discussed more in depth in previous sections.

Regional location of industries

The location of industries is influenced by relative regional competitiveness (production costs, margins), and distance between production and consumption areas (transport costs). Commodity-linked support affects competitive advantage between sectors, while production quotas limit adjustments. To the extent commodity sub-sectors use a different input mix, input subsidies also affect competitive advantage between sectors. Finally, regional support (*e.g.* LFA) maintains production in those areas.

CAP reforms have changed the differences in protection and support between commodity by reducing administered prices in some sub-sectors and de-linking support from specific commodity production. The phasing out of milk quotas will also affect

regional location of milk production. Daniel *et al.* (2008) compare the concentration of production in 30 areas of the EU15 for the period 1983 to 2004. They find that production concentration is strongly linked to land availability. Commodities that were most supported by the CAP, such as cereals, milk and beef, are the least concentrated. They also require more land than intensive livestock production or horticulture, which are less supported and much more concentrated. Over this period, cereals, beef and milk production did not become more concentrated, largely because payment or production entitlements slowed this process. Pig, poultry and horticulture production became more concentrated, while the concentration of fruit production decreased. This corresponds to a movement from traditional production areas in the south of Europe towards northern Europe (Belgium and the Netherlands).

The study also shows that movements in production location were slow in the later years following the 1992 reform. This suggests that the move from price support to payments based on current area planted and animal numbers did not lead to an increased role of market signals in guiding production location. This is because support remains linked to production factors, and thus the geographical location of farms. The CAP also maintains supported commodities in higher costs regions, which tend to specialise in the production of those commodities and become increasingly dependent on support. Capitalisation of support for land prices also contributes to the decrease in the competitiveness of regions already disadvantaged by higher transport costs.

The phasing out of milk quotas with the implementation of the Health Check is expected to concentrate production in competitive regions with lower production costs. In turn, higher concentration would lead to lower milk collection costs as production density per km² increases and perhaps farm size. The inverse is expected to occur in disadvantaged regions, all other things being equal.

Using a new economy geography model, Daniel and Kilkenny (2009) compare the impact of the single payment with no requirement to produce to that of former payments based on current area planted and animal numbers on the location of farming, agro-industry and non-farm activity between rural and urban areas. According to model results, both types of payments can decrease spatial agglomeration and encourage more farms to locate in lower population density regions. Decoupling support from current production leads to more variety farming in both rural and urban areas, but less commodity farming in rural areas. This is accompanied by a decline in the rural commodity agro-industry, which leads to a decrease in the rural population.

Analysing the regional dynamic and spatial distribution of agricultural production in France from 1990 to 2006, Ben Arfa *et al.* (2011) also find that production of commodities supported by the CAP is less concentrated and that concentration for most commodities increased slightly between 1990 and 2006 (Table 4.14). However, they observe that production is clustered in neighbouring regions. This is the case for dairy farms, which benefit from sharing industry-specific infrastructure and services. Focusing on determinants of production location in the dairy sector, Ben Arfa *et al.* (2011) find that structural change took place between 1995 and 2005. This can in part be attributed to the 2003 CAP reform, which encouraged farmers to adapt their production to market demands. For example, milk prices were not a significant factor in 1995 but became an important determinant of location of dairy farms in 2005.

Table 4.14. **Commodity production concentration in French regions, 2000, 2006**

Sectors	GINI 1990	GINI 2006	Evolution ¹	CAP ²
Cereals	0.42	0.40	0.02	Supported
Beef cattle	0.50	0.51	0.05	Supported
Dairy	0.57	0.58	0.05	Supported
Horticulture/ market gardening	0.55	0.57	0.22	Not supported
Poultry	0.70	0.71	0.00	Not supported
Fruit	0.72	0.75	0.14	Not supported
Pig	0.73	0.75	0.18	Not supported
Wine quality	0.86	0.86	-0.05	Not supported
Other wine	0.90	0.92	0.10	Not supported
Other	0.45	0.51	0.33	
Agriculture (all sectors)	0.35	0.36	0.11	

1. The evolution is calculated through a regression line, and we use the sign of the slope angle of this regression line which is ranging between [-1,1].

2. The label "supported" means that producers of that commodity benefited from price support or area and headage payments before 2005; other commodities are labelled as unsupported because they did not benefit from the same measures.

Source: Table 16.2 in Ben Arfa et al. (2011).

StatLink  <http://dx.doi.org/10.1787/888932476437>

Higher modulation from the Health Check is expected to change the regional distribution of production through its impact on income. For example, funds would move from the North-West to the South of Europe. Beef producing regions would lose because premiums remain in place but are reduced by modulation (Nowicki et al., 2011).

Employment

There is little evidence on the impact of CAP reforms beyond the agricultural sector. Mattas et al. (2010) identify and measure the effects of CAP reform on regional employment in five regions of Germany, Greece, Italy, Sweden and the United Kingdom, which are relatively rural but present a diversity of geographic and economic characteristics.

Positive Mathematical Programming (PMP) is applied to FADN data to simulate the impact of the introduction of single payments on land use, gross margin and employment. Replacing area and headage payments by single payments is expected to reduce land allocated to cereals and oilseeds in favour of fodder crops. However, cereal production will continue, mainly on highly efficient farms. Milk and sheep production will remain the same, while beef production will drop. These changes in enterprise mix are expected to lead to a decrease in on-farm and off-farm employment in all regions and for all farm types (Table 4.15).

PMP results are then fed into regional input-output models to obtain total output, employment and household income impacts in the regions. The introduction of single payments is found to cause only minor changes, in particular losses, in regional economies. This can be explained by low share of agriculture in employment and low employment multipliers of agriculture in most regions.

The extent to which the reinforcement of Pillar 2 measures through modulation could stimulate regional employment, and in particular mitigate the negative impact of higher decoupling on farm employment is difficult to investigate, as it depends on countries' choice of actions and their ability to focus sectors and areas with the highest multipliers.³³

Table 4.15. **CAP impacts on farm and off-farm employment according to farm types**

Variation in percentage						
Farm type	Type of Labour	Emilia Romagna	Anatoliki Makedonia and Thraki	East Wales	Kassel	Östergötland
Field crops	Family	-0.1	0.0		-5.2	-0.3
	Extra-family	-3.8	-1.4		-26.4	-21.9
Horticulture	Family	-0.9				
	Extra-family	-3.9				
Animal production	Family	-6.2	-13.1	0.0	-0.4	0.0
	Extra-family	-48.4	-67.9	-35.1	12.2	-19.6
Granivores	Family	-0.2				
	Extra-family	-0.6				
Mixed cropping	Family	-1.2			-0.4	0.0
	Extra-family	-8.0			-9.0	-24.4
Mixed livestock	Family	-1.7			-0.3	
	Extra-family	-32.6			-34.6	
Mixed crop-Mixed livestock	Family	-1.2	-0.1	0.0	-2.7	0.0
	Extra-family	-26.7	-50.2	-22.8	-14.4	-22.3

Source: Mattas et al. (2011).

Diversification

Farm households increasingly diversify their sources of income to engage in diversification activities on and off the farm, but the share of farms whose holder is engaged in on-farm diversification activities is still limited in many EU member states (OECD, 2009a). The extent to which reforms, in particular the introduction of single payments with no requirement to produce any commodity, affect farm household diversification outside agriculture is uncertain.

Reviewing obstacles and incentives to diversification, OECD (2009a) has identified the will to supplement and stabilise income as an incentive. It finds that the single payment represents a stable source of income and that recent reforms have had a positive impact on income, but that these two factors have reduced the need to diversify income sources for income reasons. At the same time, the removal of the requirement to produce in order to receive support is expected to free some labour for non agricultural production activities. Among the obstacles to diversification are lack of skills, as well as access to market opportunities and off-farm jobs. While on-farm diversification is encouraged in many EU member states (through Pillar 2 funds), some countries restrict access to agricultural funds or farmers' tax rebates to part-time farmers.

As seen above, as no production of any commodity is required to receive single payments; many non competitive farmers are likely to do business as usual rather than use the opportunity to develop new activities. Brady et al. (2011) note that interviewed farmers show little willingness to diversify, in particular in new member states. They conclude that: "Strategy of diversification and development of multiple income sources still creates difficulties for a substantial proportion of European farmers. This is due to a mixture of beliefs that farmers should focus on the production of food and fibre, and a lack of appropriate skills and off-farm opportunities. More than 40% of the respondents do not think they can easily find a job off-farm or increase the number of hours devoted to off-farm work. This emphasises once again the limitations of rural development policies that are focused solely on the farming community. Farmers are unlikely to

create a significant number of new jobs through the pursuit of enterprise diversification, which is an infeasible option for many, and their own future prosperity depends on the availability of work in the non-farm rural economy. Pessimism surrounding the opportunities for diversification is not confined to the relatively poorer non member states. In fact, upland grassland farmers in England are the most pessimistic about their ability to adapt.”

There are many linkages between agriculture and the rural economy, but based on available information, this section has selected three important aspects that may be affected by agricultural policy reform. It should, however, be kept in mind that agricultural policy is only one of many general, regional and sectoral policies that have an impact on rural viability and that it is certainly not the most important, either in terms of government expenditures or in terms of impact.

Notes

1. The PEM study was carried out by the OECD Secretariat. See OECD (2010d) for a description of the model and derived indicators.
2. The CAPRI analysis was carried out by consultants. The CAPRI modelling system is described at www.capri-model.org/index.htm.
3. These index numbers are generated by converting the existing set of policies to a single policy (MPS). The amount of MPS that replicates a particular impact of the policy set may be used as an indicator of the relative impact of the policy set on that specific effect (level of production, welfare, etc.) in that year relative to a base period (here 1986). For more on how these indices are calculated, see OECD (2010d).
4. Whether benefits accruing to landowners represent an unwelcome leakage or a valid target of policy is difficult to say. It depends on the share of landowners who farm, which is only imperfectly measured by the share of land that is rented. It also depends on the nature of these landowners – are they rural with some connection to agriculture, or are they urban residents with little such connection? The income impact index is derived assuming that landowners are a legitimate policy target. This distribution of welfare between farmers and landowners is considered in more depth in the section on income and welfare impacts.
5. Commodities represented in the PEM are wheat, barley and maize aggregated as coarse grains, rapeseed, sunflower and soybeans aggregated as oilseeds, rice, milk, and beef. All reported results refer to support for these commodities only or for non-commodity-specific policies that apply to them.
6. The impact of the CAP on trade is estimated using a simulation that removes all forms of support and observing the change in net exports. The negative of that result is reported in the figure.
7. This is true for all reported simulation results.
8. This section, which contains results of a scenario analysis carried out with the CAPRI model, is based on a report prepared for the OECD by Wolfgang Britz, Alexander Gocht and Ignacio Pérez Domínguez.
9. For a summary of implementation options in EU member states, see http://ec.europa.eu/agriculture/markets/sfp/process_en.htm.
10. For information on the Global Trade Analysis Project (GTAP), see <https://www.gtap.agecon.purdue.edu>.
11. A lower Shannon index indicates a higher degree of farm specialisation.
12. The EDIM is a spatial partial equilibrium model, which was built as part of a collaborative research project dealing with the economics of the European Dairy Industry. Five partners from Germany, France, Italy and the Netherlands are associated in this EC supported research program (April 2004 – September 2005). EDIM has a high level of detail with respect to modelling the different policy instruments, while it also considers a large number (14) of dairy products and preserves balance constraints between dairy products.
13. As indicated above in the CAPRI analysis, this estimated aggregate increase hides very contrasted developments by country and region. EU15 under-use of milk quotas was at –6% and EU12 at –13% in the 2009/2010 quota year (EC, 2010). According to recent EU market outlook, milk production is

projected to return to an increasing path from 2010 onwards, but a gradual increase in milk production costs limits incentives for a stronger expansion. Quota abolition is projected to have a limited impact on milk deliveries at the aggregate EU level and milk deliveries at the end of the projection period would remain considerably below the (expired) quota level (EC, 2010).

14. OECD (2003) explores this concept and provides estimates for various types of support.
15. The land market in AgriPoliS is modelled as a land rental market where the allocation of free land is organised via an auction. In Brittany grassland rental prices do not increase, because in France the SAFER regulates transactions and in the model, farmers are given more power in the negotiation of rental contracts than the land owners.
16. Non-activated eligible land for which the single payment is not claimed represents “naked land”. The total amount of naked land tends to be smaller with the hybrid model (or regional model) than with the historical model. The explanation lies in the characteristic that the total number of entitlements in the hybrid model is equal to all eligible land at the time of SPS implementation; by contrast, in the historical model entitlements are tied to the number of hectares that generated subsidies in the reference period. As a result, the hybrid model is expected to put stronger pressure on capitalisation of the single payment into land values.
17. http://ec.europa.eu/agriculture/publi/reports/scenar2020/index_en.htm.
18. The IDEMA project was supported by the European Community's Sixth Framework Programme www.agrifood.se/IDEMA. The objective was to quantify the impact of combining Agenda 2000 area and headage payments into a decoupled single payment on supply, demand, trade and prices for major commodities; localisation of production; land market and prices; farm income and structural adjustment of holdings; entries and exits from the agricultural sector; and land use and consequences for the environment.
19. ESIM results on producer prices are fed into AgriPoliS. See Banse *et al.* (2005) for a description of the European Simulation Model (ESIM).
20. Mattas *et al.* (2011) report a similar decline in farm employment.
21. This index was developed in the context of cross-country comparisons where distinctions between owned and rented land is unhelpful. It is possible to produce an index of this type under specific assumptions regarding the accounting of land ownership. The income decompositions that are carried out later in this section do essentially this.
22. Consider the limit case: if farmers owned all farmland, the lines “farmers only” and “farmers and landowners” in Figure 4.4 would be the same.
23. According to OECD membership in 2009. In 2010, two more EU member states, Estonia and Slovenia, joined the OECD.
24. This section is based on a report prepared for the OECD by Wolfgang Britz, Alexander Gocht and Ignacio Pérez Domínguez. Other parts of the CAPRI report are included in the market and environmental impacts sections of this report).
25. One should note that long term structural adjustment has increased the concentration of support.
26. Farms are classified in quartiles based on gross agricultural output (market receipts at domestic market prices).
27. Although the table shows only the correlation without lag, the lagged correlation analysis of monthly prices is also conducted for 1, 2 and 3 months. The coefficient of correlation decreases as more lags are added for most of the cases, but the magnitude of correlation is of a similar magnitude.
28. Most of this section is taken from a report prepared for the OECD by Kaley Hart and David Baldock of the Institute for European Environmental Policy, IEEP.
29. A description of how these indicators are calculated can be found in Pérez Domínguez (2006).
30. This flexibility was provided under Article 69 of Council Regulation 1782/2003.
31. “Specific support” can be provided under specific circumstances laid out under Article 68 of Council Regulation 74/2009.
32. Scenar 2020-II, “Update of Analysis of Prospects in the Scenar 2020 Study: Preparing for change”, ECNC, LEI, ZALF, December 2009. http://ec.europa.eu/agriculture/analysis/external/scenar2020ii/index_en.htm.

33. OECD (2009a) reviews evidence from the literature on regional multiplier effects of agriculture and agro-food industries in EU regions. It finds that the multipliers effects of agro-food processing industries on the regional economy are often higher than those of primary industries, and that the size of agricultural and agro-food multipliers vary by product sub-sector: it is higher in those using labour intensively. However, it is difficult to give a general estimate of the importance of economic multipliers for agriculture and related industries. For example, in a single study of several small regions of France, the Netherlands, Poland, Portugal and the United Kingdom, production multipliers of primary agriculture derived from a SAM vary between 1.05 and 2.94 depending on the region (Mayfield *et al.*, 2005). Production multipliers in Wales range from 1.06 for cereals to 2.67 for pigmeat (Midmore *et al.*, 2007). Studies show in general that multipliers are higher for intensive livestock production and meat and dairy processing industries, than for crop products. Finally, services, in particular residential and recreational functions, seem to have higher regional employment effects than other sectors, notably primary ones (Vollet, 2006).

Chapter 5

Overall Evaluation and Future Direction

This chapter evaluates the extent to which CAP reforms have followed the principles for policy reform established by agricultural Ministers in OECD countries. Several recommendations are made to improve the effectiveness and efficiency of policies to meet the objectives set for this sector in a changing environment.

Overview of 20 years of reforms

Successive reforms of the CAP have made this sector more market oriented, allowing producers to rely more on market signals and less on support to guide their production decisions. CAP reforms have been introduced gradually and have followed a steady path to reduce support levels and increase the share of less distorting support. The two milestones were the replacement of market price support by direct payments based on current area or animal numbers as of 1992 and the 2003 reform which de-linked most payments from current production factors (process of decoupling). The share of commodity specific support has substantially decreased, while the share of support which places no requirement to produce any commodity is gradually increasing and will continue to do so with the full implementation of recent reforms and the phasing in of payments in new member states.

The extent and pace of reforms has been different across commodity sectors: the oilseeds sector was the first followed by cereals, while the sugar and dairy sectors have undergone reforms more recently. In recent years, market price support, which is one of the most distortive forms of support, has been very low for many commodities in a context of relatively high world prices. Domestic intervention mechanisms have been reduced in coverage and extent, but still provide a market floor for some commodity sectors. Significant levels of protection remain, however, in some livestock sectors, maintained by trade measures. While use of export subsidies has been low in recent years — they represented 1% of Pillar 1 funds in 2010, the mechanism remains in place for most commodity sectors.

While distortions of production and trade decreased, income transfer efficiency increased. As a result, income transferred to farmers was maintained despite the reduction in support levels and the increase in the share of rented land. Higher transfer efficiency was achieved by the decrease in overall losses to the economy (deadweight losses) and less leakage to upstream and downstream sectors. Other significant changes in the distribution of welfare costs and benefits include lower consumer costs as market price support is reduced, although taxpayers bear a larger share of the costs due to the introduction of direct payments. Over the years, payments have become increasingly linked to a particular input, land, and thus benefits to landowners have increased. As the share of rented land increases, an increasing proportion of those benefits leaks outside the agricultural sector when more rented land is owned by non farmers. However, it should be noted that some rental arrangements are between farmers, such that the landlord and renter are both farmers. This is for example the case when the farm business is organised as a company renting land that belongs to the farming family.

The distribution of support within the sector remains unequal, as most support benefits larger farms with higher than average farm income levels (OECD, 2011b). However, support slightly improves the distribution of income by farm economic size. The strong correlation between support and economic size stems from the fact that most support remains untargeted to specific objectives. In particular, direct income payments under Pillar 1, which partly replaced former market price support, do not target any specific

income variable and remain linked to farm size. This leads to inefficiencies as a significant share of income support leaks to unintended beneficiaries, *i.e.* farmers who do not have necessarily low incomes. In fact, larger farms receive most support, while having income levels that are above the average of all farms.* While previous OECD work (OECD, 2003, 2007d) suggests that leakages from income support are high, a precise definition of what is an adequate income and information on income levels would be needed to estimate them. As market price support is more unequally distributed than broad-based direct payments, reforms that reduce the share of market price support improve the distribution of support. The introduction of single payments was not expected to further improve the distribution of Pillar 1 payments. The reason is that they are either implemented based on historical references with no change in individual distribution, or as a regional flat rate payment. In the latter case, there can be significant changes in the distribution of payment entitlements between farms, but in most cases the link to farm size remains. Evidence from FADN shows a slight improvement in the distribution of support by farm economic size after 2005. There are still significant differences in commodity specific support as reform affected commodity sectors to varying degrees and at different pace. This is reflected in differences in support by farm type, with some extensive livestock farm types being highly dependent on support.

Improving farm competitiveness has been an early objective of the CAP, reinforced by successive enlargements. But dependence on support jeopardizes competitiveness at world market conditions. There is a recognition that adjustments are needed to improve competitiveness and that some farms will not make it: measures are in place under Pillar 2 to facilitate farm exit and promote diversification into non-farm activities. Other Pillar 2 measures provide investment support to modernise farm holdings, adapt to new standards and set-up new businesses. The extent to which they compensate for failures in credit markets is not clear and they may slow adjustment in some cases. While market orientation improves competitiveness, as it concentrates production in the most efficient farms and regions, the link between single payments and land slows structural adjustment as it allows inefficient farmers to stay in business.

Over the past 25 years, there has been a growing emphasis on land-based public goods, illustrated by developments in Pillar 2 measures and the introduction of cross compliance. While incremental progress has been made in improving the environmental performance of agriculture, EU agriculture faces significant environmental challenges and there is still room for improvement in the environmental efficiency of the CAP. While cross compliance improves policy coherence, land covered by good management practices and farmers' awareness of environmental problems, it is difficult to monitor and the penalty is unrelated to the environmental problems and compliance costs. There is also a need to improve information needed to evaluate the impact of both Pillar 1 and Pillar 2 measures on the environment.

The share of primary agriculture in GDP and employment has significantly decreased over the last 25 years and is now low in many regions. However, the presence of a competitive and dynamic farming sector continues to play an important role in the

* In the EU15, the 25% largest farms had an average annual farm income of about EUR 73 000 per farm (EUR 28 000 per working unit, double the French minimum income) in 2007, which represented close to 3 times the average of all farms and 16 times the average of the 25% smallest farms (1.5 and 5.5 times respectively when considering farm income per working unit).

economy of many rural areas, in particular predominantly rural areas where the primary sector represents around 5% of value added and 16% of employment, and in the new member states. In addition, agriculture generates additional economic activities, with particularly strong linkages with food processing, tourism and trade. Agriculture also continues to be a major land user and through its impact on land management and the environment affects the attractiveness of rural areas. While improvements in the environmental performance of agriculture have had positive effect on rural areas, increased decoupling is expected to lead to a concentration of production in competitive regions, with potential negative impacts on the viability of non competitive regions, but the reinforcement of Pillar 2 allows specific measures to be targeted to those regions.

Future challenges

The CAP will have to continue to pursue a number of economic, environmental and societal objectives, and adapt to changing priorities. Growing demand and higher commodity prices will offer major opportunities to the EU agricultural sector, which will also face major challenges, including food security, sustainable use of resources, mitigation and adaptation to climate change, and market volatility. These issues were discussed by OECD ministers in February 2010 (OECD, 2010i). The need to respond to these challenges and opportunities should guide future reform. At the same time, the same pressures that have led to past reforms will continue to drive future reforms, and may become even stronger. This is in particular the case for budget constraints in the context of the world economic crisis, which led to large budget deficits in many member states. Progress towards transparency also exposes the CAP to broader scrutiny, raising public interest on how money is distributed and to what end. There are also pressures from farmers and member state governments on reducing the transaction costs of policy implementation. This reinforces the need to define clear and precise policy objectives and to monitor the effectiveness and efficiency of policies put in place in pursuit of these objectives.

Within the European Union, agricultural policies are increasingly being evaluated as part of reform processes, or as part of a regular policy implementation process. However, there is some scope for improving the pertinence of evaluation. . Besides technical problems to disentangle effects of various policies and other factors, evaluation is made difficult by the lack of clear objectives, in particular for Pillar 1 measures, and by the lack of statistical information, e.g. on price transmission, the level of income and wealth within the farming community, or on the state of the environment. Clarifying policy objectives, linking policy measures to those objectives and collecting relevant information to monitor policy effectiveness and efficiency is a prerequisite to improving the CAP further.

Following OECD Ministerial principals for policy reform, some suggestions for future reform are made below, which take into account challenges faced by the food supply chain.

Improving market orientation and minimising production and trade distortions

Future reform should build on past successes and continue to increase its market orientation as well as address remaining market deficiencies that constrain the competitiveness of the EU food and agricultural sector. The impact of budgetary payments on production and trade in the European Union is relatively minimal and further changes are expected to have marginal effects. Further progress in reducing the market impacts of support will require reducing the level of market price support, which is one of the most distorting forms of support and still makes up a significant share of the PSE. This can only be

achieved if domestic reform is accompanied by a reduction in trade barriers, including better market access, and the abolition of export subsidies. As reliance on domestic price signals increases, it is all the more important to ensure that domestic markets function and provide undistorted price signals. There would thus be a need to better monitor price transmission across borders and along the food chain and to improve it in case of identified problems. Similarly, the role of futures markets in providing price information and stabilisation is likely to increase, and it is important to ensure that they function in a transparent and reliable way, in particular with rules to enforce contracts. While increasing the market orientation of the CAP and improving the functioning of markets, attention should be paid to interactions with environmental and rural objectives and corresponding measures.

Structural change and competitiveness

There is a great need to improve policy coherence in this area within Pillar 2, between Pillar 1 and Pillar 2, and with other policies that have a great influence on the sector such as land or labour policies, and social policies. The first step to improve competitiveness would be to improve market functioning by removing possible impediments such as restrictions in production and payment rights, or obstacles to price transmission along the food chain. The latter is in the realm of competition policy. Investments in infrastructure would also contribute to a better functioning of markets and trade. Improving market information systems would be one way to help the agricultural sector capture more of the value in the food production and marketing chain. Ensuring a stable investment and business environment would also be important, with clear prospects about the future of the CAP. Finally, the role of public and private research and extension in improving productivity and competitiveness is well established; the CAP could contribute to supporting agricultural knowledge systems (research, extension, education, advisory services, market information systems, and information technologies) in co-ordination with other EU and national research systems.

Risk management

The reduction of market interventions may increase the need to develop instruments that empower farmers to deal with business risks. Policies should not focus on the management of “normal” risk that should be under the responsibility of the farmer. Providing information systems and training would help farm households manage certain risks and increase the demand for market solutions. In case of failure of markets, support for risk management tools such as insurance systems, futures and contracts, would preferably be of a temporary measure in order to encourage the development of private solutions rather than slow it, and should focus on solving the information gaps, as permanent support would crowd out the development of any market solution. Catastrophic risks demand clear *ex ante* definitions and protocols that limit the scope of *ex post* assistance. This can be the case with insurance systems in which the subsidy would only apply to non-marketable risks and which would be able to discipline total disaster assistance. At the EU level, risk exposure and legislation differ so much among countries and regions, that the European Union should follow the subsidiarity principle and confine its role to defining general rules for intervention. The structural social and poverty consequences of the most dramatic events would better remain the responsibility of national social systems.

Income and equity

While reforms have improved the efficiency with which support is transferred to farmers, two major problems related to income objectives remain. First, given the link between payments and land, a part of the support is capitalised either in the value of payment entitlements or in the value of land, depending on relative availability. Monitoring developments in land and entitlement markets is crucial to understand the impact of the current set of policies. In the short term, making production factors, including payment entitlements, more widely tradable would reduce the degree to which support is capitalised in these assets. There are large differences among member states regarding the trading of entitlements. While the EU regulations allow entitlements to be tradable, certain constraints are imposed and, within EU regulations, some member states have introduced specific restrictions (Ciaian *et al.*, 2010). Reducing payment entitlements over time would also help. Second, there are equity and efficiency issues regarding the distribution of support. The distribution of support remains unequal, with the 25% larger farms with income levels per farm above the average of all farms receiving close to three-quarters of support, in particular income support. As direct income payments take a large part of support, this suggests that much money is wasted to “unintended” beneficiaries, those who receive support that is not needed to achieve policy objectives. In terms of income support, more could be achieved with less if only those who needed support were targeted. Modifying the distribution of payments by imposing ceilings on individual farms or excluding hobby farms would not address the problem, which is that income support is not delivered with reference to any income target defined within policy objectives. Payment ceilings would also be likely to affect farm restructuring strategies, and might encourage the break-up of larger farms.

Income objectives are defined in vague terms, with reference to “ensuring a fair standard of living for the agricultural community,” but there is no definition of what is a fair standard of living. Moreover, statistical information on the income and wealth situation from non agricultural sources of the farm community is not available at EU-wide level. A much better understanding of the incidence and cause of low incomes in agriculture is a pre-requisite for effective policy formulation, *i.e.* to be able to propose options that are appropriate to the specific situations. As awareness about the use of public money increases, it is important to clarify what the income objectives of the CAP are, in particular what type and level of income is targeted.

Environment

The environment is another area where policy coherence between agricultural, agri-environmental and other EU environmental policies is essential to success. There is not only a need to monitor and evaluate the impact of Pillar 2 measures, but also current and future Pillar 1 measures on the environment, in particular in the event of targeting of payments or removal of the link with land management. As the regional scope and objectives of agri-environmental policies broaden, scrutiny on their performance will increase. While measurable minimum standards of environmental quality have been established through regulations, clearer definitions of environmental targets for additional environmental services provided by farmers as well as by other land-based providers such as foresters are needed. The polluter pays principle should be implemented more widely in agriculture, including drawing on technologies to identify polluters. The responsibility to enforce the polluter pays principle should lay at local level to account for the spatial

diversity of environmental quality. At the same time, the European Union should ensure that local or regional institutions have the right incentives to enforce standards. Guidance should be provided to producers regarding which additional environmental services are demanded beyond the minimum level of good agricultural and environmental practice required by farmers at their own expense (reference level). Where environmental outcomes cannot be easily targeted directly, proven best farm management practices could be an alternative. Incentives to farmers, groups of farmers, or conservation trusts to supply environmental services should be delivered through bidding systems (auctions) rather than by flat-rate compensation for increased costs or loss of revenue. Other opportunities to reveal the supply and demand for additional environmental services would be useful. There is still a need for more research and extension to identify and get farmers to adopt evidence-based sustainable farming practices, including options for reduced greenhouse gas emissions and increased carbon sequestration.

Rural development

The diversity of rural areas in the enlarged European Union requires approaches that are targeted to specific local conditions. Hence, rural development objectives need precise definitions and clearly stated priorities at the regional and local levels. A regional approach, taking into account all horizontal and sectoral policies affecting rural areas, would be preferable to a sectoral one as many policies have a simultaneous bearing on rural development. Most EU actions on regional development are through cohesion policies, which mainly finance large projects, while Axis 3 and 4 of the RDR fund more local projects with a regional approach. Consistency between all EU and national policy actions should be improved. While agricultural policies usually play a significant role in land management and rural dynamism, their potential impact on overall employment and GDP is more limited. Policies that contribute to a better integration of farm households in the local economy and to providing land-based environmental benefits will have a positive impact. For both equity and efficiency reasons, incentives and support for rural development activities should be offered to all rural agents on an equal base. This requires, where possible, targeting the outcome rather than the means in order to provide local amenities at lowest cost. While any impediments to farm household diversification into rural activities that may exist in national legislation should be removed, regulations and policies should ensure they have the same conditions as other rural agents. Finally, coherence between agricultural policy and policies with an impact on the development of rural areas should be improved.

Looking ahead

The current debate on the CAP post-2013 represents a unique opportunity for the European Union to build upon the considerable success of past policy reforms and to align future policy instruments with its future objectives. This is particularly important with the prospect of strong demand growth and higher real prices for many agriculture commodities over the coming decade, alongside important challenges today – from global food security and price volatility to land and water scarcities and climate change.

While much progress has already been made, additional action would help to improve the functioning of markets across the European Union and at its borders (see above). Increased investment in innovation is also warranted; agricultural research and development, technology transfer, education and extension services offer demonstrably

high returns and could do much to improve productivity growth and sustainable resource use. A range of policy instruments could target both the positive and negative impacts of farming: direct payments, market creation, taxes, regulations, training and advisory services and information are appropriate in different circumstances. At the same time, an effective policy framework for producer risk management could be introduced, giving due consideration to the full range of policies that affect farm risk and to the distinction between risks that a farmer can efficiently manage and those that require public support. Finally, a competitive and well-functioning food supply chain would be important for the future of the farming sector. This would include improving price determination and transmission mechanisms, competition, contractual relations, and transparency along the food chain.

Whatever policy directions are decided over the coming period for a future CAP, it is important to maintain and improve the EU-wide information system to enable evidence-based analysis, and to thereby inform future policy decisions.

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ANNEX A

The Integration of Environmental Concerns in European agricultural policy: A Short History

Until the mid-20th century, there was perceived to be relatively little conflict between agricultural and environmental objectives in Europe other than the large scale soil erosion which has occurred, particularly in parts of the Mediterranean (Baldock and Lowe, 2000). This changed with the advent of technological transformations, which included the large scale use of inorganic fertilisers, pesticides, and the emergence of intensive livestock farms.

The detrimental impacts that certain agricultural management practices were having on the environment became increasingly apparent during the 1960s (Ratcliffe, 1967; RCEP, 1979) with parallels to the debate in the United States on pesticide use (Carson, 1962). Within the European Community, growing concern for the environment led to a focus during the 1970s on developing environmental policy in its own right rather than incorporating environmental concerns within sectoral policies to ensure that the environment was afforded some basic protection. This led to the introduction of a range of policies, with some of particular relevance to agriculture, such as the Birds, Drinking Water and Water Framework Directives,¹ subsequently underpinned by the Treaty of Rome. In 2000, the Water Framework Directive became the overarching framework guiding member states' water policies, including with regard to pricing policy and environmental objectives.² During the 1980s the limitations of relying solely on environmental legislation at the European level became increasingly apparent and it became clear that environmental concerns needed to be integrated into sectoral policies, including agricultural policy. In the agricultural sector, this was reinforced by the recognition that it was production linked support under the CAP that was driving the use of some environmentally damaging management practices with deleterious effects on water quality, biodiversity and cultural landscapes.

In 1985 the first moves towards introducing environmental objectives within the CAP were taken, with a Commission Green Paper on the future of the CAP proposing that agricultural policy should “take account of environmental policy, both as regards the control of harmful practices and the promotion of practices friendly to the environment”¹ (European Commission, 1985). This was followed, in 1987, by the legal requirement to integrate environmental protection into all Community legislation under the Single European Act. In subsequent reforms of the CAP, from the 1992 MacSharry reform through the Agenda 2000 reforms, to the 2003 reform and the subsequent Health Check in 2009, environmental concerns have gradually been integrated within the CAP and over time have

been afforded an increasingly prominent position within the policy (Annex Table A.1). Policy changes that have been focused primarily on improving the environmental sustainability of agriculture include the growing use of environmental conditionality on farm support payments as well as the introduction of environmentally focused incentives through, for example, the agri-environment measure. However, other policy changes, such as those aimed at constraining production (quota, set-aside) or removing the link between payments and current production (introduction of single payments) have also had an impact on the environment, although this has not been their core rationale.

Annex Table A.1. Elements of CAP Reforms that have influenced the environmental performance of agriculture

Year	Key reforms	Environmental measures
1985	Council Regulation EEC 797/85	Provisions introduced under Article 19, that allowed member states to introduce zonal schemes designed to protect the farmland habitats and landscapes of Environmentally Sensitive Areas from the threat of agricultural intensification.
1987	Council Regulation EEC 1760/87	Permitted member states operating "Article 19" schemes to claim up to 25% of the cost of payments from the CAP budget.
1992	MacSharry Reforms – introduction of Regulation 2078/92	– Agri-Environment measure became more central to the CAP as one of a number of "accompanying measures". It was made compulsory for all member states to implement agri-environment schemes which provided payments for "using agricultural land which are compatible with protection and improvement of the environment, the countryside, the landscape, natural resources, the soil and genetic diversity" (Article 1c). – Article 1e introduced provisions for the (voluntary) long-term set-aside of agricultural land for reasons connected with the environment. – Introduction of headage payments for livestock, including the Beef Special Premium (BSP) and the Suckler Cow Premium (SCP.)
1999	Agenda 2000 – Introduction of Council Regulation 1259/1999	– Range of environmental and socio-economic measures brought together under the "Rural Development Regulation", and given a more prominent role within the CAP as the "Pillar 2". – Modulation introduced on a voluntary basis. – The basis of support for Less Favoured Area (LFA) payments on livestock farms moved from headage to area.
2003	2003 CAP reform – Introduction of Council Regulation 1782/2003	Introduction of: – Single payments in Pillar 1; several variations and timescales permitted. – Cross-compliance. – Article 69 – up to 10% of single payments able to be used for "specific types of farming and quality production". – Modulation becomes compulsory for EU15 (3% in 2005 rising to 5% from 2007). United Kingdom, France and Germany allowed to continue to administer voluntary modulation to honour existing commitments until January 2007.
2005	Introduction of the European Agricultural Fund for Rural Development (EAFRD) – Council Regulation 1698/2005	Builds on the Rural Development Regulation, organising measures under 3 axes supporting "competitiveness"; the environment; and quality of life. Member states required to spend a minimum of 25% of their budget on land management, including environmental measures under Axis 2.
2007	Council Regulation 378/2007	United Kingdom and Portugal given permission to levy additional rates of voluntary modulation for a limited time frame to meet existing rural development commitments. Later, Portugal chose not to apply voluntary modulation.
2008		– Abolition of set-aside. – Further incorporation in single payments required for majority of sectors apart from suckler cows, sheep and goats. – Article 68 on "specific types of farming and quality production" made more flexible – becomes Article 68 "support for specific areas". – Extension of cross-compliance requirements.
	CAP "Health Check" – Council Regulation 73/2009 – replacing Council Regulation 1782/2003; Council Regulation 74/2009 – amending Council Regulation 1698/2005	– Compulsory modulation – higher standard rates (up to 10% in 2012), plus a progressive element introduced (higher rates for larger farms). Extended to EU10 for first time, and Romania/Bulgaria from 2012. – Requirement to target additional modulation receipts to "new challenges" of biodiversity, water management, renewable energies and the dairy sector.

Source: Adapted from Tucker et al. (2010).

Notes

1. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version of Council Directive 79/409/EEC as amended); Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption. See http://europa.eu/legislation_summaries/environment/nature_and_biodiversity/l28046_en.htm and http://europa.eu/legislation_summaries/environment/water_protection_management/l28079_en.htm.
2. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, http://ec.europa.eu/environment/water/water-framework/index_en.html.

ANNEX B

Annex Tables of Chapter 2

Annex Table B.1. Relative importance of various activities among EU farms with OGAs directly related to the holding, 2005

Percentage of farms with Other Gainful Activities (OGA)¹

Type of output	Agriculture	Agriculture-related	Agriculture-related/Other	Other				Other ⁹	Total
Factor(s)	Land	Labour and Capital	Labour	Land	Labour and capital				
OGA activity	Renewable energy production ²	Processing of food products ³	Contract work ⁴	Aquaculture ⁵	Tourism, accomodation and other leisure activities ⁶	Handicraft ⁷	Wood processing ⁸		
Austria	6.2	44.2	28.7	0.8	35.0	0.9	3.2	0.0	119.0
Belgium	0.5	20.6	25.2	0.9	20.1	6.1	2.8	42.5	118.7
Czech Republic	0.7	25.3	0.0	0.0	8.0	2.9	21.1	51.8	109.8
Denmark	12.1	3.2	43.8	0.0	4.6	8.9	0.0	43.2	115.8
Finland	7.4	4.3	55.9	0.4	10.0	1.3	5.1	39.9	124.4
France	0.2	36.2	16.3	0.1	12.6	1.4	3.1	71.8	141.8
Germany	18.2	38.3	19.8	1.7	17.1	1.2	3.2	24.7	124.2
Greece	0.2	37.2	55.4	0.4	5.0	1.1	0.6	1.8	101.6
Hungary	38.3	62.7	0.0	2.0	3.3	0.9	1.9	4.5	113.5
Ireland	2.2	3.6	32.3	2.0	19.6	3.9	3.1	43.5	110.2
Italy	0.2	84.0	2.4	0.1	12.1	0.9	1.2	5.0	105.9
Luxembourg	52.8	25.0	13.9	0.0	16.7	2.8	8.3	5.6	125.0
Netherlands	11.5	5.8	19.7	0.3	15.5	0.0	0.0	70.4	123.2
Poland	0.2	4.0	23.6	10.2	6.8	1.6	6.8	51.1	104.3
Portugal	0.6	86.2	5.7	0.0	2.7	0.5	2.4	4.7	102.9
Slovak Republic	0.6	18.0	33.5	1.2	9.3	5.6	5.6	54.0	128.0
Spain	0.8	42.8	10.4	0.2	13.1	1.0	0.4	35.0	103.7
Sweden	8.7	11.1	46.7	1.8	22.8	5.6	9.8	21.2	127.8
United Kingdom	0.9	5.0	33.6	0.6	46.8	1.5	2.3	36.5	127.2
EU15	4.4	41.4	19.8	0.5	18.1	1.4	2.5	33.9	122.1
EU19	5.3	35.7	19.5	2.3	15.3	1.4	3.3	35.7	118.5

1. Agricultural holdings in which a member of the family, who is engaged in farming, also undertakes OGAs, that is every activity other than activity related to farm work, carried out for remuneration.
2. Producing renewable energy for the market, *inter alia*, windmills or biogas producing electricity, selling agricultural products, straw or wood to energy production facilities, etc.
3. All processing of a primary agricultural product to a processed secondary product on the holding, regardless of whether the raw material is produced on the holding or brought from outside. This includes, *inter alia*, processing meats, making cheese, wine production, etc. Sale of farm products directly to consumers is included here, except if no processing of the product at all is taking place on the holding.
4. Contract work, usually using the equipment of the holding inside or outside the agricultural sector, *e.g.* clearing snow, haulage work, maintenance of landscape, agricultural and environmental services, etc.
5. Production of crayfish, etc., produced on the holding.
6. All activities in tourism, accommodation services, showing the holding to tourists or other groups, sport or recreation activities, etc., where either the area, the buildings or other resources of the holding are used.
7. Handicraft either manufactured on the holding by the holder or family members, or by non-family labour force, provided that they are also carrying out farm work, regardless of how the products are sold.
8. The processing of raw wood on the holding for the market (saw milling, timber, etc.). Further processing, such as producing furniture from the timber, belongs normally under Handicraft.
9. Other gainful activities not mentioned elsewhere, *inter alia*, raising fur animals, horse boarding.

EU15: Member states of the European Union from 1995 to 2003.

EU19: Member states of the European Union who are also members of the OECD, i.e. EU15 plus the Czech Republic, Hungary, Poland and the Slovak Republic who became members of the European Union in 2004.

Source: EUROSTAT Farm Structure Survey database, definitions from EC (2002).

StatLink  <http://dx.doi.org/10.1787/888932476494>

Annex Table B.2. **Share of member states in the value of agricultural products, 2009**

	All agricultural products	Crops	Cereals	Oilseeds	Livestock products	Milk	Cattle	Pigmeat
Total value (Billion EUR)	304	171	35	8	133	41	27	31
% share in production of:								
Austria	2	2	1	1	2	2	3	2
Belgium	2	2	1	0	3	2	4	5
Bulgaria	1	1	2	4	1	1	0	1
Czech Republic	1	1	2	5	1	1	1	1
Cyprus ^{1, 2}	0	0	0	0	0	0	0	0
Denmark	2	2	3	3	4	3	1	8
Estonia	0	0	0	0	0	0	0	0
Finland	1	1	1	1	1	2	1	1
France	18	20	24	27	17	18	25	9
Germany	14	12	15	22	15	17	13	20
Greece	3	4	2	0	2	3	1	1
Hungary	2	2	4	6	2	1	0	2
Ireland	2	1	0	0	3	3	5	1
Italy	12	14	8	2	11	10	12	8
Latvia	0	0	0	1	0	0	0	0
Lithuania	0	0	1	1	0	1	0	0
Luxembourg	0	0	0	0	0	0	0	0
Malta	0	0	0	1	0	0	0	0
Netherlands	6	6	1	0	6	8	6	8
Poland	5	4	7	7	6	7	3	7
Portugal	2	2	0	0	2	2	2	2
Romania	4	5	6	5	3	3	1	4
Slovak Republic	1	0	1	2	1	1	0	0
Slovenia	0	0	0	0	0	0	0	0
Spain	12	13	9	3	10	6	8	14
Sweden	1	1	1	1	2	2	1	1
United Kingdom	7	5	9	7	9	8	13	4
EU15	85	84	76	67	85	85	93	83
EU10	10	9	16	24	11	11	5	12
EU2	5	7	8	9	4	4	1	4

1. Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: EUROSTAT, Economic Accounts for Agriculture.

StatLink  <http://dx.doi.org/10.1787/888932476513>

Annex Table B.3. **Changes in the composition of production value, by commodity, 1987-89, 1997-99, 2007-09**

	1987-89	1997-99	2007-09	
	EU15	EU15	EU15	EU27
Crop output	53.9	55.2	56.6	57.0
Cereals	14.0	10.4	12.3	13.6
– Common wheat	5.6	4.3	5.5	5.9
– Durum wheat	0.8	0.6	0.8	0.7
– Barley	3.9	2.4	2.8	2.8
– Maize	2.4	2.0	2.1	2.7
– Rice	0.3	0.3	0.3	0.3
Oilseeds	2.2	1.3	2.0	2.5
– Rapeseed	1.0	0.8	1.6	1.8
– Sunflower	0.7	0.3	0.3	0.6
– Soybeans	0.4	0.1	0.0	0.1
Protein crops	0.5	0.3	0.2	0.2
Sugar beet	2.2	2.2	1.0	1.0
Fruits and vegetables	18.0	21.0	23.0	21.9
– Fruits	5.7	6.4	7.2	6.9
– Vegetables	12.2	14.7	15.8	15.0
Other crop output	17.1	20.1	18.1	17.8
– Potatoes	2.0	2.4	2.6	3.1
– Olive oil	1.3	1.8	1.6	1.3
– Wine	4.6	6.7	5.7	4.9
Livestock output	45.9	44.8	43.4	43.0
Beef and veal	11.6	9.7	9.5	8.6
Pigmeat	9.1	9.3	9.4	9.5
Poultry and eggs	5.9	6.4	6.6	7.3
Milk	15.7	15.8	14.7	14.6
Other animal output	3.6	3.5	3.3	3.1

Source: EUROSTAT, Economic Accounts for Agriculture at producer prices.

StatLink  <http://dx.doi.org/10.1787/888932476532>

Annex Table B.4. Changes in the productivity of intermediate consumption, by member state, 1990, 1995, 2000, 2005, 2009

	1990	1995	2000	2005	2009
EU27	n.a.	n.a.	n.a.	100	102
EU15	n.a.	91	99	100	102
Belgium	27	45	81	100	91
Bulgaria	n.a.	n.a.	56	100	107
Czech Republic	n.a.	n.a.	91	100	104
Denmark	95	99	96	100	102
Germany	n.a.	94	97	100	102
Estonia	n.a.	100	106	100	111
Ireland	113	108	103	100	89
Greece	n.a.	102	100	100	96
Spain	93	85	105	100	116
France	95	95	98	100	103
Italy	60	90	97	100	99
Latvia	n.a.	n.a.	112	100	107
Lithuania	n.a.	83	96	100	115
Hungary	n.a.	n.a.	83	100	108
Malta	n.a.	n.a.	106	100	95
Netherlands	93	101	104	100	102
Austria	106	94	101	100	107
Poland	n.a.	n.a.	87	100	97
Portugal	108	97	103	100	104
Romania	n.a.	n.a.	108	100	102
Slovenia	n.a.	86	92	100	89
Slovak Republic	n.a.	108	93	100	114
Finland	98	108	99	100	102
Sweden	99	86	87	100	107
United Kingdom	88	86	94	100	98

n.a.: Not available.

Source: EUROSTAT, Economic Accounts for Agriculture.

StatLink  <http://dx.doi.org/10.1787/888932476551>

Annex Table B.5. **Percentage changes in total factor productivity, by member state, 1980-2000**

	Efficiency change	Technical change	TFP change ¹
Belgium	0.0	-0.4	-0.4
Bulgaria	1.4	0.6	2.0
Denmark	0.9	2.2	3.2
Germany	0.3	1.1	1.3
Ireland	0.0	1.1	1.1
Greece	0.7	1.0	1.7
Spain	0.9	0.1	1.0
France	0.0	2.0	2.0
Italy	0.0	0.9	0.9
Hungary	0.0	0.3	0.3
Netherlands	0.0	2.2	2.2
Austria	0.0	1.4	1.4
Poland	1.5	0.7	2.1
Portugal	1.9	0.7	2.6
Romania	0.8	1.5	2.3
Finland	0.2	0.9	1.1
Sweden	-0.8	1.2	0.3
United Kingdom	0.1	1.3	1.4

n.a.: Not available. TFP: Total Factor Productivity.

1. Malmquist productivity indices derived from Data Envelopment Analysis (DEA).

Source: Coelli and Prasada Rao (2005).

StatLink  <http://dx.doi.org/10.1787/888932476570>

**Annex Table B.6. Percentage changes in total factor productivity,
by member state, 1992-2002**

	Efficiency change	Technical change	Scale efficiency change	TFP change ¹
EU15	-0.1	1.4	0.1	1.3
EU10	0.1	1.3	0.0	1.4
Belgium	0.2	1.3	0.1	1.6
Bulgaria	0.1	3.8	-0.2	3.7
Czech Republic	-0.4	1.6	0.1	1.3
Denmark	0.3	2.1	0.2	2.6
Germany	0.3	0.6	0.1	1.0
Estonia	2.0	4.3	-0.9	5.3
Ireland	-1.3	1.0	-0.2	-0.5
Greece	-0.4	3.3	-0.3	2.6
Spain	-0.9	2.2	0.1	1.4
France	0.2	1.4	0.0	1.6
Italy	-0.2	1.4	-0.1	1.0
Latvia	0.7	4.3	-0.6	4.4
Lithuania	-0.8	3.4	-0.1	2.5
Hungary	-0.6	2.8	0.0	2.2
Malta	-0.5	3.8	0.0	3.3
Netherlands	0.2	0.3	0.4	0.9
Austria	0.0	2.5	-0.2	2.4
Poland	0.5	0.1	0.0	0.6
Portugal	-0.7	1.5	0.0	0.8
Romania	0.1	1.8	0.0	1.9
Slovenia	1.1	3.8	-0.6	4.2
Slovak Republic	-0.4	2.3	0.1	2.1
Finland	-0.6	2.7	0.0	2.0
Sweden	-0.4	2.9	0.0	2.5
United Kingdom	-0.6	1.4	0.1	1.0

n.a.: Not available.

1. Malmquist productivity indices derived from Data Envelopment Analysis (DEA).

Source: Rungsuriyawiboon and Lissitsa (2006).

StatLink  <http://dx.doi.org/10.1787/888932476589>

Annex Table B.7. **Change in farm numbers in EU member states, 1995, 2003, 2007**

	Number of farms ¹ ('000)			Annual % change from			Total % change 1995-2007
	1995	2003	2007	1995 to 2007	1995 to 2003	2003 to 2007	
Austria	222	174	165	-2	-3	-1	-25
Belgium	71	55	48	-3	-3	-3	-32
Bulgaria	n.a.	666	493	n.c.	n.c.	-6	n.c.
Czech Republic	n.a.	46	39	n.c.	n.c.	-3	n.c.
Denmark	69	49	45	-3	-4	-2	-35
Estonia	n.a.	37	23	n.c.	n.c.	-9	n.c.
Finland	101	75	68	-3	-3	-2	-32
France	n.a.	614	527	n.c.	n.c.	-4	n.c.
Germany	567	412	370	-3	-3	-3	-35
Greece	802	824	860	1	0	1	7
Hungary	n.a.	773	626	n.c.	n.c.	-5	n.c.
Ireland	153	136	128	-1	-1	-1	-16
Italy	2 482	1 964	1 679	-3	-3	-4	-32
Latvia	n.a.	127	108	n.c.	n.c.	-4	n.c.
Lithuania	n.a.	272	230	n.c.	n.c.	-4	n.c.
Luxembourg	3	2	2	-2	-3	-2	-28
Netherlands	113	86	77	-3	-3	-3	-32
Poland	n.a.	2 172	2 391	n.c.	n.c.	3	n.c.
Portugal	451	359	275	-3	-3	-6	-39
Romania	n.a.	4 485	3 931	n.c.	n.c.	-3	n.c.
Slovak Republic	n.a.	72	69	n.c.	n.c.	-1	n.c.
Slovenia	n.a.	77	75	n.c.	n.c.	-1	n.c.
Spain	1 278	1 141	1 044	-2	-1	-2	-18
Sweden	89	68	73	-2	-3	2	-18
United Kingdom	235	281	300	2	2	2	28
EU15	7 370	6 239	5 662	-2	-2	-2	-23
EU27	n.a.	15 021	13 700	n.c.	n.c.	-2	n.c.

n.a.: Not available; n.c.: not computable.

1. In EU Farm Structure Surveys, a farm is a single unit, both technically and economically, which has a single management and which produces agricultural products, and which has: an utilised agricultural area of 1 ha or more, or an utilised agricultural area less than 1 ha if it market produce on a certain scale or if its production units exceed certain natural thresholds.

Source: EUROSTAT, Farm Structure Surveys.

StatLink  <http://dx.doi.org/10.1787/888932476608>

Annex Table B.8. Changes in the distribution of farms by country, 1990, 2000, 2007
 Percentage share of farms of a size category in the total number of farms¹

Hectares	1990				2000				2007			
	0-2	0-20	20-100	≥ 100	0-2	0-20	20-100	≥ 100	0-2	0-20	20-100	≥ 100
Austria	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	15	78	21	1	12	73	25	2
Belgium	22	72	27	1	17	61	37	2	14	54	42	4
Bulgaria	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	87	98	1	1
Czech Republic	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	34	72	17	11
Denmark	1	42	54	4	2	40	49	11	2	42	40	18
Estonia	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	13	76	17	7
Germany	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	8	59	36	5	7	55	36	9
Ireland	3	54	44	2	2	44	53	3	1	43	53	4
Greece	45	97	3	0	49	97	3	0	50	96	4	0
Spain	35	87	11	2	33	83	13	4	28	80	15	5
France	15	52	43	5	17	49	39	12	13	44	39	17
Italy	56	95	4	1	57	94	5	1	50	93	6	1
Latvia	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	27	91	8	1	17	85	13	2
Lithuania	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	14	91	8	1
Luxembourg	14	45	52	3	12	40	50	10	10	35	47	18
Hungary	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	82	97	3	0	82	96	3	1
Netherlands	18	70	29	1	16	64	35	1	14	58	39	3
Poland	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	44	95	5	0
Portugal	59	96	3	1	55	94	5	1	47	92	6	2
Romania	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	65	99	1	0
Slovenia	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	27	98	2	0	25	96	4	0
Slovak Republic	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	80	96	3	3	72	94	3	3
Finland	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	3	49	49	2	3	44	51	5
Sweden	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	3	50	42	8	2	53	36	11
United Kingdom ²	6	42	42	16	14	47	36	17	28	60	27	13

n.a.: Not available.

1. In EU Farm Structure Surveys, a farm is a single unit, both technically and economically, which has a single management and which produces agricultural products, and which has: an utilised agricultural area of 1 ha or more, or an utilised agricultural area less than 1 ha if it market produce on a certain scale or if its production units exceed certain natural thresholds.
2. The increase in the share of small farms in the United Kingdom is due to a change in the definition of farms in the survey.

Source: EUROSTAT, Farm Structure Surveys.

StatLink  <http://dx.doi.org/10.1787/888932476627>

Annex Table B.9. **Change in the share of farmers over 65 in EU member states, 1995, 2003, 2007**

	Share of agricultural holders $\geq$ 65 years old (%)		
	1995	2003	2007
Austria	10	9	11
Belgium	17	20	21
Bulgaria	n.a.	41	45
Czech Republic	n.a.	18	19
Denmark	23	16	20
Estonia	n.a.	28	33
Finland	7	7	6
France	n.a.	16	15
Germany	7	6	7
Greece	31	36	37
Hungary	n.a.	30	28
Ireland	21	20	25
Italy	37	40	45
Latvia	n.a.	27	29
Lithuania	n.a.	38	41
Luxembourg	19	17	16
Netherlands	17	17	18
Poland	n.a.	15	16
Portugal	35	46	48
Romania	n.a.	39	45
Slovak Republic	n.a.	26	32
Slovenia	n.a.	34	35
Spain	30	34	37
Sweden	22	18	22
United Kingdom	25	29	33
EU15	28	31	34

n.a.: Not available.

Source: EUROSTAT, Farm Structure Surveys.

StatLink  <http://dx.doi.org/10.1787/888932476646>

ANNEX C

Annex Tables and Graphs of Chapter 3

Annex Table C.1. EU and national RDP Funds by axis and by member state, 2007-13

	Axis 1		Axis 2		Axis 3		Axis 4 - LEADER		Technical assistance		Original Total		New funds		Updated Total	New funds
	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	As a percentage of updated total
Austria	1 079	50	5 662	50	506	50	423	51	153	49	7 822	50	152	75	7 975	2
Belgium	671	30	300	50	97	38	57	37	19	50	1 145	37	92	75	1 237	7
Bulgaria	1 205	80	777	82	878	80	77	80	123	80	3 242	80	44	75	3 104	1
Cyprus	141	50	141	50	29	50	9	50	6	50	325	50	3	75	328	1
Czech Republic	840	75	1 945	80	635	75	175	80	18	72	3 615	78	57	75	3 670	2
Denmark	176	50	512	55	47	50	78	55	18	50	830	54	178	75	1 008	18
Estonia	348	75	334	80	119	75	86	80	38	75	925	77	12	75	937	1
Finland	505	45	5 407	28	433	45	242	45	40	45	6 683	31	101	75	6 729	2
France	4 621	52	5 817	55	799	52	584	56	122	53	11 943	54	1 524	75	13 468	11
Germany	3 694	60	5 504	60	3 052	65	753	64	208	65	13 210	61	1 293	75	14 504	9
Greece	2 255	71	1 715	76	710	72	295	76	103	75	5 078	73	266	75	5 344	5
Hungary	2 366	72	1 627	77	691	72	272	77	203	75	5 159	74	72	75	5 231	1
Ireland	482	50	3 385	55	0	0	425	55	6	50	4 299	54	206	75	4 505	5
Italy	6 444	48	6 981	51	1 421	49	1 291	52	496	43	16 603	50	981	75	17 615	6
Latvia	649	75	365	80	260	75	33	80	56	75	1 362	76	18	75	1 379	1
Lithuania	930	75	825	80	276	75	137	80	93	75	2 260	77	30	75	2 291	1
Luxembourg	128	20	212	25	16	40	13	40	0	–	369	24	7	75	375	2
Malta	34	75	25	80	33	75	4	80	4	75	100	76	1	75	102	1
Netherlands	291	50	289	50	290	50	97	49	6	50	973	50	143	75	1 116	13
Poland	7 187	75	5 546	80	3 430	75	788	80	267	75	17 218	77	225	75	17 443	1
Portugal	2 350	76	1 974	82	19	81	497	80	135	75	4 974	79	189	75	5 162	4
Romania	3 967	80	2 293	82	2 474	80	235	80	376	80	9 971	80	136	75	9 482	1
Slovenia	399	75	588	80	132	75	34	79	6	67	1 159	78	21	75	1 180	2
Slovak Republic	835	74	1 242	79	358	74	75	79	53	74	2 563	77	37	75	2 601	1
Spain	6 625	48	5 126	54	618	51	1 402	58	66	55	15 800	46	1 119	75	14 956	7
Sweden	555	50	2 702	47	326	45	264	40	70	50	3 917	47	169	75	4 086	4

Annex Table C.1. **EU and national RDP Funds by axis and by member state, 2007-13** (cont.)

	Axis 1		Axis 2		Axis 3		Axis 4 - LEADER		Technical assistance		Original Total		New funds		Updated Total	New funds
	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	Co-financing rate %	Million EUR	As a percentage of updated total
United Kingdom	911	58	6 561	49	675	59	474	58	14	43	8 635	51	228	75	8 862	3
EU27	49 687	62	67 857	58	18 322	67	8 820	62	2 699	65	150 179	60	7 304	75	154 689	5
EU15	30 786	54	52 148	52	9 008	57	6 897	58	1 456	54	102 280	52	6 646	75	106 941	6
EU10+2	18 902	76	15 709	80	9 313	76	1 924	79	1 243	77	47 900	77	658	75	47 748	1

EU10+2: the 12 members of the European Union which have joined since 2004 (10 in 2004 and 2 in 2007)

EU15: the 15 member states of the European Union between 1995 and 2004.

EU27: the 27 members of the European Union from 2007.

1. Those amounts do not include all technical assistance programmes implemented in member states.

2. Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

3. Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: EU Commission web site: http://ec.europa.eu/agriculture/rurdev/countries/index_en.htm updated using Commission Decision of 7 July 2009 (2009/545/EC).

StatLink  <http://dx.doi.org/10.1787/888932476665>

Annex Table C.2. Measures chosen by member states in RDPs for 2007-13

Axis 1	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
111 Vocational training, information actions, incl. diffusion of scientific knowledge and innovative practices for persons engaged in the agricultural, food and forestry sectors	x	x	0	0	x	x	x	x	x	x	x	0	x	x	x	0	0	0	0	x	0	0	0	x	0	x	x
112 Setting up of young farmers	x	x	x	0	x	x	x	x	x	x	x	0	x	x	x	x	0	0			x	0	0	x	x		0
113 Early retirement of farmers and farm workers				0	x	x	x		x	x	x	0	0	x	x	x		x			x	x			x		
121 Farm modernisation	x	x	0	x	x	x	x	x	x	x	x	0	x	x	x	x	x	x	0	x	x	0	x	x	x	x	x
114 Use by farmers and forest holders of advisory services		x		0	x	x	0	x	x		0	0	x		x	0	0	0	0	x	0	0				0	0
115 Setting up of farm management, farm relief and farm advisory services, as well as forestry advisory services						x			x		0				0				0		0						x
122 Improving the economic value of the forests	x		0		x	0		0	x		x	0	0		x	0	x	0			0	0		0	x	0	x
123 Adding value to agricultural and forestry products	x	x	0	0	x	x	x	0	x	x	x	0	0		x	x	0	0	0	0	0	0	0	x	x	x	x
124 Co-operation for development of new products, processes and technologies in the agricultural and food sectors	x				0	x	x	0	x	x	0				0				0	x		0		x			x
125 Improving and developing infrastructure related to the development and adaptation of agriculture and forestry	x	x		0	x	x	x	x	x		x	0	0		x	x	x	0	0	x	0	x	0	x	x	0	x
126 Restoring agricultural production potential damaged by natural disasters and introducing appropriate prevention actions						x	0		0		x	0			x						0						
131 Helping farmers to adapt to demanding standards based on Community legislation				x				0	0			x			0			0			0				x		
132 Supporting farmers who participate in food quality schemes	x	0		0		0	0		x		x	0			0			0	x	0	0			0			x
133 Supporting producer groups for information and promotion activities for products under food quality schemes	0	0		0		0	x		x		0	0			0			0	0	0	0				x		
141 Supporting semi-subsistence farms undergoing restructuring			0					0					x			x		x			x		0			0	
142 Setting up of producer groups			0	0	x								x					x	0		x		0		x	0	
143 Provision of farm advisory and extension services in BG and RO			x																			0					
Axis 2	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
211 Natural handicap payments to farmers in mountain areas	x		x	x	x	x			x	x	x	x			x							x	0		x	x	
212 Payments to farmers in areas with handicaps, other than mountains areas	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	x	x	x	0	x	x	x	x
213 Natura 2000 payments and payments linked to Directive 2000/60/EC	0	x			x	x		x	x			0	0	0	0	x		x				0				0	
214 Agri-environmental payments	x	x	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	0	x	x	x	0	x	x	x	x
215 Animal welfare payments	x					x		0	x	x					x											0	x
216 Support for non-productive investments in agriculture	0	0				x	x	0	x	0	x	x	0		x					x		0					x
221 First afforestation of agricultural land	x	x		0	x	x	x	0	x	x	x	x	x		x	0				x	x	x	0			0	x
222 First establishment of agroforestry systems on agricultural land				0					0		0		0		0						0						
223 First afforestation of non-agricultural land			0	0		x			x		x	0	0		0	0		0			0						x
224 Natura 2000 payments	0				0	x		0				0			0	x		0			0					0	
225 Forest-environment payments	0			0	0	x	x		x		0		0		x	x	x				x					0	x
226 Restoring forestry potential and introducing prevention actions	x		0	0	x	x	x		x		x	0	0		x	0		0			0	0					x
227 Support for non-productive investments in forestry		x		0	x	x	x		x		x	0	0		x	0	0				0		0				x

Annex Table C.2. **Measures chosen by member states in RDPs for 2007-13 (cont.)**

Axis 3	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
311 Diversification into non-agricultural activities	x	x	0		x	x	x		x	x	x	0	0	0	x	0	x			x	0			x	x	0	x
312 Support for the creation and development of micro-enterprises	x	0	0		x	x		0	x	x	x	0	0	0	x	0	0	x		x	0		0	x	x		x
313 Encouragement of tourism activities	x	x	0	0	x	x	x		x	x	x	0	0	0	x	0	x	0	0	x			0	x		0	x
321 Basic services for the economy and rural population	x	x	0	0	x	x	x		x	x	x	0	0	0	x		x	0		x	0	0		x		0	0
322 Village renewal and development	x	x	0	0	x	x	x	x	x	x	0	0	0	0	x	0	x			x	0		0	x	0	0	x
323 Conservation and upgrading of the rural heritage	x	x		0	x	x	x		x	0	x	0	0	0	x		x	0	0	x		0		x	0		x
331 Training and information for economic actors	x	x			x	x	0		0	0	0		0	0	0		0							x		0	x
341 Skills acquisition and animation anwith a view to preparing and implementing a local development strategy	x			0		x			0	0	x	0	x	0	0				0	0				x		0	x
Axis 4 (LEADER)	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
411 Implementing local development strategies – Competitiveness	x	0	0	0	0	x	0	0	x	x	0	0	0		0		0	0	0	0			0	0	0	0	x
412 Implementing local development strategies – Environment/land management	x	0	0	0	0	x			0	0	0		0		0		0		0	0			0	x	0		0
413 Implementing local development strategies – Quality of life/diversification	x	0	0	0	0	x	x	0	x	x	0	0	0	0	0	0	0	0	0	x	0	0	0	x	0		x
421 Transnational and inter-regional co-operation	0	0	0	0	0	x	0	0	x	0	0	0	0		0	0	0	0	0	x	0	0	0	0	0	0	0
431 Running the local action group, skills acquisition, animation	x	x	0	0	x	x	x	0	x	x	0	0	0		0	0	0	0	0	0	0	0	0	x	0	0	x
Technical assistance	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
511 Technical Assistance	x	x	0	0	x	x	x	x	x	x	x	0	x	x	x	x		0	0	x	0	x	0	x	x	x	x
Payments in Romania and Bulgaria	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
611 BG RO Direct Payments			x																				x				

Note: Measures chosen are indicated by a cross (x) if money was paid in 2008, and a zero (0) if a measure was chosen but no money was paid in 2008.

1. In Ireland, forestry measures are not part of the RDP.

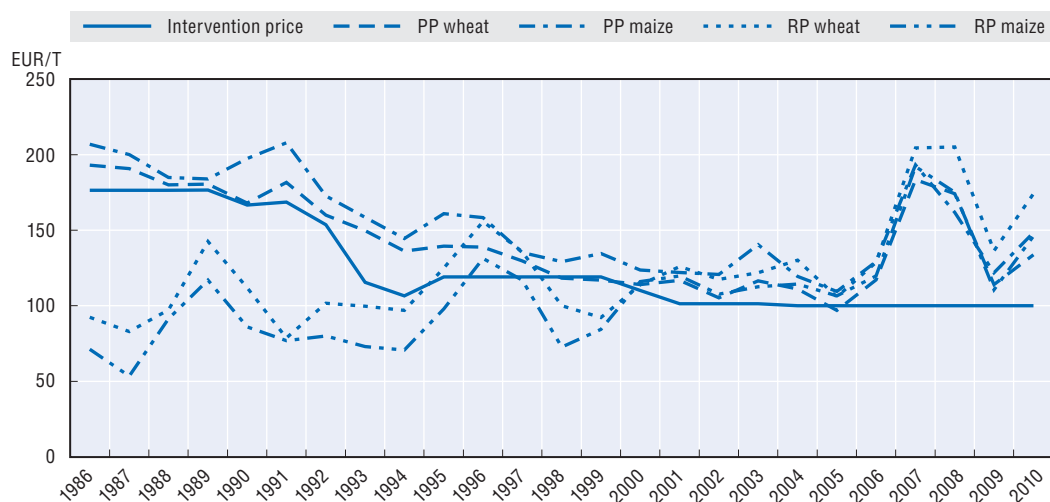
2. Axis 3 measures are implemented using a LEADER approach under Axis 4.

3. See notes 2 and 3 of Annex Table C.1.

Source: EAFRD expenditures.

StatLink  <http://dx.doi.org/10.1787/888932476684>

Annex Figure C.1. Developments in administered prices, domestic producer prices and border reference prices for wheat and maize, 1986-2010

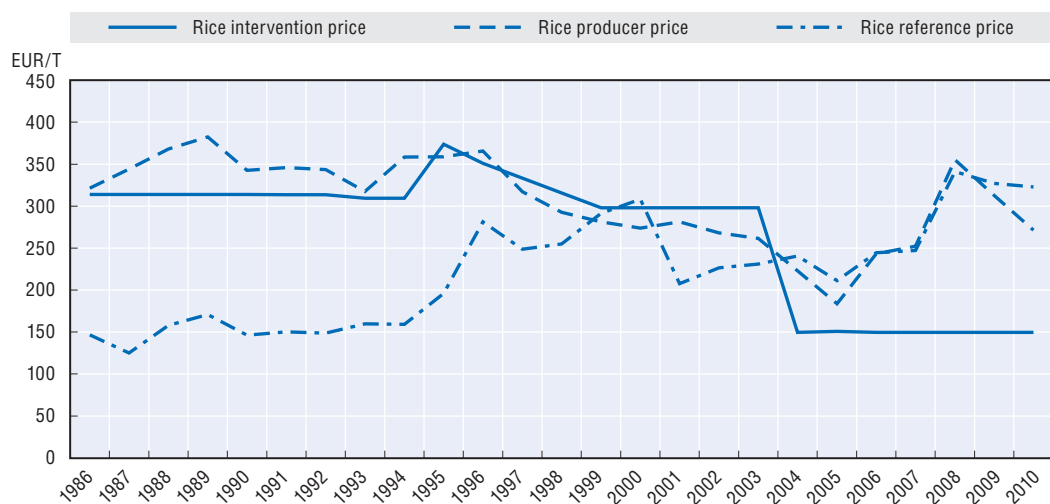


PP: Producer price; RP: Reference price.

Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475791>

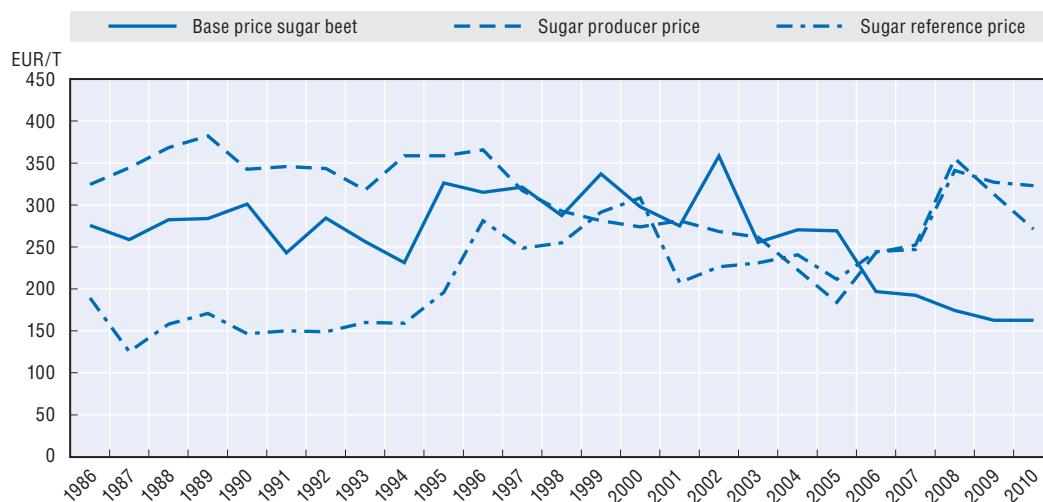
Annex Figure C.2. Developments in administered prices, domestic producer prices and border reference prices for rice, 1986-2010



Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475810>

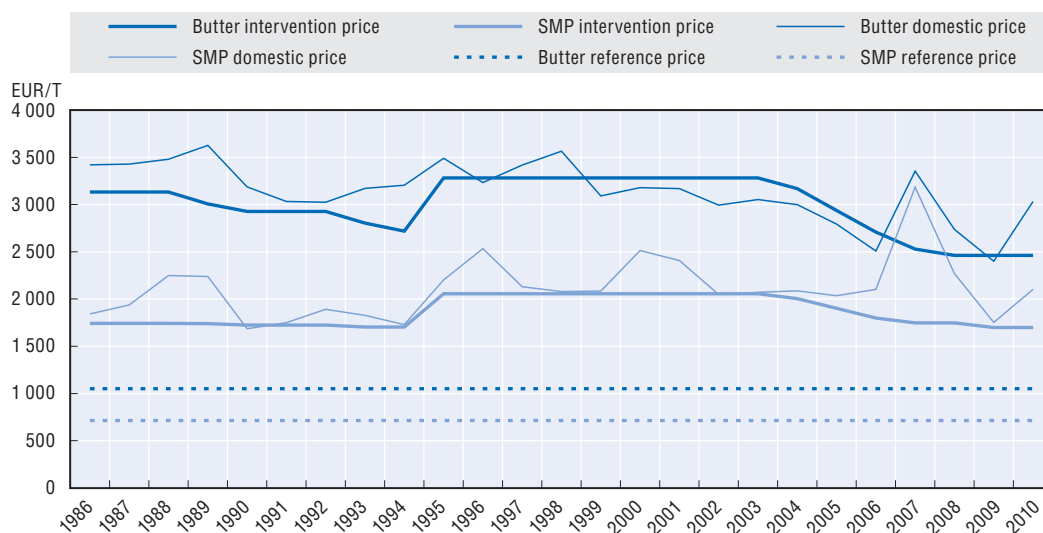
Annex Figure C.3. Developments in administered prices, domestic producer prices and border reference prices for sugar, 1986-2010



Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475829>

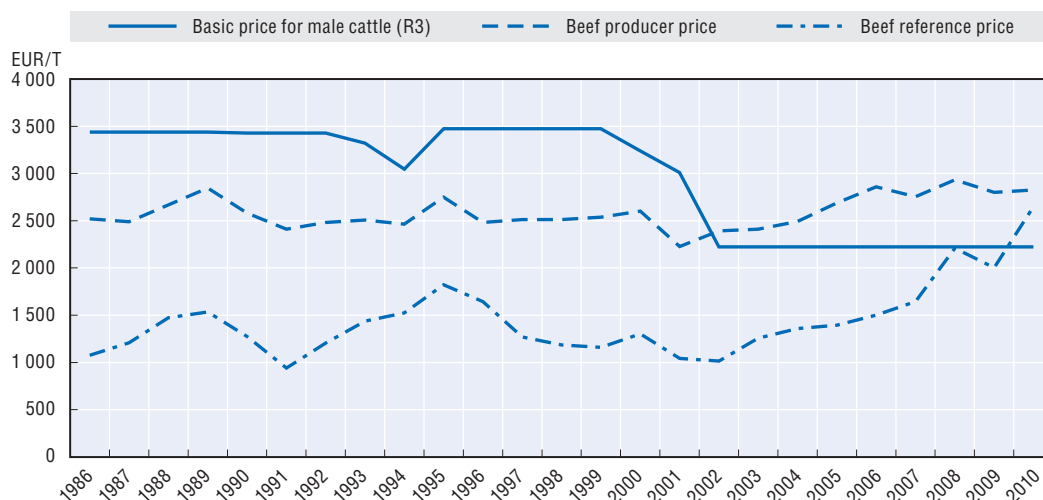
Annex Figure C.4. Developments in administered prices, domestic producer prices and border reference prices for dairy products, 1986-2010



Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475848>

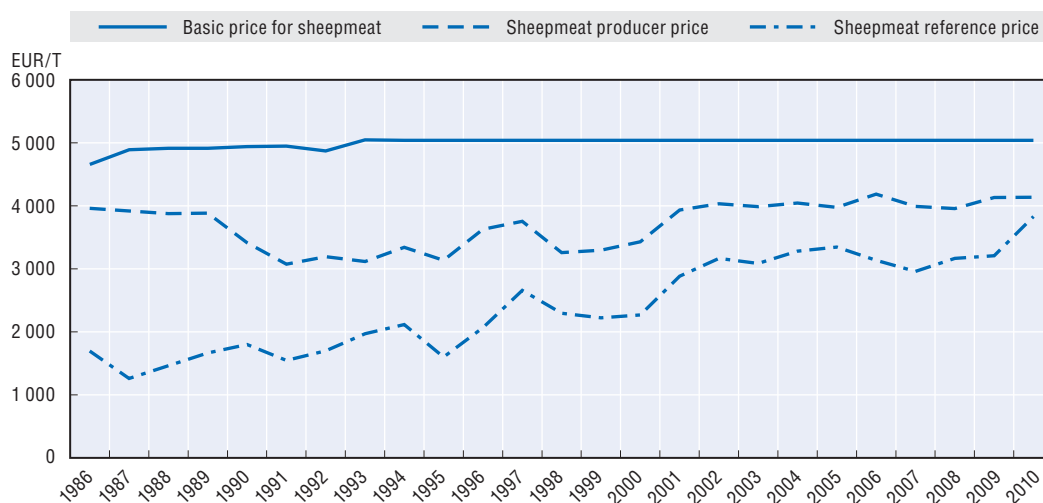
Annex Figure C.5. **Developments in administered prices, domestic producer prices and border reference prices for beef, 1986-2010**



Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475867>

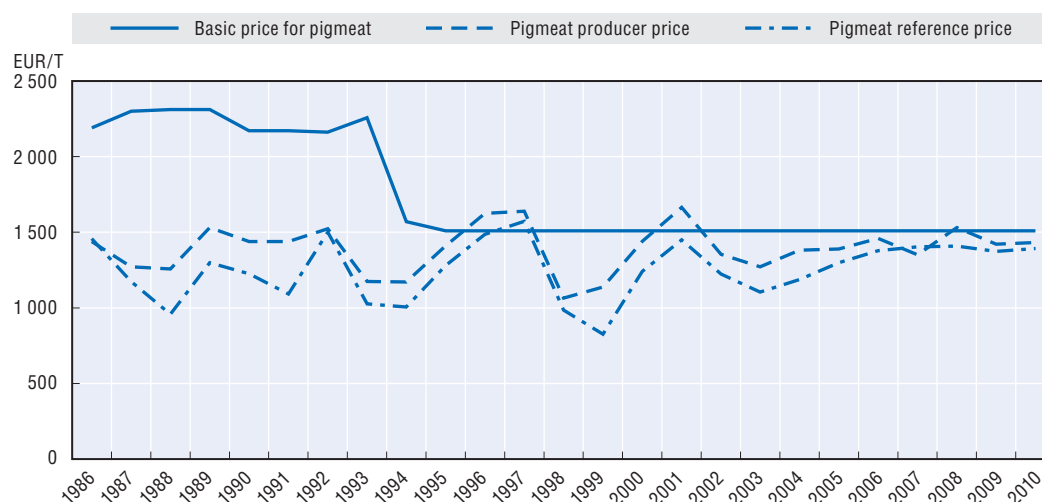
Annex Figure C.6. **Developments in administered prices, domestic producer prices and border reference prices for sheepmeat, 1986-2010**



Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475886>

Annex Figure C.7. Developments in administered prices, domestic producer prices and border reference prices for pigmeat, 1986-2009



Source: PSE/CSE and Aglink Databases.

StatLink  <http://dx.doi.org/10.1787/888932475905>

Annex Table C.3. CAP direct payments as a % of full EU rate

For countries, which joined the European Union in May 2004			
Years	EU contribution	National supplement	Overall maximum payment rate
2004	25	30	55
2005	30	30	60
2006	35	30	65
2007	40	30	70
2008	50	30	80
2009	60	30	90
2010	70	30	100
2011	80	20	100
2012	90	10	100
2013	100	0	100

For Bulgaria and Romania			
Years	EU contribution	National supplement	Overall maximum payment rate
2007	25	30	55
2008	30	30	60
2009	35	30	65
2010	40	30	70
2011	50	30	80
2012	60	30	90
2013	70	30	100
2014	80	20	100
2015	90	10	100
2016	100	0	100

Source: EU Regulations.

StatLink  <http://dx.doi.org/10.1787/888932476703>

Annex Table C.4. Minimum and maximum share of payments that could remain commodity-specific under the 2003 and 2004 CAP reforms

Payments for	Proportion of payment that must remain commodity-specific	Proportion of payments that may remain commodity-specific
2003 CAP reform		
Cereals and oilseeds	0	25
Durum wheat	0	40
Rice	42	42
Protein crops (supplementary p.)	100	100
Starch potatoes	60	60
Dried fodder	0	0
Nuts	100	100
Energy crops	100	100
Sheep	0	50
Beef		
Slaughter premium for calves	0	100
and suckler cow premium	0	100
and slaughter premium for adults	0	40
or Slaughter premium for adults	0	100
or Special male premium	0	75
Milk	0	0
Drying aid, isolated regions aid	100	100
2004 CAP reform		
Tobacco from 2010 ¹	50	50
Tobacco until 2009	60	60
Cotton	35	35
Olive oil	0	40

1. To be used for restructuring assistance under rural development measures.

Source: OECD (2004) using Council Regulation (EC) No 1782/2003 and OECD (2007).

StatLink  <http://dx.doi.org/10.1787/888932476722>

Annex Box C.1. List of measures available in 2000-06 within the framework of the RDR and regional development programmes of Objective 2 regions of Structural funds

- a) Investments in agricultural holdings¹
- b) Installation of young farmers
- c) Vocational training
- d) Early retirement
- e) Less-favoured areas; areas with environmental restrictions
- f) Agri-environment measures
- g) Investments in processing/ marketing
- h) Afforestation of agricultural land
- i) Other forestry
- j) Land improvement¹
- k) Reparcelling¹
- l) Setting-up of farm relief and farm management services²
- m) Marketing quality agricultural products¹
- n) Basic services for the rural economy and population²
- o) Renovation and development of villages and protection and conservation of the rural heritage^{Note:}
- p) Diversification of agricultural activities or activities close to agriculture to provide multiple activities or alternative incomes
- q) Agricultural water resources management¹
- r) Development and improvement of infrastructure connected with the development of agriculture²
- s) Encouragement for tourist and craft activities
- t) Protection of the environment in connection with agriculture, forestry and landscape conservation as well as the improvement of animal welfare¹
- u) Restoring agricultural production potential damaged by natural disasters and introducing appropriate prevention instruments²
- v) Financial engineering²
- w) Monitoring and evaluation¹

Note: Measures j to v correspond to Article 33, which groups together measures which are not specific to farmers.

1. RDR and Objective 2 funds.

2. Objective 2 funds only.

Source: French PDRN 2000-06 reported in OECD (2005).

ANNEX D

Annex Tables Chapter 4

Annex Table D.1. **CAPRI: Changes in fodder and fallow land area per member state**

	Base Scenario: Agenda No Set Aside (2004)						Scenario 2003 reform (2004)						Scenario Health Check (2004)					
	Fodder maize	Fodder root crops	Fodder other on arable land	Grass land	Total fodder	Fallow land and set aside	Fodder maize	Fodder root crops	Fodder other on arable land	Grassland	Total fodder	Fallow land and set aside	Fodder maize	Fodder root crops	Fodder other on arable land	Grassland	Total fodder	Fallow land and set aside
	'000 ha						% change compared to base scenario						% change compared to base scenario					
Austria	74	1	160	1 893	2 127	937	-16.8	17.9	24.0	7.5	7.9	2.8	-14.3	19.6	23.9	7.9	8.4	3.0
Belgium-Luxembourg	178	5	96	594	872	293	-6.2	15.7	6.4	7.6	4.7	-4.6	-5.2	14.1	6.4	8.8	5.7	-7.3
Denmark	133	6	363	192	695	92	-15.0	14.6	12.4	88.9	28.4	15.5	-14.5	14.8	12.0	90.5	28.7	12.1
Finland	0	2	25	602	629	301		41.2	-15.1	13.7	12.7	6.7		39.6	-17.1	13.5	12.4	5.9
France	1 475	42	3 360	10 078	14 956	5 003	-11.2	8.8	25.6	7.9	10.0	3.9	-16.8	9.3	32.1	15.6	16.1	4.1
Germany	1 248	10	491	4 978	6 726	2 468	-8.8	8.6	16.0	22.3	16.1	-2.6	-6.6	8.8	16.7	21.8	16.2	0.4
Greece	7	0	297	1 799	2 103	896	22.9	25.0	30.6	18.7	20.4	6.0	26.5	25.0	36.0	24.6	26.2	7.9
Ireland	15	6	822	3 102	3 944	1 537	-18.2	20.9	1.7	3.4	3.0	-34.2	-15.8	22.2	1.5	4.5	3.8	-35.3
Italy	280	1	1 558	4 416	6 256	2 184	-15.5	0.0	13.0	18.7	15.7	-6.3	-13.4	0.0	14.5	22.1	18.6	-7.4
Netherlands	226	1	217	779	1 222	386	-6.6	9.2	7.1	4.1	2.7	-1.6	-2.3	9.2	10.4	5.0	4.6	3.6
Portugal	114	8	434	1 485	2 041	734	-6.2	34.2	24.4	0.4	5.3	1.3	-4.3	37.8	30.0	3.9	9.1	-1.6
Spain	86	50	926	10 552	11 614	5 180	-11.2	26.9	21.1	12.2	12.8	5.7	-19.1	31.3	25.4	19.0	19.3	3.1
Sweden	10	0	1 011	506	1 527	250	-4.0		10.2	33.0	17.7	-2.9	-4.7		9.7	33.1	17.4	-8.4
United Kingdom	127	59	1 200	10 036	11 422	4 932	-29.3	18.4	5.7	5.6	5.3	-28.5	-29.6	19.5	5.7	5.4	5.1	-28.1
EU15	3 972	190	10 961	51 011	66 134	25 192	-10.9	18.7	16.6	11.1	10.7	-6.1	-11.9	20.4	19.6	14.7	13.9	-6.4
Cyprus ^{1,2}	0	0	24	0	25	0	0.0	0.0	0.2	-3.1	0.1	0.0	0.0	0.0	0.0	-3.1	0.0	0.0
Czech Republic	226	1	192	867	1 286	431	1.1	0.7	-2.4	-1.8	-1.4	0.1	2.0	1.4	-2.9	-2.3	-1.6	0.3
Estonia	1	0	182	247	430	123	0.0	-4.2	-5.9	8.3	2.3	2.5	0.0	-4.2	-5.6	8.3	2.4	4.8
Hungary	132	1	241	1 075	1 449	535	-4.5	-3.8	-25.7	21.9	11.6	7.4	-3.9	-3.8	-25.7	21.5	11.3	8.0
Latvia	2	6	325	622	955	310	-7.2	-1.3	-3.7	7.6	3.6	0.4	-6.0	-1.1	-3.5	7.6	3.7	2.6
Lithuania	14	18	305	941	1 279	467	-2.4	-2.3	-13.3	11.8	5.4	2.4	-1.3	-1.8	-12.7	11.9	5.7	5.3
Malta	0	0	5	0	5	0		0.0	0.0		0.0			0.0	1.3		1.3	
Poland	282	49	452	3 355	4 138	1 676	2.4	1.0	1.2	0.6	0.8	1.1	3.4	1.3	1.3	0.5	0.8	1.7
Slovak Republic	94	2	152	613	861	306	-2.6	-2.0	-1.9	5.2	3.1	4.4	-1.9	-1.5	-1.9	4.9	2.9	5.3
Slovenia	54	4	5	321	383	160	2.3	0.0	-0.4	-0.7	-0.2	0.6	7.0	2.2	2.4	4.5	4.8	2.6
10 New member states	806	81	1 884	8 041	10 811	4 010	0.2	-0.1	-6.8	5.6	3.0	2.2	1.3	0.3	-6.6	5.6	3.1	3.3
Bulgaria	40	3	94	1 835	1 972	917	20.6	-4.9	-7.3	-0.8	-0.6	-15.5	21.2	-6.0	-5.2	0.3	0.4	-15.5
Romania	32	24	852	4 824	5 733	2 412	9.6	-0.7	-1.2	-2.7	-2.4	-7.5	13.1	-0.5	-0.2	-0.7	-0.6	-7.3
Bulgaria/Romania	72	27	947	6 658	7 705	3 330	15.7	-1.1	-1.8	-2.1	-1.9	-9.7	17.6	-1.1	-0.7	-0.4	-0.3	-9.5
EU27	4 850	299	13 791	65 710	84 650	32 531	-8.7	11.8	12.1	9.1	8.6	-5.5	-9.2	13.0	14.6	12.0	11.2	-5.6

1. Note by Turkey:

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

2. Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: CAPRI scenarios.

StatLink  <http://dx.doi.org/10.1787/888932476741>

Annex Table D.2. **CAPRI: Changes in average producer price and market balances for cereals by member state**

	Base Scenario: Agenda No Set Aside (2004)					Scenario 2003 reform (2004)					Scenario Health Check (2004)				
	Cereal price	Cereal area	Production	Demand	Net trade	Cereal price	Cereal area	Production	Demand	Net trade	Cereal price	Cereal area	Production	Demand	Net trade
	EUR/T	'000 ha	'000 t	'000 t	'000 t	% change compared to base scenario				Change in '000 t	% change compared to base scenario				Change in '000 t
Austria	86	826	5 103	5 424	-321	7.5	-13.3	-8.2	-6.8	-49	8.4	-12.6	-6.7	-6.8	23
Belgium-Luxembourg	94	352	2 741	4 123	-1 382	7.2	-6.5	-3.2	-2.4	12	8.2	-4.4	-1.1	-1.8	44
Denmark	102	1 567	9 773	9 280	493	7.1	-8.3	-5.4	-3.6	-196	8.2	-7.9	-4.7	-3.2	-155
Finland	91	1 224	4 044	3 617	427	7.4	0.9	3.6	-2.2	225	8.6	1.4	4.5	-3.6	310
France	100	9 477	65 447	50 430	15 017	7.0	-7.9	-3.7	-3.4	-745	8.0	-13.2	-8.1	-6.4	-2 099
Germany	94	7 137	47 870	45 546	2 324	7.2	-9.1	-5.6	-4.8	-495	8.3	-9.2	-5.3	-4.7	-388
Greece	153	1 255	4 380	5 427	-1 047	7.4	-26.4	-25.1	-15.9	-238	8.4	-26.1	-23.5	-18.0	-52
Ireland	86	310	2 353	2 596	-243	7.0	-31.1	-25.8	-13.7	-252	8.1	-24.7	-19.3	-11.0	-167
Italy	142	4 207	21 052	23 232	-2 180	10.5	-22.9	-18.7	-12.7	-989	11.1	-21.0	-16.3	-12.5	-534
Netherlands	100	232	1 796	4 591	-2 794	7.4	-11.6	-8.3	-3.9	32	8.5	-7.0	-3.5	-2.8	66
Portugal	142	444	1 167	2 875	-1 707	12.5	-23.4	-12.5	-5.0	-1	13.9	-32.6	-15.1	-8.0	54
Spain	125	6 857	20 971	26 037	-5 066	8.1	-14.9	-10.1	-7.1	-260	9.6	-20.6	-15.4	-8.8	-946
Sweden	86	1 134	5 635	4 919	716	7.7	-13.8	-8.5	-4.9	-242	8.8	-11.4	-5.8	-3.6	-150
United Kingdom	102	3 194	22 677	22 958	-281	7.0	-12.0	-7.9	-5.5	-531	8.1	-11.5	-7.1	-4.9	-470
EU15	106	38 215	215 009	211 053	3 956	6.9	-12.4	-7.6	-6.0	-3 728	7.9	-14.4	-8.7	-6.8	-4 463
Cyprus ^{1, 2}	209	67	108	671	-563	2.6	2.4	3.8	-0.9	10	2.7	2.4	3.9	-0.9	10
Czech Republic	96	1 603	7 375	6 749	626	2.2	2.2	3.0	0.6	182	2.4	2.1	3.0	0.5	181
Estonia	73	268	706	723	-17	2.3	-1.9	-1.0	-1.3	3	2.5	-2.1	-1.1	-0.7	-3
Hungary	94	2 876	13 997	10 098	3 899	2.6	-3.5	-1.7	-3.0	62	2.9	-3.4	-1.4	-3.0	104
Latvia	77	442	1 162	1 175	-13	2.1	-0.8	0.2	-1.0	14	2.3	-0.9	0.1	-0.8	11
Lithuania	77	895	3 017	2 930	86	2.2	-2.7	-1.2	-1.0	-6	2.4	-3.1	-1.4	-0.9	-17
Malta	106	0	0	111	-110	1.9	0.0	2.2	0.0	0	2.2	0.0	2.2	0.4	0
Poland	74	8 260	28 987	29 247	-261	2.2	2.2	3.0	0.3	796	2.4	2.1	3.0	0.4	772
Slovak Republic	91	804	3 289	2 751	538	2.3	-2.3	-1.0	-2.3	31	2.5	-2.3	-0.9	-2.4	38
Slovenia	106	97	520	907	-387	2.3	3.1	4.3	-1.4	36	2.8	11.2	12.0	-0.9	70
10 New member states	83	15 313	59 159	55 361	3 798	2.2	0.5	1.4	-0.6	1 127	2.5	0.4	1.5	-0.5	1 167
Bulgaria	83	1 707	6 167	6 097	69	1.1	4.0	4.2	2.4	109	1.3	2.3	3.3	2.6	47
Romania	128	5 819	19 498	18 582	916	1.1	2.6	2.8	1.2	319	1.2	0.1	1.4	1.3	34
Bulgaria/Romania	117	7 526	25 664	24 679	985	1.0	2.9	3.1	1.5	428	1.1	0.6	1.9	1.6	81
EU27	102	61 053	299 832	291 093	8 739	5.2	-7.3	-4.9	-4.3	-2 173	6.0	-8.8	-5.8	-4.9	-3 214

1. Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. Note by all the European Union Member States of the OECD and the European Commission:

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Source: CAPRI scenarios.

StatLink  <http://dx.doi.org/10.1787/888932476760>

Annex Table D.3. **CAPRI: Changes in average producer price and market balances for oilseeds by member state**

	Base Scenario: Agenda No Set Aside (2004)					Scenario 2003 reform (2004)					Scenario Health Check (2004)				
	Oilseed price	Oilseed area	Production	Demand	Net trade	Oilseed price	Oilseed area	Production	Demand	Net trade	Oilseed price	Oilseed area	Production	Demand	Net trade
	EUR/T	'000 ha	'000 t	'000 t	'000 t	% change compared to base scenario				Change in '000 t	% change compared to base scenario				Change in '000 t
Austria	258	110	232	387	-155	5.1	-13.4	-14.9	-1.9	-27	6.2	-11.3	-12.2	-2.2	-20
Belgium-Luxembourg	213	29	36	2 040	-2 004	7.9	-1.1	-1.3	-1.3	26	9.4	-0.3	1.6	-1.3	28
Denmark	216	116	401	757	-356	7.9	-3.6	-1.7	-2.5	12	9.4	-2.4	-0.1	-2.7	20
Finland	220	83	93	267	-174	7.9	-0.2	1.8	-1.6	6	9.4	0.0	2.5	-2.0	8
France	190	1 954	5 776	4 248	1 528	6.3	-11.9	-9.2	-3.2	-397	7.6	-19.0	-16.0	-3.8	-761
Germany	199	1 307	4 558	9 337	-4 779	7.8	-9.8	-6.9	-2.1	-121	9.3	-7.5	-4.2	-2.3	18
Greece	255	7	7	399	-392	3.0	14.3	16.6	-0.8	4	3.7	17.9	21.1	-0.8	5
Ireland	230	2	7	47	-40	7.9	-31.7	-26.8	-3.0	0	9.4	-24.6	-19.5	-2.7	0
Italy	197	303	794	2 115	-1 321	2.5	-2.7	-4.0	-1.6	2	2.7	-0.5	-1.5	-1.6	23
Netherlands	169	7	6	4 461	-4 455	7.5	-3.8	-9.9	-1.0	42	9.0	-2.8	-6.1	-0.9	41
Portugal	263	18	8	1 144	-1 136	3.0	-30.6	-29.6	-0.9	8	3.7	-19.9	-18.6	-0.9	9
Spain	289	703	653	3 928	-3 275	3.0	-4.4	-2.6	-0.6	6	3.7	-7.0	-4.8	-0.7	-4
Sweden	200	84	185	298	-113	7.9	-3.4	-0.6	-3.2	8	9.4	0.0	3.6	-3.6	18
United Kingdom	225	569	1 820	2 522	-702	7.9	-7.5	-5.9	-1.9	-60	9.4	-6.3	-4.2	-2.0	-26
EU15	204	5 290	14 577	31 951	-17 375	6.8	-8.9	-7.2	-1.8	-491	8.3	-10.9	-8.6	-1.9	-643
Cyprus ^{1,2}	0	0	0	4	-4	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
Czech Republic	208	403	804	650	154	4.2	5.8	9.2	-0.8	80	5.0	6.8	11.0	-0.8	94
Estonia	216	48	73	75	-1	4.7	2.5	3.5	-1.0	3	5.6	3.2	4.5	-1.0	4
Hungary	218	665	1 378	701	678	2.7	-0.6	0.0	-1.2	8	3.0	-0.3	0.4	-1.2	14
Latvia	183	53	95	84	11	4.6	4.2	5.2	-1.4	6	5.6	5.1	6.4	-1.5	7
Lithuania	191	95	174	52	122	4.7	4.1	5.3	-1.9	10	5.6	5.1	6.5	-2.0	12
Malta	0	0	0	8	-8	0.0	0.0	0.0	-0.7	0	0.0	0.0	0.0	-0.7	0
Poland	187	528	1 298	1 198	100	4.7	5.5	6.8	-1.4	106	5.6	6.4	8.1	-1.5	122
Slovak Republic	187	207	409	280	130	3.7	-0.3	1.0	-1.0	7	4.3	0.6	2.1	-1.0	11
Slovenia	214	6	7	24	-17	4.0	2.1	5.1	-0.7	1	4.6	4.9	11.0	-0.8	1
10 New member states	202	2 005	4 239	3 074	1 164	3.7	2.8	4.4	-1.2	221	4.4	3.5	5.4	-1.2	266
Bulgaria	169	647	960	635	325	0.6	3.6	3.6	1.1	28	0.4	3.7	3.7	1.1	28
Romania	180	1 260	1 831	1 378	453	0.6	3.6	3.7	1.2	52	0.4	4.8	4.9	1.2	73
Bulgaria/Romania	176	1 907	2 791	2 013	778	0.6	3.6	3.7	1.1	81	0.4	4.4	4.5	1.2	101
EU27	200	9 203	21 606	37 039	-15 432	5.2	-3.8	-3.5	-1.5	-190	6.2	-4.6	-4.2	-1.7	-276

1. Note by Turkey:

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2. Note by all the European Union Member States of the OECD and the European Commission:

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Source: CAPRI scenarios.

StatLink  <http://dx.doi.org/10.1787/888932476779>

Annex Table D.4. **CAPRI: Changes in average producer price and market balances for dairy products by member state**

	Base Scenario: Agenda No Set Aside (2004)				Scenario 2003 reform (2004)				Scenario Health Check (2004)			
	Milk price	Dairy herd	Yield	Production	Milk price	Dairy herd	Yield	Production	Milk price	Dairy herd	Yield	Production
	EUR/T	'000 head	kg/head	'000 t	% change compared to base scenario				% change compared to base scenario			
Austria	283	552	5 196	2 869	0.14	0.00	0.00	0.00	-9.95	4.64	0.13	4.77
Belgium-Luxembourg	272	611	5 310	3 243	0.17	0.01	-0.01	0.00	-10.52	4.37	0.28	4.66
Denmark	314	580	7 780	4 510	0.16	-0.01	0.01	0.00	-7.37	1.78	0.05	1.83
Finland	349	327	7 354	2 404	0.11	-0.02	0.02	0.00	-6.04	-0.57	0.03	-0.54
France	286	3 938	6 010	23 670	0.16	-0.01	0.01	0.00	-12.42	2.90	0.13	3.04
Germany	292	4 312	6 410	27 642	0.17	-0.01	0.01	0.00	-10.55	4.17	0.10	4.27
Greece	343	154	4 776	735	1.12	-0.29	0.10	-0.19	-6.31	-1.41	0.10	-1.31
Ireland	260	1 140	4 641	5 290	0.15	-0.02	0.02	0.00	-7.29	2.67	0.08	2.75
Italy	348	2 034	5 397	10 978	0.27	-0.01	0.01	0.00	-8.19	1.31	0.11	1.43
Netherlands	324	1 518	7 063	10 721	0.12	0.01	-0.01	0.00	-8.26	6.79	0.12	6.92
Portugal	311	325	6 005	1 949	0.10	-0.01	0.01	0.00	-9.44	2.39	0.09	2.48
Spain	289	1 105	5 706	6 308	-0.04	-0.03	0.03	0.00	-8.87	1.15	0.09	1.25
Sweden	315	401	7 933	3 179	0.13	0.02	-0.02	0.00	-7.20	-0.03	-0.01	-0.04
United Kingdom	258	2 109	6 840	14 423	0.18	0.00	0.00	0.00	-12.77	3.91	0.09	4.00
EU15	296	19 105	6 172	117 918	0.17	-0.01	0.01	0.00	-10.09	3.22	0.16	3.39
Cyprus ^{1, 2}	425	26	5 282	137	0.01	0.00	0.00	0.00	-5.04	2.39	0.07	2.47
Czech Republic	245	415	6 298	2 611	0.14	0.00	0.00	0.00	-7.68	1.99	0.02	2.01
Estonia	226	112	5 032	564	0.11	-0.01	0.00	0.00	-6.64	2.06	0.03	2.09
Hungary	269	291	6 123	1 785	0.08	0.01	-0.01	0.00	-6.16	1.69	0.01	1.71
Latvia	196	170	3 591	612	0.13	0.00	0.00	0.00	-6.93	1.30	0.04	1.33
Lithuania	188	424	3 413	1 448	0.13	0.01	-0.01	0.00	-8.16	1.56	0.04	1.60
Malta	371	6	5 936	38	0.09	0.00	0.00	0.00	-7.01	2.02	0.02	2.15
Poland	191	2 578	4 170	10 747	0.13	0.00	0.00	0.00	-8.18	1.86	0.05	1.91
Slovak Republic	253	156	5 752	896	0.10	0.01	0.00	0.00	-7.33	1.67	0.04	1.71
Slovenia	284	130	4 210	545	0.08	0.00	0.00	0.00	-7.17	1.95	0.04	1.99
10 New member states	214	4 308	4 499	19 384	0.12	0.00	0.00	0.00	-7.65	1.81	0.05	1.86
Bulgaria	203	363	3 479	1 263	0.88	-0.32	0.01	-0.31	-2.46	-0.55	0.00	-0.55
Romania	191	1 489	3 367	5 014	0.94	-0.36	0.01	-0.36	-1.88	-0.47	0.00	-0.47
Bulgaria/Romania	193	1 852	3 389	6 276	0.93	-0.35	0.01	-0.35	-2.01	-0.49	0.00	-0.49
EU27	280	25 265	5 683	143 579	0.19	-0.04	0.02	-0.02	-9.52	2.71	0.29	3.01

1. Note by Turkey:

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Source: CAPRI scenarios.

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Annex Table D.5. **CAPRI: Changes in average producer price and market balances for beefmeat by member state**

	Base Scenario: Agenda No Set Aside (2004)					Scenario 2003 reform (2004)					Scenario Health Check (2004)				
	Beef price	Beef herd ¹	Production	Demand	Net trade	Beef price	Beef herd ¹	Production	Demand	Net trade	Beef price	Beef herd ¹	Production	Demand	Net trade
	EUR/T	'000 head	'000 t	'000 t	'000 t	% change compared to base scenario				Change in '000 t	% change compared to base scenario				Change in '000 t
Austria	2 818	657	211	147	65	2.3	3.0	-0.3	-0.4	0	1.8	1.0	-0.6	-0.3	-1
Belgium-Luxembourg	2 927	813	310	208	102	2.3	-4.8	0.6	-0.3	3	1.8	-11.5	-2.3	-0.3	-7
Denmark	1 859	433	142	147	-5	2.3	6.0	4.5	-0.5	7	1.8	-12.9	-6.8	-0.3	-9
Finland	2 272	240	92	99	-6	2.3	-0.2	3.4	-0.3	3	1.8	-17.3	-10.1	-0.1	-9
France	3 434	6 680	1 831	1 605	226	2.3	4.4	1.6	-0.4	37	1.8	3.1	1.2	-0.4	28
Germany	2 156	3 099	1 300	1 017	283	2.3	-9.8	-6.3	-0.3	-79	1.8	-9.0	-2.9	-0.2	-36
Greece	4 441	292	50	181	-131	2.3	-1.6	-6.5	-1.0	-1	1.8	-1.6	-3.9	-0.7	-1
Ireland	2 317	2 655	571	75	495	2.4	-15.2	-9.0	-0.2	-51	1.8	-15.9	-6.4	-0.1	-37
Italy	3 217	2 700	970	1 385	-415	2.3	-4.6	-2.0	-0.6	-11	1.8	-3.6	0.2	-0.5	8
Netherlands	3 301	161	377	326	51	2.3	1.8	8.2	-0.7	33	1.8	-8.8	5.2	-0.5	21
Portugal	3 510	623	117	194	-77	2.3	4.0	-0.7	-0.8	1	1.8	2.1	-1.0	-0.5	0
Spain	2 863	4 170	681	659	22	2.3	1.7	0.0	-0.9	6	1.8	-0.5	0.1	-0.6	5
Sweden	2 568	451	141	217	-76	2.3	5.3	6.7	-0.4	10	1.8	-2.5	-0.4	-0.3	0
United Kingdom	2 897	3 897	848	1 196	-348	2.3	-15.2	-9.2	-0.6	-71	1.8	-15.7	-6.9	-0.4	-54
EU15	2 899	26 870	7 643	7 455	188	2.8	-3.8	-2.0	-0.5	-114	2.2	-5.3	-1.6	-0.4	-91
Cyprus ^{2,3}	2 548	11	4	6	-2	1.9	2.0	1.2	-0.3	0	1.3	1.7	1.7	-0.3	0
Czech Republic	1 446	292	100	93	8	1.9	0.9	0.9	-0.9	2	1.3	-0.1	1.1	-0.5	2
Estonia	1 048	49	18	15	4	1.9	-2.1	-1.4	-0.9	0	1.3	-2.3	-0.8	-0.6	0
Hungary	2 025	90	45	37	8	1.9	-6.2	-0.2	-1.4	0	1.3	-7.2	0.4	-1.0	1
Latvia	1 345	61	20	21	-1	1.9	-28.6	-15.2	-0.4	-3	1.3	-28.7	-14.4	-0.2	-3
Lithuania	1 214	150	51	40	11	1.9	-12.2	-6.4	-0.3	-3	1.3	-12.3	-5.5	-0.2	-3
Malta	2 806	3	1	11	-10	1.9	1.8	0.8	-0.3	0	1.3	1.2	1.6	-0.2	0
Poland	1 562	818	361	290	71	1.9	1.8	1.1	-0.6	6	1.3	1.5	1.9	-0.4	8
Slovak Republic	2 625	68	41	41	-1	1.9	1.5	0.9	-0.9	1	1.3	0.7	1.3	-0.6	1
Slovenia	2 082	138	55	58	-4	1.9	0.9	1.1	-0.6	1	1.3	0.5	1.3	-0.4	1
10 New member states	1 641	1 680	696	612	84	2.1	-1.3	-0.1	-0.7	3	1.5	-1.8	0.5	-0.4	6
Bulgaria	2 417	125	46	73	-27	2.0	-0.3	0.2	-0.8	1	1.8	-0.3	-0.1	-0.8	1
Romania	1 708	977	233	228	5	2.0	-0.9	-0.6	-0.7	0	1.8	-0.9	-0.7	-0.6	0
Bulgaria/Romania	1 825	1 102	279	301	-22	2.1	-0.8	-0.5	-0.7	1	1.8	-0.9	-0.6	-0.7	0
EU27	2 763	29 652	8 619	8 367	251	2.7	-3.5	-1.8	-0.6	-110	2.1	-4.9	-1.4	-0.4	-84

1. "Beef herd" = suckler cows + adult cattle for fattening.

2. Note by Turkey:

The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

3. Note by all the European Union Member States of the OECD and the European Commission:

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: CAPRI scenarios.

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Chapter 2. Overview of developments in the European agricultural sector

Chapter 3. Agricultural policy reforms in the European Union

Chapter 4. Impact of agricultural policy reforms on the economic and environmental performance of agriculture

Chapter 5. Overall evaluation and future direction

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