AGRI-2012-C4-04 - Analysis on future developments in the milk sector

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ERNST & YOUNG
Quality In Everything We Do

Executive summary

This report proposes a prospective vision of the future of the European milk market after the removal of the quotas in 2015. The study has been conducted through consultation of a panel of independent experts. Experts have offered their opinions to describe future trends, driving factors, perspectives and challenges expected in the years to come and they have concluded by providing recommendations.

The focus of the analysis has been to define likely scenarios following the end of the quota regime in the EU27. Scenarios are described as a synthesis of experts' opinion reports. They have been introduced by a theoretical analysis surveying literature on the topic and a descriptive chapter including data on trends in the dairy sector.

The analysis takes into account the role of market forces, organisational systems (in particular, producer organisations and inter-branch organisations) and policy measures in drawing perspectives of the milk sector in terms of:

I. Market balance and competitiveness – The analysis covers various components of the sector's competitiveness, such as added value of products, differentiation of product portfolio, ability to promptly react to changes in domestic and world demand, market share in the world market, price of raw materials and final products, investments in the production and processing industry. This theme has been analysed by Paolo Sckokai, Joost M.E. Pennings and Ludwig Theuvsen.

II. Sustainable milk production including territorial dimension – The analysis assesses the milk sector's contribution to the total agricultural product value as well as its role in maintaining vibrant rural communities, especially in the most fragile areas. The analysis identifies regions at risk, also describing elements that may underpin the sustainable development of the sector including its economic and territorial dimensions and suggests appropriate actions. This second theme has been analysed by Michel de Haan (and Jelle Zijlstra), Susanne Clausen and Heikki Lehtonen.

Market balance and competitiveness

To draw most likely scenarios on the evolution of the sector, experts have considered quantitative and qualitative information on different factors. Evolution of domestic and international market forces has been considered by all experts as central elements together with changes in the agricultural and trade policies.

All experts agree that quota removal does not seem to represent a crucial element in determining market perspectives as quotas are no more binding in most of the European Member States. According to experts, most important is to consider the global evolution of market forces at the international level and how European dairy sector will adapt to it.

As regards the analysis of added value and portfolio of products, experts have found it relevant to look at the evolution of international demand and dairy prices and how the organisation of the supply chain affects the distribution of added value along the supply chain. Two experts (Paolo Sckokai and Joost M.E. Pennings) predict that an increasing share of milk will be processed into high value products, with a lesser share devoted to industrial products. They add that the abolishment of milk quotas will allow for more innovation with positive effects on the variety and added value of dairy products. This will result from enhanced level of competitiveness on the market. Ludwig Theuvsen foresees no major impact of the removal of the milk quota system on product portfolios and added value.

Experts also consider the role of policy measures. The milk package has been assessed mainly based on theoretical considerations due to the fact that no specific study has yet been conducted for the dairy sector. Sometimes, the analysis referred to experiences in other sectors, such as the fruit and vegetables or the meat sector. They all consider that it is useful for sharing market information and providing incentives. However, they doubt that these will have major impacts on market evolutions.

Experts regard the ability to react to changes in demand as something driven by the new policy framework targeting a more market-oriented milk production. To assess competitiveness of the European Union in the world market, experts referred to the difference in production costs between Europe and its international competitors. Cost information has also been analysed to provide insight on the needs of investments in the production and processing industry. In addition, experts considered the differentiation of strategies that firms could implement to adapt at best to an increasingly demand-driven environment.

There is a broad consensus among experts on the fact that price volatility constitutes one of the greater challenges that dairy producers will have to face in the near future. Joost M.E. Pennings notices that current instruments should be refined and complemented by additional tools to face instability in the markets. In particular, well-functioning futures markets are considered as essential by this expert. All the three experts do not see in the buy-out scheme an appropriate policy instrument to face price volatility. Joost M.E. Pennings finds that the buy-out scheme could perturb the functioning of future markets.

Ludwig Theuvsen suggests to critically review whether dairy farming is the most suitable farming practice for the least-favoured areas (e.g. the Alpine regions), where less intensive farming practices, such as beef production or keeping of suckler cows could be more effective in meeting society's goals with regard to these areas. This should be also considered given that often these areas have to adopt more intensive farming techniques to offset their competitive disadvantage.

All experts also agree on the fact that the distribution of value added along the dairy supply chain is currently unbalanced in favour of processors. Paolo Sckokai and Joost M.E. Pennings consider that POs and IBOs could represent appropriate tools in the future to alleviate asymmetries in bargaining power between producers and processors and it is recommended that such organisations could be reinforced in the near future. However, Ludwig Theuvsen doubts that POs and IBOs will work effectively in rebalancing bargaining power between producers and processors. Paolo Sckokai recommends that adequate sizes should be fixed for POs and IBOs and that a particular effort should be put in fostering commercial POs. The size is important to have organisations highly representative and with sufficient bargaining power. Commercial POs are among the organisations that have proved more successful in pursuing the interests of their members.

Challenges	Recommendations	Experts in favour
Price volatility	Current instruments should be refined or complemented by further tools. A clear price and volume information platform should be instaured.	Joost M.E. Pennings
	Buy-out scheme should not be implemented.	Joost M.E. Pennings Ludwig Theuvsen Paolo Sckokai
	Strengthen the safety net for extreme market situations.	Ludwig Theuvsen Paolo Sckokai
Disadvantaged areas	The current legal framework should be reinforced for less favoured areas. It could be reconsidered whether less favoured regions could possibly be reconverted to less intensive farming practices, such as e.g. beef production.	Ludwig Theuvsen
Unbalanced distribution of value added across the supply chain	The roles of POs and IBOs should be reinforced.	Joost M.E. Pennings Ludwig Theuvsen Paolo Sckokai
	The creation of commercial POs should be stimulated. The law should fix adequate sizes for POs and IBOs in order to make them more effective and for POs to improve their	Paolo Sckokai

Challenges	Recommendations	Experts in favour
	bargaining power. Foster the coordination of farms with institutional bodies to promote PDO/PGIs.	

Sustainable milk production including territorial dimension

To assess the role of milk in maintaining vibrant rural communities, experts have considered both aspects on economic development and environmental intensity of milk production. From a socioeconomic point of view, the dairy sector has a particular importance for fragile areas. Fragile areas are, in general, described as areas with few economic opportunities in addition to those offered by the dairy sector. As regards the territorial dimension, experts have looked at possible increases in production intensity following the removal of quotas and its consequences on the environment.

To identify regions and production systems which might be more challenged after 2015, experts have used different classifications. Sometimes they have preferred to clearly distinguish between the geographical and the organisational component, defining clusters of regions and different ways of organising farms production to then attribute production systems to geographical areas. In other cases, they have directly treated geographical systems as production systems.

Different measures have been used to assess the importance of the milk sector in regional economies. For example, Michel de Haan and Jelle Zijlstra assessed the weight, first looking at the dimension of the agricultural sector with respect to the regional economy and then of the whole dairy sector with respect to the agricultural sector. In addition to production, Susanne Clausen has also considered the employment dimension.

The experts tend to align on the fact that the milk sector already plays a relatively marginal role in most of regional economies. The milk sector will continue to contribute to economic growth and job creation only in a limited number of regions. No major change is expected to take place following the removal of the quotas in 2015.

Overall, after 2015, no dramatic change is expected in the trend of the restructuring process that has been taking place in the last years in Europe. The production will tend to be more concentrated in larger and more efficient farms and this will also induce a geographical distribution towards countries characterised by the presence of more farms with such characteristics.

All experts see environmental degradation as one of the main challenges for the years to come. Michel de Haan and Jelle Zijlstra recommend to leave up to harmonised rules and environmental regulations to offset negative consequences on environment due to intensified production and, in agreement with Susanne Clausen, R&D programmes to enhance sustainability for the dairy sector.

There is also a general alignment in identifying the farmland abandonment as a major risk for certain areas in the forthcoming periods, even though this is regarded as independent from the removal of quotas. All the experts seem to agree that the mountainous regions can endeavour difficulties in various countries, such as Portugal, Italy, Greece and France. Michel de Haan, Jelle Zijlstra and Heikki Lehtonen all report Romania and Bulgaria as the possible countries endeavouring more difficulties. They also find that some regions in the Nordic areas (Northern Sweden and Northern and Eastern parts of Finland) are more at risk of suffering difficulties in the foreseeable future. There is a general consensus that regions in Central and Eastern Europe could also have regions suffering more in the years to come. Also for the Eastern countries, regions that appear to be more at risk are the mountainous ones.

In this respect, Michel de Haan and Jelle Zijlstra recommend to put in place policy instruments with the aim of preserving landscapes in regions with ecologically valuable

habitats. They also suggest to facilitate the restructuration of the sector with less competitive farmers moving to other more profitable (farm or non farm) sectors. Heikki Lehtonen and Susanne Clausen advise to maintain coupled payments in areas where preserving dairy farmer's activities are perceived as a strategic objective. Heikki Lehtonen recommends to realising a precise mapping of all those areas which could be more at risk to suffer from future markets fluctuations. Nevertheless, this expert expects a more significant decrease of milk producer prices following the milk quota abolition, at least in the long run, than anticipated in the recent literature. This will make the position of less favoured areas more difficult.

Susanne Clausen perceives lack of investment as a major challenge and suggests introducing various measures to stimulate investment in dairy activities.

All experts conclude that market trends will represent the main determinants for the future of the milk sector. Global prices of inputs and outputs and demand are becoming the main drivers with an impact on perspectives of the dairy sector development. Overall, the quota abolition is expected to have a relatively reduced impact in the short to medium run and cause only minor changes in the development of the dairy sector across the European regions.

Challenges	**Recommendations**	**Experts in favour**
Environmental degradation	It is recommendable to introduce R&D programmes to enhance sustainability for the dairy sector.	Michel de Haan and Jelle Zijlstra Susanne Clausen
	A part of land payments should be conditional to suitable environmental criteria.	Heikki Lehtonen
	Establishment of environmentally sustainable production systems.	Michel de Haan and Jelle Zijlstra Susanne Clausen
Farmland abandonment	It is recommendable to put in place policy instruments in order to preserve regions with ecologically valuable habitats.	Michel de Haan and Jelle Zijlstra
	Production coupled payments should be maintained in less favoured areas if milk production in these areas is pursued as a strategic objective.	Heikki Lehtonen Susanne Clausen
	Coupled payments could be complemented by branding support (e.g. PDOs or PGIs).	Heikki Lehtonen
High vulnerability of fragile areas to prices fluctuations	A precise mapping of fragile areas should be created and this implies the selection of clear and objective indicators to do so.	Heikki Lehtonen
Lack of investments	Follow up on the implementation of the Milk Package and support farmers with knowledge, training and advisory service on how to effectively operate producer organisations in order to strengthen farmer's position in the value chain. The establishment of a futures market could be a way to enable farmers better managing risks associated with volatile milk and feed prices. This will, however, require considerable amount of education and training of farmers in how to use this.	Susanne Clausen
	Access to capital should be facilitated especially in more disadvantaged areas for instance by establishing a loan fund for farmers. Political initiatives targeting young people and rendering	Susanne Clausen Michel de Haan and Jelle Zijlstra

Challenges	Recommendations	Experts in favour
	milk production attractive should be introduced. Training and education programmes should be considered to prepare farmers in tackling challenges, such as market instability and to become more market oriented. Know-how on the design of environmental friendly production facilities should be fostered. Restructure programmes for regions with many small farms and dairy processors.	
Lack of coordination in efforts performed through European funding programmes	Combine EU funds for regional development to create regional economic development and foster coordination in financial efforts.	Michel de Haan and Jelle Zijlstra

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Glossary (A-Z)

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CAP 2020

The Common Agricultural Policy is due to be reformed by 2013. After a wide-ranging public debate the Commission presented on 18 November 2010 a Communication on "The CAP towards 2020", which outlines options for the future CAP and launched the debate with the other institutions and with stakeholders. On 12 October 2011 the Commission presented a set of legal proposals designed to make the CAP a more effective policy for a more competitive and sustainable agriculture and vibrant rural areas[1].

Collection

Milk collection is only a part of milk production. The other part of the milk produced generally includes domestic consumption, direct sale and cattle feed.

Collection centre

Eurostat distinguish milk collection centres from milk enterprises. The former relates only to the enterprises which purchase milk from agricultural holdings and sell it in their own names to dairies.

Comext

Official statistical database on trade managed by Eurostat.

Cooperative

A voluntary form of association of farmers. In the milk sector, cooperatives can be devoted to milk collection only or combine milk collection and processing. In the first case, the collected milk is sold to dairies for processing.

Cross-compliance

Farmers who do not comply with certain requirements in the areas of public, animal and plant health, environment and animal welfare, are subject to reductions of or exclusion from direct support. This system is an integral part of EU support under direct payments.

D

Direct payments

Direct payments are payments granted directly to farmers under certain support schemes.

E

Eurostat

Statistical office of the European Union.

F

Farm net value added

It represents the amount available to remunerate all fixed production factors (land, labour and capital). It is studied per annual work unit as an income indicator.

G

Gross margin

Milk and milk products revenues minus specific costs (feed, veterinary, etc.) and other operating costs (upkeep of machinery, energy, contract work, taxes on land and buildings,

[1] http://ec.europa.eu/agriculture/cap-post-2013/

etc.). The gross margin over operating costs represents an indicator to assess farmers' income from a production.

H

Health Check

Health Check is a set of measures which aims at simplifying the Common Agricultural Policy (CAP) and helping them to respond better to signals from the market and face new challenges. The principal measures are phasing out of milk quotas, decoupling of support, assistance to sectors with special problems ('Article 68' measures), extending Simplified Area Payments Schemes (SAPS), additional funding for EU-12 farmers, using currently unspent money, shifting money from direct aid to rural development, investment aid for young farmers, abolition of set-aside, cross compliance and intervention mechanisms.

M

Milk Package

The so-called 'Milk Package' was designed to take into account the development of the milk and milk products sector following the end of the quota system in 2015. It has been fully applicable since 3 October 2012.

Q

Quota rent

The quota rent identifies the amount of surplus generated by a restriction on supply and can be calculated as the present value of annual benefits for milk producers derived from maintaining the quota.

S

Self-sufficiency ratio

Gross human apparent consumption compared to production.

Single CMO

Regulation fixing the Common Market Organisation for agricultural products.

Specialisation rate

The share of milk output and subsidies in total output and coupled subsidies (forage farm use deducted).

Abbreviations used

AEC	Average Economic Costs
AGMEMOD	Agricultural Member States Modelling
APO	Association of Producer Organisations
AWU	Annual Work Unit
CAP	Common Agricultural Policy
CAPRI	Common Agricultural Policy Regionalised Impact
CAPSIM	Common Agricultural Policy Simulation
COPA-COGECA	Comite des Organisations Professionnelles Agricoles de l'Union Européenne – Confédération Générale des Coopératives Agricoles de l'Union Européenne
CMO	Common Market Organisation
EAAE	European Association of Agricultural Economist
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
ECM	Energy Corrected Milk
EU	European Union
EU-2	Member States which integrated to the EU in May 2007
EU-10	Member States which integrated to the EU in May 2004
EU-12	Member States which integrated to the EU after April 2004
EU-15	Member States of the EU from 1995 to 2004
FADN	Farm Accountancy Data Network
FAO	Food and Agricultural Organisation
FAPRI	Food and Agricultural Policy Research Institute
FNVA	Farm Net Value Added
IBO	Inter Branch Organisation
IFCN	International Farm Comparison Network
LFA	Less Favoured Areas
LVL	Latvian lats
MC	Marginal Cost
MS	Member State
OECD	Organisation for Economic Co-operation and Development
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
PO	Producer Organisation
SMP	Skimmed Milk Powder
WMP	Whole Milk Powder
WTO	World Trade Organisation

Part 1:

Introduction

1. Introduction

1.1 Background and objectives

1. The common market organisation in milk and milk products has undergone successive reforms during the last decade. Building on the orientations of Agenda 2000, the 2003 reform started loosening up the milk quota system in view of its end in 2015. This deadline was confirmed in 2008 by the CAP Health Check, which set out progressive increases of the quota levels, abolished aids for the seasonal storage of certain cheeses and the use of butter in pastry and ice-cream. Direct payments have been decoupled from production while maintaining the possibility for the Member States to recouple them to address specific disadvantages affecting farmers in economically vulnerable or environmentally sensitive areas. Support measures for fragile areas and for the development of higher added value and quality products have also been strengthened under the rural development policy.

2. The proposals on the CAP 2020 reform move deeper into these aspects. The Member States will benefit from an extended flexibility to support certain fragile areas. On the other hand, a particular focus has been put on maintaining permanent pasture under greening obligations, with a potential impact on milk production. As for market management mechanisms, the reform proposals keep those broadly unchanged for the milk sector, while strengthening the horizontal emergency measures which will enable a quicker response to general market disturbances. In addition, a set of measures is proposed on risk management, innovation, knowledge transfer and research cooperation, which should contribute to enhancing the long-term competitiveness of the sector.

3. The reform confirms the end of the milk quota system in 2015. For a sector that has been used to production limitations for more than 25 years, the end of the quota system creates challenges for economic operators. In view of preparing them to the new context, the Commission has proposed measures aimed to strengthen the organisation of milk producers and their bargaining power and improve the cooperation and relations between the different stages of the supply chain. The main elements of the so-called Milk Package are (i) producer organisations allowed to collectively negotiate contract terms with processors, (ii) basic mandatory conditions for contracts in the Member States which decide to impose compulsory contracts, (iii) stronger inter-branch organisations, (iv) reporting obligation of monthly milk deliveries and (v) possible supply regulation for cheeses benefiting from protected designations of origin (PDO) and protected geographical indications (PGI).

4. The objective of this report is to assemble different viewpoints by a number of independent experts concerning the EU milk sector in the future context without quotas and, based on this input, deliver a prospective analysis of the most likely evolution of the sector. The viewpoints by the independent experts have been provided to identify major future trends and driving factors and the perspectives and challenges resulting from the end of the milk quota system in 2015. In particular, the following two themes have been addressed:

    - Theme 1: Market balance and competitiveness. This theme deals with various components of the sector's competitiveness, such as the added value of products, the differentiation of the product portfolio, the ability to promptly react to changes in domestic and world demand and to target specific outlets, the market share in the world market, the price of raw materials and final products, investments in the production and processing industry.

    - Theme 2: Sustainable milk production including its territorial dimension. This theme deals with the milk sector's contribution to the total agricultural product value as well as its role in maintaining vibrant rural communities, especially in the most fragile areas. It identifies regions at risk, describing elements that may

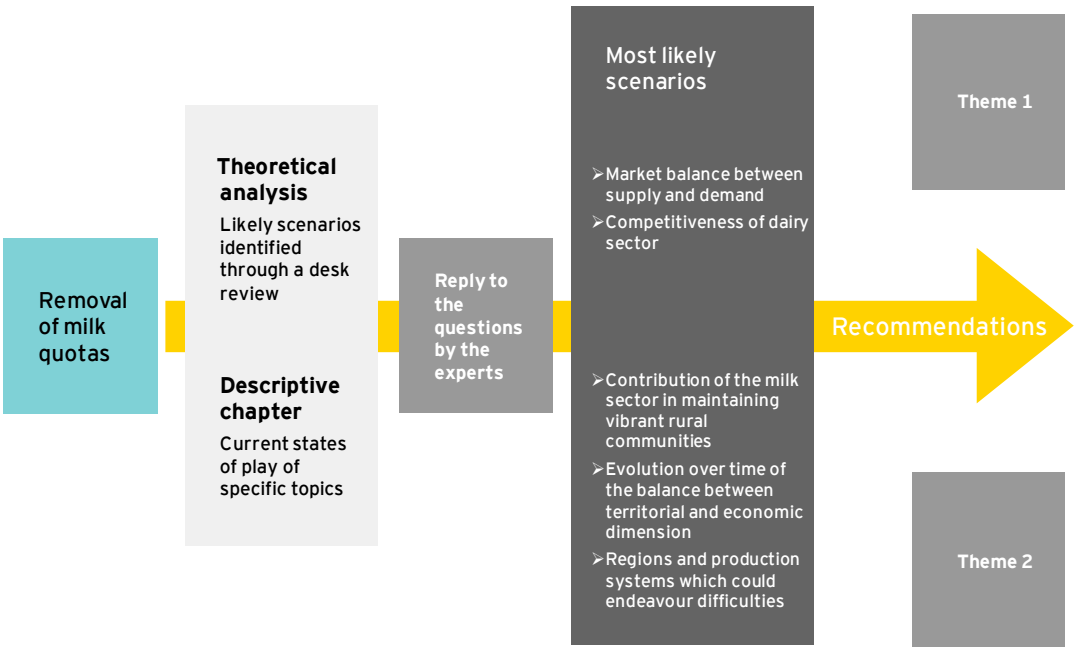
underpin the sustainable development of the sector including its economic and territorial dimensions and suggests appropriate actions.

1.2 Methodology

1.2.1 General approach

5. Figure 1 summarizes the approach followed to identify the most likely development of the milk sector following the removal of the milk quotas.

Figure 1: General approach



6. First, a desk review was performed to identify the existing scenarios regarding the evolution of the milk sector. The findings of this desk review are provided in the theoretical analysis. In addition, the descriptive chapter provides descriptive statistics on key issues.

7. After taking stock of this material, experts have replied to the analysis questions, expressing their independent views on the future of the milk sector. The replies to the questions are the core part of the analysis. The experts' opinions provide primary evidence on the likely evolution of the milk sector as well as recommendations to address identified challenges. A panel of six experts has been formed and constituted in order to have multiple independent opinions on the future of the milk sector in Europe after the abolition of milk quotas. The replies to the expert opinion reports are provided in a companion document contained in the Annexe to this report.

8. The most likely scenarios regarding the future evolution of the milk sector are established and synthesised in part 4 of the present report taking into account the expert replies to the questions, the descriptive chapter and the theoretical analysis.

9. Finally, the experts have identified the main challenges to be faced by the sector and have formulated recommendations.

10. In drafting this report, we have relied on information collected and the opinions formulated by independent experts. We have not attempted to verify information apart from crosschecking when relevant. We are compiling and analysing only in accordance with the professional standards to which we are subject.

1.2.2 Theoretical analysis

11. The desk review of the academic literature, market report and other relevant documents in the theoretical analysis provides an overview of the most likely scenarios stemming from the evolution of the milk sector following the removal of quotas in 2015. This includes the role played by market forces as well as the potential impact of additional measures set out to accompany the removal of quotas.

12. Scenarios on the evolution of the milk sector have been characterised based on the findings of previous studies[2] in terms of foreseen impacts on various aspects concerning production, processing and distribution of dairy products. Most of the studies surveyed provide results based on the use of economic models on the variation of quantities and prices of dairy products; some studies also assess the environmental impact or other aspects of interest for the characterisation of scenarios. No additional modelling was carried out to support the material presented in the theoretical analysis.

13. For a precise description of scenarios following the removal of milk quotas, we have also presented the effects of policy instruments identified by the literature, which could counteract some of the expected negative impacts. The legal framework to which we have referred is mainly regulation implemented for agricultural markets and specifically, for the milk and milk products market since 2007. It includes the Single CMO regulation with its amendments, the Health Check regulation and the Milk Package.

1.2.3 Descriptive chapter

14. In order to depict the current status of the milk sector, statistics have been gathered from different sources which are complementary. These sources have permitted to cover the seven themes quoted hereafter:

    - National and regional (if available) production of milk
    - National milk balance
    - Share of milk production consumed locally versus exported
    - Structure of milk producers and processors
    - Geographical coverage of processors
    - Share of cooperatives versus private dairies
    - Use of the Milk Package tools in the Member States and regions

15. This chapter is not meant to give an analysis of the current situation of the dairy market. Only factual observations have been made and no particular position have been taken or defended.

16. The sources used to gather the data are the following:

    - Eurostat New Cronos contains macroeconomic and social statistics data covering the European Union Member States and also the main economic partners of the EU.
    - The Farm Accountancy Data Network (FADN) covers all EU Member States with harmonised accounting principles. The network is based on a system of sample

[2] The studies are presented in Table 2 in Part 3.

surveys that are performed annually to collect structural and accountancy data on farms by Liaison Agencies in each Member State.

- Eurostat Comext is the official statistical database on trade of goods managed by Eurostat. It reflects the performance of the European Union economy by focusing on the size and the evolution of imports and exports. It includes data on agricultural products trade.

- The International Farm Comparison Network (IFCN) is a global network of dairy researchers which study the milk supply chain as a whole.

- Additional sources such as COPA-COGECA have been used at very specific parts of the descriptive chapter (when needed); references have been always displayed.

1.2.4 Reply to the analysis questions

17. The experts were provided with a template and a draft outline to reply specific questions. The aim of the outlines has been to structure the experts' replies in a harmonised way. It has provided information on the general structure of the report without seeking to influence experts' response content. The replies to the questions are the property of the experts. The proposed general structure was as follows:

    - Interpretation and comprehension of the key terms of the evaluation questions

    - Indication of the analysis criteria allowing to answer the questions; validity of the quantitative and qualitative information used

    - Description of the methods used and an indication of their limitations

    - Detailed description of the reasoning followed in the analysis, indicating in particular the underlying hypotheses and validity limits

    - Conclusions for each question.

18. For each of the theme to be analysed, three experts were mandated to address the set of questions detailed hereafter. Each expert drafted an expert opinion report with their replies. These reports are contained in the companion document in the annex to this report.

19. The data provided in the Theoretical analysis and in the Descriptive chapter were informative to represent common grounds for all experts. The experts were free to use their own data.

1.2.4.1 Theme 1: Market balance and competitiveness

20. The analytical questions linked to the first theme are as follows:

    - How will the balance between supply and demand be affected by market forces, organisational systems of the supply chain (in particular POs and IBOs) and policy measures, including market support mechanisms, in a non-quota regulatory framework?

    - How will those elements affect the sector's competitiveness in terms of added value and portfolio of products, ability to react to changes in demand, competitive position of the EU in the world market, and need of investments in the production and processing industry?

- How could a possible buy-out scheme be operated in a workable and effective way?

1.2.4.2 Theme 2: Sustainable milk production including its territorial dimension

21. The analytical questions linked to the second theme are as follows:

    - What will be the contribution of the milk sector to maintaining vibrant rural communities, especially in the most fragile areas?
    - How will the balance between the territorial and economic dimension of milk production evolve over time?
    - What are the regions and production systems which could endeavour difficulties?
    - What actions could be envisaged with the view to secure a sustainable balance between the economic and territorial dimension of the milk sector?

1.2.5 Analysis of the themes, conclusions and recommendations

22. Experts' reports have been analysed and summarised to identify the most likely scenarios for the aspects of interests for the two main themes. Before moving to the description of scenarios, the understanding of the terms deemed key by the experts are summarised. Then the reports are summarised highlighting common findings and heterogeneous views expressed.

23. The last part of the report provides an overview of the main challenges and the recommendations to overcome them. Recommendations are exclusively based on experts' opinions.

Part 2:

Theoretical analysis

2. Theoretical analysis

24. In this section, we provide an overview of the most likely scenarios stemming from the evolution of the milk sector following the removal of quotas in 2015. Scenarios on the evolution of the milk sector are based on the findings of previous studies in terms of foreseen impacts on various aspects concerning production, processing and distribution of dairy products.

2.1 General framework

2.1.1 Policy objectives and measures following the removal of milk quotas

25. The removal of milk quotas aims at enhancing the competitiveness of European dairy producers, making production more reactive to demand impulses. The removal of milk quotas at the same time, exacerbates the economic outlook of certain areas/categories of dairy production with comparative disadvantages. Additional measures are set out to accompany the removal of quotas in order to ensure a sustainable contribution of the milk sector in maintaining vibrant rural communities. These additional measures are aimed at preserving producers' income, protecting market stability from extreme fluctuations in prices of dairy products in the international markets, rebalancing bargaining power of producers' *vis-à-vis* processors and ensuring a sustainable contribution of the milk sector in fostering rural communities, especially in the most fragile areas.

26. In Table 1, we present the main policy objectives for the development of the dairy sector foreseen to accompany the removal of the milk quotas. Along with this, we present the respective measures and expected impacts, all categorised according to the two main themes of the study – theme 1: market balance and competitiveness, and theme 2: sustainable milk production.

Table 1: Policy objectives, measures and expected impacts

Policy objectives	Measures	Expected impacts
Market balance and competitiveness		
Enhancing competitiveness through market balance with greater market orientation	Removal of quotas after the 2014/2015 marketing year	The impact of this policy has been broadly measured in the literature surveyed in this document. Precise estimates are provided for the expected variation in prices and produced quantities of dairy products following the removal of dairy quotas
Producer income	Direct payments to farmers Special payments exist to protect young farmers or farms of a smaller size	Support income and profit margins for producers Market orientation Activity of more fragile categories will be maintained
Market stability	Public intervention to absorb excess supply in the market as a safety net for strong fall in prices Possibility of fixing terms and conditions through contractual relations between producers and processors	Price stabilization in times of severe market crises Producers will face less volatile prices in the medium term
Rebalancing bargaining power between milk producers and processors	Possibility of forming POs	Improved price transmission and more fair distribution of value added along the chain
Increasing transparency	Form IBOs to share information along the dairy supply chain	More equal distribution of transmission of changes in prices of dairy products among processors, producers and consumers

Policy objectives	Measures	Expected impacts
Sustainable milk production including its territorial dimension		
Maintaining vibrant rural communities, especially in the most fragile areas	Form IBOs to share information along the dairy supply chain Measure on PDO/PGI Specific support to farmers (Article 68)	Reduction of asymmetry in information Preservation of value added of niche products Addressing specific disadvantages, which affect farmers in economically vulnerable or environmentally less favourable areas Alleviation of the risk of land abandonment
Supporting regions and systems which could encounter difficulties	Direct payments to farmers in areas with natural constraints	Alleviation of difficulties of operators in difficult areas
Maintaining a balance between the economic and territorial dimensions of the milk sector	Linking of direct payments to farmers conditional to environmental regulations	Reduction in negative impact on environment

2.1.2 Methodological aspects

27. Scenarios on the evolution of the milk sector are characterised based on the findings of previous studies in terms of foreseen evolution of various aspects concerning production, processing and distribution of dairy products. Most of the studies surveyed provide results based on the use of economic models on the variation of quantities and prices of dairy products; some studies also assess the expected environmental impact or other aspects of interest for the characterisation of scenarios.

28. Table 2 provides an overview of the bulk of papers considered in this section specifying the perimeter of each study in terms of geographical and time coverage, and the model used to produce the results. The perimeter and the models used can lead to differences in results reported, which are usually in line as regards broad trends depicted, but might vary in magnitude.

29. Academic contributions on the impact of removing quotas in 2015 provide scenarios of reaction in the price and quantity supplied and demanded of dairy products. Results are often presented by the European Member States (MS) and sometimes also at the regional level (e.g. Witzke *et al*. 2009). Some studies also report variation in herds and yields and in some cases this is also accompanied by scenarios on the environmental impact (see Kempen *et al*. 2011). All the studies considered present scenarios following the removal of milk quotas and their produced effects after 2015: Binfield (2007) considers 2017 the last year of the time horizon; Witzke *et al*. (2009) have a larger horizon going until 2020, Requillart *et al*. (2008) view 2016 as the last year of the time horizon. Results of these works tend to be in line with each others[3].

30. In addition to academic contributions, we also considered recent market studies providing projections on the dairy sector (please see the bottom part of Table 2). For instance we considered the market research conducted by Gira Consulting in December 2012 and titled "World and EU dairy markets through 2016", which is based mainly on market expertise and provides projections on production of dairy products such as butter, cheese, SMP and WMP. We also considered the 2012 edition of the "Prospects for Agricultural Markets and Income in the EU2012-2022", which includes medium-term projections for major EU agricultural commodity markets and agricultural income until 2022 and is issued yearly by the Commission's Directorate-General for Agriculture and Rural development (since now on

[3] Kempen *et al*. (2011) is based on the JRC study Witzke *et al*. (2009); therefore, the results reported in these two papers often coincide. However, we deciced to include also the older version because it provides more detailed results for some aspects such as variation of net trade of dairy products by country.

we will refer to this document as DG AGRI (2012)). We also consider projections contained in the "OECD-FAO Agricultural Outlook 2012-2021". Assumptions on the world market environment used to produce DG AGRI (2012) projections are based on the "OECD-FAO Agricultural Outlook 2012-2021" but also taking into account more recent global macro-economic prospects. This makes the figures of DG AGRI (2012) more up to date with respect to the ones contained in the "OECD-FAO Agricultural Outlook 2012-2021". The OECD-FAO outlook was used to report additional projections for production, consumption import and export of selected dairy products for the EU-27 at the aggregate level (Hereinafter, we will refer to this document as OECD-FAO (2012)).

Table 2: Papers proposing scenarios after the removal of dairy quotas in 2015

Articles	Perimeter of the study	Model used
M. Kempen, H. P. Witzke, I. Perez Dominguez, T. Jansson, P. Sckokai, Economic and environmental impacts of milk quota reform in Europe, Journal of policy modelling, Volume 33: 29-52, 2011 H.P. Witzke, M. Kempen, I. Pérez Domínguez, T. Jansson, P. Sckokai, J. Helming, T. Heckelei, D. Moro, A. Tonini and T. Fellmann, Regional Economic Analysis of Milk Quota Reform in the EU, JRC Scientific and Technical Reports, 2009	Geographical coverage: EU-27. Time span: base year is 2003-2005 (three years average) and the time horizon is 2020	CAPRI
J. Binfield, EU Milk Production Quotas, WCDS Advances in Dairy Technology, Volume 21: 71-84, 2009	Geographical coverage: EU-27, Norway and Western Balkans at regional level (250 regions) Time span: base year is 2006/07 and covers a time horizon until 2017	FAPRI – Gold
F. Chantreuil, T. Donnellan, M. van Leeuwen, P. Salamon, A. Tabeau, L. Bartova, EU Dairy Quota Reform – AGMEMOD Scenario Analysis, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Geographical coverage: EU-27. Time span: base year is 2007/08 and covers a time horizon until 2020	AGMEMOD
H. P. Witzke, A. Tonini, Dairy reform scenarios with CAPSIM acknowledging quota rent uncertainty, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Geographical coverage: EU-27 Quotas abolished by 2015 Time span: base year is 2001-2003 (three years average) and the time horizon is 2020	Common Agricultural Policy SIMulation (CAPSIM)
V. Réquillart, Z. Bouamra-Mechemache, R. Jongeneel, C. Penel, Economic Analysis of the effects of the expiry of the EU milk quota system, Institut d'économie industrielle, March 2008	Geographical coverage: EU-27. Time span: base year is 2005/06 and covers a time horizon 2009-2016	European Dairy Industry Model (EDIM)
Z. Bouamra-Mechemache, R. Jongeneel, and V. Réquillart, Removing EU milk quotas, soft landing versus hard landing, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Geographical coverage: EU-25. Time span: base year is 2003 and covers a time horizon 2009-2015	Spatial equilibrium model
Market research		
Gira Consulting & Research Prospective et Strategie, World and EU dairy through, December 2012	Geographical coverage: EU level, World level Time span:2011 to 2016	Forecasts
Prospects for agricultural markets and income in the EU 2012-2022, European Commission, Agriculture and Rural Development, December 2012	Geographical coverage: EU Time span: 2012-2022	Deterministic projections and stochastic simulations with AGLINK-COSIMO
OECD-FAO Agricultural Outlook 2012-2021	Geographical coverage: OECD countries, World, sometimes with focuses on the EU-27 Time span: 2012-2021	Deterministic projections and stochastic simulations with AGLINK-COSIMO

31. For a precise description of scenarios following the removal of milk quotas, it is also necessary to present policy instruments that may be implemented to counteract some of the expected negative impacts. The legal framework to which we will refer in the remainder of this section is mainly regulation implemented for agricultural markets and specifically, for the milk and milk products market since 2007. It mainly includes the Single CMO regulation with its amendments, the Health Check regulation and the Milk Package. We also present some possible changes in legislation that are currently under consideration (Table 3).

32. In 2009, based on the Health Check[4] of the CAP, several major measures were adopted to modernise the agricultural market. Among the major changes introduced, there is:

- progressive phasing out of the milk quotas by five consecutive annual increase of one percent of milk quotas (for Italy, it has been replaced by a unique five percent increase in 2009)
- adjustment of the fat correction factor, which resulted in a further one percent increase in quotas
- super levy changes in 2009/10 and 2010/11 (for deliveries which exceed six percent of the quota, the super levy to be paid is 150 percent of the normal super levy)
- abolishment of the compulsory set-aside (farmers do not have to leave 10 percent of their land fallow)
- assistance to sector with special problems (so-called Article 68 measures)
- extension of the Single Area Payment Scheme until 2013
- investment aid for young farmers

33. With the milk crisis experienced in 2007/2008, a need for emergency intervention has been identified. Special intervention measures can be adopted in case of serious disturbances in the market as a safety net to support producers' income. 'Milk Package' consists of a reorganisation of the dairy supply chain with contractual regulation guidance to negotiate collectively in POs and to enhance transparency in the milk market. Milk Package also contains a measure to manage the supply of cheese in PDO/PGI. Additional laws and proposals part of the CAP 2020 are underway to complete the legal framework in the next few years.

Table 3: General legal framework

Regulations	Objectives
EC reg 1234/2007 establishing a common organisation of agricultural markets and specific provisions for certain products (Single CMO Regulation)	To establish the Single CMO Regulation for agricultural markets
EC reg No 248/2008 amending the Regulation (EC) No 1234/2007	To increase quotas by 2 percent from 1 April 2008
Health Check EC reg No 72/2009 amending the Regulation (EC) No 1234/2007 EC reg No 73/2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers 74/2009 amending Regulation (EC) No 1698/2005 on	To modernise the CAP and to help farmers respond better to signals from the market and face new challenges by applying measures such as the five consecutive one percent increase of quotas, the abolition of set-aside, etc.

[4] http://ec.europa.eu/agriculture/healthcheck/index_en.htm

Regulations	Objectives
support for rural development by the European Agricultural Fund for Rural Development (EAFRD)	
Milk Package: Regulation (EU) No 261/2012 amending Regulation (EC) No 1234/2007	To establish amendments to the Single CMO Regulation concerning the milk sector
Proposals for a regulation establishing a common organisation of the markets in agricultural products (Single CMO Regulation) CMO (2011) 626 Proposal on rules for Direct payments CMO (2011) 625 Proposal on support for a rural development CMO (2011) 627 Proposal on financing, management and monitoring CMO (2011) 628 Proposal on fixing certain aids and refunds CMO (2011) 629 Proposals on the application of direct payments in respect of 2013	Legal proposals for the CAP after 2013. The principal instruments of the CMO are maintained. Private storage of butter and SMP will be optional Specific amendment is proposed by Michel Dantin to establish a so-called "buy-out scheme" (new article 156a) in order to address eventual severe imbalances in the market for milk and milk products

34. In the remainder of this section, we first introduce the role of market forces in shaping the future of the milk sector following the removal of quotas. We will then proceed to analyse the role of available policy measures and organizational systems in offsetting some of the collateral effects of quota removal.

2.2 Role of market forces in shaping the future of the milk sector

35. In this section, we report the main scenarios envisaged in the literature concerning the future of the milk sector and the role played by market forces, defined as the aggregate behaviour of buyers and sellers determining prices. We first present market forces and their mechanism of adjustment. We then introduce an overview of estimated variations in production demand and prices in the dairy sector following the removal of milk quotas. Scenarios are first reported at the aggregate level for production and price of raw milk and then presented by country and by dairy.

2.2.1 Presentation of market forces

36. The role of market forces is presented from both an aggregated and a microeconomic perspective. We introduce the section by analysing how the removal of quotas might impact the price and quantity of dairy products. We then analyse from a microeconomic perspective, how the new level of prices will affect the individual producers/processors with specific reference to their profit margins.

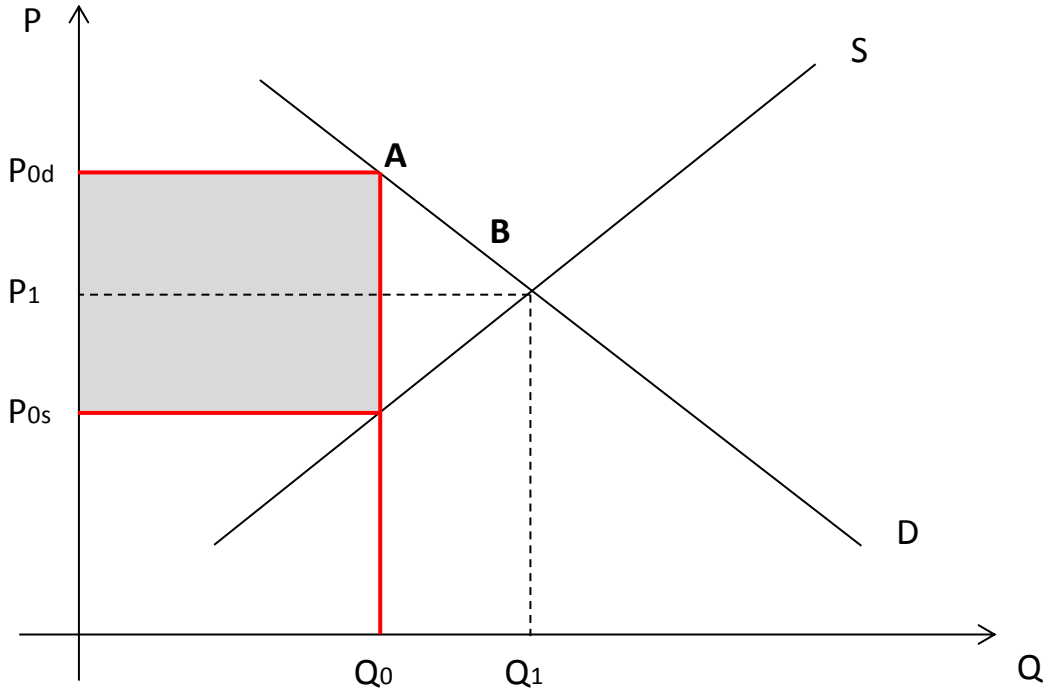
37. Market forces can be defined as the set of interactions between supply and demand which gradually lead the market towards equilibrium. We refer to supply to indicate milk produced either to be processed further by dairies or to be sold directly. The demand is determined by the final consumption of dairy products.

38. The economic theory foresees that as soon as the quotas are removed due to market forces, market equilibrium will adjust with an increase in the quantity of milk supplied, followed by a fall in prices (Figure 2). In the presence of quotas, the market cannot produce more than the quantity $Q_{0,}$ to which corresponds a given price P_{0d}. If the quota is binding with its removal, the market would naturally adjust to the quantity and price determined by the intersection of demand and supply (P_1), for which the respective quantity increases to Q_1. It should be noticed that in Figure 2, we refer to the market of raw milk, which is not traded on international markets due to the fact that it is highly perishable and costly to transport.

39. However, the consecutive annual increases in milk quota have led to a situation in which quotas have become less and less relevant and in most MS they have no more value (in

quota year 2010-11, only five Member States exceeded their national ceilings). This situation could imply that "soft landing" is on track and thus the impact should be smoother than it is presented in Figure 2. With milk quotas gradually increasing, the EU milk supply is becoming more and more responsive to price fluctuations. This has been also proved by recent events when given the favourable price conditions, milk production experienced an increase at world level both in 2010 and 2011. Increased milk supply worldwide has put downward pressure on prices that have resulted in a prompt decrease of production in the following months[5].

Figure 2: A possible effect of removing quotas on the aggregate milk market



40. In many of the academic studies considered, quotas still represent a central factor for modelling the effects of milk quota removal. The presence of binding quotas is reflected in quota rents, which would increase the probability of a positive impact on quantities of milk produced – the higher the quota rent, the higher the expected increase in milk production caused by market prices. The quota rent identifies the amount of surplus generated by a restriction on supply and can be calculated as the present value of annual benefits for milk producers derived from maintaining the quota. In Figure 2, the quota rent corresponds to the shaded area.

41. The gradual increase in quota level and the fact that quotas are no more binding and without value in many countries should be taken into account when interpreting results obtained in models that are based on quota rents as a key driving factor.

42. Each individual farm/producer faces different average economic costs (AEC), which include both average and fixed costs. There might be cases in which the new price level falls below the AEC borne by producers. In these cases, if no additional measure is in place, the farms would be naturally forced out of the market. The level of AEC is determined by various factors, such as the size and/or geographical location of the farms.

[5] For a complete overview of the developments on the gradual removal of quotas please consult the two editions of the soft landing reports in 2010 and 2012 – Evolution of the market situation and the consequent conditions for smoothly phasing out of milk quotas.

43. Quantitative modelling is often used to assess the impact of removing quotas. Table 4 provides more details on the most common models used, reporting on their characteristics, objectives and sectors/commodities covered.

Table 4: Overview of principal models[6]

Model	General characteristics	General objectives	Sectors/Commodities
FAPRI GOLD, Food and Agricultural Policy Research Institute (Grains, oilseeds, livestock and dairy), FAPRI	Interconnected network of several partial-equilibrium models describing the markets for different agricultural commodities	To examine and project the area, production, usage, stocks, prices, and trade for fluid milk, butter, cheese, non-fat dry milk, and WMP for several countries and regions of the world	Major temperate crops, sugar, ethanol and biodiesel, dairy, and livestock and meat products
CAPRI, Common Agricultural Policy Regional Impact	Static, partial equilibrium model consisting of four interconnected modules	To evaluate ex ante impacts of the CAP and trade policies on production, income, markets, trade, and the environment, from global to regional scale	Fifty agricultural primary and processed products for the EU
EDIM, European Dairy Industry Model	Spatial equilibrium model of the dairy sector integrating the vertical structure of the industry Includes milk supply, processing of milk in dairy products and demand Hedonic model distinguishing fat and protein	To simulate the impact of alternative policy scenarios for the dairy sector over a medium term period	Fourteen dairy products characterised by their fat and protein content
AGMEMOD, Agricultural Member States Modelling	Econometric, dynamic, multi-product partial equilibrium model	To make projections and simulations in order to evaluate measures, programmes and policies in agriculture at the EU level as well as at the Member States level	The commodity coverage of the current version of the model extends to markets for grains, oilseeds and to the markets for their associated meals and oils, root crops, livestock and milk and dairy products (cheese, butter, whole milk powder and skim milk powder)
AGLINK-COSIMO, OECD-FAO	Dynamic supply-demand partial-equilibrium model of world agriculture	To generate baseline projections for the OECD-FAO Agricultural Outlook	It includes annual supply, demand and prices for the principal agricultural commodities produced, consumed and traded in OECD and certain non-OECD countries

[6] The information contained in this table is sourced from various papers listed here below and contained in the references at the end of this report:
"Indirect Land Use Change from increased biofuel demand – Comparison of models and results form marginal biofuels production from different feedstocks, Edwards *et al.* (2010)
"Modelling CAP Decoupling in the EU: A Comparison of Selected Simulation Models and Results", Balkhausen *et al.* (2007)
"Documentation of the AGLINK-COSIMO Model", OECD, Directorate for Food, Agriculture and Fisheries – Committee for Agriculture (2007)
Réquillard et al. (2008)
"Literature Review of Methodologies to Generate Baselines for Agriculture and Land Use", Blanco-Fonseca, (draft version 05.02.2010)

44. Having presented the market forces at work when discussing the removal of dairy quotas, we can now go through the various scenarios for the future of the milk sector as outlined in the studies surveyed.

2.2.2 Main assumptions characterising scenarios

45. Most of the studies reviewed in this report provide their results on the removal of quotas in a comparative perspective with respect to a baseline scenario. In order to compare results, it is important to take into account the characteristics of the different benchmarks used to describe the future perspectives of dairy products. The baseline scenario is a projection of the most likely trends in the European agricultural sector under the status *quo* policy at the time in which the paper was written.

46. Baselines set by the different authors in terms of regulatory framework tend to have common features of the Luxembourg Agreement in 2003, namely, direct payments are usually considered to be replaced by decoupled payments and intervention prices for butter and SMP are to be gradually reduced to safety-net level. Assumptions are also made for the development in macroeconomic fundamentals of Europe and some of its main trade partners. The baseline is used to evaluate several scenarios, but relevant for us was just the scenario characterised by the removal of quotas in 2015. This scenario entails usually all the elements of the *status quo* scenario with the only difference being, that quotas will be completely removed in 2015. For a more precise description of baselines and counterfactual scenarios used to produce the results reported in this study, the reader can refer to Table 5, which reports extracts of the seven academic papers reviewed, providing details on the characteristics of the scenarios used.

47. In general, all models make use of all available information at the point in time in which results are produced. This includes not only the *status quo* in policy reforms foreseen on the time horizon of interest, but also a set of additional quantitative information on macroeconomic and demographic trends. The most recent figures provided by reliable international institutions such as the International Monetary Fund, the World Bank and the OECD are usually used.

Table 5: Possible scenarios for prices and supplied quantities of dairy products following the removal of quotas in 2015 (in most of the cases, these are quotes directly sourced from the articles)

Articles	Baseline or *status quo* scenario assumptions	Scenario of quota removal assumptions
M. Kempen, H. P. Witzke, I. Perez Dominguez, T. Jansson, P. Sckokai, Economic and environmental impacts of milk quota reform in Europe, Journal of policy modelling, Volume 33: 29-52, 2011 H.P. Witzke, M. Kempen, I. Pérez Domínguez, T. Jansson, P. Sckokai, J. Helming, T. Heckelei, D. Moro, A. Tonini	The central elements for the dairy sector of the Luxembourg Agreement in 2003 are taken into account, namely the decoupling of direct payments together with a stepwise reduction of intervention prices for butter and SMP Furthermore, it also includes further reforms on single markets (tobacco, olive oil and cotton sectors), the reform of the sugar quota, a 2 percent expansion of milk quotas in 2008 and the abolition of obligatory set-aside This scenario was mainly elaborated to show the impact of the 2003/2004 reform ex-post, i.e., more for technical purposes Moreover, this scenario includes expert-driven assumptions on the development of dairy markets and milk quota rents For this scenario, DG AGRI provided statistical information on milk deliveries, export subsidies, intervention stocks for dairy products and, medium-term projections for dairy markets.	The common approach to identify the implications of a certain policy scenario such as the abolition of milk quotas is to repeat the baseline scenario with all parameters and exogenous inputs maintained except those under investigation, in this case the milk quotas. In the reform scenario, milk production will be determined according to the usual 'marginal cost equals price' optimality condition, with marginal cost determined from the calibrated cost functions, endogenous quantities and shadow prices of fixed factors As scenario results are generated for the year 2020, the dairy sector is assumed to have adjusted to the new market environment between 2015 and 2020.

Articles	Baseline or *status quo* scenario assumptions	Scenario of quota removal assumptions
and T. Fellmann, Regional Economic Analysis of Milk Quota Reform in the EU, JRC Scientific and Technical Reports, 2009		
J. Binfield, EU Milk Production Quotas, WCDS Advances in Dairy Technology, Volume 21: 71-84, 2009	There exist varying degrees of decoupling among the different Member States Many of the direct payments formerly linked to production, either through a per-hectare of crop or per-head of animal basis, are incorporated into the Single Farm Payment (SFP) It is assumed that the SFP has a modest production stimulating effect because the security of the decoupled payments may reduce their financial risk levels or facilitate bank loans Global market conditions over the past year resulted in set-aside being set to zero for the crop year 2007/ 08. A zero rate for set-aside has been imposed in the Baseline for the whole ten-year projection period as it is projected that prices remain well in excess of the sort of levels that would trigger intervention purchases In the dairy sector, milk quotas rise by two percent for the 2008/09 quota year It is assumed that the dairy quota system will remain in place for the whole of the projection period The EU export subsidy limits and import tariffs, agreed under the Uruguay Round Agreement on Agriculture (URAA), remain in place.	The scenario for testing the removal of quotas includes: As part of the mid-term review reforms most direct payments were decoupled from production. In this scenario some more beef payments and all remaining cereal coupled payments were decoupled The Commission's initial proposals regarding the transfer of some of the decoupled payments to rural economy measures (a process called "modulation" by the EU) were incorporated but had little impact Five annual increases in milk quota of one percent implemented from 2009 to 2013, followed by abolition in 2015 Export subsidies eliminated for all commodities in 2013 as EU has already declared that, irrespective of a new WTO agreement, EU export subsidies will be eliminated
F. Chantreuil, T. Donnellan, M. van Leeuwen, P. Salamon, A. Tabeau, L. Bartova, EU Dairy Quota Reform – AGMEMOD Scenario Analysis, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Milk quotas remain in place at the 2008/09 level throughout the projection period 2008/09 quota expansion package (the two percent milk quota increase) has been implemented Butter and SMP intervention remains in place throughout the projection period No further WTO reform occurs and the Uruguay Round Trade Agreement conditions hold Export subsidies and import tariffs remain 'on the books' and are used when required to support the producer milk price	The scenario for simulating the removal of quotas includes: The dairy quota is expanded by two percent each year 2009/10 to 2013/14 2009/10 is year 1 (total increase five percent by 2013) Milk quota is eliminated in 2015 No compensation is paid to producers for the resulting price drop
H. P. Witzke, A. Tonini, Dairy reform scenarios with CAPSIM acknowledging quota rent uncertainty, 12th Congress of the European Association of	CAP reforms (except on wine as EU Regulation 479/2008 dated from 29/06/2008) Forecasts on policy driven variables such as set aside aligned with those of the European Commission Directorate General for Agriculture and Rural Development (DG Agri) In terms of future international price evolution, this study relied on FAPRI projections. For dairy products, however, these were averaged with projections from *Réquillart et al*. (2008), which	Quota expiry scenario, which provides projections for the year 2020, five years after the scheduled expiry in 2015 and corresponds to the magnitude of medium run supply elasticities (about 0.3 for milk).

Articles	Baseline or *status quo* scenario assumptions	Scenario of quota removal assumptions
Agricultural Economists – EAAE, 2008	received a doubled weight compared to FAPRI The standard baseline ignores a WTO agreement but in a sensitivity analysis an abolishment of export refunds has been assumed In addition to the 2003 Luxembourg Reform, 2004 Mediterranean Reform, and the first two percent expansion of milk quotas in 2008, it incorporates the so-called mini milk reform, which includes the permission to standardise the protein content of skimmed milk powder at 34 percent (in line with international Codex Alimentarious provisions) whereas the current standard for intervention is 35.6 percent	
V. Réquillart, Z. Bouamra-Mechemache, R. Jongeneel, C. Penel, Economic Analysis of the effects of the expiry of the EU milk quota system, Institut d'économie industrielle, March 2008	The baseline is the policy defined in 2003 (Luxemburg agreement). The main elements of this policy include: A cut in intervention prices An increase in milk production quota and direct payments based on past allocation of quotas The quantitative information about the intervention price The analysis concentrates on the period 2008-09 to 2015-16 and provides some results for the year 2020-21	The scenario of interest focuses on the removal of milk quotas during the year 2015/16 and differs from the baseline scenario in the absence of the quota system. All the other elements of the policy mix are identical. In particular: The intervention prices are identical When needed, domestic subsidies and export subsidies are used to maintain the domestic price of butter and SMP higher (or equal) to their respective intervention price The trade policy is identical, that is the general rules are not modified
Z. Bouamra-Mechemache, R. Jongeneel, and V. Réquillart, Removing EU milk quotas, soft landing versus hard landing, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	The baseline for the analysis of policy reform scenarios (Baseline) represents a continuation of the pré-Luxembourg agreement situation, including the 1995 Uruguay Round trade agreement. It thus represents a *status quo* situation at the time in which the paper was written when the dairy policy implemented is the one in place in 2003. To simplify the analysis and the comparison of scenarios, EU10 countries are modelled as if they were part of the EU in 2003.	This scenario assumes an elimination of quotas in 2013-14 in addition to the assumptions of the Luxembourg scenario: A stepwise reduction of SMP and butter intervention prices by 15 percent and 25 percent respectively The milk quota are gradually increased in the period 2006-07 – 2008-09 increasing the total EU-25 quota by 1.1 percent to 136 million t Direct payments are progressively introduced reaching 35.5 EUR/t in EU15 countries and 24.85 EUR/t in EU10 countries in 2010-11 In addition to the Luxembourg agreement, it is assumed that a new WTO agreement will be signed on the basis of the Falconer proposal of autumn 2007. It consists of a reduction of the import tariffs, an increase in import quotas and a complete elimination of export subsidies. The changes are progressively introduced over a six year period (2009-10 to 2014-15).
Prospects for agricultural markets and income in the EU 2012-2022,	The world market environment is based on the OECD-FAO agricultural outlook of July 2012, taking into account more recent global macroeconomic prospects. The projections are based on statistics	It is interesting to notice that in this case the baseline scenario already includes the removal of quotas as it was already decided at the time of the projection exercise and therefore is

Articles	Baseline or *status quo* scenario assumptions	Scenario of quota removal assumptions
European Commission, Agriculture and Rural Development, December 2012	available at the end of September 2012. As regards policy environment, the following assumptions are made: milk quotas are increased by 1 percent every quota year between 2009/10 and 2013/14. For Italy, the 5 percent increase was introduced in one go in 2009/10. Milk quotas are abolished by April 2015.Sugar and glucose quotas are assumed to expire after the marketing year 2014/2015. Intervention mechanism is set at zero for barley and sorghum. For wheat, butter and skimmed milk powder intervention purchases are possible at guaranteed buying-in prices up to 3 million t, 30 000 t and 109 000 t, respectively for each year. Beyond these limits, intervention is possible by tender. The payments that some MS kept coupled after the 2003 CAP Reform are decoupled and moved into the Single Payment Scheme (SPS) by 2010 for arable crops, dorm wheat, olive oil and hops and, by 2012, for processing aids and the remaining products with the exception of suckler cow, goat and sheep premiums, where MS are assumed to keep current levels of coupled support. The MS applying the single area payment scheme (SAPS) are assumed to adopt the regionalized system from 2014 onwards. The requirement for arable farmers to leave 10 percent of their land fallow was abolished in 2008. Direct payments exceeding EUR 5 000 annually shall be reduced each year, by 7 percent in 2009 up to 10 percent in 2012. An additional cut of 4 percent will be made on payments above EUR 300 000.	itself a relevant term of comparison for scenarios presented in the other papers part of this report. In addition to the baseline, it is interesting to consider also a specific simulation for different level of euro/dollar exchange rate. This set of results will be discussed in the section on trade.
OECD-FAO Agricultural Outlook 2012-2021	Policy assumptions are surveyed through questionnaires in each country	Also in this case, the baseline projections represent a term of comparison with results reported in other studies

2.2.3 Changes in production, demand and price of raw milk and dairy products

2.2.3.1 Change in production of raw milk

48. Table 6 reports a group of selected studies with the expected magnitude in the change of prices, supply and demand of supplied milk always with respect to the baseline. In general, the studies foresee an increase in the quantity of supplied milk (with the exception of Binfield (2009), who in practice, expect no change) and a corresponding fall in prices. The increase in supply is expected to range from -0.06 to 5.0 percent, while variation in prices ranges from 3.3 to 10.3 percent. It should be stressed that results reported at the aggregate European level do not necessarily correspond to what is found to happen at the country or regional levels.

Table 6: Possible scenarios for prices and supplied quantities of milk following the removal of quotas in 2015

Article	Baseline price (EUR/t)	Expected change in price	Baseline production (1000 t)	Expected change in quantity
M. Kempen, H. P. Witzke, I. Perez Dominguez, T. Jansson, P. Sckokai, Economic and environmental impacts of milk quota reform in Europe, Journal of policy modeling, Volume 33: 29-52, 2011 H.P. Witzke, M. Kempen, I. Pérez Domínguez, T. Jansson, P. Sckokai, J. Helming, T. Heckelei, D. Moro, A. Tonini and T. Fellmann, Regional Economic Analysis of Milk Quota Reform in the EU, JRC Scientific and Technical Reports, 2009	Baseline 2020: 298	-9.80%	Baseline 2020: 151 156	4.4%
J. Binfield, EU Milk Production Quotas, WCDS Advances in Dairy Technology, Volume 21: 71-84, 2009	Baseline 2017: 288	-2.03%	Baseline 2017: 146 300	-0.06%
F. Chantreuil, T. Donnellan, M. van Leeuwen, P. Salamon, A. Tabeau, L. Bartova, EU Dairy Quota Reform – AGMEMOD Scenario Analysis, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Baseline 2020: 315	-7.2%	Baseline 2020: 151 800	4.8%
H. P. Witzke, A. Tonini, Dairy reform scenarios with CAPSIM acknowledging quota rent uncertainty, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Baseline 2020: 244	-7.5%	Baseline 2020: 153 825	2.8%
V. Réquillart, Z. Bouamra-Mechemache, R. Jongeneel, C. Penel, Economic Analysis of the effects of the expiry of the EU milk quota system, Institut d'économie industrielle, March 2008	Baseline 2015: 289	-10.3%	Baseline 2015: 139 893	5.0%
Z. Bouamra-Mechemache, R. Jongeneel, and V. Réquillart, Removing EU milk quotas, soft landing versus hard landing, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Baseline 2014-2015 expressed as variation from an index 100 when quota are removed: 92.4	-5.3%	Baseline 2014-2015 expressed as variation from an index 100 when quota are removed: 101.9	2.6%

2.2.3.2 Variation in herds and yields

49. With the removal of quotas and the consequent increase in milk production, producers will consider whether to adapt to changes in production through variations in herds or yields. Table 7 reports the impact on herds and yields. The changes in yields are relatively small, ranging from a decrease of -0.43 percent and an increase of around 0.2 percent. As regards the herds, the range is larger with Binfield *et al.* (2009) estimating it to be in the order of 0.37 percent and Kempen *et al.* (2010) estimating it to be around 4.2 percent.

50. DG AGRI (2012) assumes an increase in yields of around 5 percent with respect to dairy herds contracting by around 3 percent by 2022. The decrease in dairy herds is expected to be more pronounced in the 12 countries joining the EU after 2004 with a decrease of around 8 percent compared to a contraction of around 1.4 percent in the remaining 15 countries as a result of continuous restructuring. Even though the yield in the 12 countries accessing EU after 2007 is predicted to increase at a higher pace with respect to the remaining 15 countries (8 and 7 percent respectively), average cow productivity will remain lower (6 000kg per cow compared to 7 600kg in the rest of Europe).

Table 7: Impact of quota removal on herds and yields in the EU-27

Article	Baseline dairy herd (thousand)	Expected change in dairy herds	Baseline yields (kg per cow)	Expected change in yields
J. Binfield, EU Milk Production Quotas, WCDS Advances in Dairy Technology, Volume 21: 71-84, 2009	Baseline 2017: 21 197	0.37%	Baseline 2017: 6 904	Yields: -0.43%
M. Kempen, H. P. Witzke, I. Perez Dominguez, T. Jansson, P. Sckokai, Economic and environmental impacts of milk quota reform in Europe, Journal of policy modeling, Volume 33: 29-52, 2011 H.P. Witzke, M. Kempen, I. Pérez Domínguez, T. Jansson, P. Sckokai, J. Helming, T. Heckelei, D. Moro, A. Tonini and T. Fellmann, Regional Economic Analysis of Milk Quota Reform in the EU, JRC Scientific and Technical Reports, 2009	Baseline 2020: 22 157	4.2%	Baseline 2020: 6 822	Yields: +0,2%

2.2.3.3 Evolution in milk price and produced quantities by country

51. The figures with predicted changes in price and quantities vary within the EU-27 (Table 8). Witzke *et al.* (2009) report projections of variation in price and produced quantities by country.

52. Remarkable differences in terms of prices and quantities can be observed also across regions within countries. For example in the United Kingdom, where an overall decline of 5.7 percent is expected, the fall in production is much more pronounced in the north with respect to the south. In general, regions starting from higher levels of quota rents are expected to increase their milk production significantly. The overall increase in milk production drives down dairy prices in the EU-27 and this exerts economic pressure on regions with low quota rents. This is the case, for example, in the United Kingdom (Eastern, South East and South West regions), Sweden (Mellersta Norrland and Oevre Norland and all Finnish regions).

53. It should be considered when looking at figures in Table 8 that, in the light of the most recent statistics, quotas are less and less relevant. In particular, according to the Second "soft landing" report[7], only six Member States overshooted their milk deliveries with respect to the quotas in 2011/2012 (Austria, Cyprus, Ireland, Luxembourg, the Netherlands and Germany). This would imply a 'soft-landing' situation that would decrease the magnitude of figures presented hereafter.

[7] See Annex 3 of European Commision, Report from the Commission to the European Parliament and the Council, "Evolution of the market situation and the consequent conditions for smoothly phasing-out the milk quota system – second 'soft landing' report", Brussels 10.12.2012, COM(2010) 741 final

Table 8: Change in price and production following the removal of quotas in the EU-27

Article	Baseline price 2020 (EUR/t)	Change in price (%)	Baseline production 2020 (1 000 t)	Change in production (%)
Austria	282	-12.4	3 193	13.5
Belgium-Lux	285	-14.3	3 460	12.2
Bulgaria	234	-2.5	1 260	2
Cyprus	461	-4.4	150	-0.4
Czech Republic	282	-7.3	2 713	2.6
Denmark	333	-8.2	4 715	-0.1
Estonia	245	-5.4	670	-0.7
Finland	379	-4.5	2 518	-3
France	300	-10.9	25 157	0.2
Germany	313	-11.9	29 297	7
Greece	358	-9.5	776	0.4
Hungary	270	-8.6	1 882	6.2
Ireland	284	-11.7	5 369	11.6
Italy	369	-9.6	11 343	2.2
Latvia	196	-5.3	827	-0.7
Lithuania	183	-7.2	1 903	0.8
Malta	365	-2.6	44	0.1
Netherlands	354	-12.7	11 179	20.5
Poland	213	-9.3	11 322	4.7
Portugal	335	-7.1	2 056	-1.4
Romania	173	-2.2	4 671	3.6
Slovakia	277	-5.6	1 037	-1.8
Slovenia	259	-6.9	676	-0.3
Spain	306	-13.2	6 563	12.2
Sweden	341	-5	3 314	-4.6
United Kingdom	278	-4.7	15 063	-5.7

Source: Witzke *et al*. 2009

54. Quota rents are important determinants of simulated changes in milk production. Table 9 describes the main results from Witzke *et al*. (2009) and shows the level of milk quota rents in each country of the EU-27. The increase in production after the abolition of the quota is expected to be higher in countries having higher level of quotas rents. According to Witzke *et al*. (2009), Austria, the Netherlands, Belgium and Luxemburg, which present high level of quota rents, will increase their production significantly. Denmark, Finland, Portugal, Sweden and the United Kingdom are expected to scale down their milk production.

55. Looking at the figures in Table 9, it should be again considered that since the publication of the article by Witzke *et al*. (2009) the quotas have increased further and in most Member States they have no value anymore.

Table 9: Quota rents by country in the EU-27

Country	Witzke *et al.*, (2009) Q rent EUR/t (2020)
Austria	84.2
Belgium-Lux.	78.7
Bulgaria	20.8
Cyprus	27
Czech Republic	27.1
Denmark	31.1
Estonia	15.1
Finland	13.2
France	37.7
Germany	55.7
Greece	41.9
Hungary	34.4
Ireland	59.4
Italy	51.5
Latvia	13.6
Lithuania	18.1
Malta	21.3
Netherlands	98.2
Poland	31.1
Portugal	34.7
Romania	23.8
Slovakia	16.7
Slovenia	21.1
Spain	68.1
Sweden	10.3
United Kingdom	8.8
EU-27	44.6

2.2.3.4 Variation in production, demand and price of dairy products

56. Table 10 provides an overview of several scenarios raised in the literature for changes in prices and quantities of different dairy products. As can be seen, the papers report scenarios which are quite different in terms of variation induced of each type of product. For instance, Binfield *et al.* (2009) foresee that the major fall in prices will be in the market of butter (-15.37 percent), with the price of milk falling at an intermediate level (-2.03 percent) and the price of cheese remaining quite stable (-0.82 percent). Chantreuil *et al.* (2008) propose a different scenario with prices of cheese also falling at a relatively high rate of -9.1 percent exceeding the fall in price of raw milk which is estimated to be around -7.2 percent.

57. Table 10 also provides an overview of the expected scenarios on the demand side of dairy products. Binfield *et al.* (2009) envisage that the demand for fluid milk will increase by 0.28 percent whereas the consumption for manufacturing of dairy products remains quite stable

at around 0.01 percent. Réquillart *et al*. (2008) anticipate a more substantial increase of 1.2 percent in the demand of liquid milk together with an increase of 1.5 percent in the demand of butter, 5.2 percent of SMP, 2.3 percent for WMP and a decrease of -0.8 percent in cheese. Also the scenario proposed by Witzke *et al*. (2008) suggests an increase in all the dairy products with the exception of butter, whose demand remains constant. Chantreuil *et al*. (2008) foresee an increase in consumption of all dairy products with the exception of WMP, whose demand is expected to experience a slow decrease in the order of -0.4 percent.

58. Binfield *et al*. (2009) argue that the removal of quotas will induce an increase of milk production in the more efficient Member States, but the elimination of export subsidies results in an offsetting effect, leaving production more or less unchanged. Herds are predicted to increase as opposed to yields that are projected to adjust downwards given the transfer from areas characterized by higher natural costs to those characterised by more extensive and, hence, less costly farming.

59. For DG AGRI (2012), the increase in milk production stems from a continued increase in the average yield per dairy cow that is projected to reach 7 200kg by 2022 for a cumulative growth of 5 percent from 2011. Prospects for dairy products are also positive due to increased domestic and world demand. This is particularly the case for cheese, with output expected to increase by 7 percent on aggregate from 2011 to 2022, reaching 9.6 million t. SMP production is expected to increase even more markedly, reaching 1.3 million t by 2022 for a total increase of 23 percent over the period 2011-2022. WMP production is expected to remain fairly stable with a slight decrease in the order of -2.5 percent by 2022. Butter production is expected to remain constant until 2015 when quotas will be removed and recover afterwards reaching 2.4 million t in 2022 (+8 percent with respect to 2011). Cheese and butter demand are expected to increase of 4.3 percent and 4.5 percent respectively over the period 2011-2022, whereas SMP and WMP demand are expected to remain stable over the same period.

60. According to the market study conducted by Gira Consulting in December 2012, over the period 2011-2016, cheese production is expected to increase by 4 percent, butter production by 2 percent, SMP production by 4 percent and WMP production by 2 percent.

61. It can be seen in Table 10 that in some papers and for some products, production increases more rapidly than consumption (e.g. Réquillart *et al*. (2008) foresee a stronger increase in butter, SMP, WMP and semi hard cheese). The expected excess production could be the result of an increased level of export.

Table 10: Comparison of scenarios for different dairy products in the EU-27

Article	Expected change in nominal prices (Baseline in EUR/t)	Expected change in production (Baseline in 1 000 t)	Expected change in demand (Baseline in 1 000 t)
H.P. Witzke, M. Kempen, I. Pérez Domínguez, T. Jansson, P. Sckokai, J. Helming, T. Heckelei, D. Moro, A. Tonini and T. Fellmann, Regional Economic Analysis of Milk Quota Reform in the EU, JRC Scientific and Technical Reports, 2009	Producers prices: -9.80% (Baseline 2020: 298€) Industrial products butter, skimmed and whole milk powder prices decrease of about 6-7%.	Supply: + 4.4% (Baseline 2020: 151 156) Industrial products butter, skimmed and whole milk powder increase of 5-6%	
M. Kempen, H. P. Witzke, I. Perez Dominguez, T. Jansson, P. Sckokai, Economic and environmental impacts of milk quota reform in Europe,Journal of policy modeling, Volume 33: 29-52, 2011 (in this paper are reported only values for prices and supply of milk)	(Baseline for SMP 2020: 2 373€) Price of cheese and fresh milk products decline by 4-6% (Baseline for cheese 2020: 4 177€)	(Baseline for SMP 2020: 932) Production of cheese and fresh milk products would increase by about 1% (Baseline for cheese 2020: 9 897)	

Article	Expected change in nominal prices (Baseline in EUR/t)	Expected change in production (Baseline in 1 000 t)	Expected change in demand (Baseline in 1 000 t)
V. Réquillart, Z. Bouamra-Mechemache, R. Jongeneel, C. Penel, Economic Analysis of the effects of the expiry of the EU milk quota system, Institut d'économie industrielle, March 2008	Cow raw milk price: -10.3% (Baseline 2015-16: 289€) Butter price: -4.5% (Baseline 2015-16: 2 320€) SMP price: -10.3% (Baseline 2015-16: 2 178€) WMP price: -7.7% (Baseline 2015-16: 2 314€) Semi hard cheese: -8.3% (Baseline 2015-16: 3 237€) Fresh products: -3.5% (Baseline 2015-16: 886€) Fluid milk: -6.6% (Baseline 2015-16: 406€)	Cow raw milk: 5.0% (Baseline 2015-16: 139 893) Butter: 10,5% (Baseline 2015-16: 1 759) SMP: 23,4% (Baseline 2015-16: 812) WMP: 25.7% (Baseline 2015-16: 862) Semi hard cheese: 4.1% (Baseline 2015-16: 2 799) Fresh products: 0.6% (Baseline 2015-16: 10 170) Fluid milk: 1.2% (Baseline 2015-16: 32 039)	- - Butter: 1.5% (Baseline 2015-16: 1 712) SMP: 5.2% (Baseline 2015-16: 717) WMP: 2.3% (Baseline 2015-16: 482) Semi hard cheese: 1.2% (Baseline 2015-16: 2 606) Fresh products: 0.6% (Baseline 2015-16: 10 568) Fluid milk: 1.2% (Baseline 2015-16: 31 921)
Z. Bouamra-Mechemache, R. Jongeneel, and V. Réquillart, Removing EU milk quotas, soft landing versus hard landing, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008)	Baseline is expressed as an index Farm milk Price : 9.6% Butter price: 14.3% SMP price: 5.2% WMP price: 5.7%	Baseline is expressed as an index Farm milk: 3.5% Cheese: 2.2% Butter: 4.2% SMP: 5.6% WMP: 23.1%	
H. P. Witzke, A. Tonini, Dairy reform scenarios with CAPSIM acknowledging quota rent uncertainty, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Cow raw milk: -7.5% (Baseline 2020: 244€) Butter: -0.5% (Baseline 2020: 2 944€) SMP: -4,6% (Baseline 2020: 2 065€) Cheese: -2.5% (Baseline 2020: 4 461€) Fresh products: -1.6% (Baseline 2020: 669€) WMP: -4% (Baseline 2020: 2 905€)	Cow raw milk: 2.8% (Baseline 2020: 153 825) Butter: 6% (Baseline 2020: 1 910) SMP: 7.9% (Baseline 2020: 804) Cheese: 2.1% (Baseline 2020: 9 631) Fresh products: 0.8% (Baseline 2020: 48 482) WMP: 3.4% (Baseline 2020: 533)	 Butter: 0.1% (Baseline 2020:2 000) SMP: 2.3% (Baseline 2020: 892) Cheese: 1.1% (Baseline 2020: 9 164) Fresh products: 0.7% (Baseline 2020: 48 623) WMP: 2.2% (Baseline 2020: 514)
F. Chantreuil, T. Donnellan, M. van Leeuwen, P. Salamon, A. Tabeau, L. Bartova, EU Dairy	Milk price: -7.2% (Baseline 2020: 315€)	Milk: 4,8% (Baseline 2020: 151 800)	

Article	Expected change in nominal prices (Baseline in EUR/t)	Expected change in production (Baseline in 1 000 t)	Expected change in demand (Baseline in 1 000 t)
Quota Reform – AGMEMOD Scenario Analysis, 12th Congress of the European Association of Agricultural Economists – EAAE, 2008	Butter price: -9.9% (Baseline 2020: 3 700€) SMP price: -5.7% (Baseline 2020: 2 240€) WMP price: -6.7% (Baseline 2020: 2 720€) Cheese price: -9.1% (Baseline 2020: 5 250€)	Butter: 7.4% (Baseline 2020: 2 040) SMP: 13.8% (Baseline 2020: 1 120) WMP: 6.4% (Baseline 2020: 740) Cheese: 5.0% (Baseline 2020: 9 770)	Butter: 2,5% (Baseline 2020: 2 140) SMP: 7.8% (Baseline 2020: 820) WMP: -0,4% (Baseline 2020: 630) Cheese: 1.7% (Baseline 2020: 9 430)
J. Binfield, EU Milk Production Quotas, WCDS Advances in Dairy Technology, Volume 21: 71-84, 2009	Milk, 3.7% fat: -2.03% (Baseline 2017: 288€) Cheese market: -0.88% (Baseline 2017: 4 000€) Butter: -15.37% (Baseline 2017: 2 570€) SMP market: 3.81% (Baseline 2017: 2 610€) WMP: 0.82% (Baseline 2017: 2 340€)	Cow's milk: -0.06% (Baseline 2017: 146 300) Cheese: 0.27% (Baseline 2017: 9 672) Butter: -2.42% (Baseline 2017: 2 084) SMP: -7.59% (Baseline 2017: 750) WMP: 2.13% (Baseline 2017: 509)	Fluid: 0.28% (Baseline 2017: 43 100) Manufacturing use: 0.01% (Baseline 2017: 102 300)

2.2.4 Changes in trade

62. As stated in the "Evaluation of CAP measures applied to the dairy sector" (2011), Europe has historically been a large player in the world market with an influence on world market price of dairy products. In this section, we propose scenarios on the trade balance effects following the removal of quotas. The most accredited scenario of lower prices and higher quantities of milk is likely to induce a decrease in world price. All other things being unchanged, this should result in an increased export of European dairy products towards third countries. Witzke *et al*. 2009 estimate that at EU-27 level net trade is going to increase of 49 600 t for butter, 20 200 t for SMP, 24 300 t for WMP and 33 300 t for cheese. In countries where production falls or falls short of demand, the excess demand tends to be compensated by an increase in imports, which affects trade balance negatively.

63. Trade flows include both intra European trade and trade with third countries. Results reported are produced with respect to a baseline scenario, with projections sourced from the outlook on the dairy sector produced by the European Commission in 2007 (Table 11).

64. From a country perspective, Germany is the country projected to experience the largest improvement in net trade, with an increase of 22 900 t for butter, 11 300 t for SMP, 6 400 t for WMP, 56 400 t for cheese and 552 900 t for fresh milk products. The United Kingdom is, on the other hand, expected to experience a decrease in all milk products with a negative peak for fresh milk products (net trade worsening of 558 300 t). Results presented for France are mixed, with net trade worsening for butter (decrease of 11 400 t), cheese (decrease of 185 500 t) and fresh milk products (decrease of 3 700 t). At the country level, the driver underlying changes in net trade is the excess domestic demand resulting from

changes in prices and production. Countries where demand tends to react more to lowering in price with respect to production see their net trade position worsening and vice versa.

Table 11: Net variation of net trade in 1 000 t by country after the removal of quotas in the EU-27, with baselines are reported in brackets.

Country	Butter	SMP	WMP	Cheese	Fresh milk products
Austria	-0.6	0.3	-0.1	3.1	171.5
	(-14)	(2)	(-1)	(-52)	(204)
Belgium-Lux	7.3	16.3	1.1	5.7	44.1
	(16)	(41)	(45)	(-220)	(386)
Bulgaria	0.1	-0.1	-0.01	-0.3	0.01
	(-1)	(-5)	(-3)	(12)	(7)
Cyprus	0	0.0	-0.1	0.1	-8.7
	(-1)	(0)	(-1)	(-2)	(-11)
Czech Republic	0.7	0.9	0.4	3.1	-16.5
	(1)	(21)	(10)	(-14)	(-88)
Denmark	-9.3	-0.6	2.8	-16.6	-14
	(13)	(11)	(74)	(179)	(-124)
Estonia	0.1	0.1	0.1	-1.2	-9.1
	(1)	(4)	(6)	(6)	(62)
Finland	-2.8	-2.3	-0.1	-4.7	-59.5
	(14)	(3)	(0)	(17)	(113)
France	-11.4	7.9	12.0	-185.5	-3.7
	(-133)	(-18)	(141)	(209)	(220)
Germany	22.9	11.3	6.4	56.4	552.9
	(-91)	(68)	(7)	(378)	(2 863)
Greece	-0.1	-0.01	-0.5	-9.8	-16.6
	(-8)	(-2)	(-21)	(-62)	(-217)
Hungary	-0.1	0.6	-0.1	7.9	-8.3
	(-5)	(6)	(-1)	(14)	(32)
Ireland	15.8	4.1	5.3	7.4	35.0
	(138)	(26)	(29)	(79)	(-370)
Italy	-1.2	-11.5	-1.0	-8.2	-207.5
	(-32)	(-102)	(-38)	(126)	(-884)
Latvia	0	-0.1	-0.01	-1.4	-5.2
	(2)	(0)	(0)	(18)	(17)
Lithuania	-1.3	-0.9	-0.01	-0.3	-29.0
	(3)	(9)	(0)	(75)	(35)
Malta	0	-0.1	-0.01	0.01	-3.7
	(0)	(1)	(2)	(-6)	(-6)

Country	Butter	SMP	WMP	Cheese	Fresh milk products
Netherlands	38.5	-4.9	4.2	200.8	-97.7
	(61)	(-92)	(60)	(326)	(-609)
Poland	2.8	8.9	1.9	-6.7	144.3
	(10)	(121)	(-3)	(173)	(-110)
Portugal	-1.7	-0.2	-0.1	-1.8	-63.2
	(14)	(-5)	(3)	(-49)	(-251)
Romania	-0.1	-0.3	-0.4	0.3	-0.01
	(1)	(-5)	(-1)	(-8)	(-6)
Slovakia	0.2	-0.2	-0.5	-1.5	-27.7
	(2)	(4)	(-1)	(2)	(138)
Slovenia	0.2	0.2	0.01	0.6	-28.8
	(2)	(1)	(0)	(2)	(97)
Spain	1.3	2.3	1.8	29.2	292.1
	(-3)	(-6)	(-4)	(-116)	(-782)
Sweden	-5.1	-3.3	-1.9	-11.4	-57.1
	(5)	(-1)	(-4)	(-79)	(-122)
United Kingdom	-6.7	-8.5	-6.9	-31.9	-558.3
	(-67)	(-8)	(-19)	(-308)	(-1 125)
EU-27	49.6	20.2	24.3	33.3	25.3
	(-73)	(74)	(279)	(700)	(-534)

Source: Witzke *et al*. 2009

65. OECD-FAO (2012) proposes a set of projections for the evolution of exports and imports of dairy products over the horizon 2012-2021. This time, the evolution is considered only for EU-27 as a whole with respect to third countries. Over the time span of 2012-2021, butter imports are expected to increase 1.27 percent reaching 31 000 t while exports are expected to decrease by 1.14 percent (119 000 t in 2021). Cheese imports are expected to decrease by 0.06 percent (79 000 t by 2021) whereas exports are projected to increase by 0.61 reaching 734 000 t in 2021. SMP imports are expected to increase by 3.67 percent (reaching 3 000 t in 2021), whereas WMP imports are expected to remain stable at 1 000 t. SMP exports are expected to experience a slight decrease of 0.04 percent while WMP exports increase by 1.4 percent reaching 435 000 t in 2021.

66. DG AGRI (2012) provides an overview of scenarios of exports until 2022. Market prospects for European dairy products are expected to be generally positive. The best performance is expected to be for cheese and SMP, with the European export share on world total reaching 32 percent. However, WMP is expected to deteriorate partly due to the increased competitiveness of other exporting countries.

67. As regards cheese, the expected good performance of European exports is also based on the projections of international demand, which is expected to remain robust in China, South East Asia and Middle East Asia. Also, domestic demand is expected to grow over the time horizon 2012-2022 (by more than 4 percent), mainly due to the existing room for per capita consumption in countries accessing the EU after 2004. The increased level of

demand in the world market will result in an increase in EU exports of more than two-thirds, reaching 956 000 t in 2022.

68. As regards WMP, DG AGRI (2012) foresees a general increase in international demand mainly led by China and other Asian countries expanding their demand substantially. European exports are not projected to increase accordingly due to weak competitiveness with respect to supplies from Oceania.

69. Exports of SMP are expected to increase substantially over the time horizon 2011-2022 with China, North Africa and the Middle East increasing their imports. Overall export should increase by around 30 percent, reaching 678 000 t by the end of the outlook. EU-27 is expected to have a share of 32 percent of the total world exports by 2022.

70. European exports of butter will remain uncompetitive, given the existing gap between EU and world price quotations. This effect will be offset by increased demand from the Russian federation, which will allow European exports to remain fairly stable, with a slight increase over the time horizon 2011-2022.

71. DG AGRI (2012) reports results for a series of macroeconomic scenarios based on partial stochastic models and on AGLINK-COSIMO. Results connected to this alternative list of scenarios are presented as difference with the deterministic baseline results. For instance, a scenario is tested where maize yield is hypothesized to be lower. As a consequence, crop prices are set to be higher inducing an increase in feed cost by 9 percent and, as a consequence, competitiveness of dairy products decreases, with exports contracting by 7 percent for butter and SMP and 3 percent for cheese.

72. DG AGRI (2012) assesses a scenario characterised by a more appreciated level of the euro. During the 2012 Outlook Workshop, a consultation on the exchange rate USD/EUR was conducted. 44 percent of the participants in the workshop thought that the 2022 USD/EUR exchange rate would be between 1.35 and 1.50 (1.35 is the value that has been finally considered for the baseline), which is above the assumption used to conduct the projections included in the published outlook. An additional set of simulations was produced using an average exchange rate of USD/EUR 1.48 in 2022. In general, the more appreciated exchange rate results in cheaper imports and less competitive European products, which in turn put a negative pressure on prices. In DG AGRI (2012) scenario, this is particularly the case for products such as wheat and coarse grain, with prices falling by 7 percent and 6 percent respectively.

73. According to the same scenario, EU dairy products competitiveness tends to be negatively affected despite the decrease in feed cost. In 2022, butter and SMP exports are expected to be 12 percent and 8 percent below the baseline. SMP is also below the baseline by 4 percent. Cheese trade is less affected given the high weight of European cheese export on the total world exports. When a scenario with a weaker euro is tested, butter and SMP exports become substantially higher with respect to the baseline with domestic prices also being substantially different from the baseline (e.g. eight percent higher for butter).

74. The results presented in DG AGRI (2012) suggest that trade of dairy products appears to be very sensitive to fluctuations in the exchange rate. In general, the future of the European dairy market depends considerably upon macro-economic exogenous fundamentals, which hence constitute an additional source of uncertainty.

2.2.5 Change in producers' margins

75. The removal of milk quotas has a two-fold impact on producers' margins and competitiveness. The lower prices following the increased production will compress producers' margins. In addition to this, producers might be exposed to more volatile prices, rendering their margins uncertain in the medium term.

76. Lower margins and increased volatility might impact different actors in the milk value chain heterogeneously, depending on the degree of transparency in the market and on the bargaining power of different actors across the dairy supply chain.

77. In this section, we will first introduce the impact of removal of milk quotas on producers' margins. This will be followed by a discussion on the impact of volatility. Finally, we will examine how the impact could be asymmetric between producers and processors.

2.2.5.1 Facing lower margins and the decision to quit

78. The increased level of production has a direct effect of lowering prices, which in turn would tend to compress margins. As discussed in the "Evaluation of CAP measures applied to the dairy sector" (2011), producers that cannot recover their production costs are faced by the decision to quit the market. The expected reduction in prices has a direct impact on the margin of producers.

79. Given that producers in the dairy sector are price takers, they can control only costs to respond to the reduction in margin. Farmers unable to lower costs will be naturally squeezed out of the sector leaving resources that could be used by the innovating producers. For profitability reasons, technological changes are more likely to take place in farms with a minimum production size, so that, larger producers are in a better position to innovate. Smaller farms might be more at risk of exiting the market or reducing size.[8].

2.2.5.2 Evolution in price volatility

80. Setting quotas on milk production has contributed to control variation in dairy prices. Quotas, together with subsidised exports, import protections (tariffs, quotas) and public intervention have in general facilitated in maintaining a gap between the world and European milk prices and therefore have room to manage domestic price volatility. The substitution of market price with direct payment measures will now favour an environment of more volatile EU milk and dairy prices.

81. The new levels of prices more linked to world levels, expose producers to a higher volatility in prices and the consequent uncertainty in the level of profit margins in the medium term. Depending on their risk aversion, some producers might decide to quit their activities or not invest in additional resources due to the uncertain level of revenues.

82. According to the EC[9], international prices of agricultural products are going to be more volatile in the periods ahead. Three main arguments have been identified to explain the increased level of price variation:

- Climate change plays a significant role in production level, especially for what concerns geographic areas in the rest of the world
- The higher correlation with prices of products out of the agriculture sector (e.g. biofuels)
- The increased integration of the financial world market

[8] For a discussion on technological changes in the farmers sector, please refer to the following paper and the literature cited in it:
Andrea Zimmerman and Thomas Heckelei, "Structural Change of European Dairy Farms – A Cross- Regional Analysis", the Journal of Agricultural Economics, Vol.63, No.3, 576-603, 2012.

[9] The "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and theCommittee of the Regions" – The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future, Brussels, 18.11.2010 – COM(2010) 672 final

83. In addition to these identified factors, there could be new ones emerging in the near future, such as uncertainties regarding future reforms. The same study recognises the difficulty of quantifying the increase in volatility due to different factors affecting the market of agricultural products.

2.2.5.3 Transmission effects on the dairy supply chain (Producers/Processors)

84. Different scenarios can be drawn for different steps of the dairy supply chain. The removal of quotas on milk production relates mainly to raw milk producers. The decrease in prices will distribute across different actors of the dairy supply chain depending on their bargaining power. The High Level Group on Milk considered in its report[10] that concentration of supply is low in many cases and these results in an imbalance in bargaining power between farmers and dairies. The net effect on prices for producers and processors will mainly depend on the degree of price transmission throughout the chain.

85. Price transmission along the supply chain depends on two main factors[11]:

- The cost structure of food supply chain, which is linked to a rise in living standards, technological changes, production, transport, processing, storage and distribution costs. The cost of food products is increasingly dependent on costs of labour, energy and marketing rather than on raw products[12].

- The competitive structure of the supply chain also plays a role in the price transmission as the presence of large processors or retailers which benefit of market power can be the cause of unbalanced adjustments in the price transmission, also reflecting asymmetric information.

86. The same study by the EC provides estimates on the price variation transmission effects along the dairy supply chain. The degree of statistical causality of consumer prices and raw materials prices is estimated to be negligible for 40 percent of dairy products. This can be explained by the low share of raw materials in final products and the pricing strategy of processors and retailers. Higher price transmission was observed in less processed products (bulk milk, butter, liquid milk), whereas, lower transmission was observed in more processed products. This reflects the higher importance to be attached to processing and distribution costs.

87. Witzke and Tonini 2008 explained that raw milk is less tradable than dairy products, which reduces the bargaining power of raw milk producers. Processors therefore usually enjoy a certain degree of market power in imposing the price paid for raw milk.

88. Processors and distributors also have an advantage in adapting to volatility in prices and exploiting the asymmetry of information between producers at the beginning of the chain and final consumers of milk at the end. In periods of boosting prices, producers and collectors can have an incentive in transmitting the increase to final prices paid by the consumers, while in a period of quantity surpluses, they might not revise down the price applied to consumers[13].

[10] Report of the High Level Group Milk, 2010
[11] Analysis of price transmission along the food supply chain in the EU, accompanying document to the Communication from the European Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions, 2009
[12] As cited in the document, please refer to http://ec.europa.eu/economy_finance/publications/publication_summary15232_en.htm
[13] Please refer to the paper: Jean –Christophe Kroll, Aurélie Trouvé and Martin Déruaz, Quelle perspective de regulation après la sortie des quotas? Faut il encore une politique laitière européenne?, UMR 1041 INRA – AGROSUP, Centre d'Econo,ie et Sociologie appliquées à l'Agruculture et aux Espaces Ruraux (CESAER), 2012.

89. The communication of the dairy market (COM(2009)385)[14] stated that price transparency and price transmission in the dairy sector are not functioning optimally, especially for the downstream sectors. These concerns were expressed following the crisis of 2007, when consumer prices adjusted quickly upwards, whereas in the following period, they did not adjust downwards, following the decrease in gate milk prices and ex-factory prices for dairy commodities. This prompted the high level group of experts to conclude that "the magnitude, the delay and the asymmetry in the downward adjustment of dairy consumer prices – which is particularly marked in some member states – clearly shows that the EU dairy supply chain does not function efficiently [...]. This situation also raises serious concerns regarding the distribution of value-added in the chain between farmers, milk processing factories, the dairy industry and retailers."

2.2.6 Evolution of rural communities: environmental and socioeconomic aspects

90. In the context of quota abolition, the competitiveness of EU producers needs to be improved to face the lower price levels. Expected developments in dairy farming could negatively impact the environment in two ways. First, for Willeke–Wetstein (1997), intensification is correlated with higher pollution of the environment (pollution, low diversity and landscape simplification). Second, for Milne and Osoro (1997), abandonment of dairy farming and grassland in fragile areas is linked with the decline of valued habitats and reduced biodiversity. The exclusion of these areas could have detrimental effects on their socioeconomic and environmental outlook.

2.2.6.1 Socioeconomic development

91. Daniel *et al*. (2008) describe possible impacts of quota removal on the geographical concentration of the milk production. Milk quotas allow MS to support the production of milk in areas facing higher production costs, as they are sometimes fixed by regions. Without quota, milk production is expected to be concentrated in competitive regions which present lower production costs, lower transportation to consumers costs and lower raw milk collection costs. These regions where milk production is concentrated would become more competitive and would see an increase in employment related to the dairy supply chain. At the same time, regions facing higher production prices would have to tackle the opposite situation of milk production decreasing, farmers leaving the market and employment becoming scarce.

92. Regions facing higher cost production are often mountainous areas or LFAs. LFAs are classified as such, given the greater level of difficulties encountered from a natural and socioeconomic point of view.

93. Greece, Italy and Austria are characterised by a high proportion of mountains in their territories. Other European countries with a relatively large number of LFAs include Belgium, Germany, Ireland, Luxembourg and the UK. In these countries, LFAs are classified under the category, 'Other'. The Netherlands, Denmark and Finland have identified some LFAs with specific handicaps[15].

94. In a study realised for the DG AGRI in 2008[16], it was highlighted that mountainous areas in the EU-15 would be less affected than the same type of areas in the EU-10. The impact of the price drop on the margin per t is estimated to be in the order of 15 percent in the mountain areas of EU -15 instead of the 16 percent on total average (all areas). In the EU-10, it is instead foreseen to decrease by 26 percent instead of the EU-10 average of 14

[14] As cited in the Report of the High Level Group on Milk, final version published on the 15th June 2010
[15] For more information please refer to the "Evaluation of the environmental impact of milk quotas", Alliance Environment, July 2008.
[16] Milk sector – (4) Impact on milk margins of a price redction complement on mountain areas, European Commission, Directorate- General for agriculture and rural development,

percent. The share of farms remaining with positive margin would be of 95 percent and 89 percent in EU-10 and EU-15 respectively.

95. The Commission has conducted a study to analyse the risk of farmland abandonment (FLA) in the EU. The study aims at identifying regions at the local level (NUTS 3) where farmland abandonment is most likely to happen. The major reasons for FLA are: a weak land market, low farm income, low investment in farm, age of farm holder, low farmer qualification, low population density, small field size and farm enrolment in specific schemes. This study identifies regions with higher risks, which are Portugal, Extremadura and Castilla la Mancha (Spain), Molise, Sardinia, Toscany) (Italy), Greece, Latvia, Estonia, northern Finland, northern Sweden and Donegal and Connacht in Ireland. In these regions, the farm types most represented are those specialised in grazing livestock or in permanent crops.

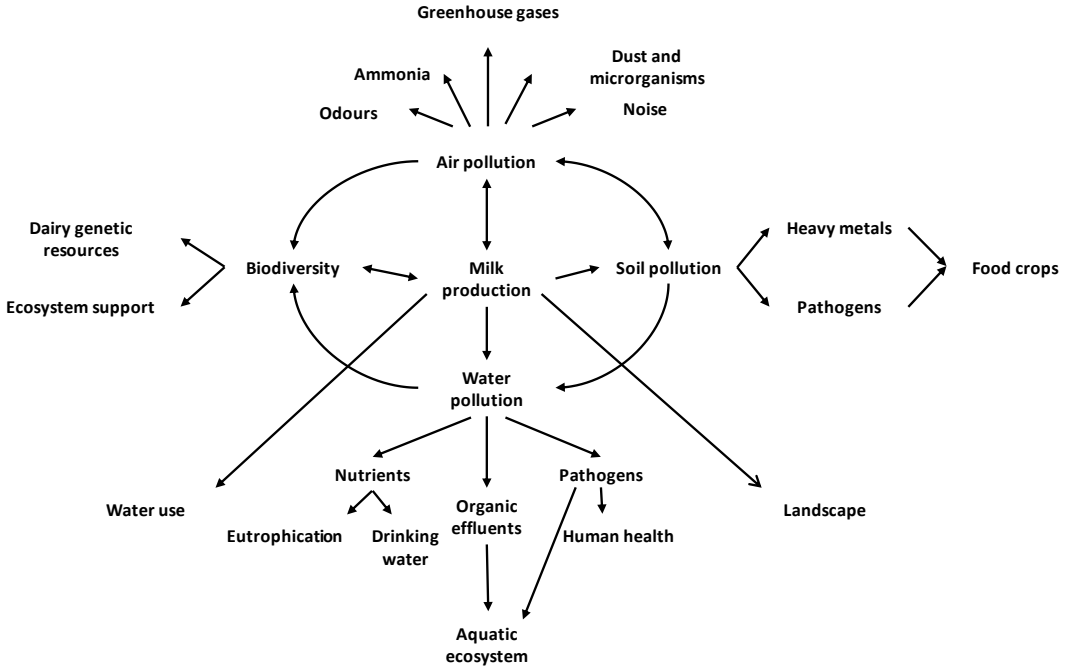
2.2.6.2 Environmental evolution

96. The OECD report on dairy sector (2004) argues that the milk sector has a direct impact on the environment. The main issues linked to the milk sector are:

- Air pollution: The major concerns from dairy production are greenhouse gas emissions (methane and nitrous oxide) and odour.
- Soil pollution: Heavy metals present in manure (in particular, copper and zinc), are the principal sources of soil pollution. For Haan *et al.*, (1998), heavy metals accumulated in the soil can contaminate crops and lead to possible human health problems.
- Water pollution: Excess nutrients (nitrogen and phosphorus) from dairy manure are the principal sources of water pollution. Water pollution is characterised by bad quality of drinking water, higher costs of purification and the disappearance of aquatic wildlife.
- Biodiversity: The biodiversity issue suggests two key impacts: the impact on genetic variety of breeds which is essential to maintain efficient production and avoid inbreeding. The impact on ecosystem in rural areas is also important, as diversity is endangered by intensive production system and the use of fertilizers.

97. The figure below summarises the negative effects of milk production on each of these four environmental issues and also shows the direct impact on water use and the landscape. The dairy sector is not the only agricultural sector to be taken into account for pollution caused, but given the importance of this sector, its negative impacts could be significant.

Figure 3: Linkages between milk production and the environment



Source: Report on dairy sector, OECD (2004)

98. According to Alliance Environment (July 2008), four parameters in the dairy industry are directly responsible for damage to the environment:

- The scale of production which includes the volume of milk, the size of dairy herds and the area of land devoted to dairy production could be directly related to the levels of nutrients, methane emissions and the eventual imported feed that implies transportation pollution (Garnett, 2007).
- The concentration of the production in particular on land designated as Nitrate Vulnerable Zone (NVZ) is also a determinant of degradation of the environment.
- The intensity of production, which takes into account numbers of cattle per hectare and inputs/outputs per hectare.
- The level of specialisation of the production: According to Alliance Environment, specialised dairy farms could have a negative impact on the environment even if they could reduce pollution with their economic efficiency.

99. The new level of world competitiveness might affect the regional specialisation pattern and the complementarity between herds and the surface they occupy. Leyton *et al*. (2009) show how the potential increase in production in a given structure can only be achieved through an increase in concentrated animal feeding and the concentration of the number of animals fed over a certain surface. The increase in land exploitation and the geographic concentration of production exacerbates the negative effects on the environment.

100. Kempen *et al*. 2011 provide an overview of changes estimated in environmental indicators by 2020 in the EU-27. The CAPRI model is used to provide environmental effects based on the nitrogen cycle of agricultural activities. Table 12 shows the degree of variation of atmospheric and soil indicators which can be included in the CAPRI model. As regards nitrate leaching, higher effects can be expected in regions with high environmental pressure in the baseline (and this is mainly in 11 Dutch regions where dairy farmers are highly

competitive with respect to other regions and increase their herds significantly). The CAPRI model does not take into account specific regional policies that could mitigate practices that are detrimental to the environment.

Table 12: Environmental impact as measured by Kempen *et al*. (2011)

Environmental effects (percentage of change due to quota removal)
Gaseous loss mineral fertilizer: 0.76%
Ammonia loss mineral fertilizer: 0.76%
Gaseous loss manure: 0.66%
Ammonia loss manure: 0.70%
Methane: 1.41%
N surplus at soil level: 1.05%
Nitrate leaching: 1.33%
Denitrification: 0.98%

2.3 Role of available policy measures and organisational systems

2.3.1 The Milk Package

101. The Milk Package remits to the Member States the decision as to whether the conclusion of contracts between milk producers and dairies is to be mandatory or not. The information figuring in the contract is price, the volume and the timing and duration of the contract. This measure aims at increasing the awareness to the market signals in order to make supply correspond to demand. Such contracts would benefit both parties as they give more visibility on quantity delivered for purchasers and reduce risks associated with price and income volatility.

102. Not having identified dedicated studies on the effect of the Milk Package measures, we have surveyed literature on the fruit and vegetable sector. The milk sector and the fruit and vegetable sector exhibit various similarities, which make the comparison relevant especially as regards the structure of producers' cooperative and associations. Nonetheless, it should be considered that the two sectors have substantial differences. The fruit and vegetable sector has in general, a wider mix of primary fresh products and most of these products can be sold without being processed. Raw milk instead is homogeneous while the derived processed products are more diversified.

103. For the fruit and vegetable sector, the last decade has exhibited growth of large scale retailers who have now acquired an advantage in terms of bargaining power with respect to suppliers (Dell'Aquilla *et al*. 2012, Marette and Raynaud, 2003). The imbalance in bargaining power translates itself into an increased share in overall profits for large-scale retailers with respect to smaller suppliers[17].

104. In a context in which all elements of the contract should be freely negotiated, MS have been allowed to use some counteracting policy measures to alleviate the problem. For example, new contracts could contain elements in favour of farmers such as reduction of income risks, an assured market outlet for products and better return on investments[18]. Moreover, fixing common rules and a shared vocabulary for contracts could reduce the transaction and negotiation costs[19]. French government has for example already fixed compulsory

[17] Allain M.L, Chambolle C., Approches théoriques des rapports de forces entre producteurs et distributeurs, économie rurale, 277 – 278, septembre-décembre
[18] MacDonald, J., Korb P., Agricultural Contracting Update: Contracts in 2008, USDA Economic Research Service, 2011
[19] Vavra P., "Role, usage and motivation for contracting in agriculture", OECD Food, Agriculture and Fisheries Working Papers, No. 13, 2009

contractualisation between producers and their buyers in the milk and fruit and vegetable sectors.

105. To alleviate the problem faced by smaller producers who are at greater risk in the event of decrease in prices of dairy products, additional measures have been introduced through the Milk Package. This situation has been raised by The High Level Group on Milk on its report and the Commission, under the Regulation No 261/2012, recognises for example, the possibility for small producers to enter larger POs in the milk sector. Members of such organisations will have more influence over contractual terms, particularly in setting prices.

106. The EU experience has demonstrated the key role played by POs in rebalancing bargaining power and stabilising prices and income through concentration and planning of fruits and vegetables supply. POs can act as a tool to rebalance distribution of value added in the supply chain. Larger POs market sales oriented and with strong organisational structure are more successful in managing crisis. In term of PO's participation, differences can be observed between Northern and Southern countries or between old and new MS. Such differences stem from each MS decisions on the application of the CMO and from structural, historical or cultural factors. The rate of participation in producer organisations in fruits and vegetables sector is about 34 percent in the EU24, which is very far from the objective of 60 percent fixed by the CMO (Dell'Aquilla *et al*. 2012).

107. Mattas and Bouarakis (2005[20]) conducted a case study on the functioning of the Greenery, a producer organisation in the Netherlands. This PO was established to achieve four goals: to reduce costs, to increase scale of operation, to enhance market orientation, to improve co-ordination in the production and distribution chain. The co-operative has operated important changes like contract mediation between growers and wholesalers with better communication on varieties and products characteristics. Costs benefits have been observed, as well as reduction in transportation time and improvement of quality.

108. IBOs in the milk sector allow actors in the dairy supply chain to be involved in dialogues and carry out a number of activities apart from producing milk or processing milk or milk products. Their main objective is to provide statistical data and market information to foster transparency and reduce asymmetries of information across the supply chain. IBOs could also fund researches or studies to improve innovation and promote dairy products. Cadilhon and Dedieu (2011) define IBOs as vertical structures to alleviate coordination failures across the supply chain. IBOs have five main goals: relationships with policy makers, promotion of products, setting up of quality standards, research and developments and market management.

109. Increasing transparency through the collection and analysis of key information across the supply chain may help to understand price evolution at each stage in the chain[21]. For example, the Dairy Product Mandatory Reporting Program (USDA, 2008b) requires dairy manufactures "to provide to USDA certain information including price, quantity [...] of dairy products" sold and stored. This may facilitate more informed marketing decisions and promote competition in the dairy product manufacturing industry. A similar system also exists in France, managed by France Agrimer that aim at publishing monthly national references of product prices at different stages in the chain, and analysing gross margins through the identification of the various types of costs at each stage.

110. MS may establish binding rules (in official publication) on PDO/PGI cheese supply regulation, for a limited time period under certain conditions. This measure is aimed at

[20] Prof. K. Mattas, Dr. G. Baourakis, Supply chain analysis of the fruit and vegetable market in the EU (Case studies for the Netheland and Germany), 2005

[21] EU Parliament, The EU fruit and vegetables sector: overview and post 2013 CAP perspectives, Directorate General for internal policies, Policy department B, Structural and Cohesion Policies, Agriculture and rural development, 2011

ensuring the value added and quality of cheese with a PDO and PGI, which are particularly important for vulnerable rural regions and for the diversification of product portfolio.

2.3.2 Role of cooperatives[22]

111. Farmers' cooperatives play an essential role in rural areas as they are large employers and usually try to improve the competitiveness and environmental sustainability. Moreover, they generally reduce the counterpart risk of farmers and help in lowering costs such as transportation and transaction by mutualising them.

112. Specific features of the dairy sector, such as the daily production and the perishability of products induce the requirement of high standard transportation logistics, strong investments in infrastructure and equipment, regular quality control, etc. These characteristics increase the importance of cooperatives in this sector. Indeed, the difficulty of stocking fresh dairy products can put farmers in against-the-clock situations which enhance the counterparts' bargaining powers. Further, the relatively high weight of raw milk supports the idea of collective transportation.

113. Other principal functions of cooperatives are:

- reinforcement of the negotiating power of farmers
- strengthening of R&D, quality and safety
- supply of inputs to the members
- grant of loans to the members
- developing and marketing regional products

2.3.3 Direct payments to support farmers' income

114. Direct payment is a measure to support producers' income and protect them from instability in the market. This measure also aims at maintaining rural activities and supporting fragile producers. Some special measures also exist for small and young producers who traditionally face higher AEC. A new design of direct payments is anticipated in new proposals[23] for CAP 2013. MS could be asked to choose a compulsory scheme composed of basic payments, green payments and young farmer's payments. In addition, MS could be offered the possibility of applying for a voluntary scheme composed of support for natural constrained areas and coupled support. Small farmers could benefit from a simplified scheme.

115. The potential negative effects of the removal of quotas on the environment would be alleviated by compliance to policy requirements such as the cross compliance applied to The Single Payment Scheme[24]. This measure directly links the payments received by farmers to their compliance with environmental regulations (environment, food safety, animal and plant health and animal welfare, maintaining land in good agricultural and environmental conditions). This measure is aimed at reducing negative ecological impacts and promoting sustainable agriculture in Europe.

[22] European Commision, "Support for Farmers' Coopertatives – Final Report", J. Bijman, C. Iliopoulos, K.J. Poppe, C. Gijselinckx, K. Hagedorn, M. Hanisch, G.W.J. Hendrikse, R. Kühl, P. Ollila, P. Pyykkönen, G. van der Sangen, 2012.
[23] Proposal on rules for Direct payments CMO (2011) 625
[24] In order to move to a Single Payment Scheme across the Member States, The Basic Payment scheme will be applied (Article 19, COM (2011) 625). The aim of this measure is to reduced the difference in payments existing in the current situation between farmers and Member States. In 2019, MS will have to move towards a uniform payement per hectare at national and regional level.

116. The new proposal contained in Article 29, COM (2011) 625 provides insights into the Green payments. This measure proposes to provide additional payments to farmers who respect certain agricultural practices in favour of the climate and the environment. With cross compliance, this measure links environmental requirements with farmers' activities.

2.3.4 Measures for market stability

117. The EC has several instruments available to cope with the instability in milk prices and study new propositions for the CAP after 2013 to reinforce its intervention ability in case of a serious imbalance in the market. The implementation of such policies will ultimately determine the degree of volatility faced by producers/processors.

118. Public intervention and private aid stockage are two mandatory instruments to be used by Member States when coping with price volatility and mitigate their impacts. Public intervention[25] provides operators with the right of selling quantities of butter or SMP when the price reaches a fixed threshold (intervention price). Private aid storage is a measure aiming at limiting decrease in prices by controlling the quantities of dairy products ultimately ending up in the market. These two measures, together with export refunds, are used as a safety net in case of market disturbance, to limit the negative impact on producers.

119. To offset volatility induced by climate change and financial market integration, the EC is in the process of considering new policy instruments. A new proposal[26] for the CAP after 2013 on mutual funds would offer MS the possibility of supporting financially, mutual funds providing compensation to farmers who experience a severe drop in their income.

120. Another additional measure tabled by the European Parliament is the buy-out scheme, through which the Commission could grant aid to milk producers who voluntarily cut their production by at least 5 percent, compared with the same period in the previous year in the event of a severe imbalance in the market for milk and milk products[27]. The desired effect of this measure would be to limit price fall. This supplementary measure is designed to be applied only in the context of exceptional disturbances.

2.3.5 Aid for regions facing natural constraints

121. Maintaining vitality in rural areas is an objective of the CAP 2013. For this reason, it should be envisaged that scenarios concerning these areas should be adjusted by taking into account mitigating policy interventions. Regarding the fragile areas, Article 68 assigns to MS the possibility of attributing additional aids for regions facing natural constraints. These aids are meant to address specific disadvantages for farmers in environmentally sensitive areas and to counter land abandoning. Each MS decides, under non-discriminatory criteria (natural constraint characteristics and agronomic conditions), which region could benefit from such payments.

[25] EC reg 1234/2007 establishing a common organisation of agricultural markets & specific provisions for certain products (Single CMO Regulation)
[26] Proposal on support for a rural development CMO (2011) 627 (Article 37, 40)
[27] This measure has been proposed by Michel Dantin under the Amendment 144 of the proposal establishing a common organisation of the market in agricultural product. Please refer to Michel Dantin, Draft REPORT on the proposal for a regulation of the European Parliament and of the Council establishing a common organisation of the markets in agricultural products (Single CMO Regulation) (COM(2011)0626 – C7-0339/2011 – 2011/0281(COD)), Compromise amendment replacing Amendments 391, 2104, 2011

Part 2:

Descriptive Chapter

3. Descriptive chapter

122. This section is intended to provide a detailed description of the current status of the milk sector. Data and figures on the dairy supply chain taken from various sources have been gathered and presented to cover the following aspects:

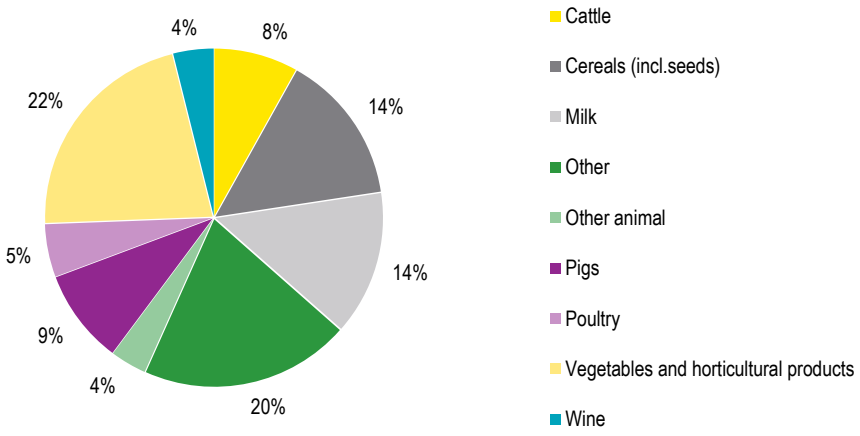
- National and regional (if available) production of milk
- National milk balance (i.e., surplus/deficit of aggregate dairy commodities in milk equivalent)
- Difference of raw milk prices paid to milk producers in the EU and the relation with added value to explain such differences
- Share of milk production consumed locally versus exported
- Structure of milk producers and processors
- Geographical coverage of processors
- Share of cooperatives versus private dairies
- Use of the Milk Package tools in the Member States and regions.

3.1 National and regional production of milk

3.1.1 At the European Union level

123. **Milk production represents a significant part of EU agricultural production.** The dairy sector is present in all EU Member States and represents an important proportion of the agricultural economy. In the EU-27, the share of milk in total agricultural production reached 14 percent, i.e., EUR53 billion, in 2011.

Figure 4: Share of different products in agricultural production (by value) in 2011

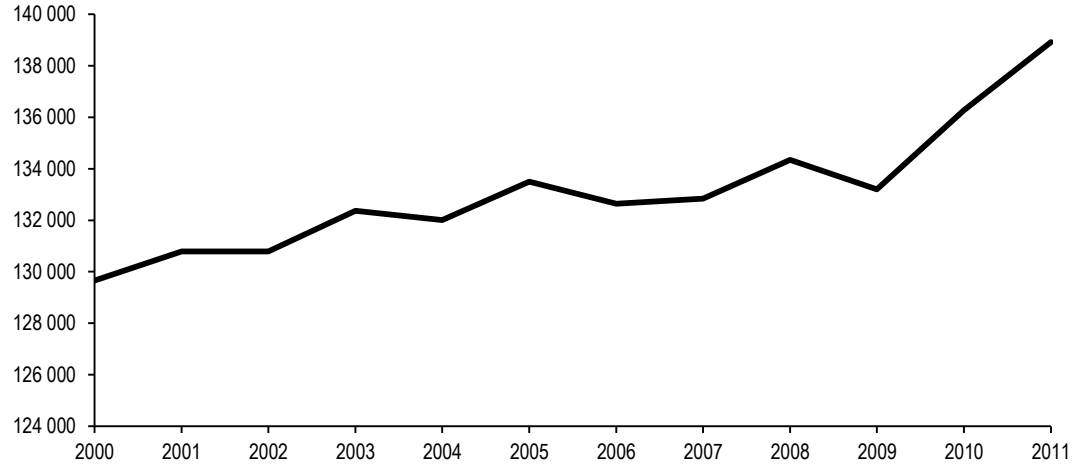


Source: DG AGRI, 2012 annual report (preface)

124. **European Union milk production has been increasing over the last decade, making the EU the world's leading milk producer in 2011.** The milk production of the 27 EU Member States reached 155.3 million t in 2011, making it the world's largest milk producer with 21 percent of the 727.1 million t of global milk production. As shown in Figure 5, the volume of milk produced in the EU-27 has been increasing since 2000, though not steadily.

125. **A significant increase in cow's milk production is observed starting from 2010**. According to the Quarterly Report on the Dairy Market issued by the European Commission in March 2011, this can be explained by favourable weather conditions, dynamic demand and attractive milk prices. Indeed, the annual average milk price paid to producers in 2010 was 15 percent higher than the average price paid in 2009. Moreover, the programmed yearly quota increases have also boosted production.

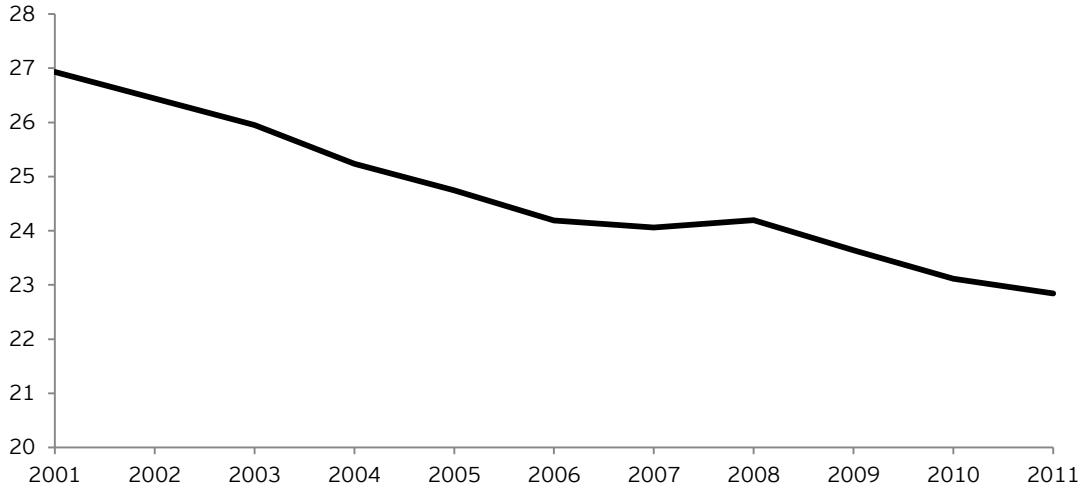
Figure 5: Development of EU 27 cow's milk production[28] from 2000 to 2011 (1000 t)



Source: Eurostat, cows' milk collection (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

126. **The productivity level of milk production has been increasing since 2001.** The increased milk production must be compared against the declining number of cows. While production has been increasing, cow herds have been decreasing for the last 10 years. The average decrease is over 2.5 percent per year, which amounts to a total reduction of 15.2 percent between 2001 and 2011. The average cow's milk yield (obtained from number of dairy cows and cow's milk collection) in the EU reached 5.83 t/animal in 2011.

Figure 6: Cows for the dairy industry (EU-27) in millions of animals



Source: Eurostat (Animal Production Statistics)

[28] A distinction should be made between "collected milk " and "produced milk". Carted data (representing cows milk collection) is only a part of the total milk production on the farm. The other part of the milk produced on the farm generally includes domestic consumption, direct sale and cattle feed.

127. **The number of dairy farms has decreased in the last decade.** Between 2003 and 2010, the number of farms in the EU-27 fell by 47 percent (from 3 199 420 to 1 701 090). However, the number of cows in Europe has not declined as fast as the number of farms; the average number of cows per farm has increased from 30 cows per farm in 2003 to 42 in 2010.

128. **Milk quality has remained quite stable.** Average fat and protein content was approximately 4 percent and 3.3 percent, respectively, between 2000 and 2010.

129. **The production of dairy products is highly diversified in the EU.** A large variety of dairy products are processed in the EU, including cheese, butter, whole milk powder (WMP), skimmed milk powder (SMP) and whey (either in liquid state, or concentrated, or in powder or in blocks, etc.).

Table 13: Production of dairy products from 2000 to 2011

Products (1000 t)	Cow's milk collection	Cheese	Butter	WMP	SMP	Whey
2000	129 663	7 492	1 335	547	981	32 149
2001	130 789	7 833	1 394	514	877	32 930
2002	130 787	8 014	1 512	514	1 098	31 809
2003	132 366	8 129	1 512	504	1 073	32 527
2004	132 009	8 227	1 494	528	957	37 045
2005	133 500	8 333	1 383	553	966	37 976
2006	132 641	8 540	1 396	503	863	38 845
2007	132 840	8 534	1 401	457	830	43 205
2008	134 346	8 542	1 499	519	801	42 807
2009	133 194	8 574	1 287	436	922	38 702
2010	136 266	8 785	1 276	429	888	40 598
2011	138 921	8 837	1 321	351	1 020	40 754

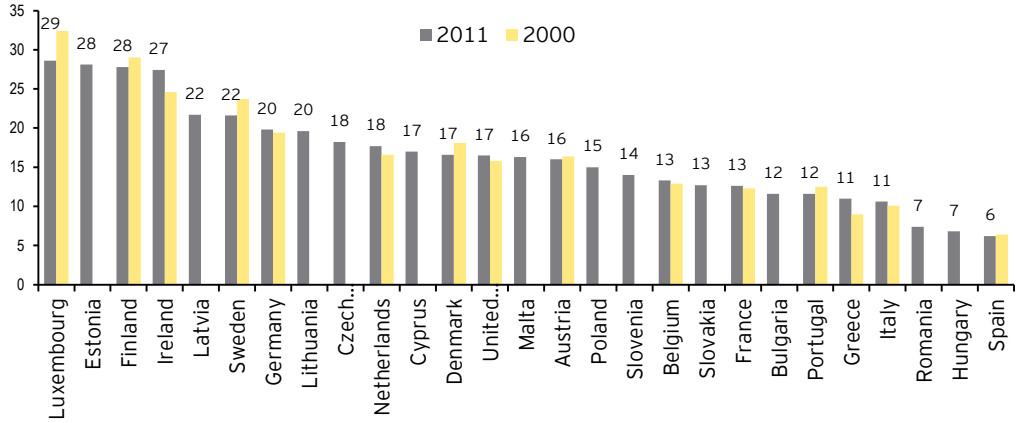
Source: Authors' calculations based on Eurostat data (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

Note: For some MS data are not available so the actual EU27 figure might be higher than reported in this table

3.1.2 At the Member State level

130. **The economic importance of milk in agricultural production varies across countries; in 2011 it ranged between 6.2 percent in Spain and 28.6 percent in Luxembourg.** The lowest shares are observed in Mediterranean countries. Four Member States – Luxembourg, Estonia, Finland and Ireland – have agricultural economies that are significantly dependent on the dairy sector with the share of milk reaching more than 27 percent. As shown in Figure 7, proportions remain similar to those in 2000.

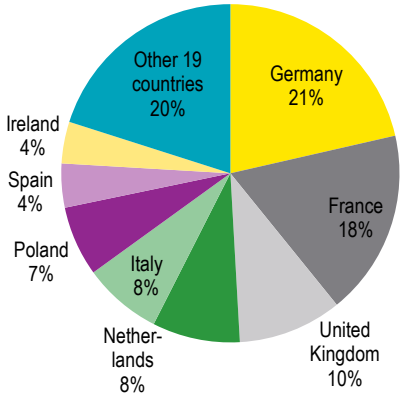
Figure 7: Share of milk in Member States' agricultural production (by values) in 2011 and 2000

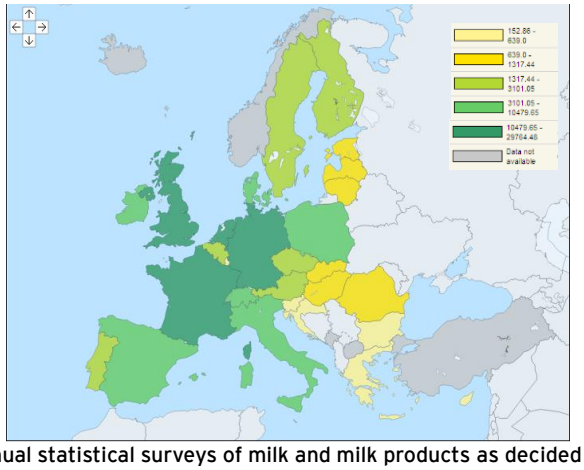


Source: DG AGRI, 2012 annual report (preface)

131. **Three EU Member States account for half of the EU's production of milk.** Among the European Union Members, the largest cow's milk producing countries are Germany (21 percent), France (18 percent) and the United Kingdom (10 percent), totalling 49 percent of the EU-27 Member States' production, as seen in Figure 8. The Netherlands, Italy and Poland respectively produce approximately 8 percent of the EU's milk. The ranking of EU milk producers has remained stable throughout the last decade.

Figure 8: Cow's milk producers in the EU in 2011 and map of cow's milk collection (in 1000 t)

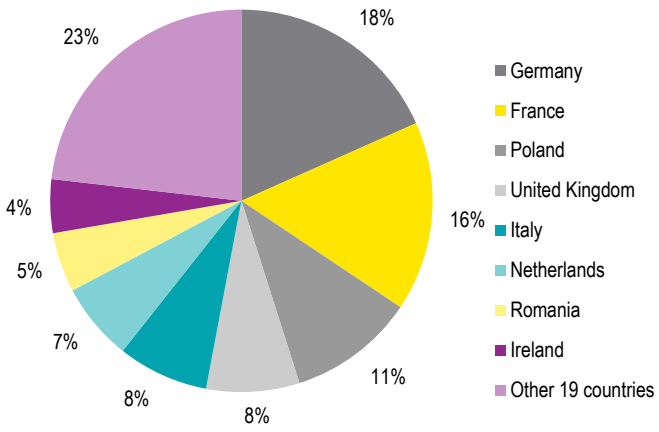




Source: Eurostat, from cows' milk collection, (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

132. **As expected, the countries listed above are also the countries with the largest herds.** However, by comparing Figure 8 and Figure 9, it can be seen that the rankings of countries by milk produced and herd size do not always coincide. Indeed, Poland is in the third place in terms of herd size, but only sixth in terms of milk produced. This can be explained by differences in milk yields per cow, as mentioned below.

Figure 9: Distribution of dairy cows per Member State



Source: Eurostat (Farm Structure Survey)

133. **The number of cows per farm is very different from one country to another but the growing trend is generalised**. The countries with the highest average number of cows per farm (over 100) are Denmark, the Czech Republic and Cyprus. The most significant growth is that of the Czech Republic whose farming structure appears to have changed since its entry into the EU. On the other hand, Romania, Latvia, Lithuania, Bulgaria and Poland still have a considerable number of small structures, with an average of fewer than 10 cows per farm.

Table 14: Number of dairy cows per farm

	2000	2003	2005	2007	2010	2012 (*)
Austria	9	9	10	11	11	14
Belgium	34	35	36	39	46	45
Bulgaria	-	2	2	3	4	-
Cyprus	-	104	101	94	103	-
Czech Republic	-	55	65	74	123	171
Denmark	57	75	85	101	134	146
Estonia	-	10	13	18	27	-
Finland	15	17	19	21	24	28
France	-	36	37	41	45	50
Germany	31	36	38	40	46	48
Greece	13	15	17	20	23	-
Hungary	10	13	18	22	22	-
Ireland	37	41	45	50	58	58
Italy	23	28	30	30	35	36

	2000	2003	2005	2007	2010	2012 (*)
Latvia	3	3	3	4	6	-
Lithuania	-	2	3	3	4	-
Luxembourg	37	39	41	37	56	51
Malta	-	45	40	43	48	-
Netherlands	47	59	61	60	75	76
Poland	-	3	4	4	6	6
Portugal	11	12	18	20	27	-
Romania	-	1	1	2	2	-
Slovakia	13	15	14	15	24	-
Slovenia	5	8	7	6	10	-
Spain	16	21	24	26	31	26
Sweden	32	41	46	52	62	-
United Kingdom	73	78	78	69	78	123

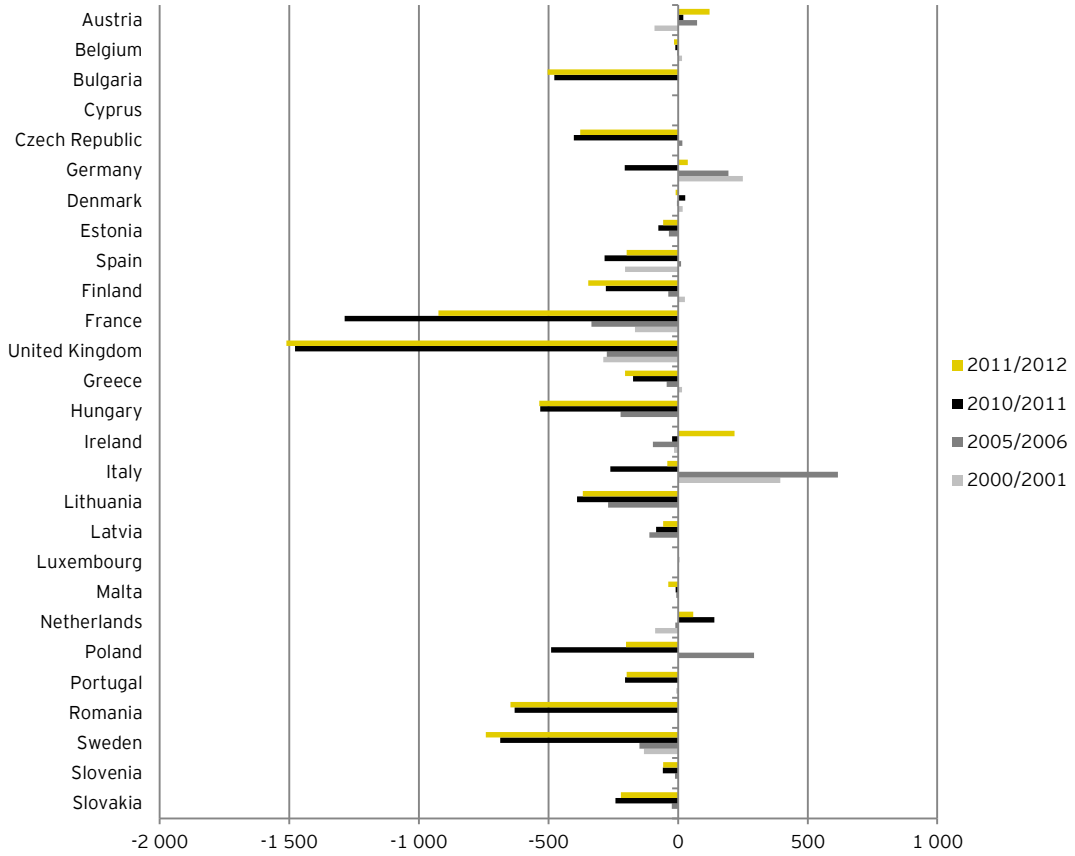
Source: Eurostat (Farm Structure Survey)

(*): For 2012, available data comes from IFCN. Figures are statistical averages of cows per dairy farm.

134. **With a few exceptions, milk production is below the allocated quota.** As shown in Figure 10 in 2010/2011, milk production was largely below the allocated milk quota in the Member States, except for Cyprus (+1.4 percent), the Netherlands (+1.2 percent), Luxembourg (+1.3 percent), Austria (+0.7 percent) and Denmark (+0.6 percent). This situation has evolved over the decade, especially since 2009 with the annual increase in milk quotas of 1 percent over five consecutive years[29].

[29] In Italy, the five annual increases in milk quotas have been replaced by a unique five percent increase in April 2009.

Figure 10: Excess or deficit in milk production compared to the milk quota in the Member States (in 1000 t)



Source: DG AGRI (last publication from September 2012)

135. **Shares of milk sent to processors vary among the Member States.** Table 15 shows the share of cow's milk collection in total cow's milk production. This proportion is lowest in the new Member States, particularly in Romania, where approximately 80 percent of milk produced is not delivered to dairies. In the EU-10 and EU-2, the shares tended to increase between 2006 and 2010, especially in Estonia and Lithuania, while it has decreased in Bulgaria and Poland. In the EU-15, the volume of milk collected is close to that produced, over 90 percent overall, without noticeable variation between 2006 and 2010. It should be noted that for some countries, the proportion is greater than 100 percent. This error can be explained by the fact that produced milk values are estimated through the use of samples, which in this case, slightly underestimated cow yield.

Table 15: Proportion of cow's milk collected as compared to cow's milk produced[30] from 2006 to 2010 (in percentage)

	2006	2007	2008	2009	2010
Austria	85	84.4	85	84.1	
Belgium	97.3	97.8	98.5	98.6	98.6
Bulgaria	64.6	64.9	61.7	55.9	50.2
Cyprus	93.5	100.1	100.1	100	100
Czech Republic	86.5	86.1	86.8	84.6	86.2

[30] Including deliveries of cream (milk equivalent)

	2006	2007	2008	2009	2010
Denmark	97.1	97.1	98.4	98.3	98.4
Estonia	87.6	85.8	87.4	91.3	92
Finland	99.3	97.3	97.5	97.8	98
France	94.3	98.1	98	98.2	98.2
Germany	96	96.2	95.8	94	98.2
Greece	87.7	92.5	89.7	91	90.5
Hungary	78.5	78.6	77.4	80	78.5
Ireland	99.3	99.5	99.5	99.5	99.6
Italy	92.8	92.8	92.9	92.4	92.1
Latvia	72.9	75.2	76.2	71.9	75.2
Lithuania	68.8	69.8	73.2	71.3	73.8
Malta	100	100	100	100	100
Netherlands	96.9	97	97.2	97.3	97.4
Poland	100.1	72.3	71.6	73.4	73.3
Portugal	103.7	93.3	93.3	93.4	93.5
Romania	21.4	22.7	21.7	21.3	20.1
Slovakia	89.9	89.7	89.5	89.1	87.1
Slovenia	86.8	79.6	80.2	82.6	86
Spain	91.3	90.6	92	91.9	92.4
Sweden	100	100	100	100	100
United Kingdom	97.1	97	97.3	97.4	97.3
EU-27	91.8	90.3	90.5	90.3	91.3
EU-25	94.7	92.9	93	92.8	93.8
EU-15	95.5	96.1	96.2	95.7	96.8

Source: DG AGRI (October 2011)

136. **Milk yields are highly heterogeneous among Member States.** Yields vary from less than 1 t/animal in Romania to more than 8t/animal in Northern Europe (Denmark, Sweden and Finland).

137. **The differences in milk productivity between members of the EU-25 have decreased.** Indeed, between 2004 and 2011, less developed dairy producers started to catch up with more industrialised countries. For instance, the standard deviation of milk yield per country decreased by 7.4 percent over this period. Strong growth is observed for Estonia, Latvia, Lithuania and Poland, whose development over the decade far exceeds 50 percent.

Table 16: Changes in milk yield in the EU since 2000 (in t per animal per year)

	2000	2002	2004	2005	2006	2007	2008	2009	2010	2011	% increase 2000-2011
Denmark	7.02	7.27	7.79	7.98	8.09	8.14	8.09	8.25	8.43	8.29	20
Sweden	7.74	8.00	8.05	8.10	8.14	8.16	8.17	8.28	8.21	8.20	6
Finland	6.82	7.13	7.46	7.55	7.86	7.98	7.82	7.98	8.05	8.01	18
Netherlands	7.00	6.70	7.03	7.05	7.39	7.25	7.12	7.34	7.66	7.74	9
United King.	5.96	6.44	6.87	6.99	6.94	6.90	7.02	7.10	7.35	7.67	23
Portugal	5.34	5.67	5.55	6.74	6.85	6.82	7.12	7.31	7.52	7.61	41
Spain	4.75	5.14	5.56	5.80	6.18	6.34	6.57	6.93	6.95	7.32	46
Germany	5.91	6.08	6.33	6.58	6.63	6.68	6.49	6.59	6.95	7.10	18
France	5.61	5.72	5.81	6.00	6.03	6.11	6.17	6.11	6.34	6.73	13
Estonia	3.12	4.28	4.60	5.05	5.56	5.76	6.03	6.33	6.44	6.68	106
Cyprus	5.76	5.40	5.36	5.88	5.81	6.08	6.45	6.55	6.45	6.34	12
Czech Rep.	4.84	5.59	5.97	5.82	5.73	6.00	6.09	6.13	6.16	6.32	27
Luxembourg	5.86	6.20	6.27	6.28	5.51	6.45	5.77	5.90	6.13	6.32	4
Belgium	4.96	4.90	4.99	5.23	5.33	5.49	5.50	5.71	5.92	6.07	19
Italy	5.69	5.22	5.44	5.55	5.62	5.58	5.73	5.59	6.01	5.97	6
Austria	4.28	4.50	4.86	4.90	5.07	5.07	5.12	5.09	5.20	5.49	21
Ireland	4.48	4.60	4.70	5.08	5.12	5.14	4.97	4.84	5.19	5.35	16
Slovakia	3.83	4.35	4.65	4.87	5.20	5.35	5.44	5.25	5.02	5.27	31
Hungary	5.15	5.63	5.07	5.33	5.40	5.44	5.42	5.67	5.53	5.23	7
Greece	3.72	4.46	4.58	4.33	3.99	4.77	4.58	5.35	4.98	4.92	34
Slovenia	3.21	3.45	3.76	4.23	4.54	4.53	4.62	4.57	4.74	4.82	48
Latvia	1.95	1.88	2.57	2.71	3.25	3.50	3.72	3.60	3.81	4.03	96
Poland	2.27	2.53	2.99	3.20	3.35	3.27	3.30	3.54	3.56	3.81	57
Lithuania	2.16	2.19	2.63	2.88	3.25	3.33	3.49	3.40	3.55	3.77	64
Bulgaria	1.98	2.10	2.16	2.31	2.40	2.22	2.24	2.02	1.83	1.79	-8
Romania	-	-	0.65	0.68	0.69	0.72	0.71	0.70	0.77	0.78	20
Malta	-	5.31	5.27	5.32	5.47	5.41	5.54	-	-	-	-
EU-27	-	-	5.23	5.39	5.48	5.52	5.55	-	-	-	-
EU-25	-	5.32	5.59	5.78	5.89	5.91	5.92	-	-	-	-
EU-15	5.75	5.86	6.09	6.30	6.37	6.41	6.40	6.46	6.73	6.91	17

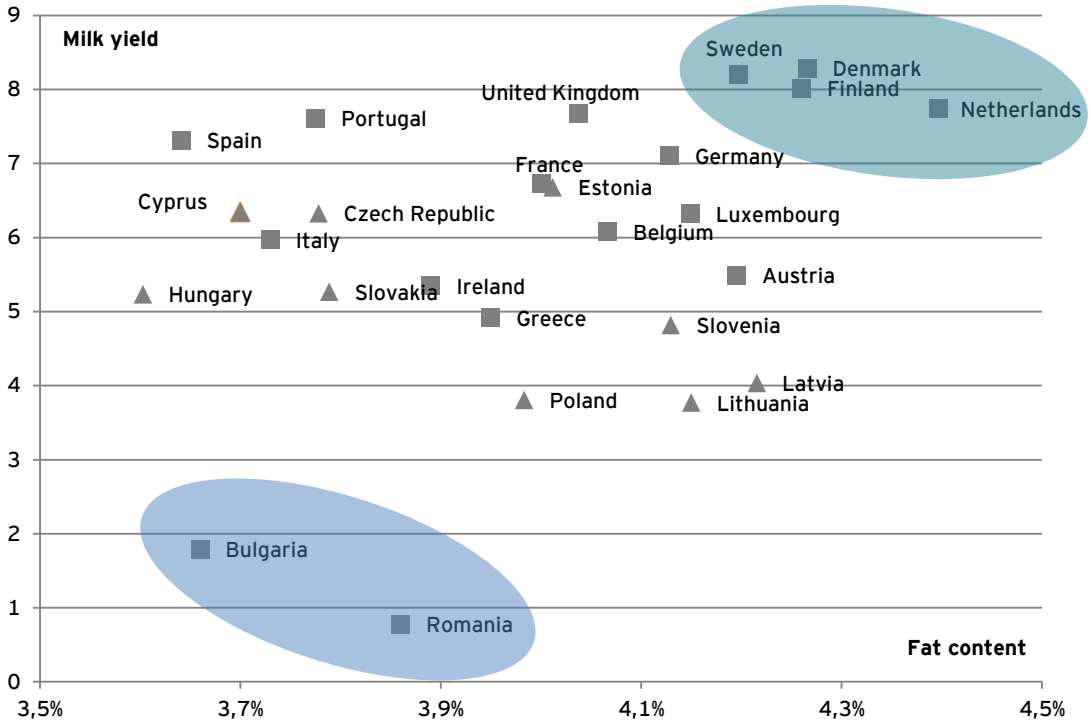
Source: Eurostat, calculations based on number of dairy cows and cow's milk collection

138. **Variations exist among the EU Member States in terms of the quality of cow's milk produced.** In particular, we observed the following in 2011:

- Four Member States produce milk that presents a high fat content (close to or greater than 4.2 percent): the Netherlands (4.4 percent), Denmark (4.3 percent), Finland (4.3 percent) and Sweden (4.2 percent). Few changes were observed over the period.
- The lowest fat content, approximately 3.6 percent, was observed in Bulgaria, Italy, Cyprus, Hungary, Malta and Slovakia, with little change over the period.
- An increase in fat content was observed for Romania, Greece (+8 percent), Latvia (+5 percent), Lithuania and Slovakia over the period.
- France, the UK and Belgium remained stable at approximately 4 percent over the period.

139. **The Member States with the highest milk yields tend to be those with the highest fat contents (Denmark, Finland).** Further (see Figure 11), the two Member States integrated in 2007 – Bulgaria and Romania – have the lowest fat contents and milk yields. Member States integrated in 2004 (represented by ►) cover a wide range of fat contents as do the EU-15, but tend to have lower yields.

Figure 11: Distribution of Member States by fat content (in percentage) and yield (in t per head) in 2011



Source: Eurostat (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

140. **In 2011, dairy product production was variable among EU Member States.** Germany, France and Italy are the biggest cheese producers, between them generating nearly 60 percent of European cheese production. This is in part explained by the fact that they are the largest milk producers and the owners of the largest cow herds. To a lesser extent, the Netherlands and Poland account for 16 percent of the EU cheese output. The two largest milk producers, Germany and France, are also the largest butter producers, providing 60 percent of the butter produced in Europe. The production of WMP is largely dominated by

France and Denmark. Their share of European WMP production reaches 56 percent. Three-quarters of European SMP are produced by Germany, France, Belgium/Luxembourg and Poland. The main producers of whey are Germany, the Netherlands, the UK, Italy and Poland.

In the Table 17, available milk corresponds to milk collected from cows, ewes, goats and buffalos. For whey, the figures reported are the total whey production (either in liquid state, or concentrated, or in powder or in blocks, etc.). The countries listed hereafter did not report at least one category of whey:

- Estonia (whey in powder and in block not reported)
- France (whey in liquid state and in concentrated state not reported)
- Latvia (whey in liquid state, in powder and in block not reported)
- Lithuania (whey in concentrated state not reported)
- Romania (whey in concentrated state, in powder and in block not reported)
- Slovenia (whey in liquid state and concentrated state not reported)
- United Kingdom (whey in powder and in block not reported)

Table 17: Production of dairy products per Member State in 2011

Products (1000 t)	Available milk	Cheese	Butter	WMP	SMP	Whey
Austria	2 911	154	31	0	6	1 109
Belgium and Luxembourg	-	81	26	50	100	975
Bulgaria	580	69	1	0	0	383
Cyprus	192	16	0	-	-	33
Czech Republic	2 366	113	22	13	15	986
Denmark	4 800	276	37	97	36	1 945
Estonia	642	41	6	1	4	217
Finland	2 255	109	42	4	15	934
France	25 472	1 933	355	99	269	684
Germany	29 764 (*)	2 111	425	-	300	12 303
Greece	-	193	1	-	-	-
Hungary	1 309	65	4	-	-	299
Ireland	-	-	146	38	67	121
Italy	11 115	1 171	0	-	-	3 322
Latvia	662	29	4	-	-	201
Lithuania	1 317	103	8	-	16	937

Products (1000 t)	Available milk	Cheese	Butter	WMP	SMP	Whey
Malta	-	-	-	-	-	-
Netherlands	11 832	750	-	-	51	6 908
Poland	9 311	676	122	25	97	2 968
Portugal	1 877	72	28	7	7	99
Romania	916	62	9	-	2	27
Slovakia	-	31	6	2	2	229
Slovenia	526	18	-	-	-	96
Spain	6 523	307	41	1	5	1 527
Sweden	2 850	103	6	15	28	1 062
United Kingdom	13 805	355	-	-	-	3 389

Source: Eurostat (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

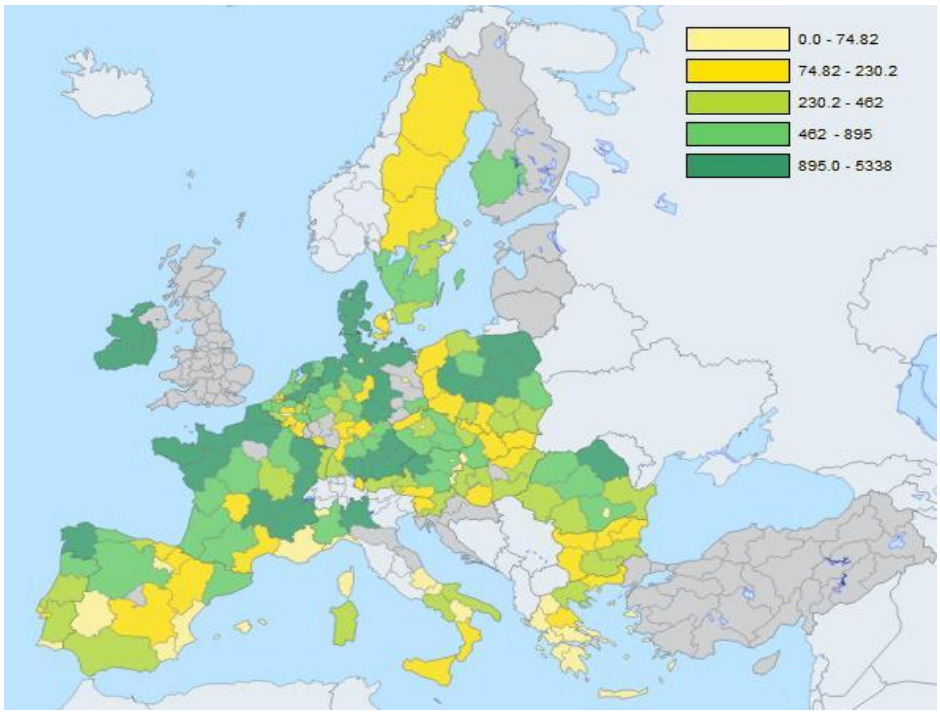
Note: For some MS Eurostat data is not available

(*): Milk collected from cows replaces available milk as the former is not disclosed

3.1.3 At the regional level

141. **Milk production in the EU is highly regionalised.** As highlighted in Figure 12, strong regionalisation of production can be observed within the Member States. Although lowlands are more common for dairy cow breeding, some mountainous areas, such as the Alps, have intensive cow's milk production.

Figure 12: Production of cow's milk in the EU at NUTS2 level in 2011 (in 1000 t)



Source: Eurostat (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

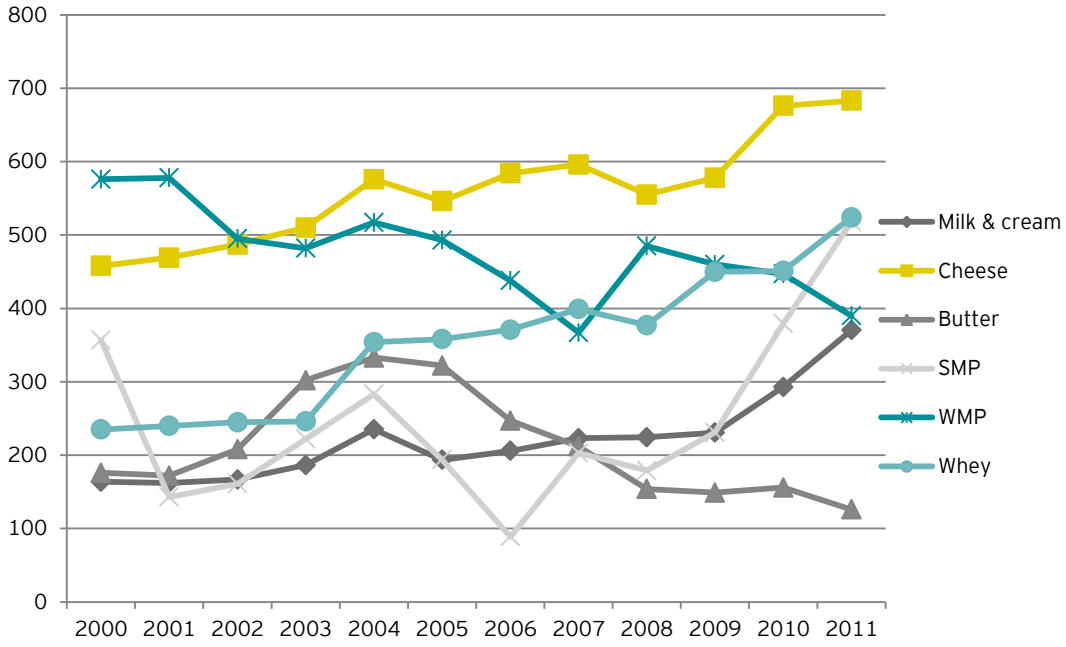
3.2 National milk balance (i.e. surplus/deficit of aggregate dairy commodities in milk equivalent)

3.2.1 At the European Union level

142. **The volume of exports increased throughout 2000-2011.** Exports to third countries reached 3 009 000 t in 2011. There has been an overall increase of 23 percent in exports from the EU between 2000 and 2011, but this conceals variations across the years.

143. **Cheese is the European flagship dairy product.** Cheese has been the leading exported dairy product by volume since 2003 when its exported value exceeded the value of WMP for the first time. Since 2008, butter has been a less important product in terms of export volume.

Figure 13: Changes in European exports of six key dairy products (2000-2011) (in 1000 t).



Source: Comext

144. **In milk equivalent, cheese, SMP and WMP are the most exported products.** Even though volumes of liquid milk and whey exported are significant (see Figure 13) their share of milk equivalent product exports are very weak. For instance, the volumes of whey and SMP exported by the European Union are similar in 2011 but their shares in milk equivalent are respectively 1 percent and 18 percent.

145. **The entrance of 10 countries in 2004 does not appear to have drastically altered the pattern of European dairy product exports in milk equivalent.** The percentages of products exported remained stable between 2003 and 2005.

Table 18: European dairy product exports in milk equivalent[31] (in percentage of the total dairy products exported and in million t)

Product	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Milk & cream	2%	2%	2%	2%	3%	2%	3%	3%	3%	3%	3%	3%
Cheese	21%	25%	25%	25%	25%	26%	29%	29%	27%	27%	27%	26%
Butter	6%	7%	9%	12%	11%	12%	10%	8%	6%	5%	5%	4%
SMP	15%	7%	8%	10%	11%	8%	4%	9%	8%	10%	14%	18%
WMP	24%	27%	23%	21%	20%	21%	20%	16%	21%	19%	16%	13%
Whey	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Total	18.4	16.0	16.1	17.1	19.3	17.9	16.7	17.5	17.3	18.2	20.8	22.4

Source: Authors' calculation based on Comext data and other sources (please refer to footnote 31 page 52)

146. **The value of exports reached historic levels in 2011.** The amount of total dairy product exports reached an historic high of EUR8 121 million in 2011. This represents a growth of 14 percent in one year and an overall increase of 66 percent between 2000 and 2011.

147. **Cheese is by far the most valuable exported product, representing EUR3 209 million in 2011.** Even in 2000 and 2002, when cheese was not the most exported dairy product in terms of volume, it was still the product which represented the greatest income in monetary terms.

Table 19: European dairy product exports (in percentage of total dairy product exports and in millions of euros)

Product	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Milk & cream	3%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Cheese	35%	42%	41%	41%	41%	46%	41%	41%	46%	42%	40%
Butter	7%	8%	11%	12%	13%	10%	9%	8%	7%	8%	7%
SMP	13%	6%	8%	9%	7%	4%	10%	7%	7%	12%	16%
WMP	26%	24%	22%	22%	22%	20%	19%	25%	19%	19%	16%
Whey	5%	6%	5%	6%	7%	8%	10%	7%	8%	8%	9%
Total	4 882	4 468	4 494	4 977	4 976	4 826	5 954	6 269	5 184	7 143	8 121

Source: Comext

148. **The value of exported dairy products declined in 2002, 2003, 2005, 2006 and 2009**. The most significant decrease occurred in 2009, when the value of the exports of all dairy products dropped by 17 percent. If we compare Figure 13 and Figure 14, we can see that

[31] The conversion factors for milk equivalent have been sourced from: IFCN, "A Global Review – The Supply of Milk and Dairy Products", Dr. T Hemme, A. Weers, K. Christoffers, 2005.

For cheese (which can have very different conversion factors), the conversion factor used is the mean of the IFCN source and three additional sources listed hereafter:

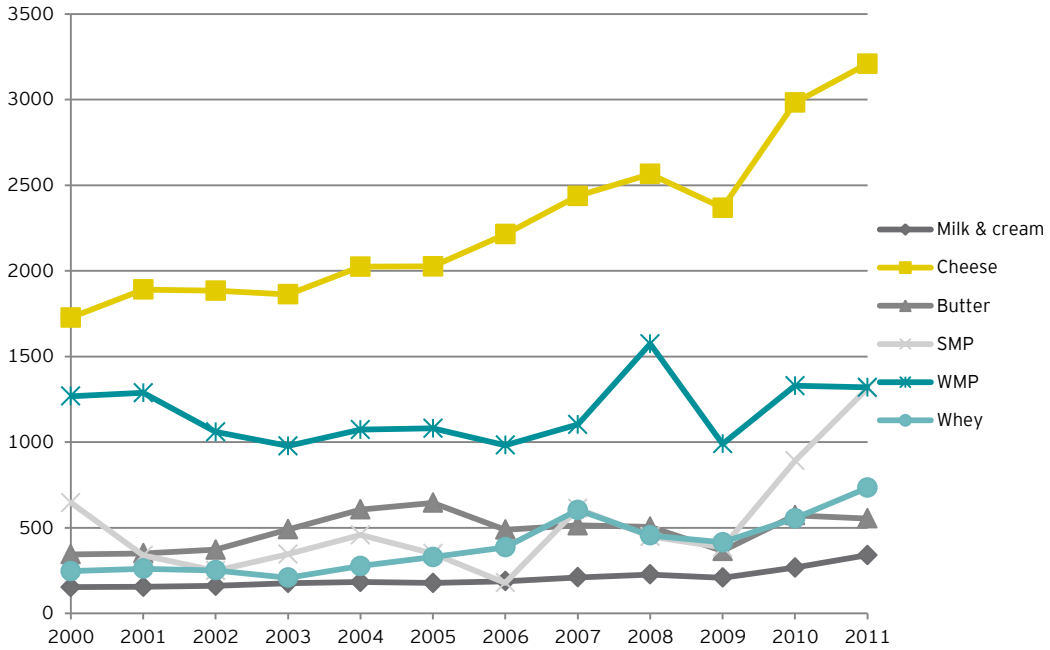
FAO, "Agribusiness handbook – Milk / Dairy Products", 2009

CLAL.it, http://www.clal.it/en/index.php?section=dairyPROD_DWT_me

Robert Jacobson, "Calculating Milk Equivalents: Milkfat or Total Solid Basis", http://aede.osu.edu/sites/drupal-aede.web/files/MilkfatToSolidsCalc.pdf

the drop in 2009 is due only to a drop in prices, as exports grew in volume (cheese, whey and SMP grew and WMP and butter decreased slightly).

Figure 14: Exported value in millions of euros

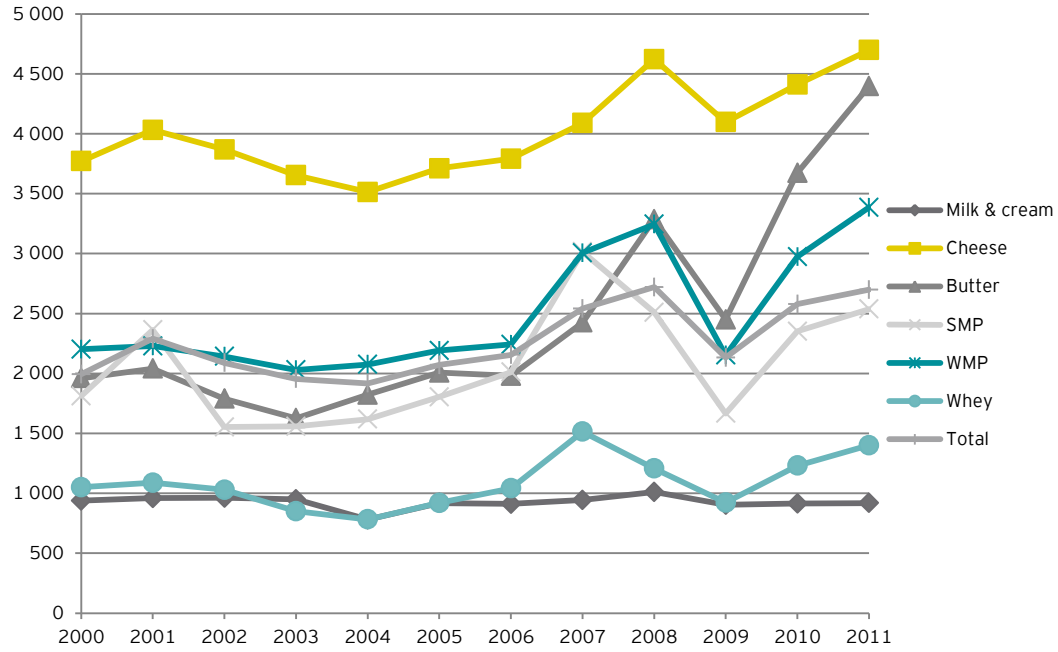


Source: Comext

149. **Overall, the average prices of exported dairy products increased throughout the period.** The average export prices since 2000 are plotted by product in Figure 15. This is calculated by dividing the values of the exported goods by their total volume. Note that there is a significant fluctuation in 2008/2009, coinciding with the global milk crisis. Further, anticipated fluctuations occurred after the 2003 CAP reform.

150. **The highest export prices across the whole period involve cheese.** Data show a boom in butter prices, from less than 2 000 EUR/t in 2000 to over 4 000 EUR/t in 2011, which is comparable to cheese prices (124 percent increase).

Figure 15: Average export prices (in euros / t)



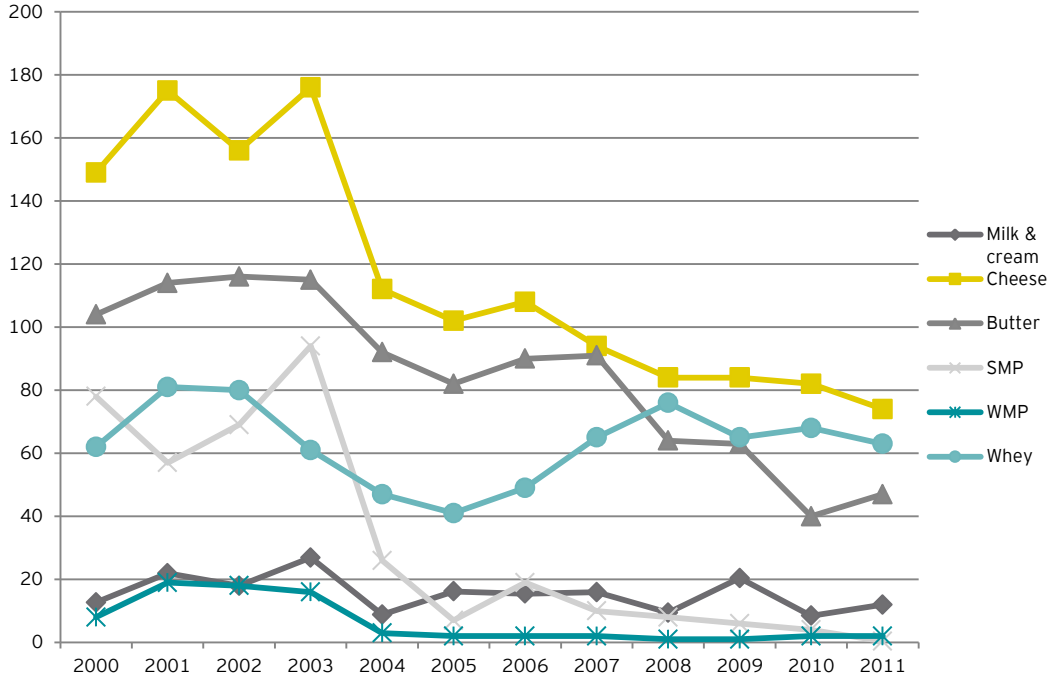
Source: Authors' calculations based on Comext data

151. **European dairy product imports are insignificant compared to exports.** Indeed, in 2001, the year in which the lowest quantity of dairy products was exported, the EU exported four times more products than it imported (this was the year in which the EU imported the most). Moreover, the overall amount of imported European dairy products declined by more than half between 2000 and 2011, going from 418 000 t to 206 000 t (a 51 percent drop).

152. **This decrease primarily concerns cheese, butter and SMP.** However, the most drastic plunge in import volumes involves SMP (decreasing from 80 000 t in 2000 to less than 5 000 t in 2011). The plunge of SMP imports is due to the entry of the EU-10, from where SMP was imported under the zero duty quotas before accession.

153. **In general, the decreases have become sharper since 2004, after the integration of additional countries with the European Union.** Indeed, since 2004 the trade with these countries has not longer been considered as European Union imports but as internal trade.

Figure 16: Changes in six key dairy products imported by the EU between 2000 and 2011 (in 1000 t)



Source: Comext

154. **In milk equivalent, the plunge of total dairy product imports appears more pronounced than the decrease in terms of volume of products imported.** Indeed, as shown in Table 20, the total dairy products import in milk equivalent decreased from 3.5 to 1.4 million t (-60 percent as compared to -51 percent for products in t).

Table 20: European dairy product imports in milk equivalent (in percentage of the total dairy products imported and in million t)

Product	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Milk & cream	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	1%	2%
Cheese	36%	38%	34%	35%	36%	37%	36%	34%	38%	38%	48%	44%
Butter	20%	19%	20%	18%	23%	24%	24%	26%	23%	22%	18%	22%
SMP	17%	11%	14%	17%	7%	2%	6%	3%	3%	2%	2%	0%
WMP	2%	4%	4%	3%	1%	1%	1%	1%	0%	0%	1%	1%
Whey	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%
Total	3.5	3.9	3.8	4.2	2.6	2.3	2.5	2.3	1.8	1.9	1.4	1.4

Source: Authors' calculation based on Comext data and other sources (please refer to footnote 31 page 52)

155. **The value of imported goods reached EUR618 million in 2011.** This represents a decrease of 32 percent as compared to 2000. Significant fluctuations can be observed over the years, especially in 2004, when the one-year decrease in dairy product imports in terms of value was nearly 40 percent.

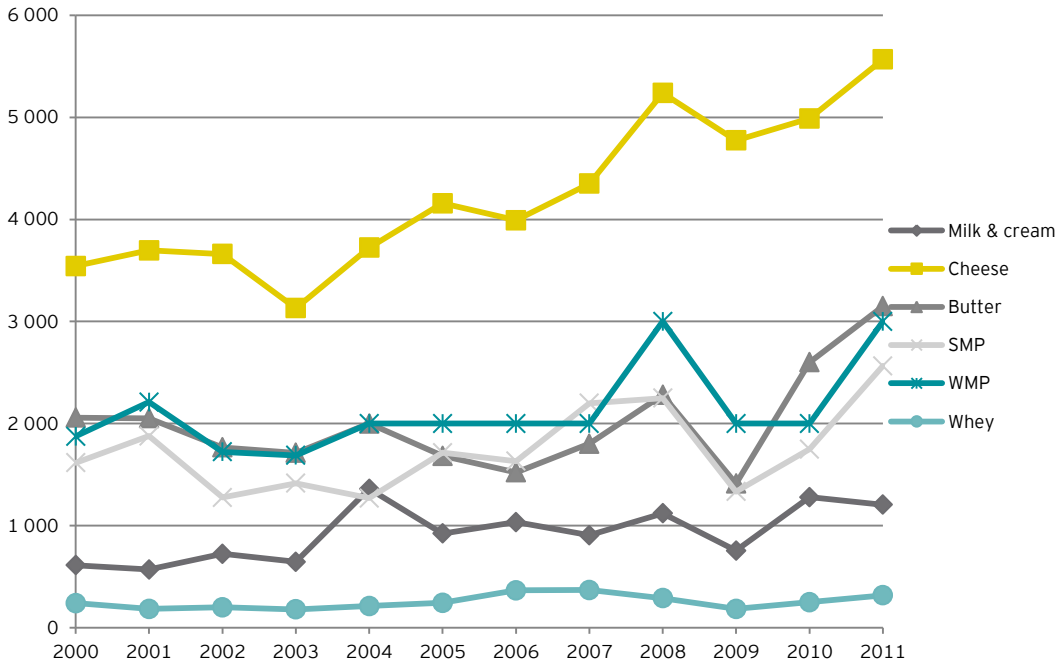
Table 21: European dairy product imports (in million euros)

Product	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Milk & cream	1%	1%	1%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Cheese	58%	60%	61%	57%	61%	68%	66%	62%	66%	73%	71%	67%
Butter	23%	22%	22%	20%	27%	22%	21%	25%	22%	16%	18%	24%
SMP	14%	10%	9%	14%	5%	2%	5%	3%	3%	1%	1%	0%
WMP	2%	4%	3%	3%	1%	1%	1%	1%	0%	0%	1%	1%
Whey	2%	1%	2%	1%	1%	2%	3%	4%	3%	2%	3%	3%
Total	913	1 073	941	963	689	623	654	656	663	547	576	618

Source: Comext

156. **Average import prices are comparable overall to export prices, except for whey prices, which are 75 percent lower on average than export prices throughout the decade**. The fluctuations in 2008 and 2009 are particularly significant for SMP, WMP, butter and cheese.

Figure 17: Average import prices (in euros/t)



Source: Comext

157. **The EU is a net exporter of dairy products, increasingly so since 2000.** Table 22 and Table 23 summarise the European Union's trade balance with the rest of the world (in 10 000 t of milk equivalent and millions of euros, respectively). This trend is especially pronounced for cheese and SMP, with a total growth in volume of milk equivalent exported of 97 percent and 85 percent in eleven years. Although volumes in milk equivalent are smaller for milk and cream and whey, the growing trend of their respective trade balance is also significant since 2000.

158. **A significant gap can be seen in 2004, with a global growth of the trade balance in milk equivalent for all dairy products.** This growth is all the more significant for SMP, cheese, butter and WMP.

Table 22: European dairy product trade balance in milk equivalent (in 10 000 t)

Product	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Milk & cream	32	31	34	48	37	40	44	45	44	60	75
Cheese	260	278	281	390	373	400	422	396	415	499	512
Butter	47	60	123	158	158	103	79	59	57	76	52
SMP	212	70	97	195	142	53	147	130	171	285	393
WMP	429	361	352	389	371	330	276	366	347	336	293
Whey	8	7	8	14	14	14	15	13	17	17	20
Total	1 495	1 226	1 291	1 665	1 559	1 423	1 519	1 542	1 635	1 933	2 096

Source: Authors' calculations based on Comext data and other sources (please refer to footnote 31 page 52)

159. **In terms of monetary value, the dynamic of the trade balance of cheese, SMP and whey is very similar to the dynamic observed for quantities exported in milk equivalent.** However, the dynamics for butter and WMP are quite different over time, depending on the unit measure. Indeed, the balances in terms of quantity (in milk equivalent) for butter in 2000 and 2011 are relatively similar (10 percent growth over ten years). Nevertheless, the growth of the trade balance in euros over the same period is 209 percent.

160. **A similar but more extreme situation can be seen for the WMP trade balance.** Indeed, the balance in terms of quantities exchanged (in milk equivalent) decreased by 32 percent between 2000 and 2011 while the balance in terms of monetary value increased by 5 percent.

Table 23: European dairy product balance (in millions of euros)

Product	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Milk & cream	146	148	160	172	163	172	196	216	193	257	325
Cheese	1 199	1 313	1 312	1 607	1 602	1 783	2 028	2 125	1 967	2 573	2 797
Butter	131	167	294	423	508	352	350	360	276	469	406
SMP	521	162	213	425	338	148	590	431	377	884	1 313
WMP	1 253	1 029	951	1 067	1 076	978	1 099	1 571	988	1 325	1 314
Whey	232	236	198	267	319	368	580	433	403	538	714
Total	3 969	3 527	3 531	4 288	4 353	4 172	5 298	5 606	4 637	6 567	7 503

Source: Comext

3.2.2 At the Member State level

161. **The Member States could be divided into three main groups in terms of dairy product imports[32] (see Figure 18).**

- Firstly, Germany and Italy are the two largest dairy product importers in the EU, with over 3 000 000 t. However, these countries have different profiles of

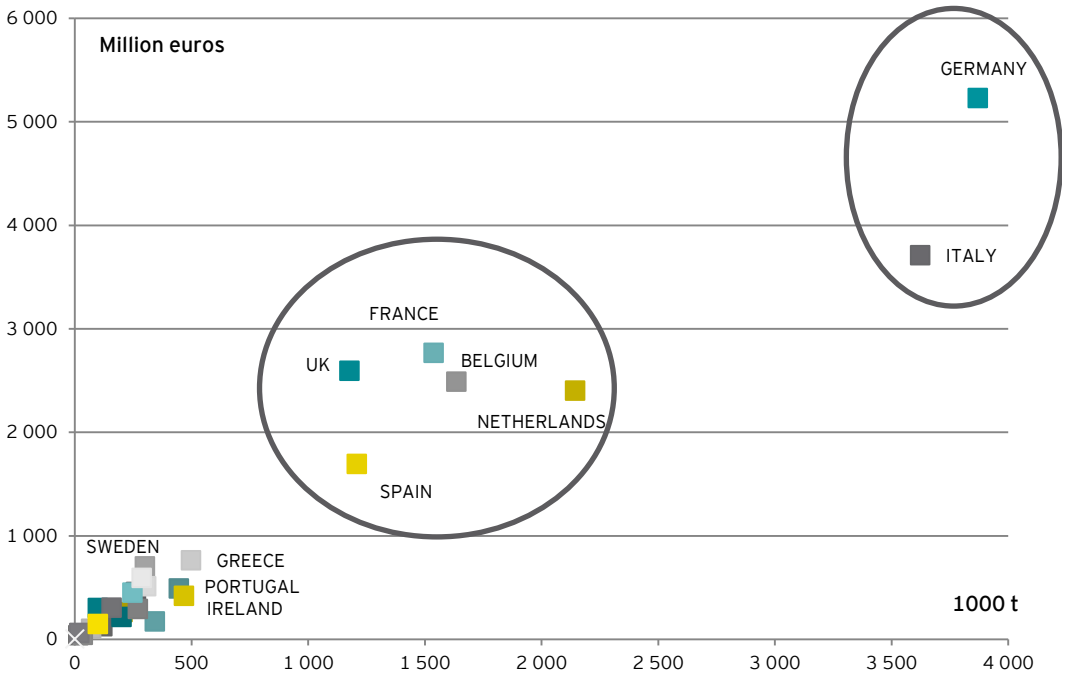
[32] At the Member State level both intra-European trade and trade with third countries is considered.

imported products, as Germany has a per-volume import price higher than the European average and Italy, a lower one. To a certain extent, this can be explained by the fact that Germany imports more cheese, butter and whey than Italy, which imports more raw milk and cream.

- The second group of countries is composed of France, Belgium, the Netherlands, the United Kingdom and Spain. This group is characterised by high levels of imports (over 1 000 000 t), usually at a high price (imports of processed products).

- The third group, comprising the rest of the Member States, has low volumes of imported dairy products and lower prices per t than the European average (this is less true for Nordic countries such as Sweden).

Figure 18: European dairy product imports in 2011 (in 1000 t and million euros)

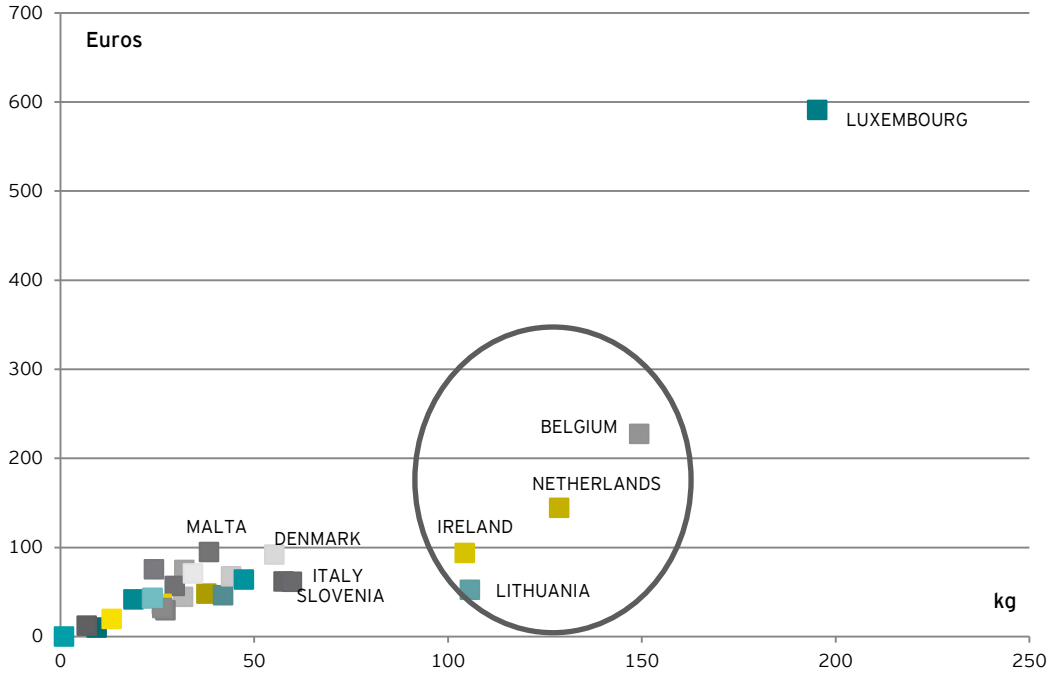


Source: Comext

162. **If we look at imports per capita (Figure 19), the data provides a different picture.** Indeed, there is a significant size effect in imports as volumes are correlated to country's populations.

163. **Luxembourg, which is in the third group in Figure 18 (low imports) is actually the biggest importer per capita in term of both volume and monetary value** (with almost 200 kg and EUR600 of dairy products imported per capita in 2011). Next, a group composed of Belgium, Ireland, Lithuania and the Netherlands imports significant volumes of dairy products per capita but for an overall low price. Finally, all the other countries (except Denmark, Italy and Slovenia) import less than 50 kg (and less than EUR100) of dairy products per inhabitant.

Figure 19: European dairy product imports per capita in 2011 (in kg and euros per capita)

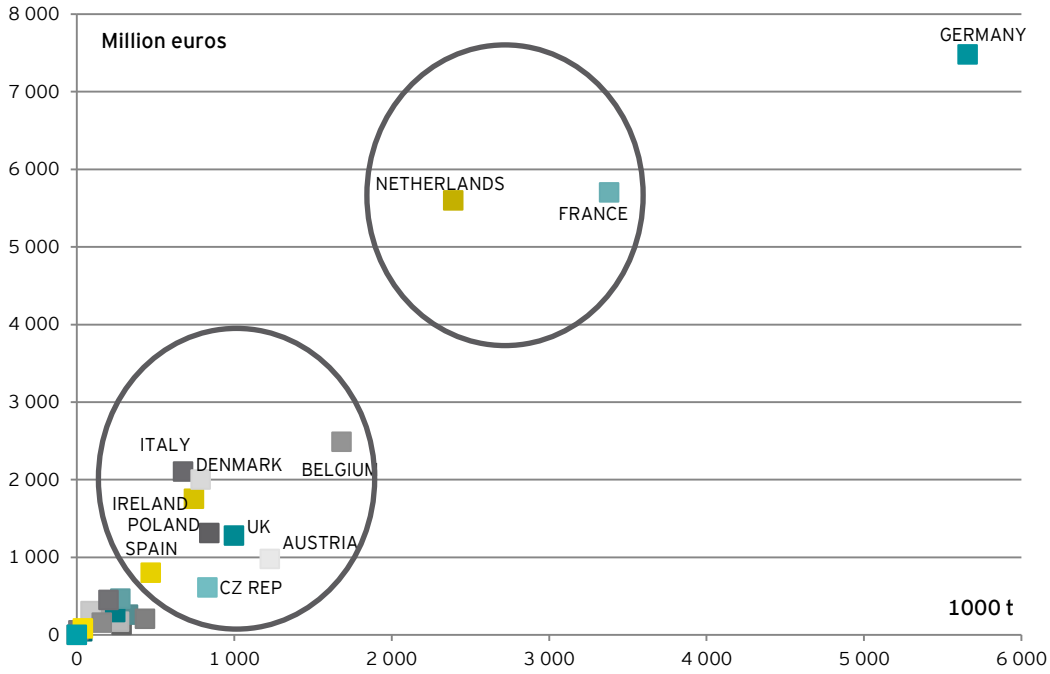


Source: Comext

164. **Exports are predominant for most of the EU Member States.** Different clusters of countries can also be identified in Figure 20. Germany is the leading player in the European dairy products trade, with almost EUR7 500 million of income and over 5 000 000 t exported. Luxembourg is followed by a group composed of the Netherlands and France, which also export high volumes of dairy products but differentiate themselves through the high value added of their products compared to the European mean (see below).

165. **The remaining countries can be placed in a heterogeneous group of relatively low exporters.** Nine countries make up a sub group that exports over EUR500 million and 500 000 t of dairy products, among which Italy has a very high level of value added.

Figure 20: European dairy product exports in 2011 (in millions of euros)



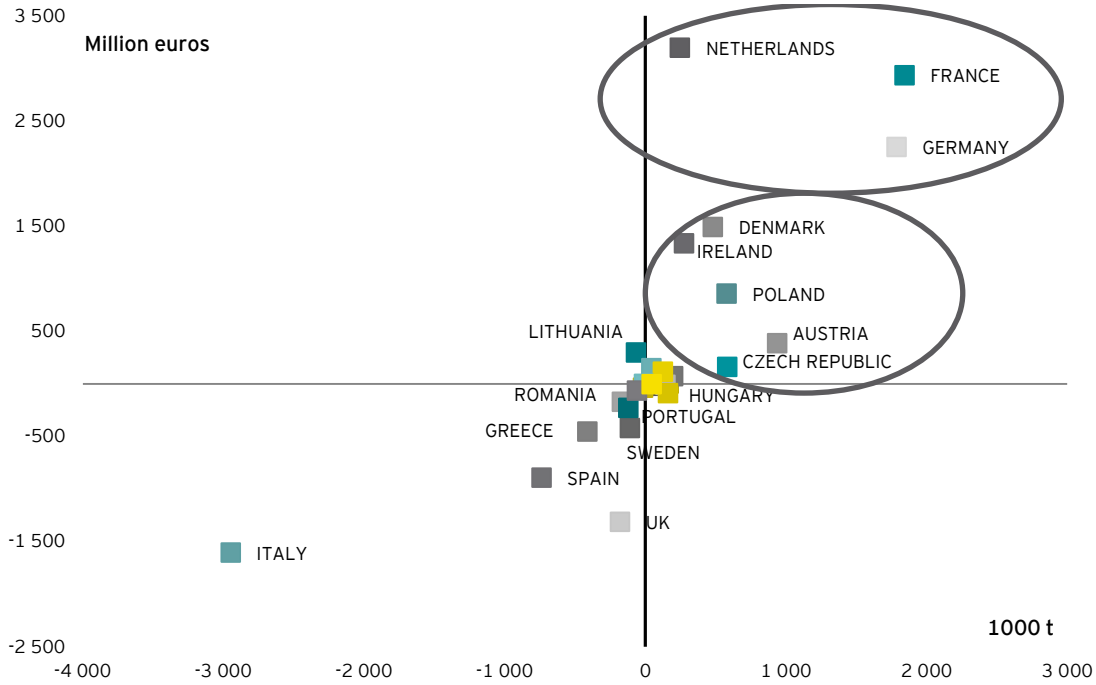
Source: Comext

166. **As can be expected, EU Member States are net exporters of dairy products in terms of volume.** This is true except for Italy, Spain and Greece and to a lesser extent the UK, Portugal, Lithuania, Sweden, Bulgaria, Romania, Malta and Cyprus. The balances in terms of volumes and monetary value are charted in Figure 21.

167. **The three highest balances in terms of volume are Germany, France and Austria (in that order) with a positive volume ranging between 1 890 000 and 939 000 t.** In terms of value, the Netherlands surpasses both France and Germany, which round out the top three. Austria is relegated to the seventh position behind Denmark, Ireland and Poland.

168. **The balance in volume and monetary value are generally in line with each other**; however, this is not the case for Belgium, Hungary, Lithuania, Luxembourg and Slovakia. Significant differences in terms of the two kinds of balances (in value and volume) can be explained by the specificities of each country's value added chain. For Italy, the ratio of exports over imports in volume is 19 percent but 57 percent in value. For Cyprus, these ratios are 55 percent and 96 percent, respectively. This situation can be explained by the production and export of high value-added cheese, such as Parmigianino Reggiano (in Italy) or Feta (in Cyprus).

Figure 21: European dairy product balance in 2011



Source: Comext

169. **Of the EUR3 193 million of positive balance for the Netherlands, EUR2 034 million come from the cheese trade (64 percent).** The rest mainly originates from butter and WMP. Furthermore, it should be noted that the Netherlands' trade in SMP is in deficit in terms of volume but in surplus in terms of value.

170. **In Italy, the milk and cream balance is -2 632 000 t (EUR-1 137 million),** which represents 89 percent of the total deficit in volume and 71 percent in euros.

171. **Austria's balance ranks higher among its peers in terms of volume (third European country) than in terms of value (seventh).** This is due to the fact that exports are mainly focused on low added-value products (milk and cream). In order to have a more precise view of the Member States dairy product balance, Table 24 summarises the net balances (in volume and monetary terms) for six key dairy products for each country. As not all the dairy products are selected, the sum of the volumes or values of each row in Table 24 is not equal to the values charted in Figure 21. However, for most of the countries these six products represent almost the totality of the balance. For the United Kingdom, Portugal and Sweden, total balances obtained by adding the rows in Table 24 are overestimated as they are in deficit of other dairy products, such as buttermilk. The opposite occurs for the Netherlands, France, Spain, Germany, Belgium and Austria.

Table 24: Balance in volume and value by country and product in 2011

Country	Milk & cream		Cheese		Butter		SMP		WMP		Whey	
Balance	1000t	M€	1000t	M€	1000t	M€	1000t	M€	1000t	M€	1000t	M€
Austria	664	260	13	66	-11	-50	-14	-26	0	1	184	38
Belgium	-39	-67	-86	-329	-12	6	70	176	40	95	-46	-38
Bulgaria	-25	-14	12	32	-3	-12	-17	-38	-12	-19	-8	-10
Cyprus	-2	-1	-1	17	-1	-5	0	-1	0	0	0	0
Czech Republic	565	218	-47	-132	-13	-51	13	32	11	36	24	-31
Denmark	147	98	201	896	15	118	15	41	97	302	-4	29

Country	Milk & cream			Cheese		Butter		SMP		WMP		Whey
Finland	-38	5	-4	-39	21	84	13	29	1	2	56	67
France	776	216	397	1 660	-75	-267	169	409	48	163	102	268
Germany	685	318	388	382	-28	-96	243	579	20	56	-130	302
Greece	-192	-129	-74	-169	-11	-39	-13	-22	-6	-13	3	-7
Hungary	208	38	-25	-77	-5	-18	-8	-11	-1	-2	22	9
Estonia	86	30	13	45	3	13	6	11	1	2	8	5
Ireland	-121	-68	115	451	158	562	56	144	64	184	41	88
Italy	-2 632	-1 137	-203	225	-49	-211	-56	-130	-27	-90	213	-39
Latvia	186	62	-2	-4	1	2	3	5	4	9	19	6
Lithuania	-165	19	58	210	2	7	14	34	0	-1	26	26
Luxembourg	118	45	-8	-60	-1	-4	-1	-1	0	-1	2	-1
Malta	-6	-4	-6	-26	-1	-2	-1	-2	0	0	0	0
Netherlands	-79	150	466	2 034	123	533	-8	27	99	408	-395	-163
Poland	177	128	101	313	20	72	58	139	8	25	145	110
Portugal	36	6	-29	-109	3	13	-2	-4	4	17	14	4
Romania	-121	-51	-30	-86	-5	-15	-3	-9	-3	-6	-4	-6
Slovakia	98	56	-12	-19	-7	-29	-1	-4	0	-2	20	-2
Slovenia	168	60	-10	-42	0	-2	0	-1	-1	-4	22	3
Spain	-342	-29	-202	-623	4	28	-39	-73	-10	-30	-8	-31
Sweden	7	-53	-73	-345	-12	-48	16	38	24	71	2	-11
UK	433	204	-290	-997	-66	-227	-20	-19	35	80	38	-1

Source: Comext

3.3 Differences in raw milk prices paid to milk producers in the EU and the relation with value added to explain such differences

3.3.1 At the European Union level

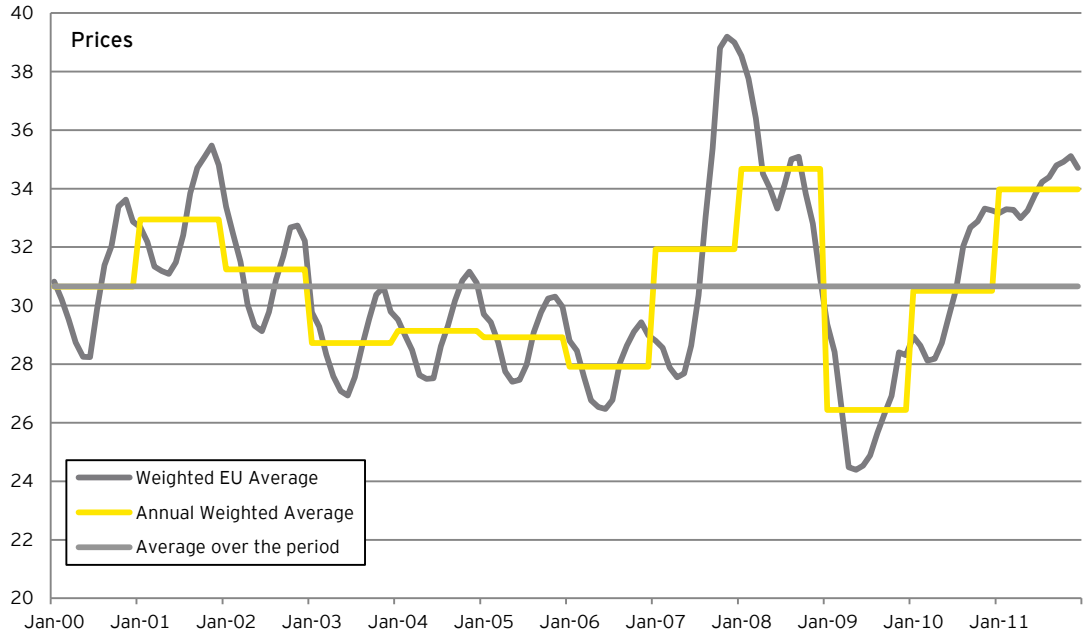
173. **The average price of European cow's milk (weighted by countries' production) fluctuates around an average of 30.7 EUR per 100 kg (in grey in Figure 22).** This fluctuation has been getting stronger since 2007. Indeed, if we divide the dataset into two parts, before July 2007 and after 2007, the values have a range (maximum – minimum) of 9 and 15, respectively.

174. **The annual volatility[33] of raw milk prices is 10.2 percent for the whole period.** However, if the dataset is divided into two parts as above, the respective annual volatilities are 8.9 percent and 12 percent.

175. **The maximum average price (39.2 EUR per 100 kg) was attained in September 2007 and the minimum (24.4 EUR per 100 kg) in May 2009.** This fluctuation represented a decrease of 38 percent in 18 months.

176. **No significant change in average price paid to farmers occurred in 2004 with the entrance of the new Member States to the European Union.**

Figure 22: Weighted average of the price of raw cow's milk (in Euro / 100 kg)



Source: Eurostat (data used for this graph was last updated in November 2012)

3.3.2 At the Member State level

177. **In addition to the fluctuations over the years and the apparent seasonality of raw cow's milk prices in the EU, there are disparities in the prices paid to farmers in the different Member States.** Table 25 summarises the prices paid to farmers in each country in the last decade.

[33] From monthly prices, monthly volatility is calculated as the standard deviation of price variations. We applied the scaling method In order to determine an annual volatility (here we multiplied the monthly volatility by the square root of twelve).

178. **Since 2000, the group of countries where the raw milk price has been the highest has been Finland, Greece and Italy.** This group has been joined by Malta and Cyprus since their entrance into the EU in 2004.

179. **Various Member States have succeeded each other as the countries with the lowest raw milk price.** The countries with the lowest raw milk price between 2000 and 2003 were Spain, the UK and Ireland. Since the entrance of Lithuania, Latvia, Slovenia and Hungary in 2004, these countries replaced the aforementioned as the countries where the raw milk price is the lowest. In 2009, Romania joined this group (data is not available for 2007 and 2008).

180. **In the volatile period of 2008-2011, most countries experienced major fluctuations (especially around 2009) before returning to initial prices.** However, this is not the case for Spain, Portugal and Luxembourg. Indeed, in this period the price variation for these three countries is -18 percent, -14 percent and -13 percent, respectively.

Table 25: Prices of raw cow's milk in euros / 100 kg

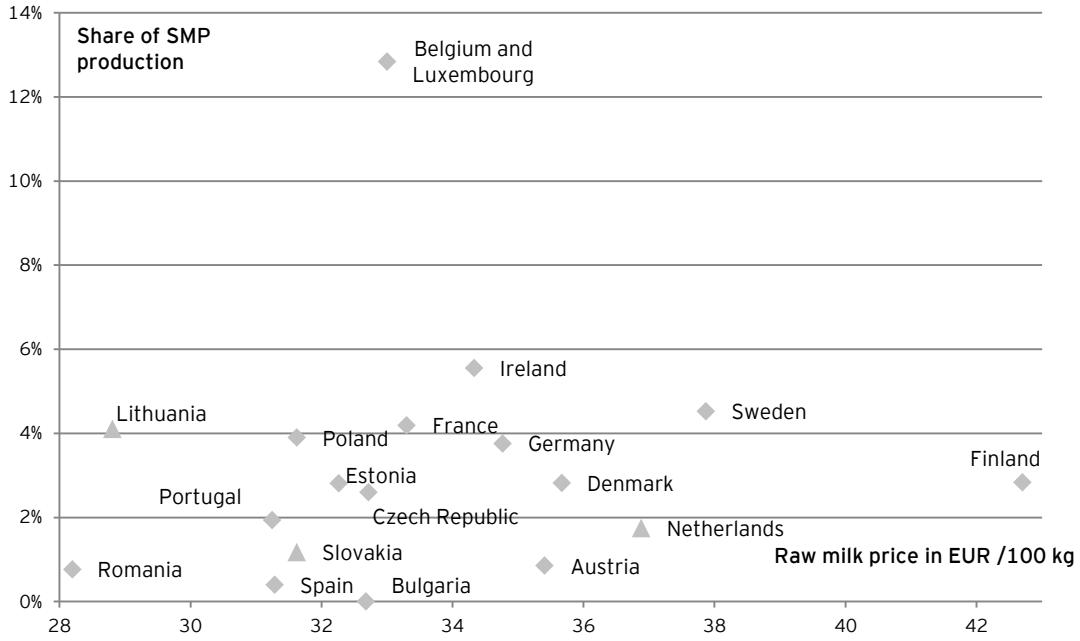
Country	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	29	32	30	30	30	30	34	39	29	32	35
Belgium	30	29	27	29	28	27	35	32	24	30	33
Bulgaria	-	-	-	-	-	-	25	32	25	28	33
Cyprus	-	-	37	40	40	40	41	50	51	51	52
Czech Republic	-	26	24	25	27	27	29	33	23	28	33
Denmark	33	34	33	31	29	29	32	37	28	32	36
Estonia	-	-	19	24	25	24	27	30	21	28	32
Finland	34	36	36	35	35	36	38	44	39	40	43
France	30	31	30	32	31	29	32	36	30	31	33
Germany	31	31	30	29	29	27	33	34	24	31	35
Greece	32	34	34	36	36	35	39	43	38	37	43
Hungary	-	29	27	25	26	24	29	32	21	26	31
Ireland	28	27	28	29	28	27	35	36	25	31	34
Italy	34	39	35	35	34	32	34	37	31	34	38
Latvia	-	-	14	17	21	23	26	28	19	25	29
Lithuania	-	-	14	17	20	20	24	25	18	25	29
Luxembourg	32	33	33	32	31	30	36	38	27	30	33
Malta	-	40	41	40	35	-	-	-	-	44	47
Netherlands	32	33	32	29	29	28	33	36	27	31	37
Poland	-	-	22	23	25	25	29	32	21	27	32
Portugal	29	33	33	33	29	27	32	36	29	29	31

Country	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Romania	-	-	-	-	-	-	-	-	20	24	28
Slovakia	-	-	22	23	25	25	29	32	21	27	32
Slovenia	-	-	29	28	26	26	28	33	26	27	30
Spain	27	29	29	31	30	30	35	38	29	29	31
Sweden	36	33	34	32	29	29	31	36	26	34	38
UK	27	27	25	27	27	26	29	32	26	28	31

Source: Eurostat (last updated in November 2012)

181. **As seen in Table 25, significant differences in prices paid to farmers for raw milk still existed between EU countries in 2011 (52 EUR as compared to 28 EUR per 100kg in Cyprus and Romania respectively).** In addition, in Figure 23 no clear pattern appears, between the share of SMP produced over the total dairy production (in milk equivalent) and the raw milk price.

Figure 23: Share of SMP production over the total dairy production in milk equivalent in 2011

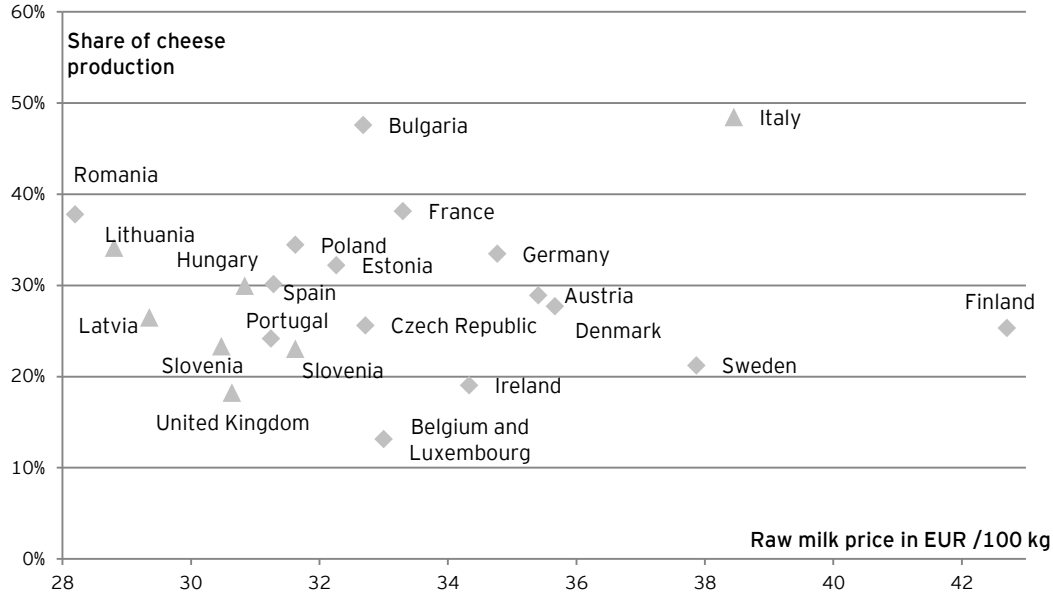


Source: Authors' calculation based on Eurostat and DG Agri (for milk equivalent factors please refer to footnote 31 page 52)

Note: For Member States charted as triangles, data concerning the total dairy production might be incomplete. For this reason, their share of SMP production might be slightly overestimated.

182. **Similarly, raw milk prices do not appear to have a strong link with the national production of high value added dairy products such as cheese** (see Figure 24).

Figure 24: Share of cheese production over the total dairy production in milk equivalent in 2011



Source: Authors' calculation based on Eurostat and DG Agri (for milk equivalent factors please refer to footnote 31 page 52)

Note: For Member States charted as triangles, data concerning the total dairy production might be incomplete. For this reason, their share of cheese production might be slightly overestimated.

183. **Between 2000 and 2011, the farmer's share of the consumer price (reflecting the ratio between farmers' and consumers' prices) for milk has decreased from 40 percent to 35 percent (see Table 26).** This is all the more true if the average for 2011 is calculated, taking only the countries for which data is available for both 2000 and 2011 (the drop is from 40 percent to 33 percent)[34].

184. **Over the whole period, farmers in Germany received the highest share of revenue from milk sales, generally approximately 50 percent (except in 2006 when Estonia received the highest share, with 48 percent as compared to Germany's 46 percent).** At the other end of the scale, three countries have succeeded each other as the country where farmers received the smallest share of milk revenue:

- Approximately 27 percent in Italy between 2000 and 2006;
- Approximately 21 percent in Latvia in 2008 and 2009;
- Approximately 23 percent in Romania in 2010 and 2011.

185. **Although the maximum farmer's share of the consumer price for milk remains stable over time (approximately 49 percent), the minimum decreases from 27 percent to 22 percent**. The 'historical' low value of 19 percent was attained in 2009 by Latvia.

186. **Only six countries out of the 24 for which data is available have a bigger farmer's share of the consumer price for milk in 2011 than in the first year of collected data.** These countries are Bulgaria, Cyprus, the Czech Republic, Lithuania, Poland and Slovakia. If only data from Member States is taken into account (data since the countries joined the EU), then the farmer's share of the consumer price grew in only four of the former. Indeed, in Bulgaria and the Czech Republic, the share was lower in 2011 than in 2008 and 2004.

[34] This result remains unchanged if only countries from the European Union in both periods are taken into account, or if calculations are made taking into account data for countries at the date that they joined the EU.

Table 26: Farmer's share of the consumer price for milk (in percentage of milk consumer price)

Country	2000	2002	2004	2006	2008	2009	2010	2011
Austria	-	39	36	34	36	29	32	34
Belgium	-	40	40	37	35	26	36	39
Bulgaria	-	33*	39*	40*	48	41	42	39
Cyprus	-	-	-	-	39	41	41	42
Czech Republic	33*	38*	39	40	34	30	34	34
Denmark	-	-	-	-	-	-	-	-
Estonia	-	-	48	48	40	39	43	41
Finland	49	47	44	43	44	40	43	33
France	-	41	40	37	39	33	36	37
Germany	54	49	49	46	48	42	49	51
Greece	49	45	37	30	33	30	28	30
Hungary	51*	42*	36	34	33	27	32	34
Ireland	36	33	32	30	29	20	27	30
Italy	28	28	26	25	25	22	26	27
Latvia	29*	29*	31	29	23	19	24	24
Lithuania	27*	32*	28	32	29	23	33	32
Luxembourg	35	34	33	29	30	21	24	25
Netherlands	44	37	35	34	36	25	35	35
Poland	-	28*	32	34	34	30	37	41
Portugal	47	49	46	42	47	41	42	46
Romania	-	-	-	-	24	25	24	22
Slovakia	-	-	29	26	33	25	31	33
Slovenia	43*	43*	44	44	40	31	34	35
Spain	47	39	40	36	37	32	33	37
Sweden	34	31	28	27	32	26	29	29
UK	43	39	39	33	41	35	38	44

Source: IFCN

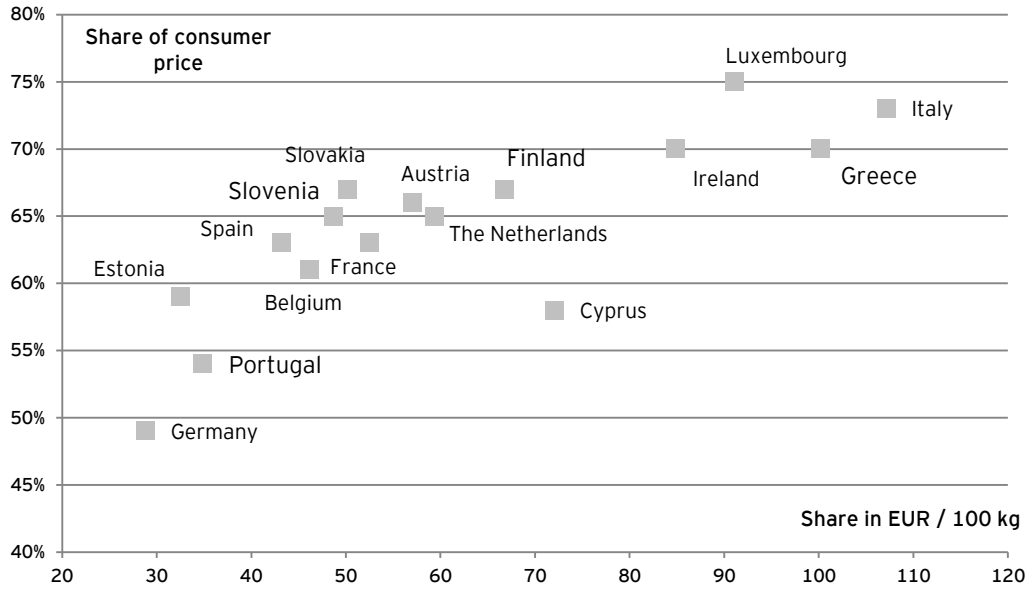
*: The country was not part of the EU at that time

187. **Milk processors' and retailers' share of the milk consumer price can be obtained by calculating the percentage remaining after deducting the shares given in Table 26.** Therefore, the conclusions that can be drawn for this part of the value chain are the opposite of those for farmers. In order to obtain a comparison that also takes into account

price information, Figure 25 plots the share as a percentage against the real share of processors and retailers in monetary terms.

188. **Among the Member States charted (those that use the euro as currency), processors' and retailers' share of the consumer price for ECM[35] milk was the highest in Luxembourg in 2011.** However, in Italy the share per kilogram sold was the highest for processors and retailers.

Figure 25: Share of processors and retailers for ECM milk in 2011



Source: IFCN

189. **The share of processors and retailers has increased for all countries since 2000 (or since their entry into the EU) except for Cyprus.** This increase has been particularly strong for Finland, Greece and Latvia. In Table 27, the share of processors and retailers as charted in the horizontal axis of Figure 25 is presented as from 2000.

Table 27: Share of processors and retailers (EUR / 100 kg) for ECM milk

Country	2000	2002	2004	2006	2008	2009	2010	2011
Austria	-	40.9	43.7	48.4	57.4	59.4	56.7	57.1
Belgium	32.1	38.8	39	40.3	53	59.7	47.8	46.2
Bulgaria (*)	50.8	53.8	46.6	50	47.7	60	61.1	69.1
Cyprus	-	-	-	-	77.2	74	73.8	72
Czech Republic (**)	1.4	1.2	1.1	1.1	1.4	1.2	1.2	1.3
Denmark	-	-	-	-	-	-	-	-
Estonia	-	-	18.8	18	33.9	23.8	26.1	32.5
Finland	24.3	28.5	30.8	33.5	38.3	44.1	39.1	66.8
France	-	41	43.3	46.6	51.1	55.8	51.7	52.5

[35] ECM: Energy Corrected Milk (IFCN database on milk production standardizes milk to 4% fat and 3.3% protein).

Country	2000	2002	2004	2006	2008	2009	2010	2011
Germany	22.9	28.6	26.3	28.7	33.4	29.8	28.7	28.8
Greece	40.4	51	63.4	84.9	87.3	89.9	95.9	100.2
Hungary(**)	4.9	8.2	9.5	10.4	12.8	13.3	12.5	13.4
Ireland	53.7	59.1	59.6	61.1	80.9	92.3	83.3	84.8
Italy	81.9	87.2	93	97	115.1	112	99.8	107.1
Latvia(*)	17	18.6	22.1	29.8	50.4	42.2	40.9	47.6
Lithuania(*)	108.6	85.3	108.2	105.3	151.1	149.2	118.3	147.3
Luxembourg	53.4	59.5	61.5	68.1	82.6	93.5	90.9	91.1
Netherlands	35.4	47.8	48.7	49.7	55.9	66.8	52.2	59.4
Poland(*)	-	164.3	156.8	154.2	184.9	195.5	171.8	166.4
Portugal	30.4	30.4	32.9	37.6	38.6	39	37.5	34.9
Romania(*)	-	-	-	-	210.2	221.5	240.7	262.7
Slovakia	-	-	44.8	57	53.5	53.3	48.1	50.2
Slovenia	30.2	30.4	27	28.1	41.8	49.9	44.7	48.7
Spain	26.6	35.9	37	42.8	52.2	52.9	47.7	43.2
Sweden(*)	475.3	526.9	591.8	600.9	609.5	673	644.3	680.5
UK(*)	22.1	26.3	28.0	35.9	36.0	42.8	38.9	33.5

Source: IFCN

(*): In (local currency/100kg) for ECM milk

(**): In (thousand local currency/1000kg) for ECM milk

3.4 Share of milk production consumed locally versus exported

3.4.1 At the European Union level

190. **The consumption of drinking milk in the EU has remained stable.** In 2011, an average of 64 kg of milk was consumed per person.

191. **Cheese consumption across the EU is growing slowly, yet steadily.** Cheese consumption in the EU-27 has followed a slight upward curve between 2007 and 2011, reaching 17.1 kg of cheese eaten per person in 2011.

192. **European cheese productions have largely exceeded consumption between 2000 and 2011**, with a self-sufficient rate (defined as production/consumption) of up to 156 percent in 2009. This ratio shows significant fluctuations over the period.

193. **The percentage of cheese production dedicated to export has grown slightly in the EU.** In the EU-27, 8 percent of cheese production was exported in 2011. This share has evolved slightly over the decade, growing from 6 percent to 8 percent.

194. **Lesser, stable butter consumption.** European butter consumption has been approximately 3.6 kg/capita since 2007. In terms of butter production, the European Union became self-sufficient in 2007 and has produced surplus of butter since then.

195. **The share of butter exported seems to be on a decreasing trend in the EU-27.** In 2011, the volume of butter exported represented 9 percent of the butter production in volume. After reaching a peak in 2005 with 21 percent of production exported, this share has since come down.

3.4.2 At the Member States level

196. **Although the per capita consumption has not fluctuated over the past years, Member States have very heterogeneous milk consumption patterns.** Indeed, per capita consumption ranges from 8 kg/capita in Bulgaria to 140 kg/capita in Estonia in 2011. If the figures in Table 28 are compared to Figure 7, it can be observed that the shares represented by milk in total agriculture is usually linked to the per capita consumption of milk (see Estonia, Finland, Ireland, etc.).

197. **The per capita consumption of milk remains steady in the majority of Member States**, except in Cyprus, Ireland, Latvia, Portugal, Romania and Sweden, where it has decreased between 2007 and 2011.

Table 28: Per capita consumption of liquid milk in kg

Country	2007	2008	2009	2010	2011
EU-27	66	65	65	65	64
Austria	80	81	80	80	79
Belgium	55	54	54	54	54
Bulgaria	7	7	7	8	8
Cyprus	104	99	98	97	93
Czech Republic	51	53	60	58	58
Denmark	90	91	89	91	91
Estonia	136	140	137	137	140
Finland	133	132	131	127	126
France	60	59	57	59	59
Germany	54	55	54	54	54
Greece	40	41	41	42	37
Hungary	57	54	59	51	51
Ireland	144	141	139	135	128
Italy	55	55	57	57	57
Latvia	122	87	84	82	83
Lithuania	37	39	30	30	31
Luxembourg	40	40	29	35	35
Malta	74	70	70	70	69

Country	2007	2008	2009	2010	2011
Netherlands	53	52	51	50	49
Poland	46	44	43	42	42
Portugal	92	83	79	78	77
Romania	113	105	100	100	100
Slovakia	52	48	50	50	50
Slovenia	82	77	70	80	80
Spain	92	89	88	89	86
Sweden	106	104	100	97	93
UK	105	103	104	107	106

Source: Productschap Zuivel

198. **Cheese consumption varies among the Member States.** The largest cheese consumers are Greece, Luxembourg, France, Germany and Italy with more than 22 kg/capita consumed in 2011. On the other hand, Romania, Bulgaria, Ireland, Spain, Malta, Portugal, Slovenia and Slovakia consumed less than 10 kg/capita in 2011.

Table 29: Per capita consumption of factory cheese (only from cow's milk) in kg/capita

Country	2007	2008	2009	2010	2011
EU-27	16.7	16.7	16.9	17.1	17.1
Austria	17.7	18.3	17.9	17.9	17.8
Belgium	16.1	15.8	15.6	15.9	15.9
Bulgaria	5.6	5.6	5.6	5.6	5.6
Cyprus	18.8	18.8	17.2	21.4	20.6
Czech Republic	16.9	16.2	16.7	16.5	16.5
Denmark	16.5	16.4	16.3	16.2	16.2
Estonia	18.8	17.1	18.4	18.4	19.2
Finland	19.9	20.0	20.7	21.3	21.3
France	25.6	26.9	27.1	25.6	25.7
Germany	22.3	22.2	22.3	22.9	23.1
Greece	29.2	31.1	31.0	30.9	27.7
Hungary	10.7	10.9	11.0	11.5	11.5
Ireland	7.1	6.1	6.3	7.2	7.1
Italy	20.9	20.7	21.1	22.0	22.0
Latvia	12.7	13.0	13.3	13.4	13.5
Lithuania	13.6	14.3	14.5	14.5	15.0
Luxembourg	18.3	24.4	22.0	26.7	26.7

Country	2007	2008	2009	2010	2011
Malta	10.0	9.3	9.2	9.2	9.2
Netherlands	18.0	19.3	19.0	19.5	19.4
Poland	10.7	10.7	10.8	11.3	11.7
Portugal	10.8	10.5	10.2	10.2	9.7
Romania	5.0	5.0	5.0	5.0	5.0
Slovakia	9.8	9.2	9.5	9.9	9.9
Slovenia	10.3	9.4	9.3	9.2	9.3
Spain	7.4	7.5	8.2	9.3	9.0
Sweden	17.6	18.5	18.9	18.5	18.6
UK	11.2	11.7	10.9	11.2	11.1

Source: Productschap Zuivel

199. **The EU is largely self-sufficient for cheese, although the production/consumption ratio varies greatly among the Member States.** Indeed, Table 30 indicates that not all Member States' national cheese production covers their needs. For instance, the volumes of cheese produced in Romania and Malta are less than 1/3 of their cheese consumption, whereas the self-sufficiency ratio reached over 200 percent in Ireland, Denmark, the Netherland and Lithuania in the past years. In Bulgaria, Hungary, Poland and the Netherlands, the ratio has shrunk over the years, whereas the per capita cheese consumption has increased slightly.

Table 30: Self-sufficiency ratio for cheese in EU-27, from 2000 to 2011 (in percentage)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
EU-27	**123**	**109**	**120**	**116**	**106**	**121**	**121**	**146**	**155**	**156**
Austria	88	92	97	99	92	97	101	99	92	95
Belgium	37	38	36	56	33	-	-	-	34	37
Bulgaria	-	-	-	-	-	927	885	924	135	112
Cyprus	-	-	-	-	64	102	92	87	82	95
Czech Republic	-	-	-	98	96	-	-	-	-	-
Denmark	333	286	269	261	268	-	-	-	-	-
Estonia	-	-	-	132	117	133	154	129	159	151
Finland	107	110	109	107	100	98	-	-	-	-
France	114	117	117	118	121	125	125	124	123	121
Germany	104	107	106	109	111	114	121	114	114	116
Greece	54	58	61	57	56	55	54	50	56	56
Hungary	-	-	-	223	104	108	89	80	81	83
Ireland	448	558	527	448	437	-	-	-	-	-
Italy	86	87	89	88	87	91	87	-	-	-

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Latvia	-	-	-	-	99	132	128	120	115	97
Lithuania	-	-	-	159	219	181	247	194	218	213
Luxembourg	-	-	-	-	-	-	-	-	-	-
Malta	-	26	24	23	30	31	31	34	31	-
Netherlands	258	215	223	218	192	192	-	-	-	-
Poland	-	99	-	-	108	110	79	83	86	85
Portugal	65	66	65	64	64	64	61	63	64	-
Romania	-	-	-	-	-	-	15	16	15	15
Slovakia	224	211	184	119	104	-	-	-	88	81
Slovenia	-	-	-	-	104	-	-	-	-	-
Spain	-	75	76	75	69	-	-	-	-	-
Sweden	87	85	85	81	76	-	-	-	-	-
UK	63	66	64	60	60	58	58	55	-	-

Source: Eurostat (production data from annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

Notes: Self-sufficiency ratio equal gross human apparent cheese consumption over cheese production. Data for gross human apparent consumption are not available for 2010 and 2011.

200. **For some Member States, the volume of cheese exported represented more than 15 percent of their production in 2011**: Lithuania and Finland (up to 35 percent), Latvia (23 percent), Slovenia (20 percent) and Denmark (17 percent). On the other hand, the available data shows that 10 Member States exported less than 5 percent of their production the same year.

201. **This percentage has not fluctuated significantly between 2000 and 2011.** There are however, some exceptions: the percentage exported has increased in Latvia and Finland and decreased in Lithuania.

Table 31: Percentage of cheese production exported, from 2000 to 2011 (in percentage)

	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
EU-27	**6**	**6**	**6**	**7**	**7**	**7**	**7**	**6**	**7**	**8**	**8**
Austria	7	8	9	8	8	8	8	8	10	9	9
Belgium	9	5	4	10	4	6	3	2	3	4	6
Bulgaria	7	9	11	11	11	10	9	11	10	9	10
Cyprus	-	-	-	19	16	16	14	18	13	14	13
Czech Republic	14	12	11	7	6	6	5	3	4	4	4
Denmark	24	22	23	21	17	15	16	13	13	14	17
Estonia	12	10	9	3	6	11	10	8	13	18	14

	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Finland	22	24	25	24	27	30	32	29	34	36	35
France	6	5	5	5	4	4	4	4	4	5	5
Germany	5	6	7	6	5	6	6	6	5	7	6
Greece	3	2	3	3	3	3	3	3	3	3	4
Hungary	-	6	11	22	19	16	11	7	8	11	11
Ireland	6	8	14	15	-	-	-	-	-	-	-
Italy	6	5	6	6	6	6	6	6	6	6	6
Latvia	3	4	4	1	2	6	9	10	7	18	23
Lithuania	71	51	58	31	30	36	37	33	34	32	36
Luxembourg	-	-	-	-	-	-	-	-	-	-	-
Malta	-	1	0	0	0	0	0	0	-	-	-
Netherlands	11	12	11	11	11	12	12	11	12	13	14
Poland	8	7	8	6	5	4	4	4	4	6	5
Portugal	2	2	2	2	2	2	3	3	4	5	5
Romania	4	-	1	2	2	1	0	1	1	1	0
Slovakia	18	24	32	4	3	2	1	3	5	2	1
Slovenia	15	15	23	18	14	14	15	13	17	21	20
Spain	2	2	2	2	2	3	3	2	2	3	4
Sweden	2	2	2	2	1	1	2	1	2	1	1
UK	3	7	6	5	4	3	3	3	4	4	4

Sources: Export data from Comext and production volumes from Eurostat (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

202. Although, generally, less butter is consumed than cheese in Europe, some Member States still consume a significant amount, exceeding 5kg/capita in countries, such as France, Germany, Luxembourg, Estonia and Austria.

Table 32: Per capita consumption of butter in kg/capita

Country	2007	2008	2009	2010	2011
EU-27	**3.7**	**3.6**	**3.7**	**3.6**	**3.6**
Austria	5.2	4.9	5.2	5.2	5.2
Belgium	2.4	2.4	2.4	2.4	2.4
Bulgaria	0.5	0,5	0.5	0.5	0.5
Cyprus	1.4	1.4	1.3	1.7	1.7

Country	2007	2008	2009	2010	2011
Czech Republic	4.1	4.7	5.0	4.9	4.8
Denmark	1.7	1.8	1.8	1.8	1.8
Estonia	3.5	4.3	5.5	5.5	5.5
Finland	2.8	2.7	2.9	3.1	3.1
France	7.7	7.5	7.7	7.5	7.4
Germany	6.4	6.2	5.8	5.8	5.9
Greece	0.7	0.7	0.8	0.8	0.7
Hungary	0.9	0.9	1.0	1.0	1.0
Ireland	2.5	2.5	2.5	2.4	2.3
Italy	2.5	2.4	2.5	2.3	2.3
Latvia	2.4	2.6	2.6	2.6	2.6
Lithuania	1.3	1.4	2.2	1.4	1.5
Luxembourg	6.0	6.0	5.9	5.8	5.8
Malta	-	-	-	-	-
Netherlands	4.3	3.3	3.7	3.0	3.3
Poland	4.2	4.3	4.4	4.2	4.2
Portugal	1.6	1.5	2.0	2.0	1.8
Romania	0.5	0.8	0.7	0.7	0.7
Slovakia	2.1	2.2	2.8	2.8	2.8
Slovenia	1.2	1.0	1.0	1.0	1.0
Spain	0.5	0.5	0.5	0.5	0.5
Sweden	1.5	1.6	1.8	1.6	1.7
UK	3.2	2.8	3.0	3.2	3.2

Source: Productschap Zuivel

203. **In the same way as for cheese, self-sufficiency patterns for butter are quite different among Member States and the situation has evolved between 2000 and 2009.** Ireland has produced more than ten times its needs over the decade, while butter production in Bulgaria was multiplied by almost five times between 2005 and 2009, reaching a self-sufficiency ratio of 172 percent. However, most Member States are not self-sufficient for butter.

Table 33: Self-sufficiency[36] ratio for butter in the EU-27, from 2000 to 2009 (in percentage)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
EU-27	**89**	**84**	**98**	**95**	**87**	**88**	**92**	**100**	**118**	**105**
Austria	87	87	79	80	76	71	74	75	73	68
Belgium	70	51	61	80	49	-	-	-	39	36
Bulgaria	-	-	-	-	-	35	47	77	61	172
Cyprus	-	-	-	-	25	34	31	87	18	4
Czech Republic	-	-	-	146	87	-	-	-	-	-
Denmark	657	511	562	596	469	-	-	-	-	-
Estonia	-	-	-	93	103	159	96	111	104	96
Finland	127	133	134	144	141	137	-	-	-	-
France	70	71	73	72	69	69	65	66	70	67
Germany	70	69	72	73	73	74	71	75	88	90
Greece	17	8	6	12	12	14	12	17	17	12
Hungary	-	-	-	91	62	41	38	51	59	61
Ireland	1 128	1 175	1 229	1 274	1 245	1 218	1 216	1 236	1 083	1 052
Italy	80	74	72	71	74	0	0	-	-	-
Latvia	-	-	-	-	84	113	111	111	69	75
Lithuania	-	-	-	75	155	87	256	137	163	99
Luxembourg	-	-	-	-	-	-	-	-	-	-
Malta	-	-	-	-	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-	-	-	-	-
Poland					95	96	100	60	59	63
Portugal	129	144	131	138	153	142	151	163	202	
Romania	-	-	-	-	-	-	71	84	56	70
Slovakia	102	-	80	89	71	-	-	-	62	43
Slovenia	-	-	-	-	-	-	-	-	-	-
Spain	-	68	179	122	-	-	-	-	-	-
Sweden	67	72	70	73	91	68	-	-	-	-
UK	75	81	76	66	63	66	59	75	-	-

Source: Eurostat (production data from annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

204. **The EU-27 has become self-sufficient for butter but for most Member States' national butter production does not cover their needs.** Cyprus reached the highest export /

[36] Self-sufficiency ratio equal gross human apparent butter consumption over butter production. Data for gross human apparent consumption are not available for 2010 and 2011.

production rate in 2011 with more than 450 percent. It is followed to a lesser extent by Belgium, Finland and Denmark, where the volumes of butter exported represented approximately 40 percent of production.

Table 34: Share of export in production for butter, from 2000 to 2011 (in percentage)

	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
EU-27	14	15	20	21	21	16	14	10	11	11	9
Austria	1	1	2	1	1	1	1	2	1	1	1
Belgium	45	75	99	162	-	164	303	65	75	64	43
Bulgaria	5	2	4	8	5	2	1	2	0	7	2
Cyprus	-	-	-	92	66	53	51	42	21	283	459
Czech Republic	-	34	38	14	14	17	8	-	3	4	5
Denmark	40	48	52	44	41	28	32	28	28	30	34
Estonia	6	14	17	18	33	36	38	5	14	30	3
Finland	40	45	50	48	48	46	45	47	47	40	38
France	8	8	8	10	10	7	7	6	6	8	8
Germany	4	5	10	7	6	6	5	3	4	5	3
Greece	1	1	2	8	2	1	1	0	1	0	0
Hungary	-	3	5	16	24	0	0	3	1	11	12
Ireland	9	8	18	20	18	12	14	10	6	6	4
Italy	0	0	2	2	-	-	-	0	-	-	-
Latvia	12	4	0	1	0	12	3	2	0	5	2
Lithuania	41	67	34	7	42	56	37	20	22	8	3
Luxembourg	-	-	-	-	-	-	-	-	-	-	-
Malta	-	-	-	-	-	-	-	-	-	-	-
Netherlands	-	47	69	89	76	53	45	37	-	-	-
Poland	-	-	-	4	7	12	7	3	1	3	3
Portugal	3	3	9	9	2	1	5	5	6	4	3
Romania	-	-	0	0	-	0	0	0	0	0	0
Slovakia	7	8	18	3	3	4	0	2	0	0	1
Slovenia	43	-	-	-	-	-	-	-	-	-	-
Spain	11	9	11	-	46	18	8	3	1	1	3
Sweden	20	27	29	47	44	35	16	12	1	3	4
UK	5	3	9	10	14	7	5	2	2	3	2

Sources: export data from Comext and production volumes from Eurostat (Annual statistical surveys of milk and milk products as decided by Council Directive 96/16/EC of 19 March 1996)

3.5 Structure of milk producers and processors

3.5.1 Concentration ratio of the biggest milk producers and processors per Member State

205. **Data concerning processors is not always available and updated.** However, statistics concerning the biggest actors in the economy will not have changed drastically in a couple of years. Based on the available data, the average market share of the biggest processors in the national milk delivery market is approximately 75 percent.

206. **Denmark, Finland and the Netherlands are the Member States where the share of milk delivered by processors is the closest to a monopoly situation**. Indeed, in these three countries, the biggest processor's share is approximately 90 percent, 85 percent and 75 percent respectively. This group of countries is followed by another composed of Austria, Luxembourg, Slovenia and Sweden, where the biggest processor supplies between 40 percent and 65 percent of the national milk.

207. **On the other hand, a few countries, such as Poland and Slovakia, have a system where the major actors do not control half of the milk delivery market** (in terms of milk delivered for Slovakia and in turnover for Poland).

Table 35: Share of national milk delivery by processors

Share of national milk delivery	Date of data	Biggest processor	Sum of second to ninth biggest processors	Rest (processors or not)	Name of biggest processor	Comment
Austria	2010	Approx. 40%	Approx. 40%	Less than 20%	Berglandmilch	-
Belgium	2008	-	-	-	Milcobel Belgomilk	-
Bulgaria	2011	-	-	-	Poliday-2 Ltd Karlovo	-
Cyprus	2011	-	-	-	Vivartia Cyprus	-
Czech Republic	2011	Over 60%		Less than 40%	M adeta a.s.	-
Denmark	2011	Approx. 90%	-	Approx. 10%	Arla Foods	-
Estonia	2010	Approx. 25%	Over 50%	Approx. 25%	TERE AS	-
Finland	2010	Approx. 85%	Approx. 15% (*)	0%	Valio Oy	(*) Only five processors are responsible for 100% of national milk delivery
France	2010	Approx. 25%	Over 50%	Approx. 25%	Lactalis	-
Germany	2010	Approx. 25%	Approx. 40%	Approx. 40%	DMK	-
Greece	2011	-	-	-	Vivartia SA	-
Hungary	2007	-	-	-	Sole-Mizo Zrt.	-
Ireland	2011	Approx. 25%	Approx. 60%	Less than 15%	Glanbia	-

Share of national milk delivery	Date of data	Biggest processor	Sum of second to ninth biggest processors	Rest (processors or not)	Name of biggest processor	Comment
Italy	2010	-	-	-	Parmalat (*)	(*) In terms of turnover
Latvia	2011	Approx. 15%	Approx. 45%	Less than 40%	Rigas piena kombinats	-
Lithuania	2010	Approx. 30%	Approx. 60% (*)	Approx. 10%	SC Rokiskio suris	(*) sum of the second to the fourth processors
Luxembourg	2011	Approx. 45%	Approx. 55% (*)	0%	Luxlait	(*) Only five processors are responsible for 100% of national milk delivery
Netherlands	2010	Approx. 75%	Approx. 25% (*)	0%	Friesland Campina	(*) Only seven processors are responsible for 100% of national milk delivery
Poland	2010	Approx. 15%	-	Approx. 85%	SM Mlekpol (*)	(*) In terms of turnover
Portugal	2010	Approx. 25%	Approx. 60%	Approx. 15%	Agros	-
Romania	2011	-	-	-	SC Friesland Romania SA	-
Slovakia	2011	Approx. 15%	Approx. 35%	Approx. 50%	Rajo a.s., Bratislava	-
Slovenia	2011	Approx. 55%	Approx. 45% (*)	Approx. 1%	Ljubljanske mlekarne	(*) sum of the second to the seventh processor
Spain	2009	-	-	-	Danone S.A.	(*) In terms of turnover
Sweden	2011	Approx. 65%	Approx. 35%	0%	Arla Foods Sverige	-
UK	2011	Approx. 15%	Approx. 65%	Approx. 20%	Dairy Crest	-

Source: IFCN

3.5.2 Processed milk by dairy enterprises per Member State

208. **Milk delivered as a percentage of the total production has increased (or stagnated) in all Member States since 2000** except for Greece, Spain and Hungary. During this period, Ireland and Romania are respectively the countries where milk delivered as a percentage of total production is the highest (100 percent) and the lowest (around 16 percent).

209. **In 2000, the average volume of milk delivered as a percentage of total production was 75 percent if all countries are considered and 87 percent if only the EU-15 is taken into account**. In 2011, in the EU-27 81 percent of the total milk was delivered whereas in the EU-15 88 percent was delivered.

210. **Although the overall trend is towards growth in Europe, the situations in the different countries vary and can be grouped into four different categories**:

- Industrialised countries (most of them in the EU-15) which have experienced small changes in the last years (Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Ireland, Luxembourg, the Netherlands and Sweden).
- Countries where other channels of consumption such as direct sales are still predominant (or important) and where the milk industry has not become totally industrialised (Bulgaria, Cyprus, Greece and Romania).
- Countries where the industry has evolved significantly (Estonia, Latvia, Poland and Slovenia).
- Countries that have had relatively strong and stable industrialised milk sector (Hungary, Italy, Portugal, Slovakia and Spain).

Table 36: Milk delivered as a percentage of total production

	2000	2002	2004	2006	2008	2009	2010	2011
Austria	82	80	83	84	84	83	85	88
Belgium	91	92	91	97	99	99	99	99
Bulgaria	42	51	55	55	61	61	61	45
Cyprus	66	65	63	70	73	73	74	73
Czech Republic	92	92	96	97	97	95	96	95
Denmark	96	97	97	97	97	98	98	98
Estonia	65	81	82	87	87	91	92	91
Finland	97	97	97	97	98	98	98	98
France	90	89	93	90	94	94	93	93
Germany	95	95	96	96	96	97	97	97
Greece	27	27	27	29	27	28	26	24
Hungary	80	83	81	70	80	74	69	73
Ireland	100	100	100	100	100	100	100	100
Italy	84	83	85	86	86	86	86	86
Latvia	48	47	59	73	76	72	75	78
Lithuania	55	55	61	68	73	72	73	75
Luxembourg	97	97	96	95	95	95	95	96
Netherlands	96	96	97	97	97	97	97	97

	2000	2002	2004	2006	2008	2009	2010	2011
Poland	56	61	66	71	73	76	75	74
Portugal	85	87	85	85	86	87	86	87
Romania	15	15	17	17	19	17	17	16
Slovakia	80	84	86	86	88	87	85	85
Slovenia	69	66	77	79	80	82	86	86
Spain	78	77	76	79	76	74	74	73
Sweden	98	98	98	98	98	98	98	98
UK	96	98	98	98	98	98	98	98

Source: IFCN

Note: the figures may be different from those in Figure 14. This is due to the fact that they are based on estimates.

211. **The breakdown of the milk intakes of processors (see Table 37) is similar to the breakdown of milk delivered by processors shown in Table 35.** Indeed, major concentrations can be observed for countries such as Denmark, Ireland, Finland and the Netherlands. In other countries such as Belgium and France, competition among stakeholders appears to be more equal.

Table 37: Volume in thousand t of milk intake

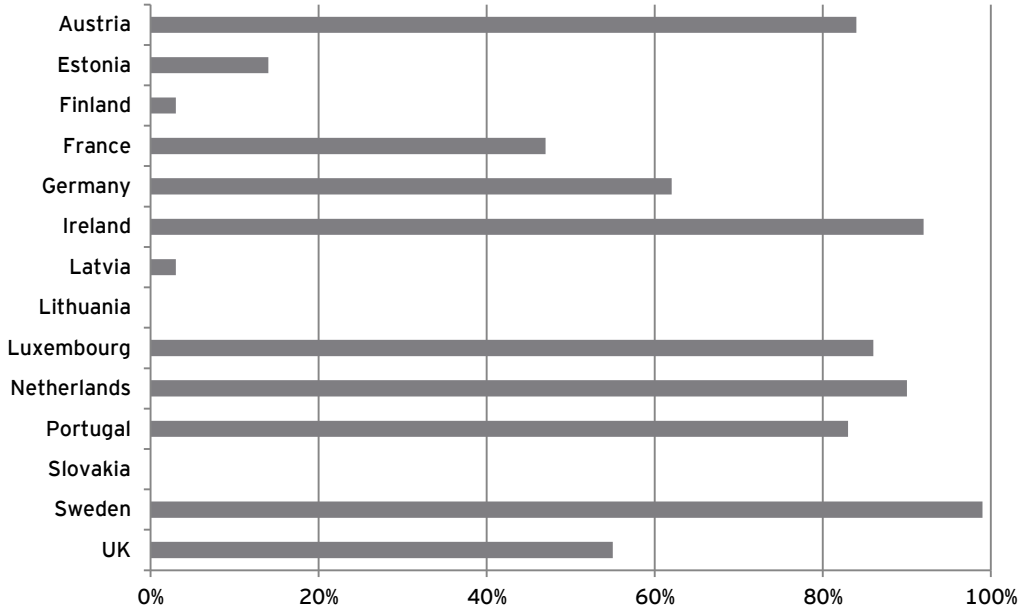
	Year of available data	Top ten processors intake									
		1	2	3	4	5	6	7	8	9	10
Austria	2010	1 080	355	304	154	-	-	137	103	81	68
Belgium	2008	428	413	406	347	311	240	229	213	161	129
Denmark	2011	4 320	-	-	-	-	-	-	-	-	-
Estonia	2010	23	22	14	11	6			24		
Finland	2010	1 962	289	45	30	-	-	-	-	-	-
France	2010	5 400	4 200	2 400	1 300	1 000	965	920	700	650	430
Germany	2010	6 800	2 013	2 000	1 238	1 077	1 007	952	852	800	782
Ireland	2011	1 200	-	91	15	-	-	-	-	-	-
Latvia	2011	110	83	80	45	25	20	17	11	10	8
Lithuania	2010	371	325	263	182	-	-	-	-	-	-
Luxembourg	2011	126	112	35	4	3	-	-	-	-	-
Netherlands	2010	8 821	900	700	440	321	250	135	-	-	-
Portugal	2010	524	182	164	153	150	142	82	63	46	32
Slovakia	2011	136	81	59	25	22	21	20	20	14	13
Slovenia	2011	275	133	85	10	14	2	2	-	-	-

	Year of available data	Top ten processors intake									
		1	2	3	4	5	6	7	8	9	10
Sweden	2011	1 819	441	209	203	100	35	19	9	9	5
UK	2011	2 214	1 972	1 942	1 673	1 565	930	615	247	-	-

Source: IFCN

212. **The countries where cooperatives are the biggest purveyors of milk for processors are Sweden, Ireland, the Netherlands, Luxembourg, Austria and Portugal with over 80 percent of the milk intake shown[37] in Table 37.** Those where cooperatives are the least important are Lithuania, Slovakia, Finland, Latvia and Estonia. In France and Germany, private companies seem to play a role in milk collection, as the share of milk intake of cooperatives is around 50 percent on average.

Figure 26: Cooperatives' share of the milk intake shown in Table 37



Source: IFCN

3.5.3 Farm net value added per annual work unit

213. **The farm net value added per annual work unit (FNVA/AWU)[38] is strongly heterogeneous among the EU-27** (see Table 38**).** Over the decade, the highest FNVA/AWU (above 35 000 EUR/AWU) are to be found in some EU-15 Member States whereas the newest Member States had lower income (under 1 000 EUR/AWU). The case of Slovakia is noteworthy with negative FNVA/AWU in 2006 and 2009. The trend in this indicator is analyzed between 2000 and 2006 as in 2007 and 2008 prices for milk powder and butter were historically high and in 2009 the milk crisis occurred. Table 38 shows that:

- The Member States integrated after 2004 have increased their FNVA/AWU, except for Slovakia where the trend is negative and Malta which stands out from the EU-15 with significantly higher FNVA/AWU.

[37] The part of milk intake exposed in Table 25 that come from processors is shown in Figure 26.
[38] The farm net value added per annual work unit (FNVA/AWU) is studied below as an income indicator. It represents the amount available to remunerate all fixed production factors (land, labour and capital).

- Among EU-15 Member States, Finland, France, Sweden and Greece have remained globally stable in their FNVA/AWU between 2000 and 2006. For the latter, some data are missing.
- The other EU-15 Member States have seen their FNVA/AWU increase over the same period.
- As mentioned previously, 2007 and 2008 have been years of high FNVA/AWU for all EU Member States (reflecting the high historical prices for milk powder and butter worldwide) and 2009 has been a year of extremely low FNVA/AWU.

Table 38: Farm Net Value Added per Annual Working Unit (FNVA/AWU) in thousand nominal EUR/AWU - Milk specialised farms[39]

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
EU15	-	26	27	27	29	31	32	40	35	27
EU27	-	-	-	-	-	-	-	22	22	16
Austria	14	16	16	14	16	17	20	22	24	17
Belgium	37	42	38	41	39	42	45	56	43	32
Bulgaria	-	-	-	-	-	-	-	3	4	2
Cyprus	-	-	-	-	-	-	-	-	-	31
Czech Republic	-	-	-	-	9	10	11	13	13	10
Denmark	45	41	48	49	50	58	70	87	78	39
Estonia	-	-	-	-	8	9	9	13	13	9
Finland	16	17	19	19	19	19	17	21	25	22
France	22	22	23	21	22	24	24	29	28	17
Germany	27	26	26	24	29	31	34	45	29	28
Greece	13	11	14	-	-	-	13	-	-	37
Hungary	-	-	-	-	10	11	13	13	17	10
Ireland	24	27	25	30	31	32	30	41	36	21
Italy	23	27	30	31	31	34	39	41	48	40
Latvia	-	-	-	-	5	5	7	6	6	5
Lithuania	-	-	-	-	7	7	6	9	9	7
Luxembourg	30	34	31	35	32	34	37	46	45	21
Malta	-	-	-	-	21	18	20	22	24	17
Netherlands	49	48	46	47	48	54	55	69	57	33

[39] These figures have been calculated for milk specialised farms, defined as the agricultural holdings with a specialisation rate higher than 50 percent.

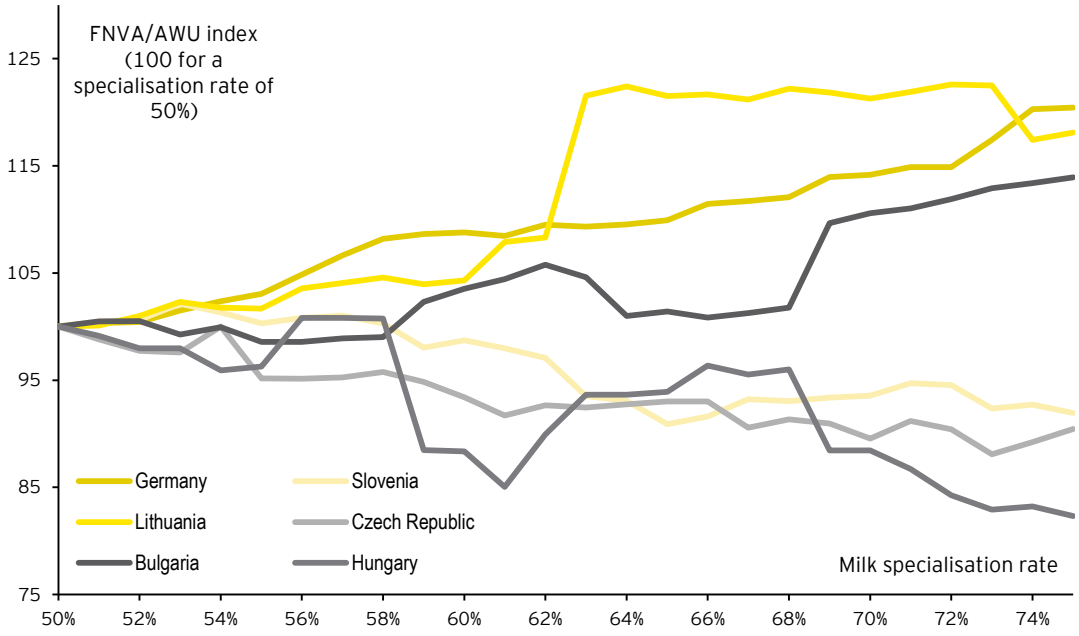
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Poland	-	-	-	-	5	6	8	10	8	5
Portugal	8	9	10	10	12	12	13	14	18	14
Romania	-	-	-	-	-	-	-	3	-	3
Slovakia	-	-	-	-	1	6	-2	5	6	-2
Slovenia	-	-	-	-	2	4	4	7	7	4
Spain	17	22	24	23	29	33	31	34	42	29
Sweden	23	19	22	22	22	25	26	34	41	22
UK	30	38	33	35	37	38	38	49	43	34

Source: EU Dairy farms report 2012

214. **When varying the threshold to define a milk specialised farm, the FNVA/AWU may follow various patterns :**

- The more specialised in milk the farm is, the higher the FNVA/AWU. This does not seem to be related to whether a Member State belongs to the EU-15 or is a more recent Member State since the pattern can be observed in Germany, Lithuania or Bulgaria.
- On the other hand, in Slovenia, the Czech Republic and Hungary, the most specialised farms have the lowest FNVA/AWU.
- A third pattern suggests that FNVA/AWU is not related to specialisation.

Figure 27: FNVA/AWU by specialisation rate in 2009. The index 100 has been attributed to the threshold of 50 percent specialisation rate

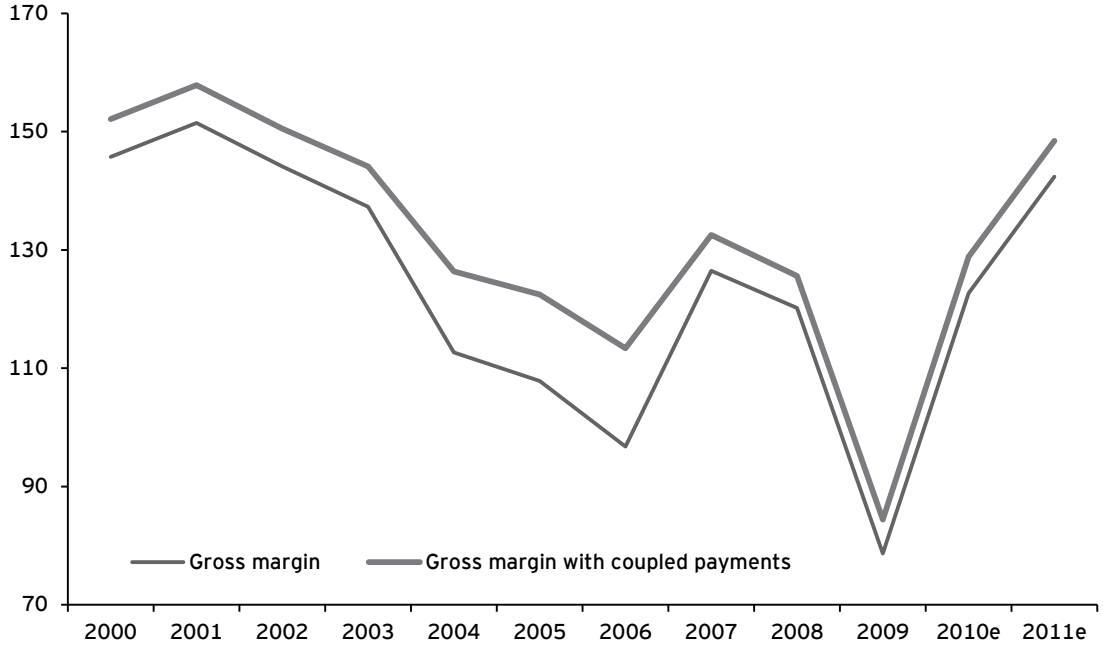


Source: EU FADN

3.5.4 Gross margin[40] over operating cost per tonne

215. **At European Union level, the period 2000 to 2011 shows a general negative trend with a downward peak in 2009 and an expected increase in 2010 and 2011.** The low point in 2009 is due to the major crisis that hit the milk sector. The pattern of a decrease from 2000 to 2006 followed by an upward peak in 2007 and a significant drop in 2009 can be observed in almost all Member States, particularly in the EU-15.

Figure 28: Average gross margin over operating costs in the EU-27 (in nominal EUR/t of milk)



Source: FADN EU Dairy farms report 2012

216. **As for the Farm Net Value Added, the average gross margin is higher in the EU-15 than in the EU-10: 148 and 131 EUR/t of milk according to the EU dairy farms report 2012 estimates for 2011**. As for EU-2 Member States, their gross margins are very high, especially in Romania, with an average estimated at 216 EUR/t for 2010. Table 39 provides the gross margins on milk over operating cost for the milk specialised farms per Member State.

217. **Among EU-15 Member States, the average gross margin per Member State between 2000 and 2011 stresses the high performance of Italy, Belgium, the Netherlands, Spain and Luxembourg, with a margin of over 140 EUR/t.** Finland has the lowest gross margin at 89 EUR/t. However, the ranking is totally different when including coupled payments in the analysis of gross margins. Finland became one of the Member States with the highest gross margins, since its farmers perceived high national aids (an average of 83 EUR/t) each year from 2001 to 2011. The United Kingdom, Sweden, and Portugal recorded a low gross margin over the decade, slightly above 100 EUR/t. This is also the case for Greece, for which some data are missing.

218. **Among EU-10 Member States, Czech Republic, Latvia and especially Slovakia have recorded low average gross margins with or without coupled payments.** Following the milk crisis in 2009, gross margins were exceptionally low, as in the EU-15.

[40] The gross margin represents an indicator to assess farmers' income from milk.

Table 39: Gross margin (over operating costs) for milk specialised farms (in nominal EUR/t of milk)

	2000	2002	2004	2005	2006	2007	2008	2009	2010e	2011e	Average 2000-2011
EU15	-	142	129	122	114	148	131	93	134	148	129
EU27	-	-	-	-	-	147	131	92	135	148	131
Austria	140	155	118	110	113	134	160	97	125	151	130
Belgium	178	163	160	148	144	188	150	99	185	203	162
Bulgaria	-	-	-	-	-	112	102	52	124	168	112
Cyprus	-	-	-	-	-	-	-	-	-	-	-
Czech Republic	-	-	81	89	79	78	75	34	91	127	82
Denmark	150	147	117	116	110	136	140	66	123	132	124
Estonia	-	-	102	89	78	96	89	56	119	140	96
Finland	98	106	93	70	69	83	123	85	84	82	89
France	139	137	121	116	99	118	121	82	102	120	116
Germany	148	129	116	104	106	158	91	81	135	134	120
Greece	139	132	-	-	22	-	-	179	135	199	134
Hungary	-	-	51	73	66	64	75	28	59	75	61
Ireland	151	135	132	119	107	157	142	58	128	148	128
Italy	190	229	187	182	189	199	212	196	244	282	211
Latvia	-	-	54	73	68	78	66	25	92	106	70
Lithuania	-	-	106	113	102	136	122	80	147	173	122
Luxembourg	163	169	155	140	132	179	181	88	119	133	146
Malta	-	-	98	59	54	51	103	79	174	169	98
Netherlands	171	163	146	143	129	169	146	87	142	173	147
Poland	-	-	103	117	117	139	123	80	129	138	118
Portugal	112	126	116	108	97	112	138	94	90	93	109
Romania	-	-	-	-	-	208	-	156	213	238	204
Slovakia	-	-	49	54	18	83	19	-81	-19	16	17
Slovenia	-	-	99	110	111	111	124	75	89	102	103
Spain	144	144	160	153	147	183	174	116	112	123	146
Sweden	145	119	112	94	77	89	100	53	132	160	108
UK	118	108	108	101	86	120	109	80	116	117	106

Source: EU Dairy farms report 2012

e: 2010 and 2011 data are based on estimates

219. The comparison between Table 39 and Table 40 shows that almost every Member State received EU coupled payments in 2004, 2005 or 2006. Some Member States systematically granted additional national aids to their milk specialised farms, over the period: Portugal, Finland, Latvia, Malta, Bulgaria and Romania.

Table 40: Gross margin (over operating costs) including EU coupled payments and national aids, for milk specialised farms (in nominal EUR/t of milk)

	2000	2002	2004	2005	2006	2007	2008	2009	2010e	2011e	Average 2000-2011
EU15	-	144	142	135	121	149	132	95	136	149	134
EU27	-	-	-	-	-	149	133	94	137	150	133
Austria	140	155	128	131	143	128	155	95	122	149	135
Belgium	-	162	171	169	144	188	150	99	185	203	163
Bulgaria	-	-	-	-	-	116	121	60	143	186	125
Cyprus	-	-	-	-	-	-	-	-	-	-	-
Czech Republic	-	-	81	89	79	78	75	34	91	127	82
Denmark	150	146	126	116	110	134	140	66	123	132	124
Estonia	-	-	102	89	93	96	89	56	119	140	98
Finland	189	199	206	174	145	159	200	162	161	158	175
France	139	137	132	138	98	118	121	81	102	120	119
Germany	148	129	124	103	106	157	91	81	135	134	121
Greece	139	132	-	-	42	-	-	179	135	199	138
Hungary	-	-	58	86	96	64	75	28	59	75	68
Ireland	151	134	141	115	107	157	140	58	128	148	128
Italy	190	228	197	202	189	199	212	196	244	282	214
Latvia	-	-	81	92	102	87	77	55	122	135	94
Lithuania	-	-	114	124	114	136	122	80	147	173	126
Luxembourg	163	164	163	137	131	177	178	87	118	133	145
Malta	-	-	98	98	106	85	122	96	191	186	123
Netherlands	171	162	156	165	162	167	143	84	140	170	152
Poland	-	-	103	117	117	139	123	80	129	136	118
Portugal	117	129	137	130	135	124	155	110	106	109	125
Romania	-	-	-	-	-	226	-	165	221	247	215
Slovakia	-	-	49	54	18	83	19	-81	-19	16	17

	2000	2002	2004	2005	2006	2007	2008	2009	2010e	2011e	Average 2000-2011
Slovenia	-	-	109	129	146	111	124	75	89	102	111
Spain	144	144	170	175	148	184	174	116	112	123	149
Sweden	145	119	123	110	100	89	100	53	132	160	113
UK	118	108	118	101	86	120	109	80	116	117	107

Source: EU Dairy farms report 2012

e: 2010 and 2011 data are based on estimates

3.5.5 Decoupled payments granted to milk producers

220. **Decoupled payments aimed at compensating for the cuts in intervention prices have been granted since 2004.** On average in the EU, decoupled payments amounted to 6 027 EUR/AWU in 2009.

221. **Decoupled payments have been increasing since 2004, at different speeds among Member States.** Denmark received the highest amount of decoupled aid in 2009, followed by Luxembourg, the Netherlands and Germany. Globally, EU-15 Member States get higher decoupled payments than more recent Member States. In 2009, an average of 10 303 EUR/AWU was paid to the EU-15 whereas the EU-10 got 2 973 EUR/AWU. Among EU-15 Member States, decoupled payments have been granted from 2005. Their amount soared in 2006, and grew to a lesser extent afterwards. EU-10 Member States have been receiving decoupled payments from 2004. Malta and Slovenia are especial cases as they received couple payments before 2007 (these countries did not chose SAPS but the regional system from 2007 and before opted for the coupled payments).

Table 41: Decoupled payments for milk specialised farms by Member States (in EUR/AWU)

	2004	2005	2006	2007	2008	2009	Average
EU15	-	5 005	9 825	10 467	10 496	10 310	9 221
EU27				5 431	6 107	6 027	5 855
Austria	-	2 047	2 240	4 338	4 247	4 400	3 454
Belgium	-	3 996	11 449	11 573	11 459	11 046	9 905
Bulgaria				252	280	382	305
Cyprus							-
Czech Republic	1 233	1 803	2 226	2 568	3 451	3 767	2 508
Denmark	-	18 787	25 553	25 431	24 994	25 477	24 048
Estonia	819	1 094	1 367	1 691	2 234	2 785	1 665
Finland	-	67	6 159	6 068	6 193	6 158	4 929
France	-	106	11 536	11 466	11 854	11 516	9 296
Germany	-	10 490	13 386	13 248	12 690	12 929	12 549
Greece			4 380			5 262	4 821

	2004	2005	2006	2007	2008	2009	Average
Hungary	1 408	1 752	2 009	2 183	3 061	3 787	2 083
Ireland	-	8 804	10 717	11 341	11 228	11 257	10 669
Italy	-	3 318	7 924	6 576	7 225	6 260	6 261
Latvia	459	536	604	752	1 072	1 338	794
Lithuania	726	823	1 005	1 127	1 526	1 870	1 180
Luxembourg	-	13 049	15 407	15 140	15 273	14 644	14 703
Malta	-	-	-	3 102	4 213	6 344	4 553
Netherlands	-	92	2 653	13 760	13 275	13 290	8 614
Poland	434	635	876	934	1 170	1 387	906
Portugal	-	742	773	2 959	2 916	3 163	2 111
Romania				134	-	254	194
Slovakia	1 032	1 548	1 934	2 327	2 501	3 729	2 179
Slovenia	-	-	-	2 818	2 780	2 567	2 722
Spain	-	83	4 779	4 366	5 982	5 328	4 108
Sweden	-	7 123	8 166	12 132	12 450	11 609	10 296
UK	-	11 101	14 145	12 972	11 975	12 214	12 481

Source: EU Dairy farms report 2012

3.6 Geographical coverage of processors

222. **Available data concerning milk collection centres is scarce in the EU**. Eurostat distinguishes milk collection centres from milk enterprises. The former relates only to the enterprises which purchase milk from agricultural holdings and sell it in their own names to dairies. Collection centres which are local units dependent on dairies are thus excluded[41]. Based on the data on the few countries that constantly report their figures, some remarks can be made: first of all, Spain reports by far the biggest number of existing milk collection centres. It is followed by France, Italy, Poland and Slovenia.

223. **As regards trends, Austria, Germany and Lithuania are among the few countries where the number of collection centres is growing.** On the other hand, France stands out as the country where the number of collection centres has dropped significantly (decreasing from 153 to 107 in nine years).

[41] 97/80/EC: Commission Decision of 18 December 1996 laying down provisions for the implementation of Council Directive 96/16/EC on statistical surveys of milk and milk products

Table 42: Milk collection – Number of collection centres

Country	2000	2003	2006	2009
Austria	2	1	-	12
Belgium	11	8	5	7
Bulgaria	-	-	-	64
Cyprus	-	-	4	4
Czech Republic	-	-	-	-
Denmark	-	-	-	-
Estonia	-	-	-	-
Finland	-	-	-	-
France	153	151	128	107
Germany	34	35	45	53
Greece	-	-	-	-
Hungary	-	52	-	23
Ireland	-	-	-	-
Italy	91	87	67	103
Latvia	-	-	-	-
Lithuania	-	32	43	53
Luxembourg	3	3	-	1
Malta	-	2	-	-
Netherlands	-	-	-	-
Poland	-	-	82	97
Portugal	28	25	25	24
Romania	-	-	-	-
Slovakia	-	-	-	28
Slovenia	-	-	91	90
Spain	258	256	221	-
Sweden	-	-	-	-
UK	17	18	21	21

Source: Eurostat (Farm Structure Survey)

224. **In 2009 (last available data), the structures of collection centres were still very different among Member States.** For example, Germany and Slovenia had opposite ranking in terms of:

- Collection centres per square kilometre as Slovenia was in the top three (light grey shading) whereas Germany was among the lowest three (dark grey shading);
- Cow's milk collection, number of dairy cows and average number of dairy cows per collection centre (opposite ranking).

225. **Germany, France, Italy and the United Kingdom have similar features but with slight differences** (e.g. few processors in the UK, a smaller number of cows per collection centre in Italy, etc.).

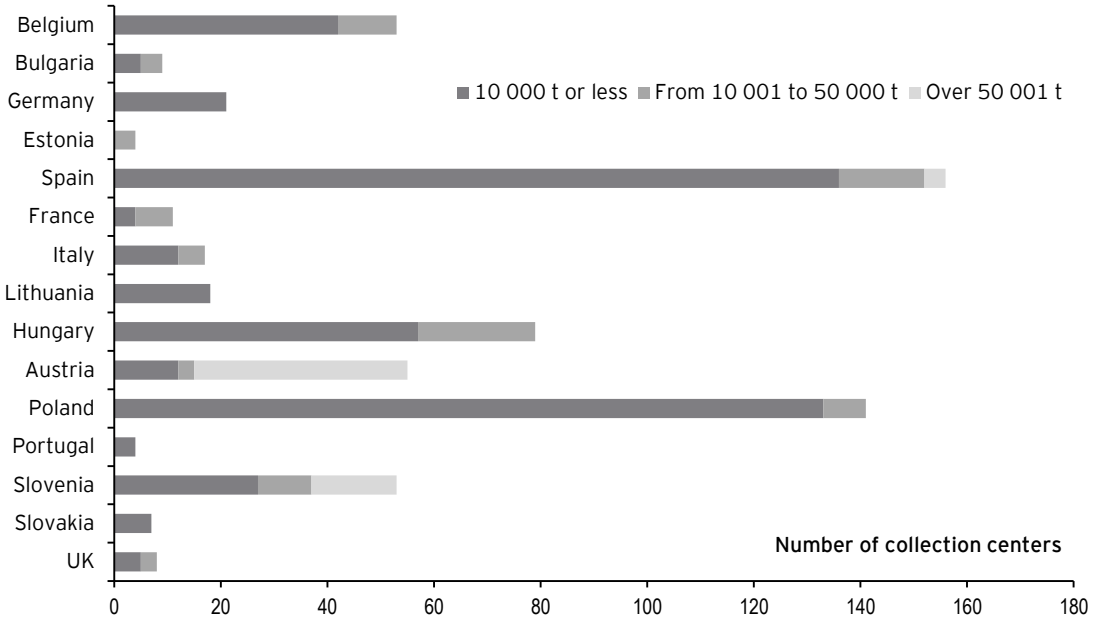
Table 43: Focus on 2009 milk' collection – value and rank among sub-group of countries in the table

Countries (available data from 2009)	Milk collection centres	Milk collection centres per 1 000 km²	Cow's milk collection (1 000 t)	Number of dairy cows (1 000 heads)	Annual yield of dairy cow's (t per head)	Average number of dairy cows per collection centre (1 000 heads)
Austria	12 (12)	0.14 (14)	2 716 (7)	533 (6)	5.1 (11)	44 (5)
Belgium	7 (13)	0.23 (11)	2 954 (6)	518 (7)	5.7 (7)	74 (3)
Bulgaria	64 (5)	0.58 (3)	600 (12)	297 (9)	2.0 (15)	5 (14)
Cyprus	4 (14)	0.43 (5)	152 (15)	23 (15)	6.6 (3)	6 (12)
France	107 (1)	0.2 (12)	22 905 (2)	3 748 (2)	6.1 (5)	35 (6)
Germany	53 (6)	0.15 (13)	27 461 (1)	4 169 (1)	6.6 (4)	79 (2)
Hungary	23 (10)	0.25 (10)	1407 (9)	248 (11)	5.7 (8)	11 (9)
Italy	103 (2)	0.34 (7)	10 500 (4)	1878 (4)	5.6 (9)	18 (8)
Lithuania	53 (6)	0.81 (2)	1 274 (10)	375 (8)	3.4 (14)	7 (11)
Luxembourg	1 (15)	0.39 (6)	271 (14)	46 (14)	5.9 (6)	46 (4)
Poland	97 (3)	0.31 (8)	9 140 (5)	2 585 (3)	3.5 (13)	27 (7)
Portugal	24 (9)	0.26 (9)	1 868 (8)	255 (10)	7.3 (1)	11 (9)
Slovakia	28 (8)	0.57 (4)	852 (11)	163 (12)	5.2 (10)	6 (12)
Slovenia	90 (4)	4.44 (1)	517 (13)	113 (13)	4.6 (12)	1 (15)
UK	21 (11)	0.09 (15)	13 237 (3)	1 864 (5)	7.1 (2)	89 (1)

Source: Eurostat (Farm Structure Survey)

226. **Based on the available data, only three Member States had milk collection centres that collected over 50 000 t of milk in 2006.** Figure 29 shows the distribution of milk collection centres by their size, symbolised by the annual volume of milk collected. Most of the milk collection centres that existed in 2006 processed less than 10 000 t of milk, whereas only a few large collection centres were counted.

Figure 29: Distribution of milk collection centres by their size in 2006



Source: Eurostat (Farm Structure Survey)

227. **The total number of milk collection centres has increased by 23 percent between 2000 and 2006.** The most significant change concerns milk collection centres that process from 1,001 to 10,000 t of milk.

228. **Milk collection enterprises are unevenly distributed in the EU.** Major concentrations can been found mainly in Italy but also in France, Spain, Greece and the United Kingdom. For the first three countries, these concentrations are in line with the number of milk collection centres, however, for the United Kingdom, the number of milk collection enterprises is much higher than the number of collection centres (e.g. 21 collection centres versus 417 collection enterprises in 2009). For Greece, no data on collection centres is available.

229. **Between 2000 and 2009, the overall number of milk collection enterprises has risen in the EU.** However, the precise growth of the sector is hard to determine as certain countries have omitted to supply their respective figures at each triennial deadline. Moreover, as the number of European countries has grown from 15 to 25 in 2004 and to 27 in 2007, the growth of the sector could be positively biased.

230. **Despite this general growth, mostly visible for Greece, Hungary, Latvia and Portugal, many countries have seen their number of milk collecting enterprises drop.** This is particularly the case for Slovenia, as also for Austria, Belgium, France and the United Kingdom.

Table 44: Milk collection – Number of enterprises

Country	2000		2003		2006		2009	
	Number	Number per 1 000 km²	Number	Number per 1 000 km²	Number	Number per 1 000 km²	Number	Number per 1 000 km²
Austria	96	1.14	86	1.03	79	0.94	-	-
Belgium	80	2.62	69	2.26	66	2.16	52	1.7
Bulgaria	-	-	-	-	-	-	172	1.55

Country	2000		2003		2006		2009	
	Number	Number per 1 000 km²	Number	Number per 1 000 km²	Number	Number per 1 000 km²	Number	Number per 1 000 km²
Cyprus	-	-	-	-	73	7.89	79	8.54
Czech Republic	-	-	55	0.7	46	0.58	41	0.52
Denmark	31	0.72	26	0.6	23	0.53	27	0.63
Estonia	-	-	23	0.51	26	0.57	21	0.46
Finland	-	-	23	0.07	19	0.06	19	0.06
France	531	0.97	468	0.86	441	0.81	417	0.76
Germany	218	0.61	201	0.56	190	0.53	194	0.54
Greece	-	-	649	4.92	877	6.65	815	6.18
Hungary	-	-	53	0.57	41	0.44	81	0.87
Ireland	66	0.94	63	0.9	59	0.84	54	0.77
Italy	1 734	5.76	1 707	5.67	1 601	5.31	-	-
Latvia	-	-	43	0.67	67	1.04	65	1.01
Lithuania	-	-	20	0.31	13	0.2	14	0.21
Luxembourg	4	1.55	3	1.16	-	-	3	1.16
Malta	-	-	1	3.16	1	3.16	1	3.16
Netherlands	15	0.36	14	0.34	16	0.39	-	-
Poland	-	-	-	-	226	0.72	190	0.61
Portugal	140	1.52	188	2.04	200	2.17	181	1.97
Romania	-	-	-	-	410	1.73	337	1.42
Slovakia	-	-	32	0.66	40	0.82	52	1.06
Slovenia	-	-	95	4.69	7	0.35	7	0.35
Spain	597	1.18	570	1.13	582	1.15	618	1.22
Sweden	10	0.02	10	0.02	10	0.02	14	0.03
UK	729	2.98	622	2.54	524	2.14	465	1.9

Source: Eurostat (Farm Structure Survey)

231. **In regard to cheese factories in Europe, the trend in the number of enterprises between 2000 and 2009 is flat with a small downwards tendency.** This is not the case for Spain, Greece, the United Kingdom and Portugal (see Table 45).

232. **The main actor in terms of number of enterprises is Italy, followed to a lesser extent by France, Greece and Spain.** The differences in terms of number of enterprises is significant between different sub-groups of countries:

- In Italy, the number is close to 2 000
- For France, Greece and Spain the number is close to 500
- For the remaining countries, the average is around 75 enterprises.

233. **It can be noted that the number of cheese production enterprises in Germany and especially in the Netherlands is low compared to their production (**see Table 17 and Table 45).

Table 45: Cheese production - Number of enterprises

Country	2000	2003	2006	2009
Austria	99	86	78	-
Belgium	64	57	56	-
Bulgaria	-	-	203	-
Cyprus	-	-	63	66
Czech Republic	-	45	40	33
Denmark	37	30	31	26
Estonia	-	22	22	18
Finland	-	23	18	22
France	624	581	541	524
Germany	193	150	154	153
Greece	-	562	604	605
Hungary	-	44	32	45
Ireland	11	-	8	-
Italy	1 977	2 066	2 026	1 839
Latvia	-	36	22	24
Lithuania	-	20	14	13
Luxembourg	3	2	-	2
Malta	-	1	1	-
Netherlands	8	8	8	-
Poland	-	258	226	187
Portugal	164	213	217	-
Romania	-	-	390	330
Slovakia	-	31	29	27
Slovenia	-	13	7	-

Country	2000	2003	2006	2009
Spain	472	462	480	534
Sweden	12	12	11	10
UK	116	112	181	173

Source: Eurostat (Farm Structure Survey)

234. **Regarding the number of butter enterprises per country, the trend in the last ten years is clearly negative (see Table 46).** Indeed, between 2003 and 2009, the number decreased by 30 percent in Europe.

235. **The overall number of butter enterprises is much lower than the number of cheese enterprises**. Indeed, in 2009 the number of butter enterprises in Italy was three times lower than the number of cheese enterprises (the ratio was similar for the UK and France). For Germany this ratio was 56 percent. For Spain, which has a low butter consumption, this ratio was 5 percent (20 times more cheese enterprises than butter enterprises).

236. **The biggest actor in this sector is Italy, with almost 600 enterprises in 2009.** It is followed by France, Poland, Greece and Germany (ranging between 85 and 173 in 2011). The other countries had 21 butter enterprises on average in 2009.

Table 46: Production of butter - Number of enterprises

Country	2000	2003	2006	2009
Austria	84	70	62	-
Belgium	60	48	43	34
Bulgaria	-	-	61	51
Cyprus	-	-	3	1
Czech Republic	-	29	22	17
Denmark	20	15	15	16
Estonia	-	11	13	14
Finland	-	14	11	8
France	249	222	194	173
Germany	135	109	96	85
Greece	-	76	77	88
Hungary	-	20	14	-
Ireland	19	-	9	-
Italy	-	976	859	582
Latvia	-	23	14	15
Lithuania	-	14	9	9
Luxembourg	-	2	-	2

Country	2000	2003	2006	2009
Malta	-	-		
Netherlands	4	3	4	-
Poland	-	205	176	140
Portugal	15	17	16	-
Romania	-	-	53	55
Slovakia	-	25	16	17
Slovenia	-	7	5	-
Spain	44	40	36	30
Sweden	4	3	3	4
UK	28	68	60	53

Source: Eurostat (Farm Structure Survey)

237. **The difference between the number of enterprises that produce powdered dairy products in different Member States is less significant than for other dairy products.** In general, there are fewer enterprises producing powdered products than any other dairy products.

238. **Germany, France, Ireland and Poland are the main actors in this industry, with over 30 enterprises per country.** The remaining countries mostly have fewer than 10 enterprises.

239. **No European trend can be determined.** However some countries have experienced considerable growth or shrinkage. The most notable growth has been in Ireland where the number of enterprises rose from 16 in 2000 to 59 in 2006, whereas Poland lost 18 enterprises between 2003 and 2009.

Table 47: Production of powdered dairy products - Number of enterprises

Country	2000	2003	2006	2009
Austria	3	3	3	3
Belgium	7	10	7	-
Bulgaria	-	-	1	-
Cyprus	-	-	-	-
Czech Republic	-	12	8	8
Denmark	2	1	1	2
Estonia	-	8	5	10
Finland	-	5	4	-
France	37	36	49	48
Germany	43	47	39	44
Greece	-	-	-	-

Country	2000	2003	2006	2009
Hungary	-	11	6	4
Ireland	16	-	59	-
Italy	-	2	-	3
Latvia	-	-	2	3
Lithuania	-	4	6	7
Luxembourg	-	-	-	-
Malta	-	-	-	-
Netherlands	7	9	9	-
Poland	-	62	51	44
Portugal	5	6	6	6
Romania	-	-	21	16
Slovakia	-	8	8	8
Slovenia	-	5	4	-
Spain	11	15	9	12
Sweden	4	4	4	4
UK	10	13	9	8

Source: Eurostat (Farm Structure Survey)

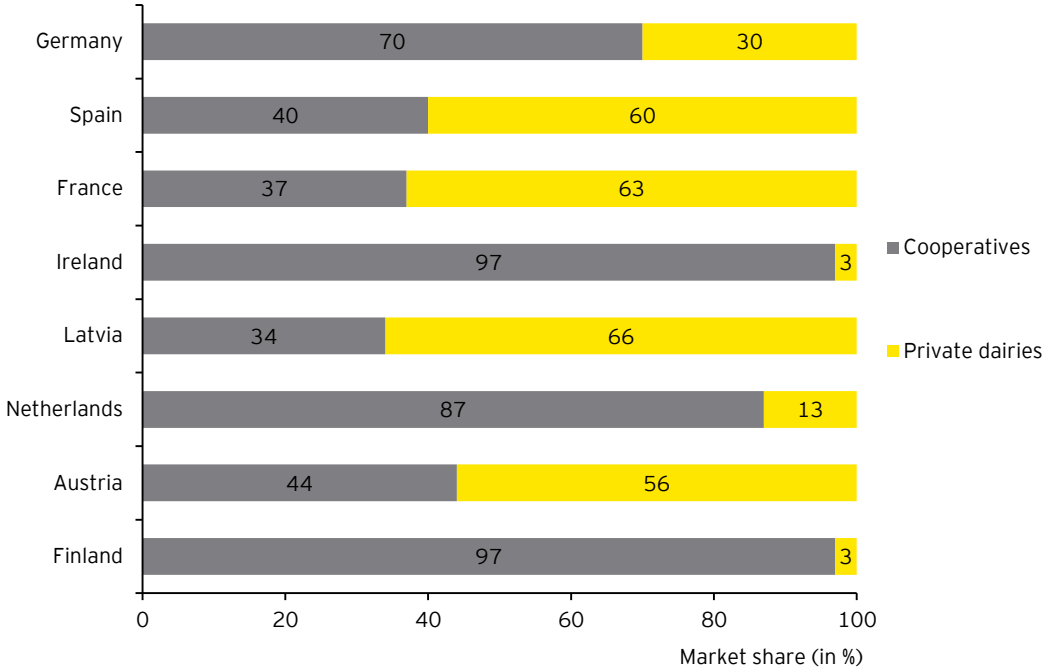
3.7 Share of cooperatives versus private dairies[42]

240. **There were 1 305 milk and dairy cooperatives in 2003 in the European Union and 2 323 cooperatives in 2008, bringing together 3.47 and 4.90 million farmers, respectively.** It should be noted that some cooperatives, not taken into account here, are multipurpose cooperatives, including milk and dairy production.

241. **The market shares of cooperatives vary significantly among Member States.** Shares range from 34 percent in Latvia to 97 percent in Ireland or Finland in 2008, as shown in Figure 30. In those two Member States, almost all the milk production is delivered to cooperatives whereas in Latvia, France, Spain or Austria, a majority of the milk produced is processed by private dairies. According to the report issued by the High Level Group on Milk in June 2010, about 58 percent of the total raw milk was processed by cooperatives at the European level.

[42] The information presented in this section was provided by COPA-COGECA. The data are based on estimations declared by cooperatives association and does not cover all the Member States.

Figure 30: Market share of cooperatives and private dairies in 2008



Source: COPA-COGECA

242. **The data for the past years show a trend towards the concentration of cooperatives, confirmed by the massive increase in their turnover**. According to the COPA-COGECA data, the latter grew from EUR45 billion in 2003 to EUR119 billion in 2008. Additional data has been gathered from different stakeholders contacted by COPA-COGECA:

- For the United Kingdom, the British Agriculture Bureau stated that, in 2011 cooperatives processed 17.9 percent of the national milk production.
- In the Czech Republic, there are only private (Czech or foreign) milk plants processing milk.
- In Portugal, the quantity of milk processed by cooperatives in 2011 represented 73 percent of national production.
- In Hungary, the 11 dairy cooperatives in 2011 produced up to 26 percent of the national production.

3.8 Use of the Milk Package tools in the Member States and regions[43]

3.8.1 Number of recognised producer organisations (POs)

243. **A recognised producer organisation (PO; Art 126a) or an Association of POs (APO) may negotiate (with a processor or collector) contracts for the delivery of (part or all of) the joint raw milk produced.** In order to be able to negotiate, the producer organisation must be recognised (national legislation on minimum criteria). Additionally, POs may negotiate contracts for the delivery of part or all of the joint raw milk production with a processor or collector provided that total volume:

[43] The situation described in this chapter is referring to data issued in May 2013.

- Is less than 3.5 percent of the EU milk production, and
- Is less than 33 percent of national production of the MS production, and
- Is less than 33 percent of the national production of the MS of delivery.

244. **Four countries have already reported recognition of POs and APOs so far**:

- Germany: 125 POs and one APOs
- Spain: Three PO cow's milk farmers and one PO sheep's milk farmers
- Italy: 32 POs recognised under previous law
- France: Eight POs recognised
- Belgium: One PO recognised.

245. **However, there have been no negotiation notifications except for Spain.** Table 48 summarises the minimum criteria for the Member States of the EU. When available, the dates of national legislation (planned or adopted) are reported in the last column.

Table 48: Minimum criteria for POs

Country	Number of farmers	Marketable production (1000 t)	National legislation date
Austria	20	or 3	October 2012
Belgium	40 / 20	-	December 2012
Bulgaria	(*)	-	Early 2013
Cyprus	35	20	June 2013
Czech Republic	10	-	October 2012
Denmark	5	3	Early 2013
Estonia	-	5%	September 2012
Finland	15	3	May 2012
France	200	or 60	Existing
Germany	5	-	Spring 2013
Greece	(*)	(*)	(*)
Hungary	-	30	1st Q 2013
Ireland	(*)	(*)	(*)
Italy	5	3	December 2012
Latvia	10	0.125	January 2013
Lithuania	20	1	October 2012
Luxembourg	10 (*)	-	2013 (*)
Malta	-	-	-

Country	Number of farmers	Marketable production (1000 t)	National legislation date
Netherlands	150	90	June 2012
Poland	20	2	2nd H 2013
Portugal	12	20	Existing
Romania	5	0.035	1st Q 2013
Slovakia	5	-	December 2012
Slovenia	(*)	(*)	(*)
Spain	-	200	November 2011
Sweden	10	6	May 2013
UK	10	6	April 2013

Source: DG Agri, Implementation of milk package by Member States (May 3rd 2013)

(*): Member States are in the process of defining minimum criteria

246. **Till date, twenty countries have adopted laws defining minimum criteria for recognised POs.** These criteria can be significantly different between countries and can be linked to the number of farmers and/or the marketable production.

247. **In Ireland, Slovenia and Greece, minimum requirements are under consideration.**

248. **Countries can require that a minimum supply of milk as compared to the country's production is ensured by the PO in order to be recognised.** The countries listed below have additional requirements or amendments to the former that are not stated in Table 48.

249. **In Belgium, requirements depend on the activity and region of the farms**:

- In Flanders, the minimum requirement in terms of farmers is 40, unless the farms are 'organic', in which case the number is reduced to 10
- In Wallonia, the requirement is 20 farmers.

250. In Spain, the main requirement is to be able to produce at least 200 000 t of milk. However this can change depending on the animals used on the farms and the region where the farms are located:

- Ewes and goats, 30 000 t
- Baleares and Canarias Islands: cows 10 000 t, ewes/goats 1 000 t.

251. **In France, in order to be recognised, a PO must be composed of at least 200 farmers or must be able to produce 60 000 t of milk.** Nevertheless, special conditions apply in the following cases:

- If the cow's milk is for PDO/PGI products, then the requirements are lowered to 25 farmers or 7 000 t of milk
- Additionally, special rules can apply if PO members deliver at least 55 percent to the same buyer.

252. **In Lithuania there is an additional requirement** to the 20 farmers and the 1 000 t to be produced; the PO must have at least 200 cows.

253. **In the Netherlands, the requirements are lowered for organic cow's and goat's milk** to 20 farmers and 9 000 t (10 percent of the standard requirements).

254. **In Portugal, the requirements are lowered for sheep and goat production** to 1 000 t.

255. **Fewer countries have adopted (or plan to adopt) laws to establish minimum criteria to recognise Associations of POs (APOs).** They are listed in Table 49. Other Member States have reported that a possible minimum criterion could be as simple as at least two PO members to create an APO.

Table 49: Minimum criteria for APOs

Country	Number of members	Marketable production (1 000 t)	National legislation date
Austria	3	-	October 2012
Germany	3	-	Spring 2013
Hungary	-	100	1st Q 2013
Latvia	5	0,625	January 2013
Lithuania	3	-	October 2012
Romania	5	0,035	1st Q 2013

Source: DG Agri, Implementation of milk package by Member States (May 3rd 2013)

3.8.2 Number of recognised inter-branch organisations (IBOs)

256. **Inter-branch organisations are representatives of production, processing and/or trade.** In order to be recognised they have to fulfil a certain number of criteria, which can vary from one country to another, and must not undertake activities incompatible with EU rules, such as market partitioning and price fixing. Their primary objectives and activities could be, in example:

- To improve knowledge and transparency
- To coordinate research and market studies
- To draw up standard contracts
- To adjust production to market requirements
- To improve quality.

257. **Among other requirements, IBOs must represent a significant share of the market, which is determined by the Member States ad-hoc or by rules:**

- In Germany, IBOs must play an essential role in economic activity at a regional level. This condition is close to the French one that states that IBOs must group together the most representative organisations for production and processing. In Latvia, the different branches of the IBOs must meet specific requirements:

  (a) For producer members at least 500 t of milk delivered (total)

  (b) For processor members at least 5 000 t of milk processed (total)

  (c) For trade members at least 100 000 LVL turnover (each trader)

- In Austria, IBOs must represent at least half of the turnover of production, processing and marketing in monetary value. In Portugal, each segment must account for at least 20 percent of economic agents and 20 percent of production volume. In Romania, IBOs must be at the initiative of at least one-third of the organisations in the milk chain. Similarly, in Slovakia they have to represent at least one-third of the economic activities.

258. **Although applications have been made, no recognitions have been granted yet except for four in France, one in Portugal and one in Spain.** Denmark and Poland have reported that recognition of IBOs is not applicable in their case.

3.8.3 Use of written contracts for the delivery of raw milk by milk producers to processors

259. **Member States are considering the question of making contracts for the delivery of raw milk between producers and processors compulsory.** Table 50 details the legal obligations applied or in the process of being voted in the different countries. When Member States make contracts compulsory, the latter must be concluded in advance of delivery and should, among others, include:

- Price (static or formula)
- Volume and timing of deliveries
- Duration of contract.

260. **Some Member States not only protect the producers by making contracts compulsory but also** by obliging the first buyer to draw up offers for a contract.

261. **Fifteen Member States either have provided or are in the process of providing or are seriously considering providing for compulsory contracts.** Most of them have a limited proportion of 'cooperative processors'. Eight of them provide for a minimum duration (6 months, 1 year and 5 years). Other Member States reported no intention to introduce compulsory contracts.

Table 50: Contractual relations (Art. 185f)

Country	Legal obligation	Minimum duration	Stages to be covered	National legislation date
Austria	Contracts (*)	(*)	(*)	(*)
Belgium	-	-	-	-
Bulgaria	Contracts	6 months	1st buyer	Early 2013
Croatia	Contracts (*)	(*)	(*)	(*)
Cyprus	Contracts	6 months	All	June 2013
Czech Republic	-	-	-	-
Denmark	-	-	-	-
Estonia	-	-	-	-
Finland	-	-	-	-
France	Contracts and Offers	5 years	1st buyer	April 2011
Germany	-	-	-	-

Country	Legal obligation	Minimum duration	Stages to be covered	National legislation date
Greece	Contracts (*)	(*)	(*)	(*)
Hungary	Contracts	6 months	All	December 2012
Ireland	-	-	-	-
Italy	Contracts and Offers	6 months	1st buyer	March 2012
Latvia	Contracts	-	1st buyer	September 2009
Lithuania	Contracts	-	All	October 2012
Luxembourg	-	-	-	-
Malta	-	-	-	-
Netherlands	-	-	-	-
Poland	-	-	-	-
Portugal	Contracts and Offers	6 months	All	June 2013
Romania	Contracts	1 year	1st buyer	1st Q 2013
Slovakia	Contracts	-	All	December 2012
Slovenia	Contracts (*)	(*)	(*)	(*)
Spain	Contracts	1 year	All	October 2012
Sweden	-	-	-	-
UK	-	-	-	-

Source: DG Agri, Implementation of milk package by Member States (May 3rd 2013)

(*): Member States are in the process of providing / are seriously considering providing for compulsory contracts

3.8.4 Use of supply regulation for PDO/PGI cheeses

262. **Upon request by a PO, an IBO or a group of PDO/PGI operators, Member States may lay down binding rules (in an official publication) on PDO/PGI cheese supply regulation, for a limited time period under certain conditions.** Greece and Italy have shown an interest in this subject. Additionally, France has adopted rules for Comté and plans rules for more cheeses.

Part 4:

Analysis of the themes and synthesis

4. Analysis of the themes and synthesis

263. In this section of the report, the main findings stemming from the theoretical analysis, the descriptive chapters and the contributions of the six experts are summarised. The synthesis draws the most likely scenarios for the dairy sector after the removal of milk quotas.

264. First will be treated findings on the analysis of market forces and their effect on the balance between demand and supply. These also include the role played by organisational systems (POs and IBOs) as possible support mechanisms in rebalancing bargaining power along the supply chain. Competitiveness is then considered as a central aspect, and it is intended as the capacity to adapt to changes in demand in the world markets and the cost comparison with foreign producers.

265. The second part of the synthesis focuses on most likely scenarios in terms of sustainability of the milk sector. This includes a summary description of the role of the milk sector in maintaining vibrant rural communities, with particular attention to fragile areas. Findings will be summarised on the evolution over time of the balance between the territorial and economic dimension. Finally, an overview is provided of regions and production systems which could endeavour difficulties.

4.1 Description of the most likely evolution of market balance and competitiveness

266. To answer questions on the perspectives of the dairy sector in terms of market balance and competitiveness, experts have referred to a specific terminology. Before introducing their analysis, they have provided an explanation for the terms that they deemed key for drafting their report (see Table 51).

Table 51: Definition of the key terms concerning market balance and competitiveness

Key term	Definition
Supply	Paolo Sckokai has considered the supply as the total milk production which goes towards the final markets. Ludwig Theuvsen has interpreted the supply in a broader sense as the supply of raw milk by farmers and the supply of dairy products by processors.
Demand	Paolo Sckokai defines the demand as the primary demand of final domestic and international consumers.
Market balance	Paolo Sckokai intends market balance as the process of prices and quantities' adjustments in response to market forces' changes. Ludwig Theuvsen considers that the milk market balance is mainly dependent on the development of supply and demand of milk and milk products.
Market forces	Joost M.E. Pennings and Paolo Sckokai define the market forces as the aggregated influence of self-interested buyers and sellers on price and quantity offered leading to market adjustments towards equilibrium. This definition can be extended to all the forces that impact market balance, that is all the forces that produce changes in final demand (domestic and third countries), in primary supply and also in the transmission of prices and information along the supply chain (apart from policy intervention).
Supply chain	Paolo Sckokai describes the supply chain as the system of activities (management, logistics, trading, etc.) and agents (farmers, consumers, processing firms, etc.) involved in the process of producing dairy products (but also information and value added) going from the farmers to the final consumers.
Organisational systems	Organisational systems are defined by Ludwig Theuvsen and Joost M.E. Pennings as the membership-based association of persons/companies striving to meet certain economic/social needs. Broadly, it includes all measures that coordinate various factors along the milk supply chain (vertical organisation) and on different levels of the supply chain (horizontal organisation).
POs	Paolo Sckokay and Ludwig Theuvsen describe producer organisations as associations of

Key term	Definition
	producers (famers) with the main purpose of concentrating supply and counterbalancing the purchasing power of dairies. The term PO was defined in Regulation (EU) No 261/2012 of the European Parliament and of the Council of 14 March 2012. There are types of producer organisations; some mainly act as an instrument of countervailing power vis-à-vis more concentrated processors and retailers, others mainly coordinate processors and producers to meet higher product or process quality.
IBOs	Paolo Sckokai and Ludwig Theuvsen refer to IBOs as organisations constituted by representatives of different interests in the supply chain, acting as a form of vertical coordination tool of the supply chain. The term IBO was defined in Regulation (EU) No 261/2012 of the European Parliament and of the Council of 14 March 2012. IBOs can carry out a wide spectrum of activities, such as standardising contracts, ensuring market transparency, coordinating research, etc.
Policy measures and market support mechanisms	Joost M.E. Pennings and Ludwig Theuvsen regard policy measures as legal instruments through which specific (EU) policies are implemented in order to accomplish certain goals such as income stabilisation and limitation of prices volatility. Support mechanisms are systems or institutions supporting and regulating the market in its functioning. Paolo Sckokai qualifies policy intervention in the agricultural sector as coming mainly from the Common Agricultural Policy (CAP), which is divided into two pillars, Pillar I - direct aids and market intervention and Pillar II - rural development measures.
Competitiveness	Paolo Sckokai and Ludwig Theuvsen regard competitiveness as the sustained ability to profitably gain and maintain market shares in liberalised markets (Martin *et al.* 1991). In general, competitiveness of a firm or sector cannot be separated from the performance of up and downstream industries. Thus, the competitiveness of the dairy industry as a whole depends on the performance of every segment of the supply chain.
Added value	Ludwig Theuvsen and Joost M.E Pennings define added value as the difference between sales prices and production costs. It can also be seen as the increase in market value resulting from a change in form, location or availability of milk, excluding the costs of material and services used to create this change. Paolo Sckokai links value added to the ability of the processing sector of producing those products for which demand is expanding and for which consumers are willing to pay higher prices.
Portfolio of products	Ludwig Theuvsen defines the portfolio of products as the breadth and depth of the product spectrum offered by the industry.
Ability to react to changes in demand	Ludwig Theuvsen and Paolo Sckokai refer to the ability to react to changes in demand as the capacity to respond to price signals regarding the quality and quantity of raw milk demanded by processors and the quality and quantity of dairy products demanded by final consumers. This ability is highly linked to the capacity of adjusting the portfolio of products and product prices to demand.
Competitive position of the EU in the world	Paolo Sckokai and Ludwig Theuvsen assess that the competitive position determines whether the EU dairy sector is able to successfully compete with other providers (other net exporters of dairy products). It is linked to the unit cost of milk produced in the EU relative to that of competitors elsewhere in the world and the ability to respond to a changing world demand, adopting adequate marketing and export strategies.
Need of investments	Ludwig Theuvsen refers to investments as the use of financial resources in order to acquire tangible or intangible assets. Paolo Sckokai precises that the need of investments is mainly to increase competitiveness in terms of costs reduction. As long as milk production is characterized by relevant economies of scale, increasing competitiveness implies increasing the size of farm operations (i.e., the number of dairy cows) in order to reduce the long run average cost of producing milk, which in turn implies relevant investments efforts at the farm level.
Buy-out scheme	Joost M.E. Pennings refers to the buy-out scheme using the description contained in the Soft landing report from the European Commission (2010). The buy-out scheme is an exceptional tool to stabilise the market, used by producers on a voluntary basis and consisting in a reduction of milk deliveries against compensations.

267. To draw most likely scenarios on the evolution of the sector, experts have considered quantitative and qualitative information on different factors. Evolution of domestic and international market forces have been considered by all experts as central elements together with changes in the agricultural and trade policies. Sometimes, experts have referred to various data sources in addition to the data provided in the descriptive chapter as well as recalled the scenarios presented in the literature and surveyed in the theoretical analysis. In some cases, experts have preferred to refer to country studies in order to then extend findings at the European level through assumptions and hypothesis.

268. As regards the analysis of added value and portfolio of products, experts have found relevant to look at the evolution of international demand and dairy prices and how the organisation of the supply chain and policy measures affect the distribution of added value along the supply chain. POs and IBOs have been assessed mainly based on theoretical considerations due to the fact that no specific study has yet been conducted for the dairy sector. Sometimes, the analysis referred to experiences in other sectors, such as the fruit and vegetables or the meat sector.

269. The ability to react to changes in demand is regarded by the experts as something driven by the new policy framework targeting a more market-oriented milk production. To assess competitiveness of the European Union in the world market, experts referred to the difference in production costs between Europe and its international competitors. Cost information has also been analysed to provide insight on the needs of investments in the production and processing industry. In addition, experts considered the differentiation of strategies that firms could implement to adapt at best to an increasingly demand-driven environment.

4.1.1 Market balance between supply and demand

270. A first insight on the most likely scenarios on demand and supply is provided by results obtained through the use of models presented in Table 6. Even though results tend to predict an increase in quantity supplied coupled with a reduction in prices, the difference in results is quite broad (e.g. the estimated reduction in prices ranges between -2.0 percent and -9.8 percent). One of the main drawbacks when looking at the scenarios depicted through economic models is that results are produced on the assumption of binding quotas, which is currently not the case in most of the European countries. According to Figure 10, in quota year 2011-12, only six Member States exceeded their national ceilings. All experts agree that quota removal does not seem to represent a crucial element in determining market perspectives as quotas are no more binding in most of the European Member States. According to experts, most important is to consider the global evolution of market forces at the international level and how the European dairy sector will adapt to it.

A favourable demand

271. Demand of dairy products is projected to be favourable over 2012-2020 (European Commission (2012a) and from OECD-FAO (2012)). Favourable market trends are mainly due to increased demand of European Union dairy products in foreign countries (e.g. Russia and China), where demand has increased substantially over the last decade and is projected to keep on increasing over the time horizon until 2020. Other markets with good potential for European exports could be Algeria, Egypt, Saudi Arabia and Iran. European dairy products with the exception of butter have proved to be competitive also with respect to low cost products, such as the one coming from Oceania. In addition to this, more efficient suppliers, such as New Zealand have relatively limited capacity to expand further their production. As regards butter, EU competitiveness depends on exchange rate and quality.

High price volatility

272. In a context of non-binding quotas, price dynamics appear to be the most crucial factor affecting perspective of the dairy sector. There is a broad consensus of the experts in

prospecting higher volatility for the years to come. Milk quotas, together with other policy instruments, such as subsidised exports, import tariffs and quotas, and public intervention, have contributed to stabilise price of dairy products within the EU. The substitution of price controls with direct payment measures will make the European level of price more linked to prices determined on the world market, which have proven to be more volatile in the recent past. Volatility is therefore expected to increase in the years to come.

273. Joost M.E. Pennings provides a clear picture on the evolution of milk price volatility over the last decade. Over the period 2000-2007, price volatility has been on average 7.16 percent and increased to 11.41 percent over the period 2007-2012. He also notices that volatility has been more marked in the EU with respect to the rest of the world (also feed costs experienced an increase). They were rather stable until 2006 and experienced an increase of 15 percent and 23 percent in the EU15 and EU10, respectively.

274. Joost M.E. Pennings considers that the increased uncertainty in market perspectives mainly due to price volatility could require investments to face increased imbalances in supply and demand. The production and processing industry will have to invest to keep up with these changing market conditions. This will require the presence of appropriate risk management tools without which the cost of capital might hinder the overall investment capacity of farmers. Ludwig Theuvsen and Paolo Sckokai stress the need for a safety net which will help to avoid major structural upheavals during times of extreme market conditions.

275. Joost M.E. Pennings also mentions the potential increasing importance of the role played by cooperatives in fixing the quantities with the objective of avoiding sharp fluctuations.

Redistribution of milk production across European countries

276. According to Ludwig Theuvsen, production reallocation will only be possible to the extent of land availability in more competitive regions. This is for example the case for regions in the lowland areas close to the Northern Sea in the Netherlands, Germany and Denmark, which have already used much of their capacity. Additional limit to production are posed by environmental laws limiting livestock farming. Such policies are already posing binding limits in the Netherlands and in Germany.

Strategies adopted by processing firms and their consequences

277. To draw more precise scenarios on the evolution of the dairy sector, Ludwig Theuvsen looks at which dairy producers are more likely to take advantage of or experience difficulties with the strategies followed by dairy companies after the removal of dairy quotas. It is possible to distinguish five clusters of companies with different strategies and inner characteristics: the large cost leaders; the international product champions; the differentiated niche products specialists, the Mediterranean cluster and the Central and Eastern European cluster (see Table 52). Dairy farmers and companies belonging to the "large cost leaders" cluster will act as major players on international markets, especially in the segment of low-price dairy products. Their ability to compete on international markets will have a strong influence on milk quantities produced in Europe and milk prices paid to farmers, which will experience upward and downward pressure, respectively. Companies belonging to the "international product champions" cluster are similar to the ones in the "large cost leaders" cluster, but tend sometimes to supply more innovative milk products (e.g. French Lactalis Group). Dairy companies which belong to the "differentiated niche products" and "Mediterranean" clusters will be expected to export smaller quantities but get higher prices as a quality premium on their products. These companies play an important role in adding value to raw milk and to foster a sustainable strategy for maintaining milk production in less advantaged regions, such as mountainous areas. Finally, companies in Central and Eastern Europe have received investment coming from Western stakeholders and this will improve their capacity of serving their large local markets.

Table 52: Dairy companies' clusters

Cluster	Strategy	Characteristics	Geographical coverage	Products
Large cost leaders	Reduce cost through the exploitation of economies of scale	Above-average sized companies with large production volumes and cost-efficient suppliers	Based in the core areas of European milk production (Denmark, Northern Germany, The Netherlands and France)	Mainly characterised by bulk commodity products (small product differentiation)
International product champions	Based on a large international network, sometimes supplying innovative milk products	Large processors have a very strong international focus	France and other European market leaders	A broad spectrum of more or less differentiated milk products
Differentiated niche products specialists	Market leaders in small market segments. They are able to add more value to raw milk inputs to reduce pressure on margins	Usually, companies have a very limited product spectrum	Often located in areas where milk production has a long tradition, such as in major parts of Austria, South Germany and France outside Brittany	High value added products such as regional, organic dairy products or domestic fair trade dairy products
Mediterranean cluster	Based on the idea that there is a close relationship between the region in which food is produced and its quality attributes	Protection of products name (e.g. 52 cheese varieties under EU legislation on PDOs and PGIs for Italy)	Mediterranean countries	High value added products (for instance, premium cheese qualities)
Central and Eastern European cluster	Consolidation of major efficient and competitive processors after privatisation and massive foreign direct investments	Modernised industries in attractive regional concentrated consumer markets (e.g. Warsaw and Mazowieckie voivodship)	Central and Eastern Europe	Local products

4.1.2 Competitiveness of the dairy sector

Demand trend might affect the composition of products portfolio

278. In a context of no more binding quotas, the impact on added value and portfolio of products will be increasingly influenced by demand trends. According to Paolo Sckokai, these trends will also impact the degree of diversification of the portfolio of products. The OECD FAO 2012 baseline projections show moderate increase in domestic consumption and more marked increase of external demand.

279. Joost M.E Pennings considers that the abolishment of milk quotas will allow for more innovation with positive effects on the variety and added value of dairy products. This will result from enhanced level of competitiveness in the market.

280. Ludwig Theuvsen assesses that the removal of quotas will hardly have any impact on the redefinition of dairy products portfolio given that prior reforms in the milk market have already pushed farmers and processors to diversify the product portfolio by investing into more differentiated products.

281. To summarize, both Joost M.E. Pennings and Paolo Sckokai envisage that the abolishment of milk quotas will have an impact on the portfolio of products with the former being more

precise in assessing that the impact will be positive. Ludwig Theuvsen believes instead that the removal of quotas will hardly have any impact on the dairy products portfolio.

Demand for high quality cheese might increase added value

282. Paolo Sckokai considers that the demand of cheese will experience the higher growth rate with respect to other dairy products. Cheese is a very broad category and includes both bulk products like cheddar and high quality PDO/PGI/organic cheese. Although data are scarce, many dairy operators suggest that demand of high quality cheese is expected to increase faster with respect to other lower quality cheese. This overall suggests a scenario of enhanced variety of products and increased added value.

POs and IBOs could rebalance market power across the dairy supply chain and diversify the portfolio of product

283. Paolo Sckokai remarks that when depicting scenarios on added value, a key element is represented by its distribution along the supply chain. In this sense, it is crucial to determine whether policies accompanying the removal of quotas will be successful in creating more equilibrated distribution of market power. There is still no sufficient evidence to judge the effectiveness of POs and IBOs in the dairy sector, but experience in other sectors might be useful to draw some lessons on the perspectives of these organisational systems in the dairy sector.

284. As discussed in the theoretical analysis, based on the experience of the fruit and vegetable supply chain, POs could represent a key determinant in rebalancing the distribution of value added across the supply chain through coordinated concentration and planning of supply. In addition to this, producers taking part to large market-oriented POs will be more successful in managing unexpected market crisis. Participation in POs might be expected to be heterogeneous across countries depending on historical and cultural factors. Overall, there is a risk that participation in POs remains low.

285. Ludwig Theuvsen refers to the example of German POs operating in the meat sector and concludes that POs will be likely to play an important role also in the dairy supply chain, as information platforms or service providers. Always in reference to the German market of meat, POs have contributed to diversify the portfolio of products by intercepting changes in consumers' preferences towards more meat coming from animals grown with higher welfare standards. However, the expert remains sceptical about the role that POs could play in strengthening farmers' bargaining power.

286. IBOs are expected to enhance transparency across the dairy supply chain and this in turn might foster the understanding of price evolution at each stage of the supply chain with rebalancing effects of added value across producers and processors (USDA, 2008b).

287. Ludwig Theuvsen considers that joint production agreements play and will keep on playing an important role in the organization of the EU dairy sector. Based on empirical research (Landwirtschaftliche Rentenbank 2001) on farmer cooperation, he stresses that farmers are highly willing to join cooperative agreements and, thus, no additional incentives are necessary for dairy farmers to enter in such agreements.

4.1.2.1 Ability to react to changes in demand

288. According to Ludwig Theuvsen, reacting to changes in demand will include both the ability of operators to react to changes in the quantities demanded as well as changes in demand regarding preferred quality attributes. In this context, producers will have to adapt to changes in international supply and demand of certain products such as UHT milk. Given the expected increase in prices volatility producers will require improved reaction times. In general, it should be noticed that there is a delay between the increase in SMP or butter prices and the increase in raw milk price.

289. Joost M.E. Pennings notices that in general, market forces in the future will contribute to an enhanced level of reaction to the demand both for producers and processors. However, producers might experience more difficulties in increasing production to adapt timely to demand impulses. This is because they might experience technical production constraints and they might suffer lack of liquidity to implement investments in a timely fashion. He adds that specialisation will be the most viable strategy adopted to increase margins and remain competitive. In this regard, Ludwig Theuvsen identifies the most specialised farms as the most exposed to price volatility.

290. Joost M.E. Pennings considers that market forces will put pressure on producers and processors to invest more with the objective of becoming more reactive to market impulses. While the processing industry appears prepared to make the necessary investment, it is more uncertain to know whether dairy producers will be able to find the resources needed.

291. The experience of the meat sector has also suggested that POs could be important in fostering "cooperative adaptiveness", by which changes coordinated across supply chain partners enhance added value of products sold on the market. In such cases, individual reaction to market impulses would fail to meet specific market demands.

292. The milk package foresees the possibility of using production plans for PDO/PGI cheeses. Paolo Sckokai stresses the fact that this could enhance the coordination of producers and processors in reacting to market impulses. For PDO/PGI cheeses, production decisions are taken many months before the product is ready to be sold to final consumers. Production plans could also allow preparing producers/processors to face different scenarios based on different foreseeable market conditions.

4.1.2.2 Improved competitive position of the European Union in the world market

293. In the period following quota removal, Ludwig Theuvsen expects that international competitiveness of the European Union in the world market is going to be enhanced. Joost M.E. Pennings states that this improvement will be mainly driven by shifts of production from less productive regions to regions with more marked comparative advantages.

294. Paolo Sckokai considers that competitiveness of the European Union in the world market is mainly constituted by the difference in production costs between the European Union and its international competitors. Assuming that the impact of quota removal will be very much reduced, disparities will persist in the costs' structure across the European Union Member States. Trends observed in the past are quite heterogeneous and their extrapolation to the future presents a series of challenges. Costs are very dependent on fluctuations in commodity prices with feed being one of its components. Therefore, commodity price volatility renders uncertain also the implications of costs on competitiveness.

295. Paolo Sckokai points out that production costs affect competitiveness via profitability. Profits computed just on the basis of operating costs tend to be positive in all European Union countries (see Table 39). However, if one considered all costs, including imputed family labour and capital costs, the result would be reversed and margins would become negative for many farms across the Member States. The share of profitable farms is declining and this happens while the number of farms is decreasing and farms are attempting to increase their size. Increasing the size of farms to enjoy higher returns on scale has not proved sufficient to foster competitiveness and profitability.

4.1.3 Scenarios on the possible application of the buy-out scheme

296. Ludwig Theuvsen considers that the only viable option to operate a buy-out scheme is on a voluntary basis due to the lack of political support that could be encountered if implementing a compulsory scheme. Due to the challenges posed by the reduction of milk production per cow, the most likely way of rendering the scheme operational is through

reductions of herd sizes. This would in turn pose the difficulty of determining the fix payment and the financial incentives paid to farmers to motivate them to send their cows to slaughter houses.

297. Joost M.E. Pennings also recognizes the technical constraints in controlling milk production per cow, which can be done mainly by a drastic change in the feed ration that might have an impact on cows health and reproduction capacity. As regards to the possibility of reducing the herd size, there might be negative spill-over effects in the meat markets. In addition to this, a reduction of milk production may interfere with contractual arrangements that farmers have with processors.

298. Paolo Sckokai points out that given the definition of the buy-out scheme, which is an exceptional measure that aims at reducing the deliveries during market crisis, only the adoption of production withdrawal could be adopted as a herd reduction would imply a permanent, and potentially delayed, change in the structure of production.

299. Ludwig Theuvsen considers that the effectiveness of the buy-out scheme would be low both in the short and in the long term. In the short term, even though farmers participated into the scheme, international market forces could adjust leaving the supplied quantity of milk unchanged. More in particular, the buy-out scheme will put upward pressure on EU milk prices relative to world market prices and this could result in a reduction of exports that would at least partly reduce the effects of the buy-out scheme. In the long term, farmers would tend to include the possibility of implementing a buy-out scheme when taking investment decisions.

300. According to Joost M.E. Pennings, the effectiveness and the viability of the buy-out scheme depends on the determination of three key parameters – intervention price, duration and quantity of milk. Due to the challenges posed in predicting market prices trends, the difficulty to assess when and for how long to intervene and the magnitude of intervention, the expert finds it almost impossible to implement the scheme effectively. In addition to this, the expert considers that a buy-out scheme provides dairy farmers with the wrong price incentives. Farmers will adapt their optimal strategy taking into account future decisions of the scheme administrator.

301. All experts agree that the implementation of a buy-out scheme creates management issues which make difficult to operate it in an effective way. The main difficulty encountered is to set key parameters.

302. Ludwig Theuvsen considers that normally the evolution of prices paid to dairy farmers for raw milk should be used as the parameter to assess whether the use of the buy-out is necessary. However, in periods characterised by high price volatility, indicators such as gross margins or liquidity situation could be seen as more appropriate to trigger the use of the buy-out scheme. Clear threshold levels should be fixed for each of the indicators considered and also the exact timing to start the intervention. Even though the use of the buy-out scheme to offset regional markets imbalances could be deemed as adequate, its implementation in the single European market risks to be ineffective. The quantities to be taken out of the market should be fixed directly in proportion to the budget put aside for the financement of the scheme and could be expressed either in absolute figures or in percentage of production. The determination of compensation payments should take into account the profitability for farmers due to the reduction in prices. This poses the problem of monitoring profitability, which would be particularly difficult due to the differentiation of costs across EU MS. In addition to clear functioning rules, administrative infrastructures and control procedures should be put in place to effectively run the buy-out scheme.

303. Paolo Sckokai also stresses that the implementation of the buy-out scheme would imply several difficulties such as the definition of the market conditions triggering the use of the scheme, the monitoring of the actual individual reduction in milk deliveries and the

definition of an appropriate compensation for farmers joining the scheme. Moreover, he questions the effectiveness of the scheme in reducing production according to targets, unless strong incentives are given to farmers.

304. In case the buy-out scheme had to be implemented, Joost M.E. Pennings considers that a system of clear decision rules should be made transparently available to all relevant market participants. The functioning of the buy-out scheme should be rendered automatic with objective rules triggering its implementation and transparent parameters to fix the level of prices and the duration of the intervention. To make the buy-out scheme effective, in addition to efficient management, the participation of the farmers will be required in case the buy-out is financed by the dairy farmers themselves.

4.2 Most likely scenarios of sustainability in the milk sector

305. As for Theme 1, to answer questions on the perspectives of the dairy sector in terms of sustainability, experts have referred to a specific terminology. In Table 53, we report the terms deemed key by the experts for their analysis.

Table 53: Definition of key terms concerning the sustainability of the milk sector

Key term	Definition
Milk sector	Heikki Lehtonen defines the milk sector as the value chain going from dairy farms and their closest input suppliers up to dairy milk processing industry in a region.
Vibrant rural communities	The term is interpreted by all experts as rural economies characterised by economic welfare, income levels and employment. Additionally, such communities are considered to be filled with energy and activity and to be linked to economic as well as social and cultural issues. Finally, vibrant rural communities are able to adapt to changing external circumstances in such a way that at least a satisfactory standard of living is maintained.
Fragile areas	Heikki Lehtonen and Susanne Clausen refer to fragile areas as regions highly dependent on milk production both in terms of employment and economy and without any obvious alternatives to milk production. Such areas are likely to already have a decreasing agricultural activity. Michel de Haan and Jelle Zijlstra add that such areas can be hampered by slopes or altitudes, unfavourable production circumstances or by environmental restrictions.
Territorial dimension	Susanne Clausen assumes that the territorial dimension is related to the Member States and Heikki Lehtonen specifies that it is related to the spatial allocation of milk production. It includes farm milk production as well as milk processing.
Economic dimension	For Susanne Clausen and Heikki Lehtonen, the economic dimension is related to the contribution to the economy and competitiveness of dairy farmers, the economic value of milk production and its role in rural economy.
Balance between the territorial and the economic dimensions	Heikki Lehtonen defines the balance between the two dimensions as how agricultural employment and income will develop in regions over time. This also includes the magnitude and direction of adjustments.
Regions which could endeavour difficulties	Susanne Clausen assumes that regions are areas which share some kind of geographical and climatic similarities. Michel de Haan and Jelle Zijlstra believe that regions which could endeavour difficulties usually meet a combination of the following factors: an expected drop in milk production, a more than average proportion of milk coming from Less Favoured Areas (Jongeneel, 2011), regions that are indicated at risk of farmland abandonment (Pointereau *et al.* 2008) and an average herd size of dairy farms below 20.
Production systems	Susanne Clausen defines production systems on the basis of the intensity of their production, availability of land and type of breed. Michel de Haan and Jelle Zijlstra evaluate production systems on the basis of herd size, intensity of production, area size, ratio of grass/fodder crops and distinguish organic from common production systems. Production systems are described by Heikki Lehtonen as value chains close to dairy farms (e.g.

Key term	Definition
	contractor services concerning farm work).
Sustainable balance	For Susanne Clausen and Heikki Lehtonen, a sustainable balance allows milk production to increase in areas which are most suited for milk production while at the same time ensures the continuation of milk production in areas where milk production has a significant role without losing competitiveness of milk and dairy production. For Michel de Haan and Jelle Zijlstra, sustainability includes environmental impact, animal welfare, maintaining natural habitats, etc.

306. To assess the role of milk in maintaining vibrant rural communities, experts have considered both aspects on economic development and environmental intensity of milk production. From a socioeconomic point of view, dairy sector has a particular importance for fragile areas. Fragile areas are in general described as areas with few economic opportunities in addition to those offered by the dairy sector. As regards the territorial dimension, experts have looked at possible increases in production intensity following the removal of quotas and its consequences on the environment.

307. To identify regions and production systems which might be more challenged after 2015, experts have used different classifications. Sometimes they have preferred to clearly distinguish between the geographical and the organisational component, defining clusters of regions and different ways of organising farms production to then attribute production systems to geographical areas. In other cases, they have directly treated geographical regions as production systems.

308. Different measures have been used to assess the importance of the milk sector in regional economies. For example, Michel de Haan and Jelle Zijlstra assessed the weight first looking at the dimension of the agricultural sector with respect to the regional economy and then of the whole dairy sector with respect to the agricultural sector. In addition to production, Susanne Clausen has also considered the employment dimension.

4.2.1 Contribution of the milk sector in maintaining vibrant rural communities

A marginal and declining contribution of milk sector to the economy

309. The experts tend to align on the fact that the milk sector plays already a relatively marginal role in most of the regional economies. The milk sector will continue to contribute to economic growth and job creation only in a limited number of regions. No major change is expected to take place following the removal of the quotas in 2015.

310. As part of their analysis, Michel de Haan and Jelle Zijlstra assess the contribution of the milk sector on the overall regional economies and they reach the conclusion of a reduced future role of the sector in maintaining vibrant communities. In terms of production value, all experts agree that dairy farms appear to have a marginal weight on regional economies, with an average weight of 0.32 percent on the regional GDP, with figures ranging from 0.89 percent for the Baltic Countries to 0.17 percent for the United Kingdom. Four out of the five regions with the biggest milk volumes produced in recent years have shares between 0.17 percent and 0.36 percent. Milk production provides a great contribution to overall agricultural production in Ireland, Scandinavia, Baltic countries and Western France. It should be noticed that these figures only consider the contribution of dairy producers and not the one of other actors in the supply chain, such as processors.

311. Overall, the milk sector and its contribution to the vibrancy of rural areas will continue to follow the trends that it has had in the last decades without experiencing major changes. Dramatic changes are not expected at least in the short term by when the current level of financial support should remain unchanged. Some regions might switch to different types of

farming and this will imply some time to adapt to changes. A marked movement from dairy to arable farming could, for example, take place in regions, such as the Czech Republic and Lithuania. As a consequence, the contribution of the dairy sector to the vibrancy of rural areas in these countries might decline.

312. Nevertheless, Susanne Clausen states that none of the identified potential fragile regions is solely depending on the milk sector in terms of employment and economic development. However, both Susanne Clausen and Heikki Lehtonen do not deny that there might still be specific areas very dependent on milk production in terms of employment and economic development.

313. Some regions are the most likely to benefit from increase of production following the removal of quotas. Michel de Haan and Jelle Zijlstra think that the milk sector is expected to contribute positively in the North Sea region the Po Valley, Ireland, Western France and Central Germany. These expectations are based on criteria, such as percentage change in production in the past ten years, entrepreneurship, profitability of production, low cost grass-based production, favourable natural constraints and the existence of a competitive processing industry.

Rural communities in fragile areas may be at risk

314. Fragile areas are more likely to be found in countries with a high share of agricultural production in their total output. Fragile areas are also characterised by a prominent weight of employees in milk production. Areas with such characteristics are presumably very limited in number.

315. Susanne Clausen restricts the concept of fragile areas to areas where milk production is important for both the employment and economy within the agricultural sector, and where milk production has declined in the recent years. If milk production contracts further in these areas, it may impact employment and economy within the agricultural sector if there are no obvious alternatives to milk production. Dairy farming in fragile areas is often characterised by strong emotional bonds between the family and the farm. Owing to this and to the type of labour applied and the general high solvency seen on many of these farms, farmers are likely to continue with milk production in the short term – also in times of adverse price conditions.

316. Heikki Lehtonen remarks that in countries with high share of milk in agricultural production such as Estonia, Ireland, Finland and Latvia, it is more likely to find individual regions where the milk sector has been for long an important sub-sector in agriculture, with possibly less favourable conditions for other agricultural activities. Fragile areas are most often small individual regions (not identified at any NUTS level), municipalities or villages which in general cannot be called "vibrant" anymore. In those areas, the removal of quotas will have a relatively large impact because of few other economic activities except dairy production. However there are also many weak rural regions where milk production has already almost ceased and for which the issue of milk quota abolition is largely irrelevant.

4.2.2 Evolution over time of the balance between the territorial and economic dimension

No change in the restructuring trend

317. Overall, after 2015, no dramatic change is expected in the trend of the restructuring process that has been taking place in the last years in Europe. The production will tend to be more concentrated in larger and more efficient farms and this will also induce a geographical distribution towards countries characterised by the presence of more farms with such characteristics.

318. According to Michel de Haan and Jelle Zijlstra, removal of quotas will have a limited impact on the process of restructuring of the dairy sector (so called "autonomic development" – refer to Table 54). This process of restructuring has resulted in larger and more efficient farms. Based on the observation that quotas hardly limit production in the present situation and on the assumption that milk prices will not differ much from the past four years, no major interruptions are expected in the pattern of this development trend.

Table 54: Pattern of the autonomic development

Step	Description
Specialisation in dairying	Dairy, arable and pig farming combined with poultry have been more and more replaced by specialised dairy farms.
Increase in land area	Farm expansion in terms of land area has been a continuous process for many years. This can be partially explained by the fact that new techniques requiring high investments can only be profitable in large farms.
Decrease in number of farms	Smaller farms tend to go out of business and sell their land to larger expending farms.
Decrease in number of cows per region	The decreasing number of cows per region has been accompanied by the increase in yield per cow through the adoption of feed and breed innovations and improved management of the structure.
Increase of farm income on larger farms	Generally, farm incomes in the long run have been higher on larger farms (Jongeneel *et al*., 2011).
Increase in milk per hectare of forage area	In general, dairy farms have moved to high input/high output systems with high inputs on roughage, fertilizer and concentrates.

319. According to Susanne Clausen, with the end of the quota regime, various factors might affect the territorial balance in the Member States, such as environmental conditions, the level of investments on farms, farm structure, the age of farmers, the type of ownership and, more in general, the efficiency, profitability and competitiveness of dairy activities. Based on the analysis of these factors along with the current utilisation of the milk quota, four possible scenarios are identified, increasing milk production, decreasing milk production, unchanged milk production or a situation of uncertainty. Table 55 provides an overview of the different scenarios also indicating what the Member States are most likely to fall in each of them.

Table 55: Clusters in terms of future developments in milk production

Cluster	Description	Member States
"Increasing milk production"	Member States characterised by favourable conditions for milk production inherent by nature (e.g. high levels of precipitation). Moreover, this cluster is characterised by a good farm structure and good farmer demography. The creation of added value is high and the competitiveness as compared to other types of farming is high. Finally, the level of net investment is usually high.	Ireland, the Netherlands, Belgium, Luxembourg, Denmark (possibly Germany)
"Decreasing milk production"	In this cluster, the farm structure is very fragmented. In some Member States, there are many very small farms and a few very large farms while others have a more homogenous farm structure; yet the farms are often small. Apart from the Baltic Member States, the level of net investments has been low and competition from other types of agricultural production is strong.	All EU-12 Member States apart from Cyprus, Malta and possibly Poland
"Unchanged milk production"	Even though members of this cluster (except for Austria) in the short term might experience a decline in production, in the longer term, the level of production is likely to remain stable thanks to their relatively high level of investments. Generally, the	Finland, Sweden, the UK and Austria

Cluster	Description	Member States
	farms achieve medium to high levels of income and are either in areas where the competition to dairy farming is weak or in areas where the climate is not favourable for other types of farming. Finally in this cluster, the production is far from reaching the quota levels.	
"Uncertainty"	Members of this cluster are characterised by low levels of investment and, except for France, a generally older population of farmers. Milk production is likely to decline over time unless investments and a structural development take place.	France, Spain, Portugal and Italy

320. Michel de Haan and Jelle Zijlstra provide estimates of the percentage change of milk production by geographical regions in the EU. Regions such as Ireland, North Sea region, Western France, Central Germany and Po Valley are expected to have an increase in milk production above 7 percent over the time horizon 2010-2020, whereas Scandinavia, the United Kingdom, Central France, Eastern Central Europe, Romania, Bulgaria and Southern Europe are expected to have a drop above 7 percent over the same time horizon. The Alpine regions, Baltic countries and Poland are not expected to experience significant changes in their milk production in the years to come (see Table 56). As regards the expected decrease in milk production in various parts of Eastern Europe and the expected increase in the Northern Sea region, these estimates are in line with the scenarios depicted by Susanne Clausen in Table 55.

Table 56: Regional data on milk production changes in past and future

Region	Average annual production 2010-2011 (in 1 000 t)	Percentage change of production between 2000 and 2010	Percentage change of production between 2010/11 and 2020
Scandinavia	5175	-11%	-16%
United Kingdom	13 974	-4%	-7%
Ireland	5 453	3%	17%
North Sea region	29 242	9%	24%
Western France	12 527	1%	15%
Central France	9 301	-4%	-9%
Central Germany	12 536	4%	11%
Eastern Germany (former DDR)	6 383	2%	7%
Alps region	10 030	0%	1%
Poland	12 347	4%	3%
Baltic countries	3 262	2%	-5%
Eastern Central Europe (C/S/H/S)	5 934	-7%	-9%
Romania and Bulgaria	5 109	-19%	-21%
Po Valley	7 831	5%	21%

Region	Average annual production 2010-2011 (in 1 000 t)	Percentage change of production between 2000 and 2010	Percentage change of production between 2010/11 and 2020
Southern Europe	11 231	-1%	-13%

Intensive farming will develop and this might exacerbate environmental conditions

321. The overall process of restructuring leading to the redistribution of production across different geographical areas, could have negative environmental impacts on both regions increasing and regions decreasing production. Regions with comparative advantages in the milk production could adopt more intensive production techniques exacerbating the pressure on environment with high level of emissions of nitrogen, phosphorus and ammonia. Producers in less favoured areas might be led to quit the dairy sector and this could result in land abandonment of areas where pasture contributes to maintain qualitative habitats and landscapes.

322. As regards the sustainability of the milk sector, Michel de Haan, Jelle Zijlstra and Heikki Lehtonen notice that the adaptation to market impulses will lead to more intensive milk production. Intensive milk production is often combined with greater negative environmental impacts like the increased use of fertilisers, a more concentrated use of manure, the pollution of ground and surface water (nitrates and phosphates), the use of feed additives and pesticides, erosion, air pollution, and a decline in biodiversity, landscape and animal welfare.

323. Heikki Lehtonen considers that increased concentration of dairy production in relatively more advantaged regions could deteriorate rural livelihood. In less advantaged regions, this could lead to abandonment of obsolete sector and industry-specific infrastructure and change the destination of farmland use. This could turn into biodiversity losses where pasture and grassland disappear. In more productive areas, negative environmental externalities, such as the reduction of surfaces and groundwater quality. Areas characterised by low land price and weaker environmental regulations might be more vulnerable to these problems.

324. Susanne Clausen notes that many of the regions with comparative advantages (The Netherlands, Belgium, Luxembourg, Ireland, Denmark and the Northern part of Germany) for milk production are also characterised by being environmentally sensitive. According to her, this is likely to limit the growth in milk production in these areas. In addition to this, Michel de Haan and Jelle Zijlstra consider that other regions which are expected to have an increase in milk production and, hence, might experience an exacerbated pressure on environment are the Po Valley, Ireland, Germany, Western France and Denmark.

4.2.3 Regions and production systems which could endeavour difficulties

Regions that could endeavour difficulties

325. To identify regions which are more at risk to experience difficulties in the years to come, experts considers various elements, such as the contribution of the dairy sector in terms of revenue and employment. On this basis, they provide a list of geographical areas that is summarised in this section.

326. Michel de Haan and Jelle Zijlstra identify regions more likely to endeavour difficulties as those characterized by high unemployment, land abandonment and by the presence of small farms with low farm income, high percentage of semi-natural grassland, aged farmers

and a projected decrease in milk production volumes. Such regions tend to be located in Southern Europe, Baltic countries and some Eastern European countries.

327. Table 57 provides an overview of the regions that have been found at risk by experts. All the experts seem to agree that the mountainous regions can endeavour difficulties in various countries, such as Portugal, Italy, Greece and France. Michel de Haan, Jelle Zijlstra and Heikki Lehtonen all report Romania and Bulgaria as the possible countries endeavouring more difficulties. They also find that some regions in the Nordic areas (Northern Sweden and Northern and Eastern parts of Finland) are more at risk of suffering difficulties in the foreseeable future. There is a general consensus that regions in Central and Eastern Europe could also have regions suffering more in the years to come. Also for the Eastern countries, regions that appear to be more at risk are the mountainous ones.

Table 57: Summary table of regions that could experience more difficulties.

Michel de Haan and Jelle Zijlstra	Susanne Clausen	Heikki Lehtonen
Portugal, Spain, Apennines (Italy) and Greece	Mountain regions of Spain, France and Italy and the Mediterranean region	Individual mountain areas in the Alpine region
Romania and Bulgaria	EU12 excluding Cyprus, Malta and possibly Poland	Romania and Bulgaria
Slovenia and Slovakia		Slovakia (especially mountain regions) Hungary: Eszak-Magyarorszag, Eszak-Alfold
Estonia, Latvia and Lithuania		Lithuania and eastern parts of Latvia and Estonia
Poland: Mazowieckie, Lubelskie, Podkarpackie and Podlaskie		Areas in mountains of southern Poland
Northern regions in Sweden and Eastern in Finland		Northern Sweden, remote regions in Northern and Eastern parts of Finland
Massif Central (France)	French parts of the continental region	

Production systems that could endeavour difficulties

328. The experts have different interpretation of production systems. Michel de Haan and Jelle Zijlstra qualify production systems on the basis of herd size, intensity of production, area size, ratio of grass/fodder crops and distinguish organic from common production systems. They point out that non-specialised farms receive on average a lower milk price than the specialized farms and that the percentage of costs covered by revenues usually increase with herd size. They identified two main production systems that could face difficulties:

- Ecologically valuable productions systems that are threatened from farmland abandonment
- Intensive production systems that are experiencing sustainability problems in terms of impact on soil, water or air or animal welfare concerns perceived by the society.

329. Heikki Lehtonen considers production systems in a broader sense that includes actors close to farm in the dairy supply chain. As regards farms, difficulties may arise from: poor

profitability, solvency and liquidity. Production systems that have low profit margins or relative high debt to annual turnover might be more vulnerable to market fluctuations. As regards processors, small-scale local actors may not have resources for expanding their product portfolio and compete with multinational companies. This could result in the loss of market shares for smaller dairy processors operating on a local basis.

330. Susanne Clausen classifies production systems based on the amount of land they exploit, the type of breed used for milk production and the kind of infrastructures used. In general, very large difference in costs can be observed among production systems and sometimes also within the same ones. In case of low milk prices, scenarios would be particularly negative for farms where milk output has a prominent share in the total output. Farms which will be more likely to be exposed to price volatility will be the ones with no or very little land and hence not producing the feed but rather buying it. In the short term, mountainous regions (French and Italian areas), the Mediterranean region and the French parts of continental region are the most likely of going through difficulties. These regions will suffer the general lack of investments in the past that should have ensured continuity of milk production.

Part 5:

Conclusions and recommendations

5. Conclusions and recommendations

331. In this part, the main conclusions of the experts concerning the evolution of the dairy sector are summarised. The section is structured to provide an overview of the main challenges and corresponding recommendations both in terms of market balance and competitiveness and sustainable milk production in the dairy sector.

5.1 Theme 1 – Market balance and competitiveness

5.1.1 Challenges

332. The experts consider that after the removal of milk quotas, the dairy sector will face the following challenges:

- **Price volatility.** Joost M.E. Pennings shows how price volatility has been following an upward trend over the last decade. The quotas on milk production, subsidised exports import protections and public intervention have in general contributed to maintain a gap between the European and the World milk price. In the absence of these measures, one of the main challenges for producers will be constituted by the increased exposition to more volatile prices. Paolo Sckokai also stresses that dynamics in prices appear to be the most relevant issue for the near future and this turn to be a real challenge when price volatility translates into income volatility. Ludwig Theuvsen precises that higher exposure to world market volatility will represent a greater challenge for EU farmers. An additional challenge will be to protect farms that could improve competitiveness and future developments of the EU dairy sector. This might be the case of growth oriented farms with high shares of debt in their assets and relying on paid labour.

- **Potential economic risk for certain areas.** Ludwig Theuvsen observes that the natural process of reallocation of production towards more competitive regions could put at risk economic perspectives of less favoured areas, especially in the Alpine and in similar landscapes. The current policy framework might not suffice to maintain production in these areas.

- **Bargaining power.** According to the experts, distribution of value added across the supply chain remains a central issue for the years to come. Even though it is quite difficult to assess how value added is distributed among actors of the dairy chain, the general claim is that its distribution is unequal, with farmers receiving a lower share due to their reduced bargaining power position with respect to processors. In this context, POs and IBOs have not yet proven satisfactory in guaranteeing the efficient functioning of the dairy supply chain.

5.1.2 Recommendations

333. **Develop instruments to limit or cope with price volatility.** Special attention should be paid to price/income volatility. Current instruments should be refined or complemented by further tools. Joost M.E. Pennings considers that price and volume information asymmetries in the chain could be eliminated or reduced by the creation of a clear price and volume information platform that could be organised by the sector, supra-national government or private markets. In this sense, feed futures could be considered in order to reduce the risk of high input prices, even though the expert recognizes challenges posed by the management of such tools. The complexity of these instruments would require preliminary training and preparation for dairy farmers for the successful participation of these actors on futures markets. Ludwig Theuvsen and Paolo Sckokai recommend to perpetuate and, where necessary, strengthen the safety net for exceptional market crises. The safety net could be triggered by early warning signals in case of an upcoming milk

market crisis and this would require the existence of databases to take decisions grounded on objective information.

334. **Refrain from implementing the buy-out scheme:**

- Joost M.E. Pennings considers that the buy-out scheme is not easy to be managed neither in normal circumstances nor in the event of a crisis. This is mainly due to the difficulty in determining when and at what price level it should be introduced. Overall, he considers that the buy-out scheme would have a negative impact on private market initiatives, because it provides producers a put option to sell milk at a given price. This could have a negative impact on the futures – spot prices relationship.

- Ludwig Theuvsen considers that the effectiveness of a buy-out scheme is reduced both in the short and long term. In the short term, its effectiveness is limited by the relatively high market integration of the EU dairy sector with international markets via the likely fall of European exports following the increase of domestic prices with respect to world prices. In the long term, farmers will tend to anticipate the effects of the buy-out scheme when taking their investment decisions. In addition to this, the considerable costs of compensating farmers and for administering the system render it not an efficient solution.

- According to Paolo Sckokai, the buy-out scheme is an unmanageable tool for obtaining a temporary reduction in milk deliveries and correcting serious market imbalance. The expert considers that the implementation of such scheme should not be seen as a priority for the Commission.

335. **Regional policy should be considered to smoothly impact on fragile areas.** Ludwig Theuvsen advises to reinforce the current legal framework for less favoured areas in the case that after the abolition of quotas, geographical shifts of production accelerate substantially. However, he also stresses that it should be reconsidered whether less favoured regions could possibly be reconverted to less intensive farming practices, such as for example beef production.

336. **Strengthen the role of POs and IBOs.** Paolo Sckokai recommends to stimulate the creation of commercial POs, which have proved to better handle and negotiate the milk produced and sold by their members. It should be ensured that POs and IBOs have an adequate size in order to be efficient and for POs to have sufficient bargaining power. Adequate size limits should be fixed by law. It should also be mentioned that Ludwig Theuvsen considers that POs and IBOs will hardly play any role in farmers bargaining power. Paolo Sckokai recommends to support the coordination of farms with institutional bodies to promote PDO/PGIs.

5.1.3 Conclusions

337. In general, there is a broad consensus on the fact that price volatility constitutes one of the greater challenges that dairy producers will have to face in the near future. Joost M.E. Pennings notices that current instruments should be refined and complemented by additional tools to face instability in the markets. All the three experts do not see in the buy-out scheme an appropriate policy instrument to face price volatility. Joost M.E. Pennings finds that the buy-out scheme could perturb the evolution of futures markets.

338. Ludwig Theuvsen suggests to critically review whether dairy farming is the most suitable farming practice for the least-favoured areas (e.g. the Alpine regions), where less intensive farming practices, such as beef production or keeping of suckler cows could be more effective in meeting society's goals with regard to these areas. This should be also

considered given that often these areas have to adopt more intensive farming techniques to offset their competitive disadvantage.

339. All experts also agree on the fact that the distribution of value added along the dairy supply chain is currently unbalanced in favour of processors. Paolo Sckokai and Joost M.E. Pennings consider that POs and IBOs could represent appropriate tools in the future to alleviate asymmetries in bargaining power between producers and processors and it is recommended that such organisations could be reinforced in the near future. However, Ludwig Theuvsen doubts that POs and IBOs will work effectively in rebalancing bargaining power between producers and processors. Paolo Sckokai recommends that adequate sizes should be fixed for POs and IBOs and that a particular effort should be put in fostering commercial POs. The size is important to have organisations highly representative and with sufficient bargaining power. Commercial POs are among the organisations that have proved more successful in pursuing the interests of their members.

340. In Table 58, a synthetic overview of the main challenges and recommendations is provided.

Table 58: Summary table of challenges and recommendations

Challenges	Recommendations	Experts in favour
Price volatility	Current instruments should be refined or complemented by further tools. A clear price and volume information platform should be instaured.	Joost M.E. Pennings
	Buy-out scheme should not be implemented.	Joost M.E. Pennings Ludwig Theuvsen Paolo Sckokai
	Strengthen the safety net for extreme market situations.	Ludwig Theuvsen Paolo Sckokai
Disadvantaged areas	The current legal framework could be reinforced for less favoured areas. It should be reconsidered whether less favoured regions could possibly be reconverted to less intensive farming practices, such as beef production.	Ludwig Theuvsen
Unbalanced distribution of value added across the supply chain	The roles of POs and IBOs should be reinforced.	Joost M.E. Pennings Ludwig Theuvsen Paolo Sckokai
	The creation of commercial POs should be stimulated. The law should fix adequate sizes for POs and IBOs in order to make them more effective and for POs to improve their bargaining power. Foster the coordination of farms with institutional bodies to promote PDO/PGIs.	Paolo Sckokai

5.2 Theme 2 – Sustainable milk production including its territorial dimension

5.2.1 Challenges

341. The experts consider that after the removal of milk quotas, the dairy sector will face the following challenges:

- **Environment degradation.** All experts notice that agglomeration and expansion of production activity in specialised regions might pose the additional challenge of environmental problems. The risk of environmental degradation and attempts to avoiding it may impose additional costs both on farmers and society. Farm

expansion and intensive production systems may result in pollution of surface and ground water and high emissions of methane and ammonia. Also, biodiversity could be at risk with natural habitats and valuable landscapes that could be damaged. These risks might be mitigated if the current legal framework is effectively utilized, maintained and respected.

- **Farmland abandonment.** Heikki Lehtonen remarks that uncompetitive fragile areas are more challenged by fluctuations in prices and will be not able to cope with periods of sustained low milk prices. Dairy producers in less favoured areas are at risk of not maintaining their production in a competitive environment characterised by lower profit margins and increased risk. Michel de Haan and Jelle Zijlstra also highlight the risk of farmland abandonment in regions of Southern Europe, Baltic countries and some Eastern European countries characterised by the presence of many small farms and where the restructuring process including specialization and expansion is lagging behind.

- **Lack of investments.** Susanne Clausen considers the lack of investments as a key issue for farmers operating in some regions. Owing to low level of investments, further decline in milk production may take place in southern Europe and in the EU12 excluding Cyprus, Malta and possibly also Poland.

5.2.2 Recommendations

342. **Attention should be paid to fragile regions.** In this sense, Heikki Lehtonen recommends to create a precise mapping of fragile areas characterised by the simultaneous presence of an uncompetitive milk production and where the rural community would be likely to lose large parts of its employment in the case of the cease of milk production. Having an accurate mapping of fragile regions might also imply the selection of clear and objective indicators, on which the mapping itself could be based. This may also help in finding new possible policy measures for such regions. It should be however noted that subsidizing milk production may not always be the solution to avoid negative economic effects, to enhance sustainable economic activities or to preserve biodiversity.

343. **Use coupled payments to protect less favoured areas.** Susanne Clausen and Heikki Lehtonen advice that production coupled payments should be maintained in less favoured areas if milk production in these areas is pursued as a strategic objective. Heikki Lehtonen suggests that such measures could be complemented by branding support (e.g. PDOs or PGIs).

344. **Promote milk collection performed by cooperatives in less favoured areas.** Michel de Haan and Jelle Zijlstra suggest to develop dairy support programmes for international cooperatives to set up subsidiaries or new cooperatives in countries with less favoured areas.

345. **Foster environmental awareness and know-how.** Susanne Clausen, Michel de Haan and Jelle Zijlstra recommend to introduce R&D programme to enhance sustainability for the dairy sector. This would be in line with other EU directives aiming at improving environmental quality. Heikki Lehtonen adds that dairy farms often lack effective and affordable tools to improve the less sustainable practices (e.g. manure management).

346. **Set up bespoke regional programmes.** The introduction of custom-made restructuring programmes for the dairy sector is also recommended by Michel de Haan and Jelle Zijlstra. This could be particularly useful for regions characterised by the presence of low income dairy farms, land abandonment, low competitiveness of the dairy processing industry and a decrease of milk production. As regards farmland abandonment, a policy instrument should be put in place to preserve regions with ecologically valuable habitats.

347. **Stimulate investments in the dairy sector.** Susanne Clausen recommends to encourage investments through the following axes:

- Follow up on the implementation of the Milk Package and support farmers with knowledge, training and advisory service on how to effectively operate producer organisations
- Ease access to capital, for instance by establishing a loan fund for farmers
- The establishment of a futures market could be a way to enable farmers better managing risks associated with volatile milk and feed prices. This will, however, require considerable amount of education and training of farmers in how to use this
- Make milk production attractive for young farmers by introducing political initiatives targeting also young people not born on a farm to invest in and develop one
- Develop training and education programmes to prepare farmers in tackling future challenges, such as market instability
- Foster know-how on the design of production facilities which both meet environmental and animal welfare requirements.

348. **Focus on strategic regional strengths.** Michel de Haan, Jelle Zijlstra and Heikki Lehtonen consider that the momentum should be on the strategic geographical advantages rather than on subsidizing the agricultural sector. OECD (2006) recommendations are in favour of investments on key territorial assets, which include also public goods as an indirect support to farms. This should be accompanied by a process of decentralization and an increased use of partnerships between public, private and voluntary sectors.

349. **Promote regional economic resilience.** Michel de Haan and Jelle Zijlstra recommend to introduce regional programmes to foster regional economic resilience. The aim of such programmes should be to identify strengths of the region in terms of professional skills, knowledge and experience, authentic character, touristic attractiveness, potential of alternative agricultural products as well as stimulate the creation of new networks to develop new commercial activities. These activities could be funded through CAP funds as well as Structural Funds.

350. **Reassess the usefulness of land payments.** Heikki Lehtonen considers that it might be also useful to reconsider the role of land payments as they might exert an upward pressure on land price with the main effect of hindering investments in dairy production in less favoured regions. If grassland areas are more easily eligible than other crops for full CAP direct payments subject to cross compliance and other conditions, the position of dairy farmers in local land markets will improve.

5.2.3 Conclusions

351. All experts see environmental degradation as one of the main challenges for the years to come. Michel de Haan and Jelle Zijlstra recommend to leave up to harmonised rules and environmental regulations to offset negative consequences on environment due to intensified production and, in agreement with Susanne Clausen, R&D programmes to enhance sustainability for the dairy sector. Heikki Lehtonen sees it necessary to encourage the development and adoption of more sustainable production practices at the farm level at affordable costs. He also considers it problematic if full Cap payments are paid on land with increasing nutrient surpluses due to intensifying production.

352. There is also a general alignment in identifying the farmland abandonment as a major risk for certain areas in the forthcoming periods, even though this is regarded as independent from the removal of quotas. In this respect, Michel de Haan and Jelle Zijlstra recommend to put in place policy instruments with the aim of preserving landscapes in regions with ecologically valuable habitats. Heikki Lehtonen and Susanne Clausen advise to maintain coupled payments in areas where preserving dairy farmer's activities are perceived as a strategic objective. Heikki Lehtonen recommends to realise a precise mapping of all those areas which could be more at risk to suffer from future markets fluctuations. Nevertheless, this expert expects a more significant decrease of milk producer prices following the milk quota abolition, at least in the long run, than anticipated in the recent literature. This will make the position of less favoured areas more difficult.

353. Susanne Clausen perceives lack of investment as a major challenge and suggests to introduce various measures to stimulate investment in dairy activities.

354. All experts conclude that market trends will represent the main determinants for the future of the milk sector. Global prices of inputs and outputs and demand are becoming the main drivers with an impact on perspectives of the dairy sector development. Overall, the quota abolition is expected to have a relatively reduced impact and cause only minor changes in the development of the dairy sector across European regions.

355. In Table 59, a synthetic overview of the main challenges and recommendations is provided.

Table 59: Summary table of challenges and recommendations

Challenges	Recommendations	Experts in favour
Environmental degradation	It is recommendable to introduce R&D programmes to enhance sustainability for the dairy sector.	Michel de Haan and Jelle Zijlstra Susanne Clausen
	A part of land payments should be conditional to suitable environmental criteria.	Heikki Lehtonen
	Establishment of environmentally sustainable production systems.	Michel de Haan and Jelle Zijlstra Susanne Clausen
Farmland abandonment	It is recommendable to put in place policy instruments in order to preserve regions with ecologically valuable habitats.	Michel de Haan and Jelle Zijlstra
	Production coupled payments should be maintained in less favoured areas if milk production in these areas is pursued as a strategic objective.	Heikki Lehtonen Susanne Clausen
	Coupled payments could be complemented by branding support (e.g. PDOs or PGIs).	Heikki Lehtonen
High vulnerability of fragile areas to prices fluctuations	A precise mapping of fragile areas should be created and this implies the selection of clear and objective indicators to do so.	Heikki Lehtonen
Lack of investments	Follow up on the implementation of the Milk Package and support farmers with knowledge, training and advisory service on how to effectively operate producer organisations in order to strengthen farmer's position in the value chain. The establishment of a futures market could be a way to enable farmers better managing risks associated with volatile milk and feed prices. This will, however, require considerable amount of education and training of farmers	Susanne Clausen

Challenges	Recommendations	Experts in favour
	in how to use this.	
	Access to capital should be facilitated for instance by establishing a loan fund for farmers. Political initiatives targeting young people and rendering milk production attractive should be introduced Training and education programmes should be considered to prepare farmers in tackling future challenges, such as market instability and to become more market oriented Know-how on the design of environmental friendly production facilities should be fostered Restructure programmes for regions with many small farms and dairy processors	Susanne Clausen Michel de Haan and Jelle Zijlstra
Lack of coordination in efforts performed through European funding programmes	Combine EU funds for regional development to create regional economic development and foster coordination in financial efforts	Michel de Haan and Jelle Zijlstra

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