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Trade Impacts of Agricultural Support in the EU

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TRADE IMPACTS OF AGRICULTURAL SUPPORT IN THE EU

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ABSTRACT

This paper aims at providing an overview of the most relevant trade issues raised by the current agricultural domestic and trade policies of the European Union (EU) and at drawing policy implications for the future of the Common Agriculture Policy (CAP) and for international trade negotiations. The focus of the paper is the period after the 2003 CAP reform which largely decoupled EU direct payments. The paper assesses the trade impacts of the EU policies by: a) analysing the evolution of the policy instruments and of the financial resources under Pillars 1 and 2 of the CAP; b) reviewing the theoretical literature and the empirical tools and evidence on the production and trade impacts of direct payments, market management measures and rural development policies; c) analysing the evolution of the bound, applied and preferential agricultural tariffs and of the tariff rate quotas applied by the EU; d) reviewing the theoretical literature and the empirical tools and evidence on the degree of agricultural protection provided to the EU agricultural sector by the EU multilateral and preferential tariffs, tariff rate quotas and non-tariff measures; and e) discussing the policy implications with a focus on the debate about the future of the CAP.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION[1]

The European Union (EU) currently consists of 28 countries, having grown from the six original Member States which created the European Economic Community (EEC) in 1958 (these were Belgium, France, Germany, Italy, Luxembourg and the Netherlands). The first enlargement took place in 1973 with Denmark, Ireland and the UK acceding to the EEC. This was followed by the Mediterranean enlargements in the 1980s (Greece in 1981, Spain and Portugal in 1986). With the end of the Cold War in 1989, the unification of Germany brought East Germany into the Community but without changing the number of countries. This was followed by the accession of Austria, Finland and Sweden in 1995 to what had now become the European Union by virtue of the Treaty of Maastricht in 1993. These fifteen countries are often referred to as the "old" Member States. These were joined by eight Central and Eastern European countries (the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia), plus two Mediterranean countries (Malta and Cyprus) in 2004, by Bulgaria and Romania in 2007 and by Croatia in 2013. The countries which have joined since 2004 are sometimes referred to as the "new" Member States. In June 2016, the British people in a referendum voted in favour of leaving the EU but it will take some years before the arrangements for withdrawal are finalised.

The EU's Common Agricultural Policy (CAP) has long been a matter of international interest. Producers in third countries – those outside the EU - have viewed agricultural policy in Europe as being a major impediment to the opening up of international trade in farm products. Both domestic policy arrangements and external barriers have contributed to the trade-distorting impacts of EU agricultural support in the past.

However, much has changed in EU agricultural policy over the past two decades. Reform of the CAP began in earnest with the 1992 MacSharry reform undertaken during the Uruguay Round negotiations on agricultural trade liberalisation. The essence of the approach initiated in this reform was to lower administered support prices while compensating farmers through partially-coupled direct payments.[2] Another important milestone was the Fischler Mid-Term Review reform of the CAP in 2003 which initiated the gradual transformation of these partially-coupled payments into mostly decoupled direct payments.[3] In the most recent reform of the CAP, which was concluded in 2013, a proportion of these payments to farmers has been earmarked for practices beneficial to the environment and climate action in an attempt to "green" the CAP.

Agricultural support in the EU today has three elements: market management (which is now largely confined to safety net support when prices drop to crisis levels or there is a market disturbance due to a loss of consumer confidence); farm income support (provided through direct payments as well as border protection); and aid to rural development.[4] These three functions are structured into two

[1] We are very grateful to Lars Brink, Fabrizio de Filippis and three anonymous reviewers for helpful comments on an earlier draft, although responsibility for the final version of the paper remains with the authors.

[2] These payments were partially rather than fully coupled because they were linked to the area planted or to animal numbers rather than total output (that is, they were decoupled from yields) and were also subject to production restrictions.

[3] According to the European Commission, direct payments now are "mainly granted in the form of a basic income support, decoupled from production…" (http://ec.europa.eu/agriculture/direct-support/index_en.htm). The extent to which the EU's direct payments to farmers are fully decoupled from production or not is examined in detail in Chapter 3.

[4] In EU agricultural policy terms, rural development has a more limited meaning than promoting the development of rural areas. The latter is an element of EU and Member States' regional policy encompassing, for example, investment in rural infrastructure, education and health services, rural planning and so on. On the other hand, rural development policy in the EU also includes the wider meaning of support for farming

Pillars under the CAP while trade policy issues are covered by the EU's Common Commercial Policy (CCP).

- CAP Pillar 1 covers the price support interventions and direct payments focused on support for farm income. Pillar 1 direct payments are annual payments which are 100% funded by the EU budget.
- CAP Pillar 2 covers rural development (e.g., improvement in farm structures, agri-environment-climate and land management programmes, off-farm diversification and village renewal). These schemes often involve multi-annual programmes and funding is shared between EU and national budgets.
- Some trade issues (e.g. import licencing rules, imposition of special safeguard duties, the entry price system for fruits and vegetables, management of tariff rate quotas, export subsidies) are covered by CAP regulations, but import protection (the EU's Common External Tariff (CET), the opening of Tariff Rate Quotas (TRQs)) as well as the conclusion of trade agreements are the responsibility of EU trade policy under the CCP.

Pillar 1 support is now largely in the form of decoupled payments. Various market management instruments such as supply controls have been eliminated (milk quotas in 2015, sugar quotas in 2017, while controls on vineyard areas have been relaxed). Export subsidies are now relegated to a crisis management instrument and have been abolished for some products (e.g. fruits and vegetables).[5] Border protection is still high, especially for beef and dairy products, but there are significant "holes" due to preferential agreements with low-income developing countries (mainly of importance for rice, sugar and bananas given the limited export ability of these countries in products protected by the CAP) and an increasing number of free trade agreements with agricultural concessions in the form of tariff rate quotas (i.e. a limited quantity of imports are allowed at zero or low import tariffs, after which the full rate of duty applies). Imports may also be restricted because of sanitary or phytosanitary barriers (e.g. the EU does not accept imports of beef from hormone-treated animals, or poultry washed with chlorine to eliminate pathogens).

The aim of this paper is to provide an up-to-date assessment of the trade impacts of recent and current EU agricultural support policies. To keep the paper manageable, our focus as economists is on describing and evaluating the policies that are in place. There is additional literature, including from other disciplines such as law and political science, which seeks to explain the rationale for these policies, the competing paradigms which influence their evolution and the ways in which the EU has tried to shape the external rules on agricultural support which we treat as given here (Daugbjerg and Swinbank, 2009: McMahon and Cardwell, 2016). As noted, agricultural support policies include both agricultural policy (covered by the EU's CAP) and trade policy (regulated by the EU's CCP). We will argue that, as a result of the significant changes in the CAP over the past two decades, its distorting impact on world markets is now much reduced. Overall spending on the CAP has been reduced. Domestic support now largely takes the form of income support payments decoupled from production. Price support guarantees are now limited to a relatively few products at relatively low safety-net levels. In the case of trade policy, we will argue that Most Favoured Nation (MFN) border tariffs on agricultural products remain high and have not changed significantly since the conclusion of the Uruguay Round. However, market access for third-country exporters has been somewhat increased through the increasing number of free trade agreements to which the EU is a

practices which contribute to the production of public goods, particularly with respect to the environment and climate change mitigation and adaptation.

[5] Following the WTO Ministerial Decision on Export Competition at Nairobi in December 2015, developed country members including the EU, committed to eliminate their scheduled export subsidy entitlements with immediate effect, with transition arrangements for processed products, dairy products and pigmeat up to 2020.

party. Most low-income and all least-developed countries enjoy duty-free access for all their agricultural exports to the EU market under various preferential schemes. Export subsidies are currently not used and will anyway be completely phased out by 2020 under the WTO Ministerial Decision in Nairobi in 2015. However, the EU still spends significant sums on agricultural support, and the future of EU agricultural policy will continue to be a contested issue in the coming years.

Chapter 2 of the paper provides an outline description of EU agricultural policies and how they have evolved over time. The intention is to provide sufficient information so that the reader can follow the more detailed assessment of the trade consequences of these policies which follows. Chapter 3 examines the production and trade impacts of EU domestic agricultural policies, including direct payments, market management measures and rural development policies. Chapter 4 gives a detailed description of EU trade policy and evaluates the extent of the trade distortions that result from this instrument. It looks specifically at the role of TRQs in providing both MFN market access as well as market access under the many EU preferential trade agreements (PTAs). Finally, Chapter 5 summarises recent discussions on the state-of-play regarding future reform of the CAP and examines the possible implications for international trade and trade negotiations in the future.

2. EU AGRICULTURAL POLICY

2.1 Historical development of the Common Agricultural Policy

The EU's common agricultural policy (CAP) dates back to 1962 when it was created by the original six Member States of the European Economic Community.[6] This policy was based on the objectives set out in the original Treaty of Rome (Article 39):

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

The CAP was based on what were described as the three fundamental principles of market unity, financial solidarity and "community preference" defined in 1962. Market unity meant that agricultural products could move freely throughout the EU without tariffs or quantitative restrictions and implied a common level of prices. Financial solidarity meant that the cost of CAP price support policies was to be borne by the EU budget rather than individual Member States. Community preference implied that EU production should be favoured by using border measures to ensure that imported products were always more expensive than the domestic ones.

In the first decades of the CAP, public support to agricultural producers was mainly provided via guaranteed prices, border protection and market intervention. Guaranteed prices were set at prices well above world market levels (Matthews 2015a). During the late 1970s and 1980s, this policy led to excessive public stocks, an increase in expenditure and international friction with the EU's main trading partners. A number of attempts to control expenditure, including the introduction of milk quotas in 1984 and various attempts at budget discipline, failed to provide a long-lasting solution to these issues.

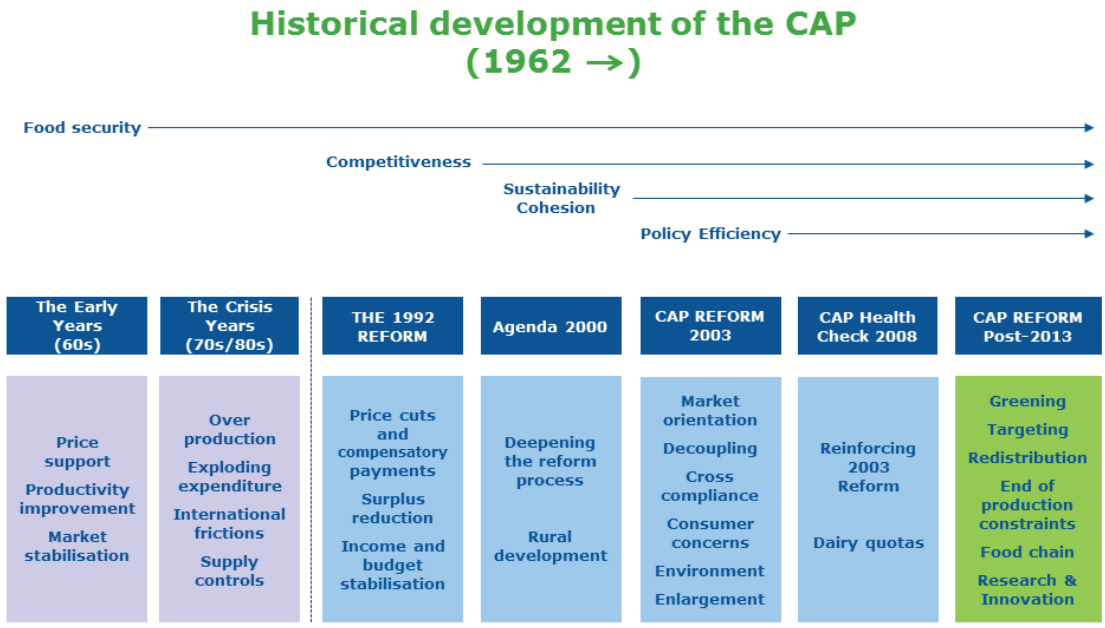
A radical reform of the CAP was adopted under the then-Commissioner for Agriculture Ray MacSharry in 1992. This reduced EU support prices for cereals and beef and compensated farmers for the consequent revenue loss in the form of partially-coupled direct payments. These took the form of area payments for arable crops and headage payments on the number of beef animals and ewes.[7] A requirement to set-aside land was made a condition for eligibility for payments for arable farmers above a certain size. Both headage payments and area payments were subject to limits (for example, area and set-aside payments could only be claimed on land that was in an arable rotation in December 1991. Suckler cow and ewe premiums were restricted to the numbers the producer had claimed in a reference period). Area payments were fixed on a regional basis within Member States, reflecting past yields. This reform took place during the GATT negotiations on the Uruguay Agreement on Agriculture and facilitated a successful conclusion to those negotiations.

This change in the support of the agricultural sector was deepened in 1999 in the Agenda 2000 reform, through the introduction of additional price cuts (including dairy products for the first time)

[6] See the webpages on the DG AGRI website http://ec.europa.eu/agriculture/cap-history/index_en.htm for a history of the CAP, also Matthews (2015a).
[7] A ewe is an adult female sheep.

and an increase in direct payments expenditure. The Agenda 2000 reform was introduced progressively during the period 2000-2002 (see Figure 1 for the timeline of CAP reform) although the dairy product intervention price cuts were delayed until 2005. Another legacy of the Agenda 2000 reform was the division of the architecture of the CAP into two Pillars. Pillar 1 addressed the classical objectives of farm policy such as market management and farm income support, while Pillar 2 gathered together measures to improve agricultural structures, regional assistance to farms in less-favoured areas, agri-environment measures as well as measures to improve the quality of life in rural areas into a new rural development pillar. This division of agricultural policy into two Pillars continues to this day, with the relative importance of Pillar 2 expenditure increasing over time.

Figure 1. Historical development of the CAP from 1962



Source: DG AGRI (2016)

A further far-reaching reform was decided in 2003 and 2004 under Commissioner Franz Fischler, with progressive implementation as from 2005. Several additional sectors were reformed (milk, rice, cereals, durum wheat, dried fodder and nuts), and some fundamental changes concerning direct payments were introduced. In particular, direct payments were largely decoupled from production, even if the possibility existed to keep part of the payments linked to production quantities of specific products. Cross-compliance was made compulsory for the receipt of payments, meaning that farmers had to respect animal and plant health, environmental, food safety and animal welfare standards as well as minimum requirements for ensuring the "good agricultural and environmental condition" of land. Direct payments were extended to farmers in the ten Member States which acceded to the Union in 2004 on a phased basis and using a simplified system. A mechanism of compulsory "modulation" was introduced with a view to strengthening the EU's rural development policy. It consisted in a reduction of direct payments (by 5% after 2007) with the transfer of the corresponding funds to rural development. Most of these changes started taking effect from 2005 onwards. Reforms to a number of other commodity regimes (sugar, wine, tobacco, cotton, rice, olive oil) during this period also lowered support prices and provided compensation to farmers in the form of increased direct payments. The significance of this reform in introducing the concept of direct payments decoupled from production which still forms the basis of CAP support today should be underlined (Swinnen, 2008).

The "Health Check" of the CAP in 2008 under Commissioner Fischer-Boel confirmed the market orientation of the policy and introduced a greater focus on new challenges such as water management, biodiversity and climate change, renewable energy, and innovation concerning these targets. Remaining coupled payments (except for suckler cows, sheep, goats and cotton) were phased out by 2012. However, Member States were given the possibility to couple up to 3.5% of their direct payments to production in the dairy, beef and veal, sheep and goat meat, and rice sectors, in order to help farmers in disadvantaged regions or in environmentally sensitive areas (so-called "Article 68" measures). Twenty-one individual commodity market regulations were collapsed into a single common market organisation regulation. Intervention arrangements were further limited to safety-net levels to be used only in cases of "market disruptions and facilitating farmers' response to market conditions". Measures to limit supply were deemed obsolete under the new conditions (also in the light of the price spike on world markets at that time) so arable set-aside was eliminated and agreement was reached to abolish milk quotas in 2015 with small increases in quota amounts in the intervening years to facilitate a "soft landing". The rate of compulsory modulation (transfer) of funds from direct payments to rural development was increased to 10% on larger payment amounts to farmers ("progressive modulation").

The most recent reform of the CAP took place in 2013 under Commission Dacian Cioloș. This 2013 reform had a long gestation period, beginning with an extensive public debate on the objectives and instruments of EU agricultural policy in 2010 (European Commission, 2010b). The reform took place in parallel with the negotiation of the EU's multiannual financial framework (MFF) for the period 2014-2020. The MFF is negotiated at regular intervals (usually every seven years) and sets out maximum limits on the yearly amount of money that can be spent in the EU budget as a whole and on various headings within that budget, including the CAP (see Section 2.4 on financing arrangement for further detail).[8] The parallel negotiation influenced both the agenda for reform (because of the need to justify the continued allocation of significant resources to the agricultural budget) and its outcome (Matthews 2015b). The reform proposals in 2011 revolved around greater fairness in the distribution of direct payments, the allocation of a share (30%) of direct payments to a greening component ("greening payment") to farmers in return for actions in favour of the environment and climate action, more targeted support for young farmers and small farmers, new tools for crisis management, measures to strengthen the position of producers in the food chain, additional investment in research and innovation, and a simpler and more efficient CAP (Swinnen 2015). A hallmark of the reform was the much greater flexibility given to Member States in the way the various CAP measures could be implemented. The 2013 CAP reform established the current regulations governing the EU's CAP, and the details of these measures are more fully described in later sections of this chapter.[9]

[8] The Mid-Term Review of the 2014-2020 MFF due to take place before the end of 2016 will consider the appropriate length of the MFF to be negotiated for the post-2020 period.

[9] The CAP reform package comprised four main legal texts:

–Regulation (EU) No 1307/2013 establishing rules for **direct payments** to farmers;

– Regulation (EU) No 1308/2013 establishing a **common organisation of the markets** in agricultural products;

– Regulation (EU) No 1305/2013 on support for **rural development**;

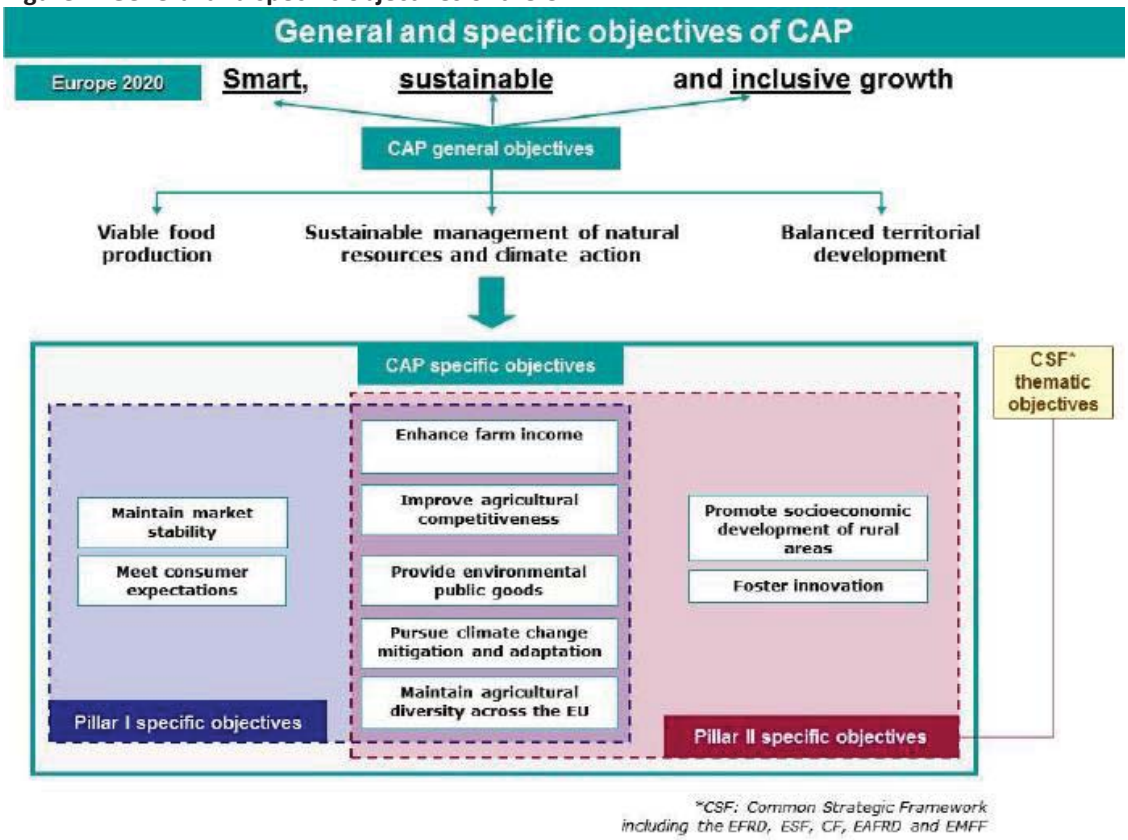
– Regulation (EU) No 1306/2013 on the **financing, management and monitoring** of the CAP (horizontal regulation).

The package also included a transitional Regulation (EU) No 1310/2013 for the year 2014 to bridge the gap between the existing legal framework and the elements of the reform for which it was decided that they will apply only from 2015 (particularly as regards direct payments and rural development), in order to give Member States sufficient time to roll out the new policy on the ground.

2.2 Objectives

The formal objectives of the CAP have not been updated in successive revisions of the EU Treaties, but in practice the CAP has adjusted to respond to different challenges over time. The general and specific objectives set for the period 2014-2020 (and which are used in the monitoring and evaluation of the CAP) are shown in Figure 2.[10] The three general objectives are viable food production, sustainable management of natural resources and climate action, and balanced territorial development. These are in turn related to the over-arching strategic objectives for EU policy set out in the Europe 2020 Strategy for smart, sustainable and inclusive growth adopted by the European Council in 2010 (European Commission, 2010a). The specific objectives of the CAP are addressed by both Pillars with some division of labour although also with some overlapping responsibilities.

Figure 2. General and specific objectives of the CAP



Source: DG AGRI (2016)

2.3 Decision-making

Agricultural policy-making in the EU is complex. At the apex is the European Council which consists of the Heads of State and Government of the 28 Member States together with its President and the President of the European Commission. Under the Treaty, the purpose of the European Council is to "provide the Union with the necessary impetus for its development and [to] define the general political directions and priorities thereof". The European Council does not exercise legislative functions. Importantly, however, it agrees the periodic MFFs which, inter alia, establish the annual

[10] See http://ec.europa.eu/agriculture/cap-post-2013/monitoring-evaluation/index_en.htm.

ceilings on agricultural expenditure within the overall EU budget. The European Council acts by consensus.

Legislative and budgetary authority is exercised jointly by the Council of the European Union (in the case of agricultural policy, this is the Agriculture and Fisheries Council also known as the AGRIFISH Council) and the European Parliament in a process known as "co-decision".[11] Since the Lisbon Treaty came into force in 2009 this procedure also applies to agricultural policy (with a few exceptions).[12] The Council of the European Union (not to be confused with the European Council) is made up of one minister from each Member State.[13] However, the right of initiative for legislation is given solely to the European Commission which consists of a college of 28 Commissioners drawn from each Member State but which represents the common European interest. This means that any EU decision must first be based on a Commission proposal.[14] The Commission also has an executive role in that it manages and implements EU policies and the budget. It has a third role as guardian of the Treaties, meaning that it oversees the application of EU law (for example, if it believes that a Member State is not fully or properly implementing a piece of EU agricultural legislation, it has the power ultimately to take the Member State to the European Court of Justice which can impose sanctions in the form of fines).

The **co-decision procedure** is based on a three-reading system as shown in Figure 3. Legislation is only adopted when the same text has been agreed by both the Council and the Parliament. Once the Commission makes a proposal, it is considered first by the Parliament (which may adopt amendments) and then the Council (if it accepts the Parliament's amendments, then the act is adopted). If the positions of the Parliament and Council are different, the legislation proceeds to a second reading. If the differences remain after the second reading, then the act goes to a conciliation committee which operates under a strict timetable. Over time, the importance of informal discussions between the Parliament's negotiators (usually rapporteurs appointed by the relevant Parliamentary Committee), the Council's negotiators (represented by the Member State holding the six-month rotating Presidency) and the Commission has grown. As a result of these informal negotiations, known as "trilogues", the great majority of EU legislation is now adopted on the first reading. The 2013 CAP reform was the first adopted under this co-decision procedure.

Decision-making in the EU is a complex system of multi-level governance with different levels of competences conferred on the Union by the Treaties (exclusive, shared and supporting). Agricultural policy is a matter of **shared competence**. Under shared competence, both the EU and Member States are able to legislate and adopt legally binding acts. However, Member States can only legislate where the EU does not exercise, or has decided not to exercise, its own competence. Whether the EU exercises its competence or not is subject to the principles of proportionality and subsidiarity. Proportionality means that the content and scope of EU action may not go beyond what is necessary to achieve the objectives of the Treaties. Under the principle of subsidiarity, the EU may act only if, and in so far as, the objective of a proposed action cannot be sufficiently achieved by the

[11] Formally, this is called the "ordinary legislative procedure" in contrast to the "special legislative procedure" where the Parliament only has a right to be consulted.

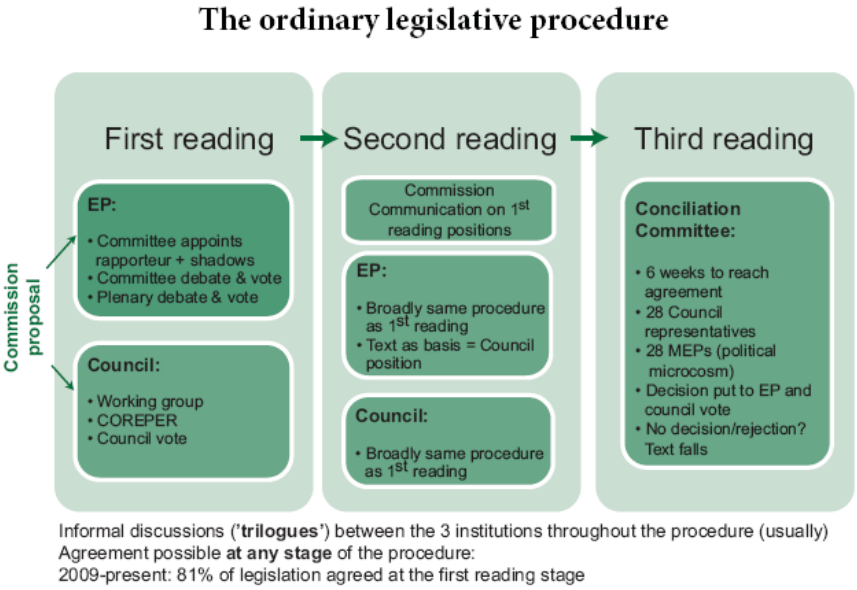
[12] The Treaty of Lisbon amended both the Treaty of Maastricht (also known as the Treaty on European Union) and the Treaty of Rome (also known as the Treaty establishing the European Community), and also renamed the Treaty of Rome to the Treaty on the Functioning of the European Union. These two treaties form the constitutional basis for the European Union.

[13] The convention is that Council is taken to refer to the Council of the European Union whereas reference to the European Council is always spelled out in full, and this convention is followed in this paper. Both of these bodies should be distinguished from the Council of Europe which was founded in 1949 to promote human rights, democracy and the rule of law in Europe and which is completely independent from the EU.

[14] The Commission's annual Work Programme sets out annual priorities and outlines legislative initiatives to be submitted by the Commission in the coming year.

Member States but could be better achieved at the EU level. Member State parliaments, by a simple majority, can request that a draft proposal be reconsidered by the Commission if they consider that it does not comply with the subsidiarity principle.

Figure 3. The ordinary legislative procedure



Source: House of Commons (2013).

EU agricultural legislation takes the form of legislative (basic) acts agreed by co-decision. However, important operational aspects are set out in delegated (non-legislative) and implementing acts which are adopted by the Commission. Legislative acts take the form of Regulations (which are directly applicable in Member States and binding in their entirety), Directives (which are binding as to the results to be achieved by the Member States but which leave to them the choice of form and methods), and Decisions (which are binding in their entirety on those addressed, whether an individual Member State, a natural or legal person). Delegated acts adopted by the Commission supplement or amend certain non-essential elements of a legislative act with the objectives, scope, and duration of the delegated powers set out in the basic legislation. Implementing acts are adopted by the Commission when it has the power to do so where uniform conditions for implementing legally binding acts are needed.

2.4 Financing

Spending on EU agricultural policy takes the form of Union expenditure through the EU budget and Member State (national) expenditure (considered as State aids). EU spending on the CAP is governed by a maximum ceiling on annual commitment appropriations established as part of the MFF which is agreed at least every five years and in recent practice every seven years by the European Council by unanimity.[15] One ceiling applies to the total budget for the MFF Heading "Preservation and management of natural resources" which includes both CAP Pillar 1 and Pillar 2 spending. Within this heading, there is a separate sub-ceiling for the item "Market-related expenditure and direct

[15] Formally, the MFF Regulation is approved by the Council acting unanimously under a special legislative procedure which requires the consent of the European Parliament through a majority of its members. Recall also footnote 8 which notes that the length of the next MFF period will be decided as part of the Mid-Term Review of the 2014-2020 MFF to be initiated by the Commission before the end of 2016.

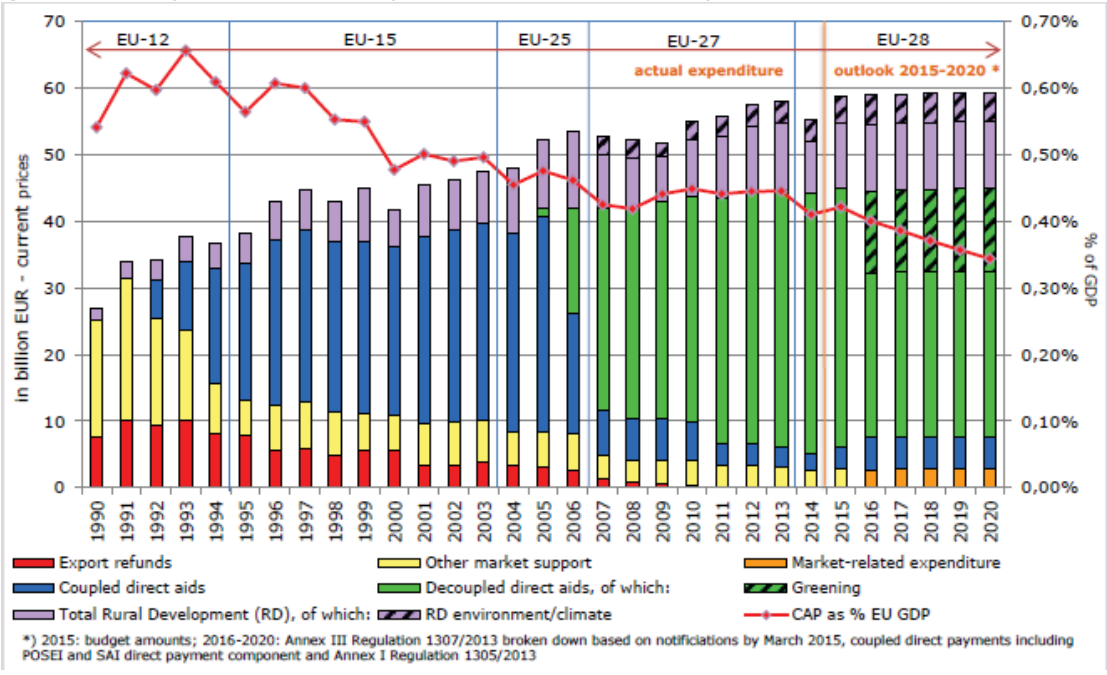
payments" or spending on Pillar 1 of the CAP. As part of the MFF process, the major share of CAP spending (notably, direct payment envelopes under Pillar 1 and rural development programme envelopes under Pillar 2) is pre-allocated to Member States.

Actual commitment and payment appropriations in any year are decided through the annual budget process which is agreed through co-decision between the Council and Parliament. However, the annual budget must respect the ceilings laid down in the MFF. Because it can be difficult to shift resources from one MFF heading to another (as this requires unanimity among the Member States), unlike in the US the CAP effectively operates under a fixed budget constraint from one MFF period to the next. This has implications for the type of policies (e.g. insurance or counter-cyclical payments) which can be realistically funded from the EU budget.

The severity of the sub-ceiling on Pillar 1 expenditure in the MFF is underlined by the **financial discipline mechanism**. The purpose of this mechanism is to ensure that the amount for the financing of CAP Pillar 1 expenditure under the MFF sub-ceiling for market-related expenditure and direct payments is not exceeded in any year. If Commission forecasts in any year indicate that expenditure on the measures financed under that sub-ceiling are likely to exceed the amount laid down in the MFF, then the Commission is obliged to limit expenditure on direct payments to prevent this.

The CAP still looms large in the overall EU budget, although its share has fallen from 70% in the early 1980s to 40% today, and its share of EU GDP has also been steadily falling (Figure 4). CAP spending is disbursed through two agricultural funds. The European Agricultural Guarantee Fund (EAGF) finances market management measures, direct support to farms and some other minor items (Pillar 1). The European Agricultural Fund for Rural Development (EAFRD) co-finances Member State rural development programmes (Pillar 2). An important distinction between the two Pillars is that (with few minor exceptions) Pillar 1 expenditure is 100% financed from the EU budget, whereas Pillar 2 expenditure on rural development programmes is co-financed with the Member States. That is, unless the Member States put in their share, the money made available in the EU budget cannot be drawn down.

Figure 4. CAP expenditure (current prices) and the CAP reform path



Source: DG AGRI, http://ec.europa.eu/agriculture/cap-post-2013/graphs/index_en.htm

The composition of CAP expenditure has changed dramatically reflecting the path of reforms. In the early decades of the CAP, most expenditure consisted of expenditure on market management and export subsidies. This was replaced by expenditure on partially-coupled direct payments following the 1992 reform, and then by decoupled direct payments following the 2003 reform. The share of expenditure on rural development (Pillar 2) has increased and accounts for around 23% of expected expenditure during the period 2014-2020. The decline in expenditure on market management (export refunds and other market support prior to 2015, market-related expenditure after 2015) is particularly noteworthy.

For the MFF 2014-2020 period the Commission initially put forward a proposal to maintain the CAP budget over these years at its 2013 level in nominal terms.[16] In the final outcome, the overall size of the MFF (measured in constant prices) was reduced for the first time by the European Council by around 3.5%. The agreed MFF also reduced the budget for CAP Pillar 1 and Pillar 2 (in real terms) from the Commission's proposal. Comparisons are most easily made by comparing the ceiling on CAP expenditure in 2020 (the end of the 2014-2020 MFF) and 2013 (the end of the previous MFF). For direct payments and market management, the reduction (in real terms) between the two years is 13% and for Pillar 2 rural development expenditure is 18% (European Parliament 2013). However, the final allocation between the two Pillars of the CAP depends on decisions made by Member States. In particular, funds made available by capping and degressivity of Pillar 1 direct payments (see Section 2.5) are transferred to Pillar 2, and Member States also had the flexibility to transfer funds between the two Pillars under specified conditions. The final outcome has been a small net transfer of resources from Pillar 1 to Pillar 2 compared to the MFF decision.

In addition to transfers from the EU budget farmers also receive significant **transfers from national budgets**. These take two forms: first, Member State co-financing of CAP Pillar 2 expenditures, plus some allowed top-ups of Pillar 1 payments in the newer Member States; and second, other state aids paid by Member States to their farmers. In 2014, agricultural state aids reported to the Commission amounted to €7.6 billion.[17] Most, but not all, of this reported agricultural state aid represents Member State spending on measures equivalent to rural development measures which would be eligible for funding under Pillar 2 if the national allocations were bigger, but which are funded instead by national exchequers. However, not all national assistance to farmers is reported as state aid to the Commission, e.g. input subsidies and tax rebates.[18] For every five euro contributed by the EU budget, national exchequers contribute a further two euro both in co-financing EU expenditure as well as through other state aid expenditure (Matthews 2013). Over the past decade, it appears that national and EU expenditure have moved closely in tandem, but there is some evidence that state aid expenditure is more "discretionary" and thus more closely aligned to general economic circumstances.

[16] Because some items were moved to other headings in the EU financial framework and taking into account a proposed increase in spending on agricultural R&D in the Research heading of the MFF, the then Commissioner for Agriculture and Rural Development argued that the Commission proposal would even maintain the CAP budget constant in real terms over the 2014-2020 period. It is important to note that direct payments to farmers are not index-linked and are fixed in nominal terms, implying a reduction over time in their real value depending on the rate of inflation.

[17] Details on state aid expenditure are reported in the State Aid Scorecard which can be found at http://ec.europa.eu/eurostat/tgm_comp/table.do?tab=table&init=1&plugin=1&language=en&pcode=comp_ag_01.

[18] The OECD also includes Member State national aid expenditure when estimating producer support for the EU. It estimates the value of fuel tax rebates to EU farmers at €2.7 billion in 2014.

This section has reviewed the mechanisms in the EU to provide budgetary support to farmers. Further support can be provided to farmers funded by consumers if prices received by farmers are maintained above world market levels through trade policies or other market management measures. Overall support to EU farmers is reviewed in Chapter 3.

2.5 Direct payments

2.5.1 Direct payments prior to the 2013 reform

Decoupled direct payments (also referred to as direct aids) introduced in the 2003 CAP reform were delivered in the EU15 Member States plus Malta and Slovenia through the Single Payment Scheme (SPS) in the 2005-2014 period.[19] A single farm payment (SFP) replaced most of the animal premia and area aids (partially-coupled aid payments to farmers) previously made. The SFP could be implemented in various ways among the Member States. The main difference was whether the SFP was based on the direct payments that individual farmers received in the historical reference period (2002-2004), thus producing a different level of SFP for each farmer (the **historical model**), or whether all payments were averaged out over a state or region within a state (the **regional model).** A **hybrid model** was also implemented in some Members States combining historical references and regionalisation.

To receive direct payments, beneficiaries had to be in possession of **payment entitlements**. These entitlements were allocated to active farmers during the first year of application of the scheme and could be transferred (by sale or lease) to other farmers in the following years. Possession of an entitlement did not automatically guarantee a payment; a farmer had to "activate" his or her entitlements by declaring an equivalent number of eligible hectares each year in order to claim the single payment.[20] If payment entitlements were not activated during two years, they reverted to the "national reserve", from which the Member State could allocate them to other farmers in specific situations. Payment recipients also had to observe the cross-compliance obligations on their land.

In most of the Member States that joined the EU in 2004, 2007 and 2013, apart from Malta and Slovenia, direct payments were phased in through a transitional system called the **Single Area Payment Scheme (SAPS)**, which corresponds to a flat rate area-based payment. The level of EU direct payments in those Member States was progressively increased from 25% of the EU-15 level in the 2005 financial year to 100% in the 2014 financial year (2017 for Bulgaria and Romania and 2023 for Croatia). In order to increase the overall direct support level above the phasing-in level, those Member States had the possibility to apply a **Complementary National Direct Payment**.[21]

[19] Although the SPS came into operation on 1 January 2005, Member States could delay implementation up to 2007. The terminology "old Member States" refers to the EU-15 while "new" Member States refers to the ten countries that acceded to the EU in 2004, Bulgaria and Romania which acceded in 2007, and Croatia which acceded in 2013.

[20] Eligible land means the agricultural area of a holding used wholly or mainly for an agricultural activity. Agricultural activity is defined in the 2013 direct payments regulation as the production, rearing or growing of agricultural products, but it can also be maintaining an agricultural area in a state which makes it suitable for grazing or cultivation without preparatory action beyond usual agricultural methods, or in cases where an agricultural area is naturally kept in a state suitable for grazing or cultivation, carrying out a minimum activity which is defined by the Member State.

[21] Thus, in principle, the EU had two parallel systems of direct payments during the period 2005-2015; the SPS (based on the decoupled SFP) in the EU15 Member States plus Malta and Slovenia, and the SAPS in the other new Member States. For clarity, we will often refer to the scheme in the old Member States as the SFP scheme.

Full decoupling was the general principle from 2005 onwards. However, Member States could decide to maintain a portion of direct aids to farmers in their previously partially-coupled form, at national or regional level. For example, Member States could retain up to 25% of the amounts paid to cereals and other arable crops and up to 40% of the funds available for supplementary durum wheat aid as partially-coupled payments. Up to 50% of the previous sheep and goat premia and up to 100% of the suckler cow premium could continue to be paid as partially-coupled payments, under well-defined conditions. As previously noted, these derogations except for beef, sheep and goat payments were later phased out under the 2008 Health Check.[22]

The 2003 reform allowed Member States to retain up to 10% of their previously coupled payment ceilings under Pillar 1 for **specific supports** to farming and quality production (Article 69 of Council Regulation (EC) No. 1782/2003). The additional payment had to be granted for specific types of farming which were important for the protection or enhancement of the environment or for improving the quality and marketing of agricultural products. In the 2008 Health Check, Article 69 (now renumbered as **Article 68** of Regulation 73/2009) expanded the scope of national envelopes while keeping the overall 10% share of each Member State's direct payments ceiling. Member States could continue to use these payments for environmental measures or improving the quality and marketing of products or animal welfare (although the money no longer had to be used in the same sector). In addition, the national envelope could be used to help farmers producing milk, beef, goat and sheep meat and rice in disadvantaged regions, to support economically vulnerable types of farming, or to top up entitlements in areas where land abandonment was a threat. The permitted uses were also extended to support for risk management measures such as contributions to crop and animal insurance premia and mutual funds for plant and animal diseases. In order to comply with WTO Green Box conditions, support for potential trade-distorting measures under Article 68 was limited to 3.5% of national ceilings. This included support for types of farming important for the protection of the environment, support to address specific disadvantages, and support for mutual funds.

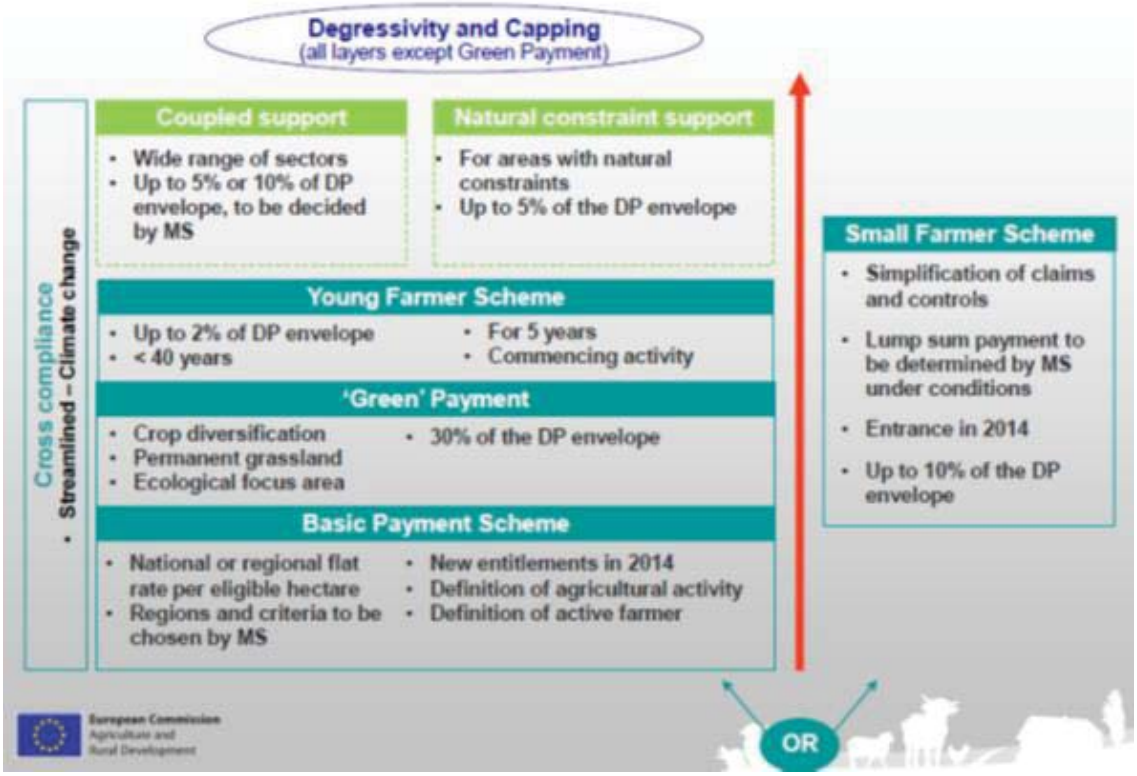
2.5.2 Direct payments after the 2013 reform

In the 2013 reform implemented from 2015, the SPS has been replaced by the Basic Payment Scheme (BPS), a green payment top-up and various targeted measures for young farmers, small farmers, farmers in areas of natural constraints and coupled payments.[23] Some of these measures are voluntary for Member States, while others are mandatory (Figure 5). The SAPS scheme was extended to 2020 for those Member States that wished to continue to use it.

[22] Cotton coupled payments are treated differently as in some MS (Bulgaria, Greece, Spain, Portugal) a crop specific payment for cotton is compulsory; the obligation derives from 1979 Act of Accession of Greece.

[23] The direct payments in the post-2013 CAP is based on the basic act Regulation (EU) No. 1307/2013, the delegated act is Regulation (EU) No. 639/2014 and the implementing act is Regulation (EU) No. 641/2014.

Figure 5. New design of CAP direct payments, 2015-2020



Source: DG AGRI (2013)

2.5.3 External and internal convergence

One of the reasons why the 2003 reform was successfully adopted was that it did not affect the distribution of Pillar 1 expenditure among Member States. The envelope of direct payments for each of the old Member States was based on their historic receipts in the reference period. For the new Member States, the envelope of direct payments was that negotiated in their Treaties of Accession. One consequence of these decisions was that the level of payments per eligible hectare differed significantly across the Member States.

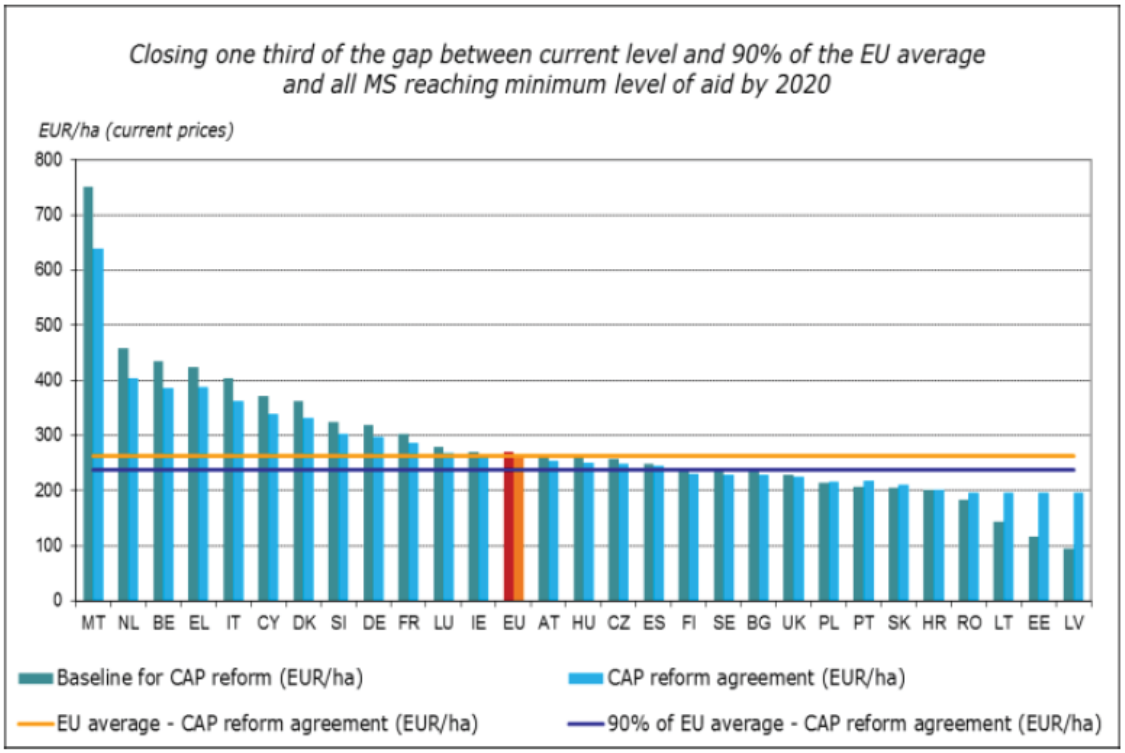
Commissioner Fischler, in his original presentation of the 2003 reform, had also proposed that the decoupled payment would be paid on historical references in order to avoid any redistribution of payments among farmers (European Commission 2003). However, some Member States were keen on the idea of a flat-rate uniform per hectare payment and this became the default option for the older Member States in the reform. However, most Member States opted for either the historical (or hybrid) models which meant that the level of payments to individual farmers in these Member States was not affected by the reform; the payments were simply converted from partially coupled to decoupled payments which benefited farmers by giving them greater freedom in making their production decisions.

By the time of the 2013 reform, the anomalies in payments both among and within Member States could not be overlooked. In the old Member States, direct payments had been introduced to compensate for reductions in support prices. Thus they reflected arbitrary differences in the product orientation and productivity between Member States during the historic reference period. The new Member States were aggrieved that their average payment per hectare (arising from the direct payment envelopes negotiated on accession) were significantly lower than payments in the old

Member States. Similarly, it became increasingly hard to justify the very substantial differences in payments per hectare between farmers within those Member States that had opted for the historic or hybrid payment models. Thus, the first objective of the 2013 reform was to address these perceived fairness issues under the headings of external and internal convergence.

External convergence referred to adjustments in the national envelopes for direct payments to ensure a more equal distribution of direct support per hectare between Member States while taking account of the differences that still exist in wage levels and input costs. A move to equal payments per eligible hectare across the Union was initially considered, but this did not gain favour. Instead, a partial convergence model was adopted. Member States that had direct payments per hectare below 90% of the Union average should close one third of the gap between their current level and this 90% level, with all Member States arriving at a minimum level by financial year 2020, representing roughly 75% of the Union average (Figure 6). This was the first time that a CAP reform had explicitly shifted resources among the Member States.

Figure 6. Changes in the distribution of direct payments across Member States



Source: DG AGRI (2013).

Internal convergence referred to the removal of differences in payments per hectare between farmers within a Member State or region that could not be justified on objective grounds. The Commission had again proposed that payments should be based on the regional model and equalised within regions, where a region could be defined in accordance with objective and non-discriminatory criteria such as institutional or administrative structure and regional agricultural potential. The final legislation introduced some additional flexibility, allowing Member States to choose from three different options:

- To apply a regional/national flat rate from calendar year 2015 as proposed by the Commission;

- To achieve a regional/national flat rate by 2019;
- A partial convergence model based on the external convergence formula which would ensure that those farms getting less than 90% (or a percentage fixed by the Member State between 90% and 100%) of the regional/national average rate would see a gradual increase – with the additional guarantee that every farmer reaches a minimum payment of 60% of the regional/national average by 2019. The payment entitlements that have an initial unit value lower than 90% (100%) of the average should be increased, by 2019, by at least one third of the difference between the initial unit value and the 90% (or 100%) of the final convergence value. The amounts available to farmers receiving more than the regional/national average are adjusted, with an option for Member States to limit any "losses" to 30% of the initial unit value.[24]

2.5.4 Basic payment scheme (BPS)[25]

Allocation of entitlements. The basic payment in the old Member States (plus Malta and Slovenia) remains an income support payment allocated according to the model of internal convergence adopted by the respective Member State. Payments continue to be allocated on the basis of entitlements although the distribution of entitlements was updated according to complicated rules.[26] The effect of the updating has been to broaden the base of farmers who can receive entitlements by including those who were previously not eligible. Member States were required to establish a national reserve of up to 3% of their basic payment scheme ceiling to make provision for new entrants and other eligible farmers. Those Member States applying the SAPS – which does not involve entitlements - could extend the use of this system until 2020 and all have opted to do so.

The green payment. In addition to the BPS/SAPS payment, each holding receives a payment per hectare for respecting certain agricultural practices beneficial for the climate and the environment (Member States are required to use 30% of their national envelope for this purpose). This is a compulsory requirement for farmers in receipt of direct payments. Failure to respect the greening requirements will result in penalties (i.e. a farmer could lose all his or her greening payment and also face a penalty of up to 25% of the amount he or she claimed for greening).[27] The green payment sits on top of cross-compliance which includes the basic compulsory layer of environmental requirements and obligations. Further, more ambitious, environmental management options can be supported through voluntary agri-environment schemes financed through Pillar 2 rural development schemes (Figure 7).

[24] Two alternative mechanisms to calculate the initial unit value were provided in the direct payments regulation with the intention that it should be equivalent to a farmer's total SFP in 2014 divided by his or her allocation of payment entitlements in 2015, adjusted by the national or regional share of the basic payment ceiling to the total amount of the SFP paid in the Member State or region in 2014. See Article 26 of Regulation (EU) No 1307/2013.

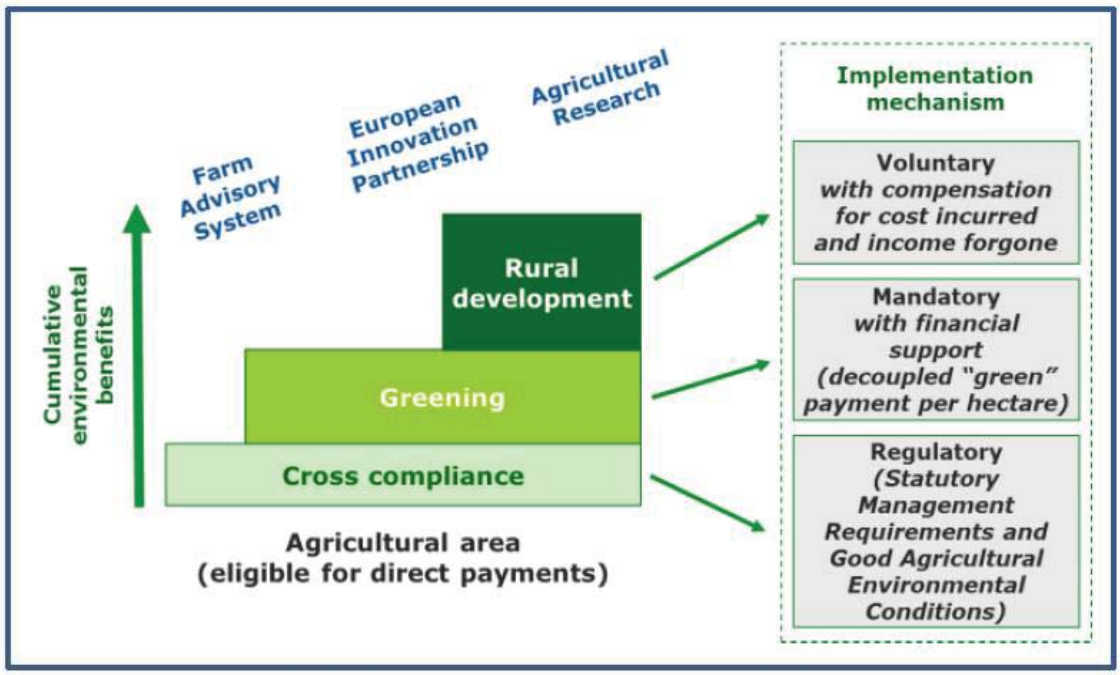
[25] For a useful summary, see DG AGRI (2015) or Henke et al. (2015).

[26] Member States should allocate new entitlements based on the eligible agricultural area in the first year of reform implementation (i.e. in 2015) to farms which were eligible for direct payments in 2013. The number of allocated entitlements could be limited to the minimum of either the eligible area in 2013 or the declared eligible area in 2015. By derogation, some Member States respecting certain conditions could keep the previous system of payment entitlements. In this case, a Member State could impose the additional restriction that the number of entitlements does not exceed the eligible area in 2015. Member States could also choose to allocate fewer entitlements for certain types of permanent grassland (using a reduction coefficient) or to exclude land cultivated with vineyards and greenhouses from receiving entitlements and being eligible for decoupled payments.

[27] The penalty was phased in. A penalty of up to 20% of what a farmer claimed for greening could be applied in 2017 and up to 25% from 2018 onwards.

The three basic practices required are maintaining **permanent grassland**, **crop diversification** and **maintaining an "ecological focus area" of at least 5% of the arable area of the holding** for farms with an area larger than 15 hectares. These practices are meant to be simple, generalised, non-contractual and annual. They should also go beyond the statutory rules linked to environmental rules under cross-compliance (statutory management requirements and standards for good agricultural and environmental condition of land). The legislation foresees a "greening equivalency" system for the recognition of environmentally beneficial practices already in place, although few Member States have made use of this option.

Figure 7. The new greening architecture of the CAP



Source: DG AGRI (2013).

Young Farmers. In order to encourage generational renewal, the Basic Payment awarded to new entrant Young Farmers (those 40 or below) should be topped up by an additional 25% for the first 5 years of installation. This is funded by up to 2% of the national envelope and is compulsory for all Member States. This top-up is in addition to other measures available for young farmers under Rural Development Programmes.

Areas with Natural Constraints (ANCs). Member States (or regions) may grant an additional payment for areas with natural constraints (as defined under Rural Development rules) of up to 5% of their national envelope. This is optional and does not affect the ANC options available under Pillar 2 rural development programmes. However, only one Member State opted to make use of this measure.

Voluntary coupled support. The 2013 CAP reform altered the framework for coupled payments. Because Article 68 specific supports (see above) were abolished, some replacement had to be found. The new framework has the following characteristics (Title IV of Regulation (EU) No 1307/2013):

• The list of sectors eligible for coupled support payments is greatly expanded (cereals, oilseeds, protein crops, grain legumes, flax, hemp, rice, nuts, starch potato, milk and milk products, seeds, sheepmeat and goatmeat, beef and veal, olive oil, silkworms, dried fodder, hops, sugar beet, cane and chicory, fruit and vegetables and short rotation coppice).

• Total support should be limited to 8% of each Member State's direct payments ceiling, or exceptionally 13% in those countries applying the SAPS scheme, or where Member States had used more than 5% of their direct payments ceiling in any year during 2010-2014 for coupled payments including Article 68 payments. These percentages could be increased by up to 2 percentage points if this support was used for protein crops. A further derogation allowed Member States which used more than 10% of their national ceilings for coupled payments including Article 68 payments in any year between 2010 and 2014 to be permitted to use more than 13% of their national ceiling for coupled payments "upon approval by the Commission".
• Member States had to notify their decisions to the Commission by 1 August 2014. However, they can revise their decisions with effect from 2017, increasing, decreasing or ceasing the amount of coupled support they provide within the relevant limits.

All voluntary coupled payments within these ceilings should comply with a number of conditions, as follows:
• Coupled support may only be granted to those sectors or to those regions of a Member State where specific types of farming or specific agricultural sectors that are particularly important for economic, social or environmental reasons undergo certain difficulties.
• Coupled support may only be granted to the extent necessary to create an incentive to maintain current levels of production in the sectors or regions concerned.
• Coupled support shall take the form of an annual payment and shall be granted within defined quantitative limits and be based on fixed areas and yields or on a fixed number of animals. This is intended to ensure that future coupled payments would qualify as Blue Box payments under the WTO Agreement on Agriculture disciplines on domestic support.

The use of this voluntary option by Member States shows a very varied pattern. Nine Member States opted to use less than the standard 8% ceiling while eleven Member States have the maximum percentage of 13% with 9 of these also using all or part of the additional 2% available in case of support to the protein crops sector. Three old Member States (Belgium, Portugal and Finland) were given permission to exceed the 13% limit. Germany has maintained its position that it does not give coupled support and is the only Member State not to provide coupled support in 2015. In total, around 10% of direct payments are now coupled (excluding cotton payments) which is a small increase compared to the end of the Health Check period. Beef and dairy are the most supported sectors, with smaller amounts going to other sectors such as sheep and goats, protein crops and fruit and vegetables (Table 1).

Table 1. Amounts of voluntary coupled support in 2015

Commodity	Number MS providing VCS*	Annual amount available	Expenditure share of EU-28 direct support	Quantitative limit on support
Beef and veal	24	€1,700m	4.1%	18.6 million cattle
Milk	19	€846m	2.0%	12.3 million cows
Sheep and goats	22	€486m	1.2%	41-42 million head
Protein crops	16	€441m	1.0%	4.3 million ha
Fruit and vegetables	19	€209m	0.5%	675,000 ha
Sugar beet	10	€176m	0.4%	497,200 ha
Other sectors	13	€279m	0.7%	n.a.
Total	27	€4,100-4,200m	9.8-10-1%	n.a.

Note: * Notified to the Commission as of 1 August 2014
Sources: Commission Information Notes on VCS, July and December 2015

Small Farmers Scheme. This is an optional measure for Member States. If implemented, any farmer claiming support may decide to participate in the Scheme and thereby receive an annual payment fixed by the Member State of between €500 and €1,250, regardless of the farm size. Member States may choose from different methods to calculate the annual payment, including an option whereby farmers would simply receive the amount they would otherwise receive. The intention is to simplify the administration of small payments both for the farmers concerned and for national administrations. Participants face less stringent cross-compliance requirements, and are exempt from greening. Total expenditure on the Small Farmers Scheme cannot be more than 10% of the national envelope, except when a Member State chooses to ensure that small farmers received what they would be due without the scheme. Fifteen Member States have opted to implement this scheme.

Redistribution of payments. The new basic payment scheme contains measures to reduce the inequality of payments between farms. To ensure a better distribution of support, Member States were required to reduce basic payments over €150,000 per farm by a minimum of 5% of the amount over €150,000 (degressivity). Member States could opt for any reduction percentage of the excess over €150,000 up to 100%, and nine Member States have opted to cap payments at amounts between €150,000 and €600,000. Wages paid to salaried workers could if desired be taken into account when implementing this reduction. A potentially more equalising measure was a new voluntary measure to pay a redistributive payment on the first hectares farmed. Up to 30% of a country's national ceiling could be devoted to this, and eight Member States have implemented it. The redistributive payment permits to increase support for small and medium-sized farms by allocating higher levels of aid for the first 30 hectares (or up to the average farm size if higher) of a holding. Member States that implemented the redistributive payment (provided it used more than 5% of their national envelope) did not have to reduce payments over €150,000 and 6 of the 8 Member States using the redistributive payment have decided not to do this.[28] Funds generated from degressivity and capping payments are shifted to Pillar 2 rural development programmes in the same region/Member State.

Active farmers. A criticism of the 2005 scheme was that payments could be made to owners of agricultural land, e.g. golf courses and airports, who in common parlance would not be called farmers. The legislation was tightened to ensure that only "active farmers" benefit from income support schemes. A new negative list of professional business activities which should be excluded from receiving direct payments, unless they can show they have genuine farming activity, is mandatory. Member States also have the option to further exclude persons whose agricultural activity is marginal relative to their non-agricultural income.

Cross compliance. Receipt of all CAP payments (including rural development payments) continues to depend on farmers observing the conditions of cross-compliance. Cross-compliance includes directives and regulations – "statutory management requirements" – that apply to all farmers regardless whether they receive direct payments or not, setting out obligations in the areas of public, animal and plant health, animal welfare and environmental protection. In addition, those farmers receiving CAP payments must in addition observe a set of standards of "good agricultural and environmental condition" of their land. These are designed to prevent soil erosion (minimum soil cover, minimum land management); maintain soil organic matter and soil structure by maintaining the soil organic matter level; protect biodiversity (retaining landscape features including a ban on cutting hedges and trees during the bird nesting and breeding season); and protecting water quality (establishing buffer strips, requiring authorisation to use water for irrigation, and protecting ground water against pollution).

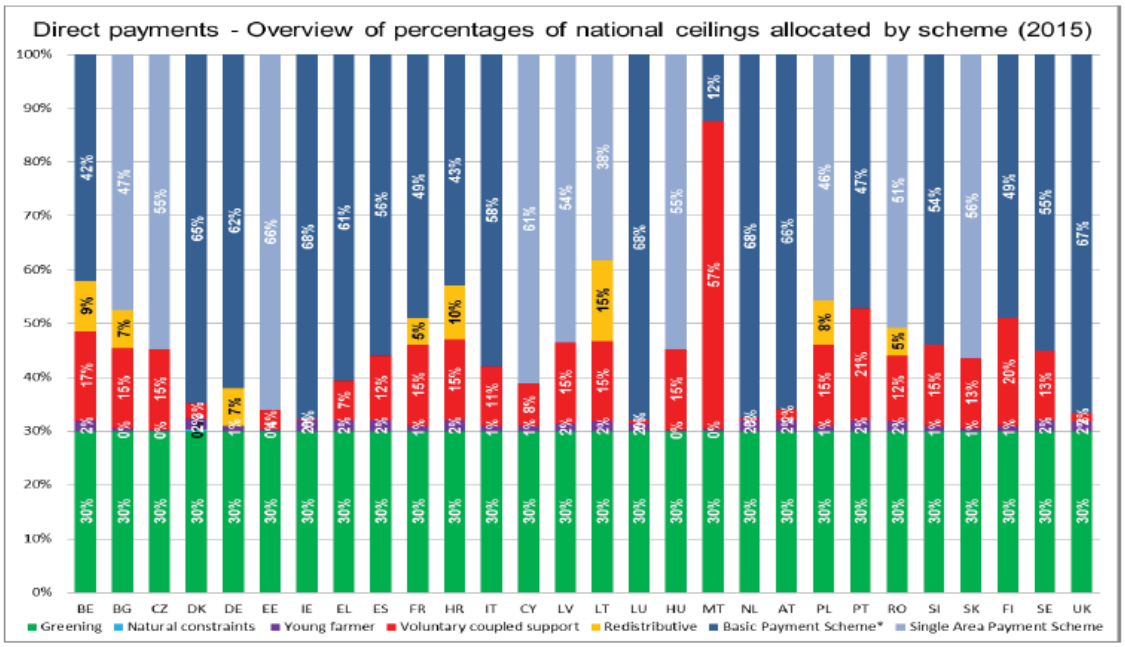
[28] See http://ec.europa.eu/agriculture/direct-support/direct-payments/index_en.htm for details on the implementation of the voluntary options regarding the direct payments scheme in Member States.

While many of these conditions simply reflect good farming practice, others add to the cost of production. An example would be the requirement to establish buffer strips along water courses to help reduce the run-off and leaching of nitrates to surface and ground waters. Farmers are sanctioned for non-respect of these standards, in addition to the sanctions generally applied, through cuts in direct payments. Control of cross-compliance requirements is carried out on the basis of the IACS (integrated administration and control system for certain EU aid schemes).

2.5.5 Flexibility and simplification

One consequence of the 2013 CAP reform has been the much greater flexibility that Member States have in how they implement CAP direct payments. The actual choices made by Member States in how they allocated their direct payments envelope in 2015 are shown in Figure 8. The 30% share allocated to the green payment was fixed by legislation, although those Member States opting for the partial convergence model could choose whether to make the payment a flat-rate one or proportional to the basic payment and most choose the latter option. Apart from Malta (which is an outlier), the BPS/SAPS payment remains the most important element in each Member State, but there is considerable variation in the national envelope shares devoted to the redistributive payment and coupled payments. Payments to young farmers, to farms in areas of natural constraints, and to farmers under the small farms scheme are a small proportion of the total.

Figure 8. Choices made by Member States in allocating direct payments, 2015



Source: DG AGRI (2015a).

A consequence of the greater flexibility allowed to Member States is complexity. Despite the intention to make CAP simplification one of the objectives of the most recent reform, the outcome has been the opposite. Thus Commissioner for Agriculture and Rural Development Phil Hogan has made simplification (yet again!) one of his priorities in his term of office.[29] Some environmental

[29] For a discussion of the history of attempts to simplify the CAP, see Matthews, A., "Simplification as a top priority in 2015", available at http://capreform.eu/simplification-as-a-top-priority-in-2015/, accessed 15 March 2016. Commissioner Hogan has asked for extensive input from Member States, the European Parliament and

observers have worried that simplification might be a smokescreen to roll back some of the elements of the 2013 reform which imposed additional obligations on farmers to pursue practices friendlier to the environment and climate change mitigation. To date, the proposals for simplification have involved amendments to delegated and implementing acts designed to make administration a little easier for paying agencies in the Member States and to reduce the scale of penalties that farmers face for unintentional errors. It remains to be seen whether the Commission will propose changes to the basic acts as part of this process and what these changes might be.

2.6 Market management measures

EU agricultural markets have been highly managed in the past using both trade and domestic policy instruments. Trade measures are now much less important as a market management instrument (Chapter 4). The tariffication of variable import levies following the WTO Uruguay Round in 1995 eliminated the stabilisation function of border measures, although an entry price system still exists for fruits and vegetables and applied tariffs are still varied (especially for cereals) within the bound tariff ceilings. Export subsidies which were also used to stabilise EU domestic prices are no longer applied (Chapter 4). The main domestic measures used to provide market support include intervention purchases at minimum guaranteed prices, supply controls implemented either directly through production or marketing quotas or indirectly through land set-aside, and demand enhancement measures, such as the disposal of produce at subsidised prices on the internal market, food aid to deprived persons and school food distribution schemes. However, much has changed during the reform path of the CAP over the past two decades.

2.6.1 Intervention measures

The use and importance of market support instruments and particularly public intervention has steadily diminished as part of the CAP architecture. The number of commodities eligible for public intervention has been reduced, limits have been placed on the guaranteed quantities, and support prices have been lowered to safety-net levels. Indeed, inflation is further eroding the real value of these safety net guarantees as intervention prices have not been updated. For example, the intervention price for cereals has remained the same at €101.31/t since 2000/2001 (Table 2 shows the evolution of intervention prices in nominal terms since the start of the reform period).

Table 2. Intervention products and prices in the EU, 1988/1989 and 2013/2014

Marketing year	**Unit**	**1988/89**	**2013/14**	**Percentage change**
Wheat	€/tonne	204.1	101.31	-50.4%
Durum wheat	€/tonne	314.6	101.31	-67.8%
Barley	€/tonne	193,9	101.31	-47.8%
Maize	€/tonne	204.1	101.31	-50.4%
Sugar	€/tonne	616.2	404.40	-34.4%
Paddy rice	€/tonne	357.3	150.0	-58.0%
Calendar year		**1988**	**2014**	
Butter	€/tonne	3562.0	2,217.51	-37.7%
Skimmed milk powder	€/tonne	1979.3	1,698.00	-14.2%
Beef	€/tonne	3912.3	1,560.00	-60.1%

stakeholder groups to feed into that process. In a speech to the "Agri 2015" conference in Leipzig on 23 April 2015, Commissioner Hogan reported that he received more than 1000 pages of simplification proposals to that date.

Sources: WTO (1994; 2015a). Note intervention existed in addition for rye, oats, sorghum, triticale, sugar and sheepmeat in 1988/1989 but not in 2013/2014.

Since the implementation of the 2008 Health Check, mandatory intervention is restricted to wheat, butter, skimmed milk powder (for specific quantities), and beef and veal. For the first three commodities intervention beyond the mandated quantities takes place on a tendering system. Intervention prices are set for several other products including durum wheat, barley, maize, sorghum and paddy rice but the quantity that may be bought into intervention is currently set at zero. Intervention prices and quantities used to be set for sugar, but these ceased to apply from end September 2010. Usage of intervention has steadily declined; for example, no beef has been purchased into intervention since 1999. The CAP 2013 agreement did not fundamentally change these arrangements, although the intervention price for beef was increased from 70% to 85% of the reference threshold[30] and the quantity of butter eligible for mandatory intervention was also slightly increased.[31] In the case of butter and skimmed milk powder, there are fixed buying-in periods limited to specific months. The periods can be extended at the Commission's discretion in cases of serious market disturbances as occurred in 2015-2016.

In addition to purchases into public intervention, the Commission can also open private storage aids (PSA) for butter and certain cheeses, skimmed milk powder, white sugar, olive oil, beef, pig meat, sheep meat, and goat meat. Under the PSA schemes, the products remain in private ownership and the owner receives aid to cover the cost of storage for periods specified in the contracts before they can be released onto the market. The significance of these market intervention measures in recent years is shown in Table 3. Intervention schemes for butter and skimmed milk powder were extended as milk prices fell in 2015 and 2016. For example, the volume limits for mandatory intervention at the fixed buying-in price for skimmed milk powder were increased from 109,000t to 218,000t to 350,000t in 2016. No butter was offered for intervention in 2015/16. The private storage aid scheme was also opened for pigmeat in 2015 and 2016, with quantities taken in amounting to 60,000t in 2015 and 89,841t in 2016.

Table 3. Purchases into public intervention or private storage, tonnes, 2009-2014

	Wheat	Barley	Maize	Butter	Skim powder	Olive oil	Pigmeat
	PI	PI	PI	PS	PS	PS	PS
2009	81,435	930,222	555,467	136,000 + 82,000 (PI)	274,000	110,000	2,161
2010	240,974	5,212,913	0	97,000	0		0
2011	0	0	0	104,000	0	44,337	141,023
2012	0	0	0	131,000	0	200,000	0
2013	0	0	0	89,449	0	0	0
2014	0	0	0	22,394	17,342	0	0

Notes: PI = public intervention, PS = private storage. For arable crops, years refer to marketing years ending in those years.

[30] Regulation (EU) No. 1308/2013 makes a distinction between reference thresholds and intervention prices. For products where public intervention continues to operate, intervention prices are set at fixed percentages of the reference thresholds (see Council Regulation No 1370/2013). The legislation states that "Only intervention prices for public intervention correspond to the applied administered prices referred to in the first sentence of paragraph 8 of Annex 3 to the WTO Agreement on Agriculture (i.e. market price support)."

[31] Fixing intervention prices and quantities and the level of aids for private storage is the only area of the CAP where decision-making power now remains solely with the Council.

No purchases into intervention (beef) or private storage (sugar, beef and sheep and goatmeat) occurred during this period.
Source: WTO European Union Trade Policy Reviews 2013 and 2015.

Most supply management measures have now been eliminated. Milk quotas had been a part of the CAP since 1984. In the 2008 Health Check it was agreed to abolish milk quotas in 2015 and this was confirmed in the 2013 CAP reform. Since 1 April 2015 milk producers are free to set their production levels solely in the light of market conditions. As part of its legislative proposals for the 2013 CAP reform, the Commission proposed to eliminate sugar quotas with effect from 2015. Although this move had been signalled some years earlier, farm organisations and some Member States wished to extend the quota regime to 2020. The final compromise agreed was that sugar quotas would continue until 2017. In the case of wine, the 2013 agreement respected the decision of the 2006 wine reform to end the system of wine planting rights at the end of 2015, but in its place introduced a system of authorisations for new vine planting from 2016 – as recommended by the High Level Group on Wine[32] – with growth limited to 1% per year.

The relative budgetary importance of these market management measures is shown in Table 4. Expenditure on storage mostly represents expenditure incurred for the private storage of commodities (e.g. butter in 2015). Export refund expenditure has declined to zero – the small amounts in recent years refer to the payment of outstanding balances for past exports of non-Annex I products, beef, pigmeat and poultry. Expenditure on other market measures remains significant. In recent years this has covered a variety of measures, including expenditure relating to quality improvement programmes for olive oil, support for producer organisations for fruit and vegetables, investment and promotion measures for wine, specific measures for agriculture in the EU's outermost regions, promotion measures, emergency measures for dairy producers, and bee-keeping.

Table 4. CAP expenditure on market management, € million, commitment appropriations, 2005-2015

Year	Total EAGF expenditure	Storage	Export refunds	Other market measures
2005	42,100.8	851.5	3,051.9	4,238.6
2006	42,175.3	756.9	2,493.6	4,581.9
2007	42,120.9	-106.7	1,444.7	3,427.1
2008	42,181.2	147.9	925.4	3,046.4
2009	43,454.1	173.4	649.5	3,083.5
2010	44,046.0	93.6	385.1	3,454.8
2011	44,046.0	-194.6	179.4	3,428.3
2012	44,745.6	17.4	146.7	3,344.5
2013	45,302.1	25.1	62.4	3,217.2
2014	44,292.7	5.1	4.5	2,579.6
2015	44,292.7	18.4	0.3	2,698.0

Source: European Agricultural Guidance Fund annual reports

[32] See http://ec.europa.eu/agriculture/wine/high-level-group/index_en.htm.

2.6.2 Crisis management

While intervention has been reduced to safety-net levels, the 2013 CAP reform introduced the possibility to take crisis measures in response to a market disturbance. Various circumstances are envisaged in which the Commission can take unspecified emergency measures without necessarily having to consult first with Member States. A crisis could be caused by significant price rises or falls on internal or external markets, by animal diseases or loss of consumer confidence due to public, animal or plant health risks, or other specific problems relating to "situations likely to cause a rapid deterioration of production and market conditions which could be difficult to address if the adoption of measures were delayed". One specific option, set out in Article 222 of the common market organisation regulation, allows for the temporary suspension of competition law restrictions on actions by producer organisations, their associations and interbranch organisations which "strictly aim to stabilise the sector concerned".[33] Examples of permitted actions under this derogation include market withdrawal or free distribution of products, storage by private operators, joint promotion measures, agreements on quality requirements, or the temporary planning of production.

Although these provisions appear to give extensive powers of market intervention to the Commission, the potential scale of intervention is limited by the modest scale of available funding. Funding can come from two sources: annual budget appropriations for market management measures and the crisis reserve. The funds available for market management measures are limited by the sub-ceiling in the MFF for total expenditure on market-related measures and direct payments. In the 2014-2020 period the margin available under this ceiling taking committed expenditure on direct payments into account is very limited (although if a surge in market management expenditure was expected, the financial discipline mechanism (see Section 2.4) could be used to reduce direct payments to accommodate this). The crisis reserve is a new mechanism introduced in the 2014-2020 MFF. It is intended to provide additional support in the case of major crises affecting the agricultural sector. It is constituted annually (to an amount of €400 million in 2011 prices) by reducing all direct payments above €2000 by the appropriate adjustment coefficient. Funds not used by the crisis reserve are returned to farmers in the following year and the reserve is reconstituted anew in that year.

[33] Interbranch organisations are defined in Article 157 of Regulation (EU) No. 1723/2013 as constituting representatives of economic activities linked to the production and at least one other stage of the supply chain including processing, trade in and distribution of products in one or more sectors. They are formed on the initiative of all or some of the organisations or associations which constitute them. They can have as objectives, while taking into account the interests of their members and of consumers, improving knowledge and transparency of production; forecasting production potential; recording public market prices; helping to coordinate better the way products are placed on the market, particularly through research and market studies: exploring potential export markets; drawing up standard forms of contract; developing initiatives to strengthen economic competitiveness and innovation; helping to adapt production, processing and marketing to market requirements and consumer tastes and expectations; seeking ways of restricting the use of animal-health or plant protection products, better managing other inputs, ensuring product quality and soil and water conservation, promoting food safety, in particular through traceability of products, and improving animal health and welfare; developing methods and instruments for improving product quality at all stages of production, processing and marketing; taking all possible actions to uphold, protect and promote organic farming and designations of origin, quality labels and geographical indications; promoting and carrying out research into integrated, sustainable production or other environmentally sound production methods; encouraging healthy and responsible consumption of the products on the internal market and/or informing about the harm linked to hazardous consumption patterns; promoting consumption of products on the internal market and external markets; and contributing to the management of by-products and the reduction and management of waste.

The years 2015 and 2016 give a unique insight into how the Commission has made use of its market and crisis management tools. The adverse impact on farm incomes of the downturn in global market prices, notably for milk, since early 2014 was compounded by the impact of the Russian ban on imports of certain EU agricultural products in August 2014. In the immediate aftermath of the Russian ban, the Commission responded with short-term market support measures including market withdrawal, free distribution and green harvesting for fruits and vegetables, and extended opening for public intervention and aid for private storage for dairy products. A further package of measures in September 2015 worth €500 million in total made available €420 million to Member States to provide liquidity support to their dairy farmers (which Member States could double using their own resources if desired). Another €30 million was made available for the promotion of EU agricultural exports to third country markets. With farm prices and income falling further, another package of measures was agreed in April 2016. This was notable for two things. For the first time, the Article 222 option to allow a temporary derogation from competition law was invoked for producer organisations in the dairy sector. However, the Commission indicated that this would be a voluntary measure and that it had no additional funds to incentivise producers who voluntarily agreed to reduce production. Second, it agreed to approve a relaxation of state aid rules which would give greater flexibility to Member States that wished to use their own funds in this way or in other ways to support dairy farmers.

In July 2016 the Commission announced a further package of measures worth another €500 million in EU funding, financed by transferring unspent funds in the agricultural budget, which could be topped up by a further €350 million by Member States. The main novelty in this package was an EU-wide scheme to incentivise a voluntary reduction in milk supplies, as well as national envelopes to Member States which could be spent on conditional adjustment aid. The use of safety net intervention measures was prolonged.

The Commission's response to the sharp fall in incomes in dairying and some other sectors in 2015-16 has underlined its unwillingness to date and that of the Council to make use of the crisis reserve which is, of course, funded by a reduction of taxpayer-funded direct payments to all farmers. It is noteworthy that to date it has also resisted calls from some Member States and farm organisations to raise the level of intervention prices for dairy products, and that support has taken the form of direct income support in addition to the limited market support at safety-net levels. The perceived absence of an adequate crisis management toolkit among some stakeholders will feature strongly in discussions on the shape of the future CAP after 2020 (Chapter 5).

2.6.3 Strengthening the role of producers in the food value chain

The new CAP has a greater focus on helping farmers to strengthen their bargaining position vis-à-vis other players in the food chain through a better organisation of commodity sectors and with a few limited derogations to EU competition law.

Producer organisations have been legally encouraged since 2001 in the fruit and vegetable sector, and since 2011 in the milk sector. The 2013 CAP reform allowed (but did not require) Member States to recognise producer organisations, associations of producer organisations and interbranch organisations except in a few sectors where recognition was mandatory (e.g. milk, olive oil, fruit and vegetables, hops, wine). Support for setting up producer groups as well as short supply chains and cooperation can be provided under Pillar 2 rural development programmes.

Derogations from competition law allow the possibility for farmers in some sectors to collectively negotiate contracts and to jointly sell and set prices, volumes and other terms through recognised organisations. This derogation applies to the supply of milk, olive oil, beef, cereals and certain other

arable crops under certain conditions and safeguards, for example, if the producer organisations create significant efficiencies through other joint economic activities (e.g. joint processing, joint transport/storage or joint quality control).[34]

Member States are authorised to introduce the compulsory use of written contracts with a number of standard clauses in their legal systems. These rules apply to all sectors except for milk and sugar where specific sectoral rules apply.

2.6.4 Promoting food demand

As in the US, food assistance programmes (including international food aid) financed from the EU budget began as a way of disposing of surplus food stocks. Subsidised disposal of butterfat and skimmed milk powder on the internal market was an important measure to limit surpluses of dairy products during the 1970s and 1980s. However, because addressing food poverty has generally been seen as a matter for Member States and their income support and social welfare policies, the scale of food assistance programmes in the EU never reached the importance they have in the US Farm Bill.

The EU's Food Distribution Programme for the Most Deprived Persons (MDP) was set up in December 1987, when rules were adopted for releasing public intervention stocks of agricultural products to Member States wishing to use them as food aid for the most deprived persons of the Community. As agricultural surpluses reduced, the programme was supported by a direct financial contribution, and the scheme was amended in the mid-1990s to make it possible to supplement intervention stocks with market purchases in certain circumstances.

In 2008, with surplus stocks almost non-existent and unlikely to increase in the foreseeable future, and with food prices rising, the Commission proposed that the budget for the scheme should be increased and that it should be allowed to make market purchases on a permanent basis, to complement remaining intervention stocks. By 2011 expenditure had risen to €480 million annually. But it was extremely difficult to find a Treaty basis for this expenditure, and even more so to justify Community action as a value added measure under the subsidiarity principle. In 2011, the European Court of Justice upheld a complaint by Germany that the programme as it then operated could not be justified as part of the CAP and thus had no basis in Union law. Subsequently, as part of its proposal for the 2014-2020 MFF, the Commission proposed to move the programme out of the CAP budget and make it part of the European Social Fund. Under the newly established Fund for European Aid to the most Deprived (FEAD) the assistance available for the most deprived persons of the Union includes, besides food aid, the supply of basic materials (e.g. clothing) and social inclusion as well.[35]

Two smaller schemes, the European School Milk Scheme[36] (which was set up in 1977) and School Fruit Scheme[37] (which also included vegetables, and which has operated since 2009) were co-financed schemes with Member States designed to encourage good nutritional habits among school children as well as promoting consumption and disposing of surpluses (in the case of milk). These two schemes have now been merged and will operate as one from August 2017 with a total budget of €250 million annually.

[34] See http://ec.europa.eu/agriculture/producer-interbranch-organisations/index_en.htm.
[35] See http://ec.europa.eu/agriculture/most-deprived-persons/index_en.htm.
[36] See http://ec.europa.eu/agriculture/milk/school-milk-scheme/index_en.htm.
[37] See http://ec.europa.eu/agriculture/sfs/index_en.htm.

2.7 Rural development measures

CAP supports under Pillar 2 are referred to as rural development policy. They differ from Pillar 1 supports in that (a) they are co-financed by Member States (b) they are programmed expenditures designed to target specific rural development objectives and (c) they are often multi-annual and contractual commitments. The programming rhythm follows the programming of the EU's budgetary cycle under the Multi-annual Financial Frameworks (MFF). Rural development policy emerged out of a range of socio-structural adjustment measures which were adopted as part of the CAP in the 1970s and 1980s, and was formally recognised as the second pillar of the CAP during the Agenda 2000 CAP reform. Rural development programmes (RDPs) were first formulated during the 2000-2006 MFF. The most recent RDPs covered the period 2007-2013, and the Member State RDPs for the 2015-2020 period were approved during 2014/2015.[38] RDPs can be submitted by Member States or by regions. In the current programming period 118 individual RDPs were approved in the 28 Member States.

Member States/regions have a great deal of flexibility in designing their RDPs and can draw on a range of measures set out in the basic legislation, although the programming process aims to steer choices in the direction of EU priorities. In the 2007-2013 programming period, measures were divided into four "axes": the competitiveness of agriculture and forestry (Axis 1); the environment and land management (Axis 2); economic diversification and the quality of life in rural areas (Axis 3): plus a compulsory allocation to a community-based local development programme called LEADER (Axis 4). Minimum and maximum limits were placed on the shares of expenditure under each axis. Over this period, cumulative expenditure was greatest in Axis 2 (51.5% of the total), followed by Axis 1 (30.8% of the total), Axis 3 (11.3% of the total) and Axis 4 (4.5% of the total) (European Commission, 2016).

Over time, the importance of Pillar 2 spending on rural development has increased as a share of the overall CAP budget (Figure 4). In both the 2007-13 and 2014-2020 MFFs, the ceilings on rural development spending were about 23-24% of the total CAP budget. Because, unlike Pillar 1 expenditure, not all of the committed expenditure is drawn down, the share of rural development expenditure in the total CAP budget is somewhat smaller.

In the most recent CAP reform, the three axes were replaced by six priorities, with a requirement that Member States/regions should select at least four of these priorities in their RDPs (Another feature of the 2013 CAP reform was the blurring of the distinction between the two Pillars. For example, payments to farmers in areas of natural constraints which traditionally was a measure included in RDPs and continues to be funded in the current RDPs, was also included as a voluntary option for which Member States could use a share of their Pillar 1 ceilings (Section 2.5.4). Also, Member states are now required to provide a top-up payment to young farmers out of their Pillar 1 ceilings, although payments to assist young farmers have been traditionally a part of RDPs and continue to be. In the other direction, the risk management toolkit (which previously had been funded out of the Pillar 1 budget as part of farm income support) was moved to Pillar 2 and expanded in the 2013 reform. Many now ask if the distinction between the two Pillars has not outlived its usefulness. It is possible that abandoning the distinction and merging the two Pillars will be taken up in the coming debate on the future of the CAP after 2020.

Table 5). At least 30% of funding for each RDP must be dedicated to measures relevant for the environment and climate change and at least 5% to the LEADER programme. The most important priorities are environment and land management (including payment to farmers in areas of natural

[38] Because of the delay in approving the new RDPs, it was agreed to roll over the measures in place during the 2007-2013 period for one further year.

constraints), followed by competitiveness measures (such as investment aids) which are given higher priority in the RDPs of new Member States.[39] Although the 2013 CAP reform left in place many of the key measures of rural development policy from the 2007-2013 period, it also introduced some additional measures which could be included in RDPs, notably a greater emphasis on innovation through the European Innovation Partnership for Agricultural Productivity and Sustainability as well as a risk management toolkit (discussed in the following section).

Another feature of the 2013 CAP reform was the blurring of the distinction between the two Pillars. For example, payments to farmers in areas of natural constraints which traditionally was a measure included in RDPs and continues to be funded in the current RDPs, was also included as a voluntary option for which Member States could use a share of their Pillar 1 ceilings (Section 2.5.4). Also, Member states are now required to provide a top-up payment to young farmers out of their Pillar 1 ceilings, although payments to assist young farmers have been traditionally a part of RDPs and continue to be. In the other direction, the risk management toolkit (which previously had been funded out of the Pillar 1 budget as part of farm income support) was moved to Pillar 2 and expanded in the 2013 reform. Many now ask if the distinction between the two Pillars has not outlived its usefulness. It is possible that abandoning the distinction and merging the two Pillars will be taken up in the coming debate on the future of the CAP after 2020.

Table 5. CAP Pillar 2 Rural Development Programme projected spending by priority, 2014-2020

Priority	Share of committed funds
Fostering knowledge transfer and innovation in agriculture, forestry and rural areas	Cross-cutting
Enhancing the viability and competitiveness of all types of agriculture, and promoting innovative farm technologies and sustainable forest management	20%
Promoting food chain organisation, animal welfare and risk management in agriculture	10%
Restoring, preserving and enhancing ecosystems related to agriculture and forestry	44%
Promoting resource efficiency and supporting the shift toward a low-carbon and climate-resilient economy in the agriculture, food and forestry sectors	8%
Promoting social inclusion, poverty reduction and economic development in rural areas	15%
Memo item: Technical assistance	3%

Source: DG AGRI

2.8 Risk management

Introducing the possibility that Member States could opt to support some specific risk management instruments as part of their RDPs is a potentially important extension in enabling the CAP to help farmers address production and price risks. Because of the predictability of direct payments from year to year, and the important role they play in farm incomes (see Chapter 3), direct payments already make a very important contribution to income stability,. Perhaps partly as a result, the use of other risk management instruments has remained very underdeveloped within the EU, particularly in comparison to the United States. Although CAP support for agricultural risk management is increasing, the share of CAP funds being spent on crisis and prevention measures continues to be very low, less than 2% of the Pillar 2 funds and 0.4% of the total CAP budget in the 2014-2020 period (Bardají and Garrido 2016).

[39] For a detailed review of how Member States have allocated their RDP resources, see Dwyer et al. 2016.

The first possibility to support risk management under the CAP was the introduction of measures in the fruit and vegetables (F&V) and wine sectors in Pillar 1 under the reform of the regulations governing their support in 2007. These allowed the introduction of mechanisms of prevention and crisis management, including support to crop insurance or setting up mutual funds.[40] This possibility to provide support was extended in the 2008 Health Check to all sectors. Under Article 68 specific support, a Member State could use up to 10% of its direct payment national envelope for contributions to insurance premiums for crop and animal insurance or by way of mutual funds for animal and plant diseases and environmental incidents.

According to Bardají and Garrido (2016), the risk management instruments supported by the CAP during 2007-2013 were not very successful. The use of risk management measures under Pillar 1 in the F&V and wine sectors was very low. Provisions under Article 68 did get more attention, but only in a few Member States and in connection mainly with crop, animal and plant insurance. In general, the implementation of mutual funds has been very limited.

The 2013 CAP reform kept the possibility to support risk management tools in the F&V and wine sectors in the new Common Market Organization Regulation. However, the Article 68 arrangements were moved out of Pillar 1 to become part of the risk management toolkit in Pillar 2, while a new income stabilisation tool was added. Thus the risk management toolkit in Pillar 2 now contains three instruments:

- financial contributions to premiums for crop, animal and plant insurance against economic losses to farmers caused by adverse climatic events, animal or plant diseases, pest infestation, or an environmental incident;
- financial contributions to mutual funds to pay financial compensations to farmers, for economic losses caused by adverse climatic events or by the outbreak of an animal or plant disease or pest infestation or an environmental incident;
- an income stabilisation tool, in the form of financial contributions to mutual funds, providing compensation to farmers for a severe drop in their income.

In each case, the Rural Development Regulation sets out conditions limiting the extent of support that can be provided. For example, in the case of the new income stabilisation tool, support is only granted when the drop of income exceeds 30% of the average annual income of the individual farmer in the preceding three-year period (or an Olympic five year average) and payments should compensate for less than 70% of the income lost in the year the producer becomes eligible to receive this assistance.

While support for risk management through the EU budget has been limited, Member States have provided support from their own resources under the general rules for state aids within the EU. This has included support for insurance schemes as well as disaster aid. Table 6 provides a summary of public expenditure both by the EU (under the CAP) and Member States (largely under state aid rules, although the 2014-2020 data include Member State co-financing of CAP RDP measures). The figures for state aids in the latter period are speculative and are based on assuming that the level of 2014 expenditure will continue for the full programming period. Ex-post compensation payments, in particular, will be subject to the vagaries of natural and other disasters over the period.

[40] Mutual funds combine the insurance idea of pooling risk across members with pooling risk over time through the long-term commitment of members. Mutual funds are based on the establishment of financial reserves, built up through participants' contributions, which can be withdrawn by members in the event of severe income losses, according to predefined rules. Hence, a mutual fund can be seen as a form of organized, joint precautionary savings fund to be used to smooth incomes over time.

Table 6. EU-28 public expenditure on risk management and crisis measures (€ million)

	2007-2013	2014-2020
Ex-ante risk management		
Insurance – CAP	850.5	2,212.6
Insurance – State aids	3,818.9	3,177.3
Mutual funds - CAP	84.0	357.0
Income stabilisation tool – CAP		2,699.6
Ex-post crisis management		
Compensation – State aids	9,729.6	4926.6
Total	14,482.5	13,373.1

Note: Figures for 2014-2020 are planned total expenditure from Member State RDPs, apart from the State Aids figures which are an estimate based on 2014 expenditure multiplied by seven.
Source: Own compilation based on Bardají and Garrido (2016).

Planned amounts reveal that Pillar 2 expenditure on risk management measures will be higher than previous Pillar 1 expenditure under Article 68. However, the take-up of the new income stabilisation tool is foreseen to be very limited, with only two EU Member States and one region having decided to use it. As noted earlier, the share of CAP funds being spent on risk management remains negligible even if there has been a significant increase in percentage terms in the current programming period.

2.9 Summary

The EU's CAP has been significantly transformed over the past two decades. The extent of these changes is often not fully appreciated by observers outside of the EU. This is partly because the pace of reform with respect to the level of EU trade protection (discussed in Chapter 4), which is the most noticeable aspect of the CAP to observers in third countries, has been slower than the reforms which have taken place with respect to domestic policy. The system of border protection put in place during the early years of the CAP has continued, changed only by the commitments to tariffy and lower import protection over the years 1994 to 2000 that the EU made as part of the Uruguay Round Agreement on Agriculture. Although the EU has offered to make further tariff reductions as part of a further round of multilateral trade liberalisation, no agreement has yet been possible in the WTO following the launch of the Doha Round of trade negotiations in 2001. Even on the trade side, however, the elimination of the use of export subsidies (see Figure 4) has played a significant role in reducing the trade-distorting consequences of the CAP in the past.

In terms of domestic policy, in contrast, the EU has driven a reform programme which has radically changed the CAP in a more market-oriented direction. Support has been shifted from products to producers and largely decoupled from production. Support has been shifted more in the direction of rewarding farmers for improved environmental management, both in terms of greater funding for agri-environment schemes in Pillar 2 and the introduction of a green payment in Pillar 1. Debate continues on the effectiveness of these more targeted measures, on the continued legitimacy of providing basic income support to farmers, and on whether the latest reform of the CAP leaves it "fit for purpose" in terms of the economic, environmental and territorial challenges facing EU agriculture and its rural areas. Support to EU agriculture remains at a high level, and plays a major role in supporting farm incomes. Whether these domestic reforms mean that the EU now has a less trade-distorting impact than in the past is taken up in the following chapter.

3. TRADE IMPLICATIONS OF AGRICULTURAL POLICIES

3.1 Introduction

This chapter summarises the quantitative evidence on the impact of the CAP's domestic policies on production and trade, with a focus particularly on the period since 2005 following the conversion of most direct payments to decoupled direct payments. The chapter highlights that there is considerable uncertainty around the impact of EU direct payments and other domestic policies on production and trade. The EU reports its decoupled income payments to the WTO in the green box as minimally trade-distorting. However, there is continuing criticism that the sheer size of the EU's direct payments, both absolutely and in relation to their share in farm value added and income, means that the EU continues to support production and thus distort trade (for example, Banga 2014). Some critics draw on US research which attempts to document the degree of coupling of US direct payments in place between 1996 and 2013. However, there are important differences between the design of the (previous) direct payments system in the US and that in the EU which mean that the results are not necessarily transferable.

This chapter draws together the empirical evidence on the trade implications of EU domestic policies and how these have changed over time. To set the scene, Section 3.2 examines the changing scale of domestic support using a variety of indicators to complement the budget magnitudes presented in Chapter 2. These include the EU's Producer Support Estimate as calculated by the OECD, the EU's notifications of domestic support to the WTO, and the relative importance of budget transfers in EU farm incomes.

There are a variety of theoretical reasons why even decoupled direct payments might be expected to influence production and trade. Section 3.3 surveys econometric evidence on the impact of direct payments on variables likely to influence production. Studies have focused on whether EU direct payments have influenced labour use, investment behaviour, the exit of farms and structural change, and productivity.

For the EU's direct payments under Pillar 1, the factor which determines their production and trade effects is the "degree of decoupling" of these payments. This, in turn, is influenced by the extent to which these payments are capitalised into land values (the greater the degree of capitalisation, the smaller the extent of trade distortion expected). Section 3.4 surveys the literature which has attempted to estimate the extent to which EU direct payments have been capitalised into land values and rents.

Section 3.5 is a brief reminder of the role that measures to restrict production have played in EU agricultural policy. Such measures offset any incentive to increased production provided by market price support or direct payments for the affected commodities. The growing importance of EU bioenergy policy is also briefly discussed. Mandates and incentives to use agricultural raw materials as bioenergy feedstocks remove these commodities from global food markets and also counteract the direct production incentives of agricultural policy.

Section 3.6 notes that all modelling studies which set out to measure the impact of the CAP on world markets must make an *a priori* assumption about the degree of decoupling of direct payments. Their results follow directly from the way direct payments are incorporated into the modelling (Balkhausen, Banse, and Grethe 2008). Thus, these studies by their nature cannot determine the impact of the CAP on world markets, but only suggest what that impact might be under specified assumptions about the impact of direct payments on production. Because the impact of EU

agricultural support on world markets usually evaluates the impact of domestic and trade policies together, the results of recent empirical studies are reviewed in the following chapter.

Section 3.7 evaluates the likely impact of Pillar 2 measures on EU agricultural production, noting that measures funded under this Pillar can both promote but also restrain production. Sections 3.8 and 3.9 examine the potential impact of market intervention and risk management measures on production, respectively. Section 3.10 summarises the likely impact of the latest 2013 CAP reform on the extent of trade distortions due to the CAP. The concluding Section 3.11 summarises the main messages of this chapter.

3.2 The changing importance of domestic support

3.2.1 EU agricultural support in the OECD PSE database

To provide a first impression of the likely changes in the trade impact of the CAP over the past three decades, trends in support as measured in the OECD Producer and Consumer Support Estimate database and EU notifications of its domestic support to the WTO are examined.

From the OECD database we first examine the trends in the %PSE and %CSE indicators (Figure 9).[41] In the early years, the levels of the two indicators were rather close, indicating that most producer support took the form of market price support. The importance of producer support as a share of gross farm receipts has gradually declined, from 39% in 1986-88 to 19% in 2012-2014. This fall reflects both policy reform within the EU and the generally higher level of world market prices particularly in the years after 2007. Over the same period, the %CSE has fallen much more significantly, from an average -35% in 1986-88 to less than -5% in the period 2012-2014.

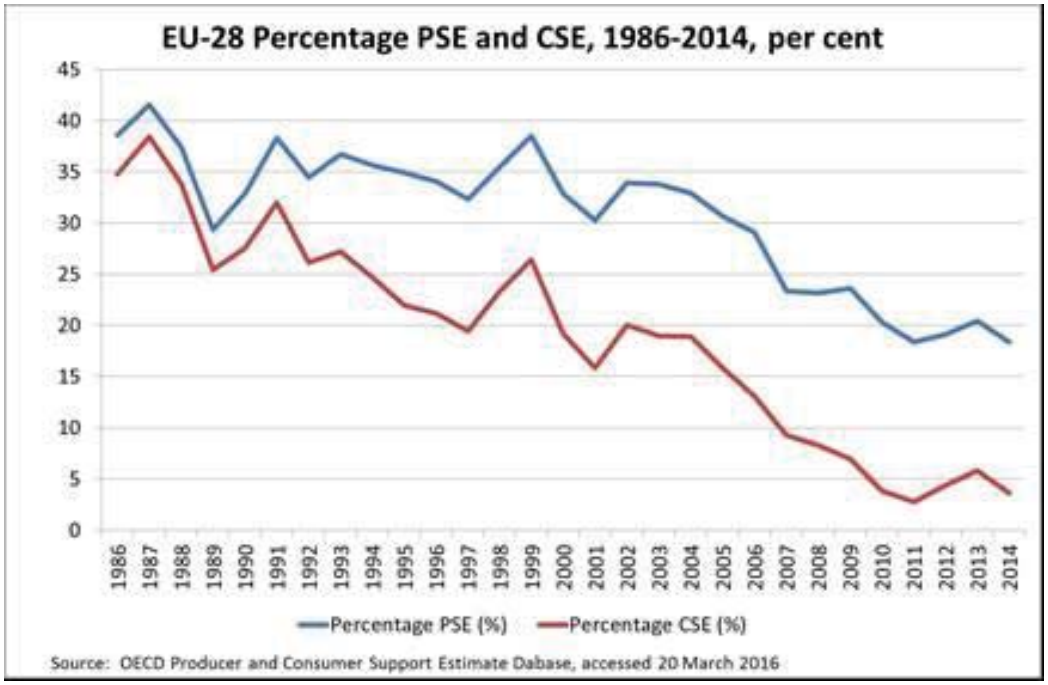
An alternative way to describe the evolution of EU-28 producer support is to examine the trend in the Producer Nominal Protection Coefficient (NPC) and the Producer Nominal Assistance Coefficient (NAC).[42] The evolution of producer support based on the Producer NPC and Producer NAC is shown in Figure 10. Again, in the early years, there is little difference between the two indicators, showing that most producer support took the form of commodity output support (i.e. either market price

[41] The OECD's Producer Support Estimate (PSE) measures the monetary value of gross transfers from consumers and taxpayers to producers from policy measures supporting agriculture. The %PSE is calculated by expressing PSE transfers as a share of gross farm receipts. The Consumer Support Estimate (CSE) measures the annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture. The %CSE is then the CSE expressed as a share of consumption expenditure (measured at farm gate) net of taxpayer transfers to consumers. Taxpayer transfers to consumers in the EU are relatively small, so the CSE and %CSE are generally negative as they mainly reflect consumer transfers to producers. Because the value of consumption expenditure at the farm gate in the EU is very similar to the value of production at the farm gate (OECD 2016, Table 2.7), the CSE and %CSE indicators are a good proxy for the importance of market price support in total producer support. A full set of definitions of the terms used in the OECD PSE database is contained in OECD (2016).

[42] The producer NPC shows the extent to which transfers arising from policy measures based on commodity output increase gross farm receipts while the producer NAC shows the extent to which transfers arising from all policy measures increase gross farm receipts. The producer NPC is calculated by the ratio between the price received by producers (including payments per tonne of current output and excluding price levies based on output) and the border price (measured at the farm gate). A producer NPC of 1.2 for a country indicates that domestic producer prices are on average 20% above border prices for the same commodities. The producer NAC is calculated by the ratio between the value of gross farm receipts and gross farm receipts valued at border prices (adjusted to a farm gate equivalent). A producer NAC of 1.2 indicates that the estimated value of transfers to individual producers from consumers and taxpayers increases gross farm receipts by 20% above what they would be if production is valued at border prices, *i.e*. with no transfers.

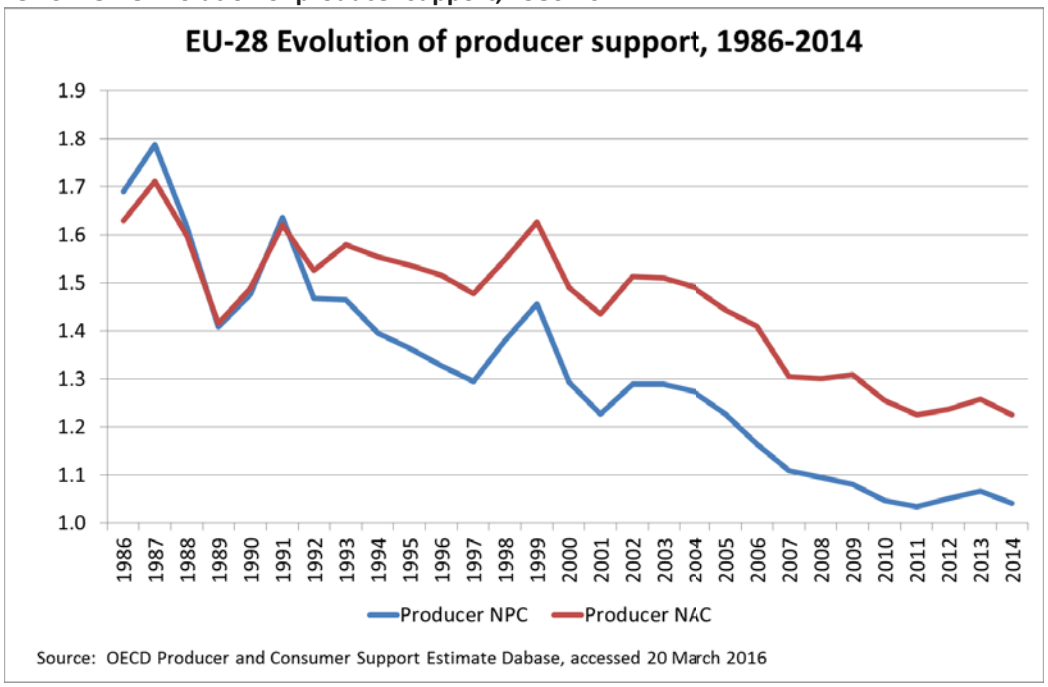
support or coupled direct payments). Over time, however, the producer NPC has fallen more rapidly than the producer NAC, as transfers to producers have increasingly taken the form of decoupled payments not directly linked to commodity output.

Figure 9. EU-28 Percentage PSE and CSE, 1986-2014, per cent



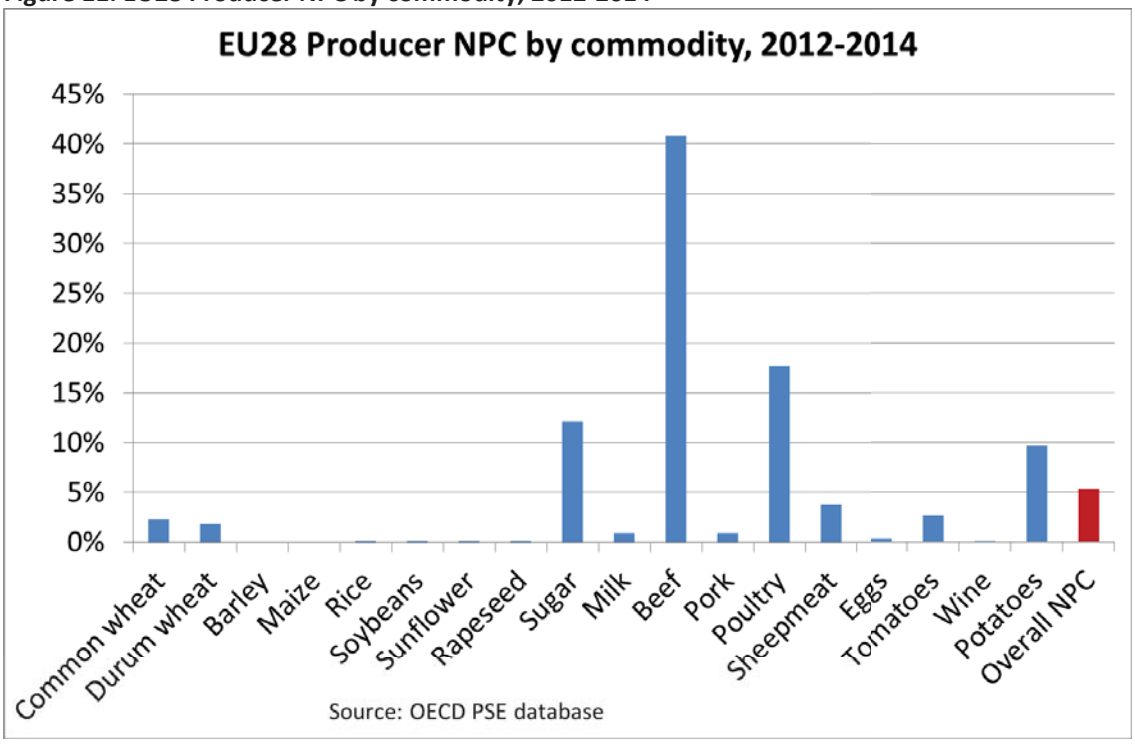
Note: The %CSE values are presented in absolute terms to allow comparison with the %PSE values, but in each year the actual value is the negative of the number shown.

Figure 10. EU-28 Evolution of producer support, 1986-2014



The producer NPC can also be calculated at the commodity level. As defined in footnote 42, the producer NPC shows the level of domestic market protection by comparing domestic prices (including direct per tonne payments) to border prices. The producer NPC for a range of commodities for the years 2012-2014 is shown in Figure 11. What stands out is the concentration of producer market price support on a small number of commodities which are often treated as "sensitive" in trade negotiations: beef, poultrymeat and sugar. Although tariff protection remains high for some other commodities (see Chapter 4), for those commodities where the EU is a net exporter (e.g. dairy products, wheat), much of this tariff protection is redundant as EU producer and market prices are set by the marginal price which is the world market export price. The upshot is that, whereas the CAP kept market prices (and, thus, also consumer prices) high in the past, this is now the case only for a handful of commodities.

Figure 11. EU28 Producer NPC by commodity, 2012-2014



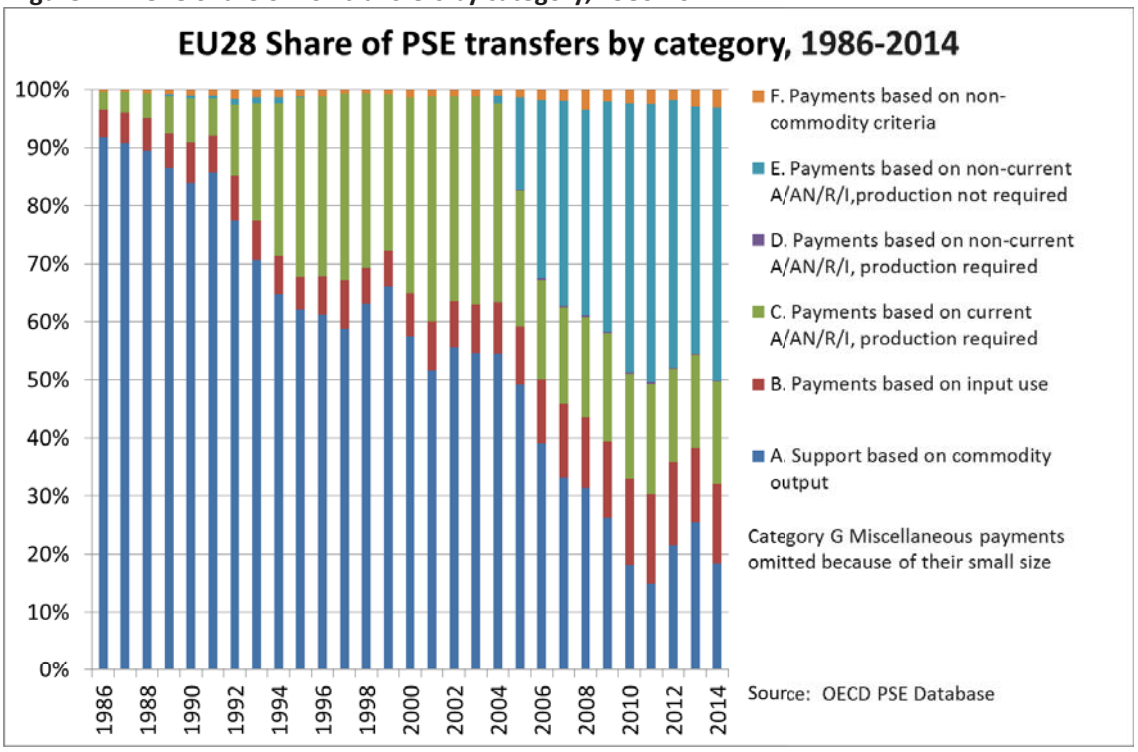
Policy measures included in the PSE are classified according to specific implementation criteria. These identify the economic features of policy measures, which are important for the consequent analysis of potential impacts of policies on production, income, consumption, trade, and the environment. Policy measures are classified into seven categories which identify the transfer basis for the policy, whether the basis is current or non-current, and whether production is required or not. The PSE categories are:

A. Support based on commodity output
B. Payments based on input use
C. Payments based on current Area, Animal numbers, Receipts, or Income, production required
D. Payments based on non-current Area, Animal numbers, Receipts, or Income, production required
E. Payments based on non-current Area, Animal numbers, Receipts, or Income, production not required
F. Payments based on non-commodity criteria

G. Miscellaneous payments

The change in the relative importance of these categories over time is shown in Figure 12. In the early years, nearly all support fell into category A "Support based on commodity output (including both market price support and coupled payments)", with minor amounts based on input use or production factors. After 1992 payments based on production factors (either land area or animal numbers) grew in importance following the MacSharry reform until from 2005 these were gradually replaced by payments based on non-current A/AN/R/I in the form of decoupled income payments linked to land. Payments based on category D or non-commodity criteria category F were a very small share throughout.

Figure 12. EU28 Share of PSE transfers by category, 1986-2014



Overall, the charts illustrate the extent to which domestic support in the EU is now paid for by taxpayers rather than consumers. Food prices (and consumers) are no longer significantly affected by EU domestic support policies. EU farmers still receive substantial transfers, but the majority of these are no longer directly linked to commodity output. According to OECD (2016), policy instruments that disconnect prices paid to producers from world market prices (including the transfers due to border market price supports) accounted for 32% of support to producers as measured by the PSE in 2015.

3.2.2 EU agricultural support notified to the WTO

The same trends are also evident in the notifications to the WTO by the EU of its domestic support using the domestic support categories set out in the WTO Agreement on Agriculture (AoA). The PSE represents the value of transfers to producers, and is complemented by the General Services Support Estimate which measures transfers that create enabling conditions for the primary agricultural sector. Classification of policies and measurement of support under the WTO Agreement on Agriculture underpin the verification of compliance with WTO commitments or, in the case of the EU, its WTO commitment in domestic support. There are a number of differences between the

definition of producer support as estimated by the OECD and the definition of WTO domestic support (see Box). The purpose of the AoA with regard to domestic support is to limit support provided through measures other than those that have no or only minimal trade-distorting effects or are subject to production-limiting programmes.

BOX. The measurement of domestic support in the WTO Agreement on Agriculture

Support under all domestic support measures is subject to the rules of the AoA, which imposes a limit on some domestic support. Support provided under polices that "have no, or at most minimal, trade-distorting effects or effects on production" are exempted from the limit as long as they also meet the sets of criteria specified under various policy headings of the AoA. This is the Green Box exemption in Annex 2 of the AoA. Payments provided under production-limiting programmes are also exempted from the limit if the payments meet certain criteria specified in Article 6.5 of the AoA. This is the Blue Box exemption. (In developing countries certain investment subsidies and input subsidies are also exempted from limit under Article 6.2). The residual domestic support, net of the exempted support, is measured through a number of Aggregate Measurements of Support (AMSs). Product-specific AMSs are calculated for each basic agricultural product receiving market price support, non-exempt direct payments, or any other subsidy not exempted from the limit. Support which is non-product specific is totalled into the non-product-specific AMS. AMS support is sometimes called Amber Box support. A fixed limit on certain Amber Box support, the Bound Total AMS, is specified in the EU's WTO Schedule of concessions and commitments. It applies to each year's Current Total AMS, which is the sum of all the AMSs, except those AMSs that are no larger than 5% of the product's value of production in that year (value of production in agriculture for the non-product-specific AMS). Those small AMSs are *de minimis* AMSs.

The headings for the policy-specific criteria in the Green Box include general government services, spending on domestic food aid, public stockholding, direct payments to producers, income insurance and safety-nets, disaster relief, investment aids, agri-environment measures, regional assistance and structural adjustment programmes. The Blue Box criteria require exempted payments to be based on fixed area and yields or be made on 85% or less of the base level of production or, for livestock payments, be made on a fixed number of head.

Market price support is calculated differently in a product's AMS than in PSE estimation (specifically, in the OECD Single Commodity Transfer). The OECD market price support calculation uses a price gap measured as the difference between the domestic price and the border price of a commodity, provided that one or more policies are applied that change the market price received by producers of that commodity. The AMS market price support is only calculated where there is an administered support price. It is calculated as the difference between this administered price and a fixed external reference price (FERP), which is the average of import prices in the 1986-88 period, multiplied by the amount of production eligible to receive support.

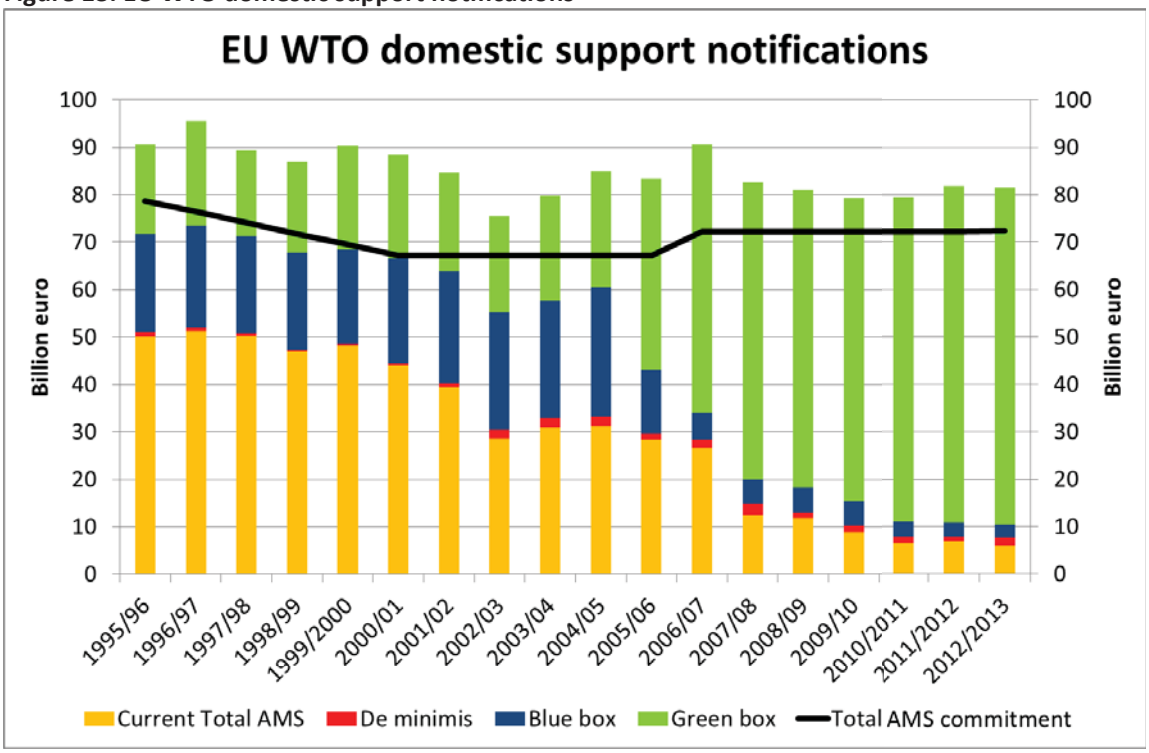
Where it is not practicable to calculate a product-specific AMS in this way, for example, because no suitable external reference price exists, provisions are made to use an Equivalent Measurement of Support (EMS). The EMS is generally calculated on the basis of budgetary outlays - the money spent by governments to support a product, for example, rather than market price support calculated with respect to a fixed external reference price.

Source: Brink, 2015.

The trends in EU domestic support classified by the different categories in the AoA are shown in Figure 13 up to 2012/13, which was the most recent EU notification at the time of writing. The dark

line shows the Bound Total AMS level, which has been adjusted over time by the EU to take account of successive enlargements of the EU. The Bound Total AMS sets the ceiling on the allowed Current Total AMS support. The chart shows how that part of trade-distorting support accounted for in the Current Total AMS has fallen steadily over time. The importance to the EU of the exemption of Blue Box payments from the Current Total AMS in those early years is also highlighted; if this had not been allowed, the sum of the reported Current Total AMS and Blue Box payments would have come close to exhausting the EU's Bound Total AMS ceiling around 1999/01 and 2000/01. Over time, policy change has replaced both AMS support and Blue Box payments with support notified in the Green Box. The EU's Current Total AMS is therefore today much below its ceiling commitment. *De minimis* AMS support has been relatively unimportant throughout the period.[43]

Figure 13. EU WTO domestic support notifications



Source: Own compilation based on EU WTO notifications.

The breakdown of Green Box expenditure over time is shown in Table 7 which also includes US Green Box expenditure in 2013 for comparison. EU expenditure on General Services has increased over time, mainly because of expenditure on infrastructural services (listed as development and maintenance of farm infrastructure; construction and reconstruction of power lines for agricultural producers; provision of electricity and water supply; farm roads; construction of reservoirs; flood protection) and other farm services. Overall EU expenditure on general services is of a similar order of magnitude to the US. A major difference between the two occurs with respect to domestic food aid, where US expenditure vastly exceeds EU expenditure under this heading, albeit only some share of this expenditure ends up directly benefiting agricultural producers. However, the roles are reversed when it comes to direct payments in the Green Box. Here the EU has significant expenditure on decoupled income support, regional assistance programmes, investment aids and other direct aids (the latter is entirely expenditure under the SAPS). Only expenditure under the heading "environmental programmes" is of a broadly similar order of magnitude although also under this heading the EU spends significantly more.

[43] See Josling and Swinbank (2011) for a fuller description of the trends in WTO notifications up to 2008/09.

The EU's classification of its decoupled direct payments in the Green Box has been questioned (Swinbank and Tranter 2005; Swinbank 2008) though never challenged at the WTO. These authors' arguments partly relied on the initial exclusion of land devoted to the production of fruit and vegetables from eligibility for the SFP, a condition which no longer applies since the 2007 reform of the fruits and vegetables regime. They further suggest that the requirement to activate entitlements by showing that one has an equivalent hectare of agricultural land in good agricultural and environmental condition means that the amount of such payments in any given year is "related to, or based on, the factors of production employed" in the years after the base period, contrary to criterion (d) of Article 6 of Annex 2 of the WTO Agreement on Agriculture. The EU would no doubt respond that the overall ceiling on SFP payments is fixed in each Member State so is not affected by the total area of land in production but, to date, there has been no direct challenge to the EU's notifications to clarify this issue. The EU also notifies SAPS payments in the Green Box where the payments are linked each year with the area maintained as agricultural land by the individual farmer but the total amount of payments is fixed. Mittenzwei and Josling (2012) estimate the share of support reported in the Green Box under measures that are considered as requiring production by the OECD in its PSE database to be 25% in 2007. That category includes e.g. agri-environmental measures which are exempted from AMS calculations if they meet other conditions set out in the Agreement on Agriculture.

AMS support broadly consists of market price support (calculated according to the AoA formula) and non-exempt direct payments. As noted above, market price support is only reported as part of a product's AMS if an administrative price exists. The reduction in the EU's Current Total AMS is due mainly to a reduction in market price support. In turn, this is due both to a reduction in the number of commodities for which an administered price exists, and a reduction in the level of the administered prices for those commodities for which this guarantee continues. This can be seen from Table 8 which shows the composition of the EU Current Total AMS in three different time periods. By 2012/13 many fewer commodities had a minimum support price, and the level of support prices where they were retained was much lower even in nominal terms than in earlier years. For rice, for example, the administered price was reduced from €373.80/t in 1995/96 to €298.357/t in 2003/04 and to €150/t in 2012/2013.

Table 7. Notified EU Green Box expenditure, 2003 and 2012, compared to US notified Green Box expenditure in 2013

Domestic Support Category	EU		US
	2003 € million	2012 € million	2013 € million
Total Green Box (Annex 2)	22,074.0	71,140.0	99,632
General services	5,016.1	8,807.0	9,526
Research, including general research	822.3	1,123.6	1,629
Pest and disease control	1,371.9	1,059.7	1,089
Training services	188.6	294.0	(1)
Extension and advisory services	245.5	824.9	2,559
Inspection services	357.7	390.8	788
Marketing and promotion services	1,174.9	856.8	228
Infrastructural services	732.6	2,481.4	-
Other farm services	122.6	1,775.8	3,234 (2)
Public stockholding for food security purposes	55.1	1.0	-
Domestic food aid	306.6	940.8	82,399
Direct payments	16,696.2	61,391.3	7,707
Decoupled income support	8.7	32,780.2	3,756
Income insurance and income safety net programmes	8.9	37.8	-
Payments for relief from natural disasters	705.5	775.3	131
Producer retirement programmes	814.2	720.4	-
Resource retirement programmes	123.0	401.4	-
Regional assistance programmes	2,980.4	4,452.3	-
Investment aids	6,821.7	6,641.5	70
Environmental programmes	5,233.8	8,869.1	3,750
Other Direct Payments	-	6,713.3(3)	-

Notes: Amounts are for marketing years, thus 2003 is 2003/04, etc.; (1) US training service expenditure is included with Extension and advisory expenditure. Integrated research and education activities have been assigned to Research; (2) Expenditure by the Risk Management Agency on crop insurance. (3) SAPS. US figures in USD converted to euro at the 2013 average exchange rate USD 1.33 = 1 euro.

Source: Own tabulation based on WTO Agricultural Management Information System, EU notification G/AG/N/EU/26 2 November 2015 and US notification G/AG/N/USA/108 25 May 2016.

Table 8. Composition of EU Current Total AMS

Commodity	1995/96		2003/04		2012/13	
	AMS support € million	Adminis-tered price €/t	AMS support € million	Administ.-ered price €/t	AMS support € million	Administ-ered price €/t
Market price support						
Common wheat	2,593.1	119.2	1,454.9	101.31	1,864.6	101.31
Durum wheat	0.0	119.2	-411.4	101.31	0.0	101.31
Barley	2,247.3	119.2	1,859.8	101.31	0.0	101.31
Maize	786.2	119.2	391.0	101.31	0.0	101.31
Rye	316.6	119.2	243.2	101.31		

Commodity	1995/96		2003/04		2012/13	
	AMS support € million	Adminis-tered price €/t	AMS support € million	Administ.-ered price €/t	AMS support € million	Administ-ered price €/t
Oats	11.0	119.2	-89.2	101.31		
Sorghum	16.8	119.2	8.8	101.31	0.0	101.31
Triticale	150.5	119.2	274.8	101.31		
Rice	507.1	373.8	420.7	298.35	0.0	150
White sugar	5,971.2	631.9	5,601.9	631.90		
Olive oil			2,649.1	3,837.70		
Skimmed milk powder	1,806.2	2,055.2	1,602.1	2,055.20	1,145.0	1,698.0
Butter	4,209.7	3,282.0	5,011.8	3,282.00	2,743.4	2,217.5
Beef	13,961.6	3,475.0	0.0	1,560.00	0.0	1,560.00
Apples	2,517.3	617.0	2,625.1	568		
Pears	742.4	559.0	584.3	510		
Apricots	115.0	1,119.0	109.9	1,071		
Cherries	199.3	1,551.0	203.0	1,494		
Peaches/ nectarines	449.2	911.0	397.8	883		
Table grapes	375.3	566.0	185.2	546		
Plums	128.8	718.0	96.2	696		
Lemons	226.6	611.0	329.4	558		
Clementines	165.1	671.0	188.3	649		
Mandarins	47.8	308.0	30.3	286		
Satsumas	23.3	308.0	22.2	286		
Oranges	329.1	369.0	329.4	354		
Cucumbers	656.2	1,184.0	781.2	1,105		
Courgettes	n.a.	724.0	112.0	692		
Artichokes	231.9	990.0	178.9	943		
Tomatoes	4,690.0	1,188.0	1,887.8	1,126		
Wine	1,705.6	38.30				
Cotton	800.4	1,063.0	769.4	910.99/ 1,063.0		
Tinned pineapple	2.2	376.5				
Citrus fruit for processing	181.6	148.2				
Lemons for processing	35.0	157.7				
Peaches for processing	73.0	273.0				
Plums for processing	47.6	1,935.2	34.6	1,935.2		
Pears for processing	28.7	392.6				
Figs for processing	n.a.	805.0	6.0	878.86		
Tomatoes for processing	342.8	100.1				
Potatoes for processing to starch	0.0*	209.8	0.0	178.3	0.0	178.3
Non-exempt direct payments	3,562.7		3,848.3		1,137.28	
Current Total AMS	**50,181.0**		**30,880.2**		**5,899.1**	

Source: Own compilation, based on EU notifications to the WTO

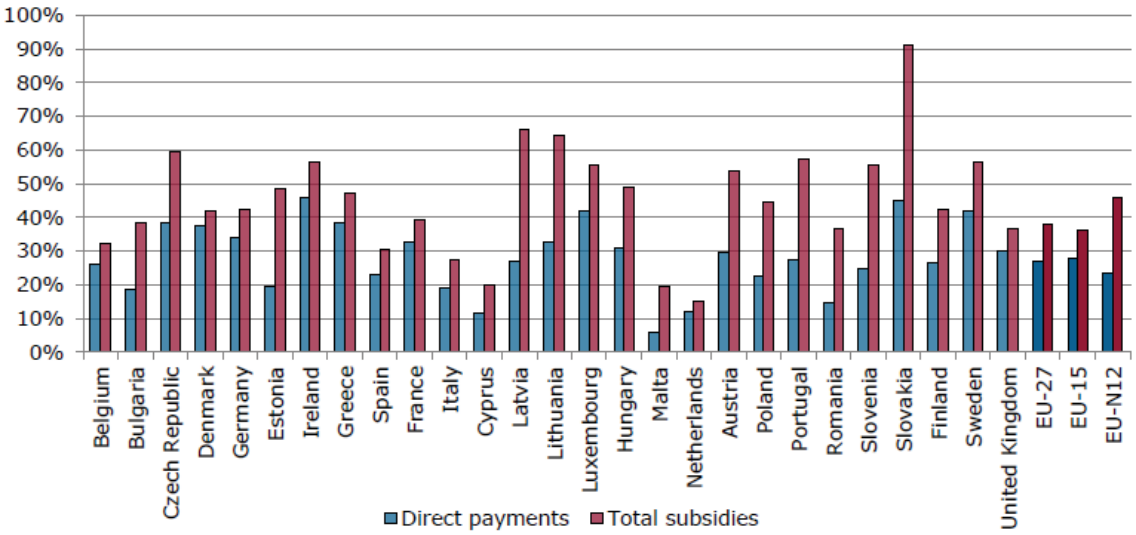
3.2.3 The importance of budget transfers in farm income

While price support is now of much less importance to EU farmers, agricultural income remains heavily dependent on the direct payments received under the CAP. On average across the EU, Pillar

1 direct payments account for 28% of agricultural factor income;[44] when Pillar 2 payments such as agri-environment payments and compensatory payments for farming in areas of natural constraints are added, the total rises to 33% (Figure 14).[45] However, for individual countries the percentages can be higher, and for individual enterprises within countries (e.g. beef farming) the percentages can be higher still. Data from FADN, the EU's farm accountancy network, suggests the dependence could be even higher than that shown in Figure 14.[46]

In the following charts using FADN data, total farm net income is partitioned between direct payments (both coupled and decoupled), other public support, and income depending on market factors (market income) which is defined as the residual. This partitioning is based on the strong assumption that all of the expenditure on intermediate consumption and external factors is allocated to the production of marketed output, and that the current level of public subsidies would be fully retained even if the farm reduced expenditure on intermediate inputs and external factors to zero. This is undoubtedly a strong assumption. For example, a farmer may be renting land on which he or she is drawing a Basic Farm Payment. Without the rental payment the farmer would not receive the direct payment. Coupled payments obviously require production. Some minimal expenditure would be required to maintain land in Good Agricultural and Environmental Condition. There are also interdependencies between the different income categories. For example, an increase in direct payments will be partly capitalised into higher land rents (Section 3.4). This would mean higher payments to external factors and therefore a lower market income. Conversely, reducing direct payments would be expected to raise market income for the same reason. However, despite these caveats, this partitioning provides useful insights into the dependence of different types of farming on the different components of income in a static context.

Figure 14. Importance of public transfers in agricultural factor income (2010-2014 average)



Source: DG AGRI

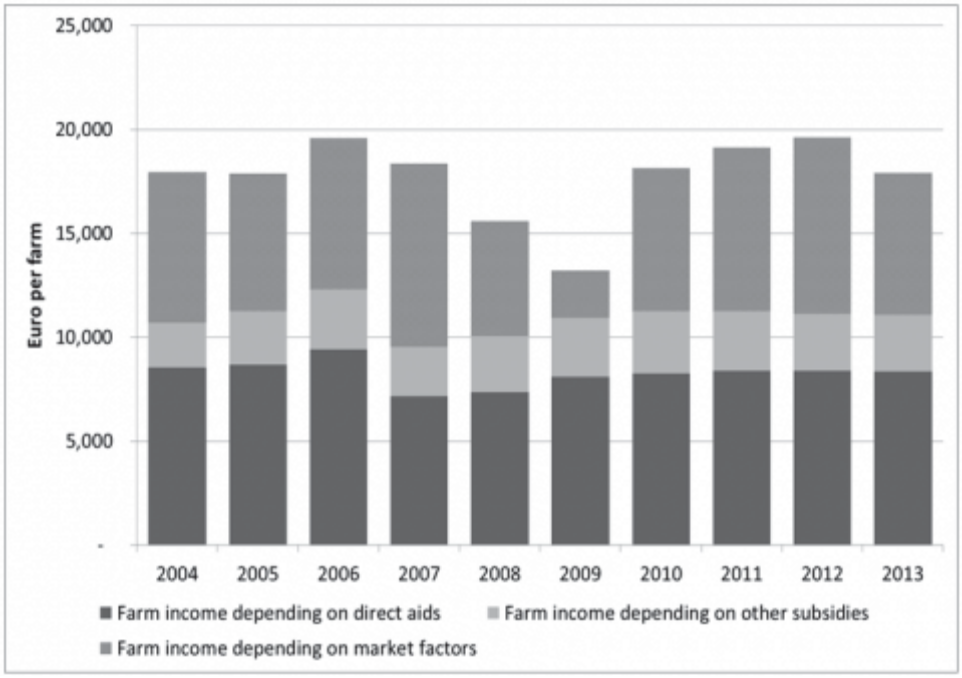
[44] Agricultural factor income represents the income generated by farming which is used to remunerate borrowed/rented factors of production (capital, wages and land rents), and own production factors (own labour, capital and land). Agricultural entrepreneurial income (also called family farm income) in the EU agricultural accounts deducts the costs of paid labour, paid interest and paid rent. Both direct payments and total subsidies are a considerably larger share of agricultural entrepreneurial income.

[45] Figures from DG AGRI, "Share of direct payments and total subsidies in agricultural factor income", available at http://ec.europa.eu/agriculture/cap-post-2013/graphs/graph5_en.pdf, accessed 24 May 2016.

[46] See Matthews, A., "The dependence of EU farm income on public support", 20 April 2016, available at http://capreform.eu/the-dependence-of-eu-farm-income-on-public-support/, accessed 24 May 2016.

Figure 15 shows the evolution of this partitioning of farm net income over time. Over the period 2004-2013, direct payments have accounted for 47% of farm net income, other public transfers 15%, and market income the remaining 38%. Direct payments have been the most stable component of farm net income, as shown by the respective coefficients of variation (0.08 for direct payments, 0.09 for other public transfers and 0.27 for market income).

Figure 15. Composition of EU family farm income over time, 2004-2013



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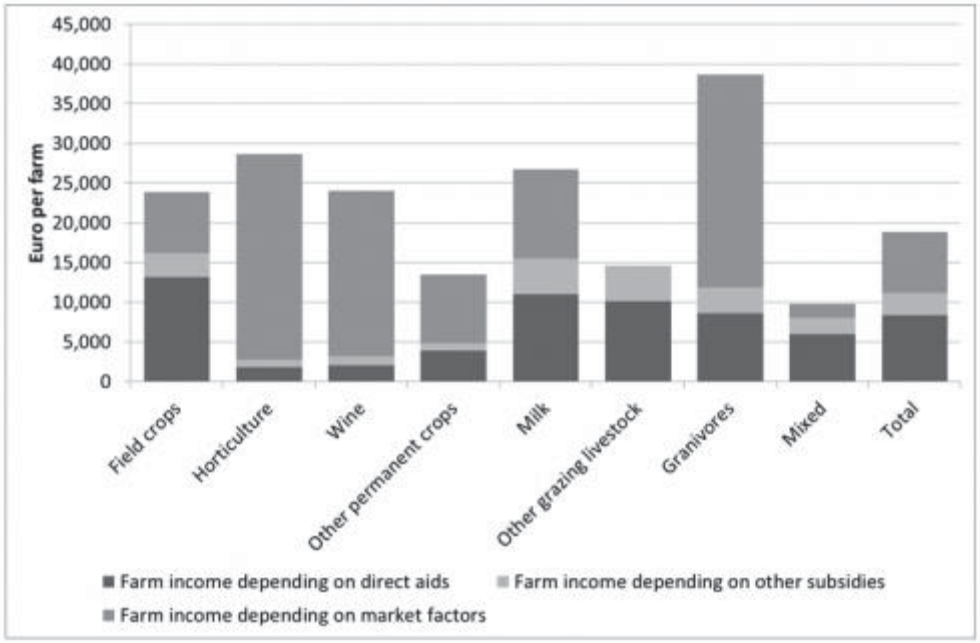
Source: Own compilation based on FADN data

Figure 16. Importance of direct payments by farm system in the EU, 2011-2013

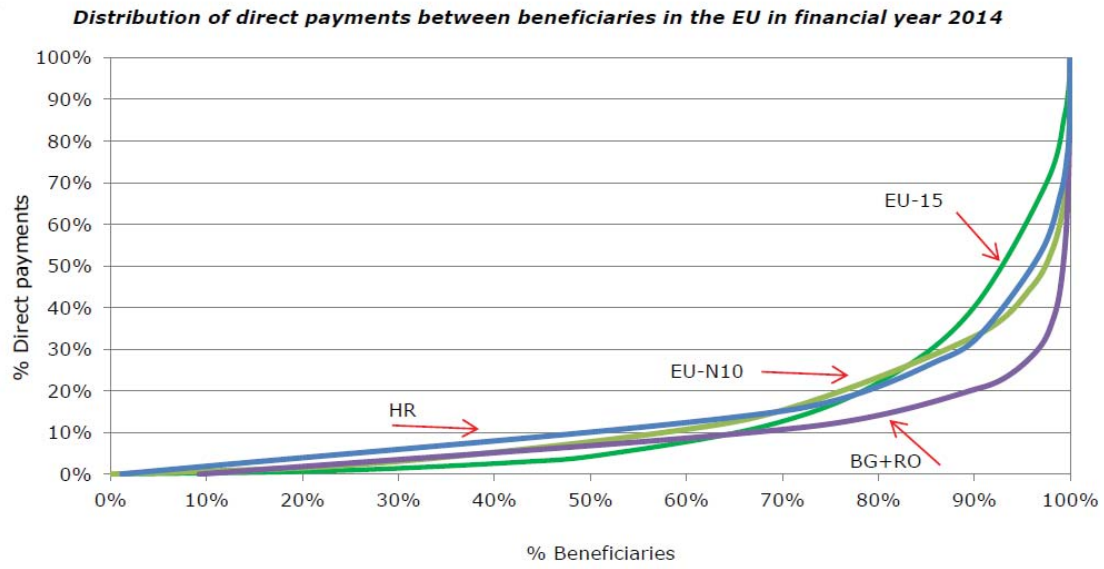


Source: Own compilation based on FADN data. Note that market income on "other grazing livestock" farms is slightly negative but the graph has been truncated at 0 for legibility purposes.

The importance of public transfers differs greatly across farm systems (Figure 16). Direct payments play a relatively minor role on horticultural farms (7%), vineyards (9%) and pig and poultry farms (granivores) (22%). However, they account for 70% of the income on "other grazing livestock" farms (predominantly beef and sheep) and 61% on mixed farms. Taking account of other public transfers does not change this ranking. The largest amounts in absolute terms are obtained by milk and "other grazing livestock" farms. Indeed, for the latter group, total public transfers (101%) actually slightly exceeded farm net income (the negative market income is not shown on the chart for legibility reasons).

These payments are still distributed very unevenly across farms of different sizes. Despite successive CAP reforms, the share of total payments (20%) going to the 80% of farms with the lowest farm incomes has not changed since 1992 – the distribution remains exactly the same in the old Member States two decades later (Figure 17). In the new Member States, with their legacy of large farms inherited from the days of central planning co-existing beside a multitude of small plots, the distribution is even more unequal, with 90% of payments accruing to just 10% of beneficiaries in Bulgaria and Romania. This should not be surprising; payments which were previously distributed on the basis of output are now distributed on the basis of land ownership which is just as unequally distributed across the EU.

Figure 17. Distribution of direct payments between beneficiaries in the EU in 2014



Source: DG AGRI (2015d).
Note: HR is Croatia, BG is Bulgaria, RO is Romania, EU-N10 are the 10 ("new") Member States that joined in 2004 while EU-15 refers to the 15 ("old") Member States that were members in 2004.

3.3 How decoupled are EU direct payments?

Truly decoupled payments do not affect the marginal incentive to produce, which means they reduce the distortionary effects on production and trade compared to the same amount of agricultural policy support provided in non-decoupled forms. But there are still a number of mechanisms whereby even decoupled payments might be expected to encourage additional production compared to the absence of such payments, although there is controversy over the magnitude of these effects (Rude 2008; Moro and Sckokai 2013). Payments that are decoupled in a

static and riskless world are no longer production neutral in a dynamic and risky world. The mechanisms include:

- Maintaining and improving farmer wealth, leading to higher investment and changing attitudes to risk (insurance and wealth effects).
- Increased access to credit where imperfect credit markets exist.
- Farmer expectations about future programme eligibility and payment basis affecting current production decisions.
- Slowing or accelerating farm consolidation.
- Conditional requirements on the receipt of direct payments such as cross-compliance or the exclusion of planting fruit and vegetables which impinge on farmers' production decisions.

However, the production effects of decoupled payments will be smaller than those of coupled payments and much smaller than market price support. Because of the difficulties in imagining a fully decoupled policy, the OECD suggests it makes more sense to discuss the production impacts of direct payments in terms of the "degree of decoupling", compared to the production effects of a fully coupled policy usually taken to be market price support (OECD 2001). In his early review of the indirect production effects of the SFP, Rude (2008) suggests that each of the above mentioned indirect effects appear to have only minimum potential to distort production decisions. "Collectively these indirect production effects may not be negligible but the impact will be nonetheless small" (p. 460). In this section, we review recent EU studies which have tried to quantify the importance of these effects.

The question we want to answer is whether EU agricultural production (and thus its impact on trade) would be different (either higher or lower) if EU direct payments were eliminated. Critics of the EU's use of decoupled direct payments argue that they continue to distort world markets. This criticism assumes that decoupled direct payments continue to provide an incentive to EU farmers to increase production relative to a baseline in which direct payments were eliminated. This counterfactual cannot be directly observed. One approach to establish the counterfactual is to model the elimination of direct payments (see Section 3.5 below). However, our review of the attempts to model the production impacts of direct payments makes clear that the outcomes depend completely on the way the analyst models these payments.

In this section, we therefore make a detailed assessment of the various possible channels through which direct payments (and other EU domestic agricultural policy measures) might influence production, reviewing the empirical evidence on the likely direction and importance of each of these channels. To influence production, direct payments must either influence the level of resource use in EU agriculture (that is, labour, land and capital) or the productivity of these resources and the efficiency with which they are used. We begin by reviewing the empirical evidence on the impact of direct payments on labour use, land use and investment behaviour in EU agriculture. We continue by reviewing the empirical evidence on the impact of direct payments on farm productivity, both directly and indirectly through their influence on farm structural change.

3.3.1 Impact of direct payments on labour use

Direct payments could influence the level of production by encouraging the retention of a larger labour force in agriculture than might otherwise be the case. Some characteristics of the EU farm labour force are important in this context. Family members still provide the bulk of agricultural labour on EU farms (more than 75%), although the importance of regular and non-regular labour input by non-family members has increased since 2005. In 2013, 97% of all farms were held by a single natural person (as opposed to legal entities and group holdings), making them family farms for

all intents and purposes. Given the high proportion of very small farms, off-farm employment (or pluriactivity) is very important. In 2013, only 42% of all farmers worked full-time on their farms (DG AGRI 2015c).

The likely impact of decoupled direct payments on labour use is ambiguous. The evidence cited later (Section 3.3.5) with respect to the impact of direct payments on farm structural change supports the view that direct payments slow the pace of farm consolidation; other things equal, this would support the view that they slow out-migration from agriculture. On the other hand, decoupled payments, by removing the link between farm production and the level of payments received, may facilitate a reorientation of farms towards less labour-intensive production and allow greater off-farm work participation by the farm operator. A countervailing effect is that direct payments, by increasing the wealth of the farm household, may reduce the need and desire for off-farm income. Direct payments may also influence capital-labour substitution by facilitating investment (see Section 3.3.3) which would also tend to reduce labour demand. Thus, determining the impact of the EU's direct payments on farm employment is ultimately an empirical question.

The farm labour force is falling steadily in the EU. Previous studies on the impact of EU direct payments on the rate of labour out-migration have given conflicting results. As reviewed by Olper et al. (2014), there are papers that find a negative impact of subsidies on out-farm migration, others that find no effect, and even papers that find a positive effect of subsidies on out-farm migration. Olper et al. (2014) conduct an econometric test of the impact of a range of different CAP payments on out-migration, using a panel dataset of 160 EU regions. Their dependent variable is agricultural employment, so they cannot take into account the intensity of on-farm employment (part-time or not). They conclude that total CAP subsidies (they do not consider market price support) play a significant role in keeping labour in agriculture. They also disaggregate total payments into their individual components. Pillar 1 direct payments are strongly and negatively correlated with out-migration, while Pillar 2 payments are positively though insignificantly associated with out-migration. Pillar 2 payments are very heterogeneous, and further disaggregation shows individual measures with both positive and negative effects. Incidentally, this study also finds that the introduction of decoupling had a positive impact on agricultural employment, consistent with the evidence cited later that decoupling slowed down the rate of farm consolidation. Overall, they conclude that the impact of CAP direct payments is to reduce the rate of farm labour out-migration by between 6 and 20% relative to a scenario without these payments, a moderate if not insignificant effect.

The conflicting findings in previous literature suggest that results in this area may not be very robust. However, this study finds that total CAP subsidies play a significant role in keeping labour in agriculture, and they also find that decoupled payments had a positive impact on agricultural employment.

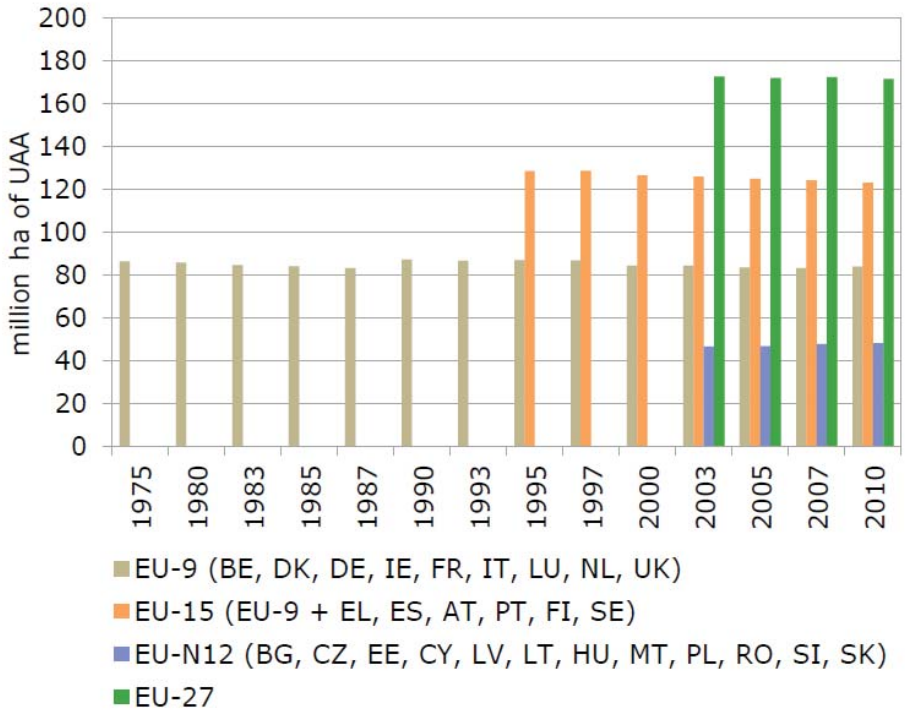
3.3.2 Impact of direct payments on land use and abandonment

The impact of CAP direct payments on land use is also ambiguous. To the extent that low-profitability farms are located in more marginal farming areas, direct payments are likely to contribute to maintaining additional, if low-productivity, land in agricultural use. As part of its Pillar 2 rural development programmes, the CAP has supported farming in less favoured areas since 1975 through area-based payments. Lefebvre et al. (2012) concluded that direct payments, as well as the '"ess favoured area" scheme, have enabled the continuation of farming, particularly the preservation of extensive grazing systems, in marginal areas, therefore contributing to the conservation of traditional rural landscapes. There is some evidence that the extension of CAP payments to the new Member States brought some previously uncultivated land back into

production (e.g. for Lithuania, see Latruffe et al. 2010). However, overall utilised agricultural area (UAA) in the EU has changed very little since 1975 (Figure 18). The 2003 CAP reform introduced the possibility to keep land in good agricultural and environmental condition (GAEC) without production. Such land is considered in agricultural use even though there is no production. Keeping land in GAEC without production rather than using it for production will mitigate any distortionary impacts of decoupled payments.

Bougherara and Latruffe (2010) conducted a survey of French farmers' stated intentions to keep land in GAEC without production in 2006 and found that operators and non-operators were equally uninterested in this option. Eurostat presents statistics on the shares of UAA of different land uses, including a category "permanent grassland and meadow not used for production, but eligible for subsidies". This accounts for around 0.8% of total UAA or 1.5 million ha in 2013. The area increased slightly between 2007 and 2010 but dropped again in 2013.[47] There may be statistical issues in distinguishing this land category from "rough grazing". To the grassland total might be added fallow crop land which is listed as with or without subsidies. This area has fallen sharply, from 8.5 million ha in 2005 to 6.2 million ha in 2013, although this may be driven more by changes in crop cultivation practices than by changes in the payments regime. The land use statistics also include a category "Unutilised agricultural land and other areas". This has also fallen steadily, from 12.5 million ha in 2005 to 10.0 million ha in 2013. While it is not clear to what extent these categories overlap with land kept in GAEC without production, it seems there is no statistical evidence that this has been a widespread phenomenon since the introduction of this option to receive decoupled payments. In most cases, the easiest and cheapest way for a farmer to maintain land in GAEC is to graze it, even if at a very low stocking density.

Figure 18. Utilised agricultural area in the EU (various configurations), 1975-2010



Note: To identify the country abbreviations see the list of EU member countries at different time periods in the opening paragraph in Chapter 1. Croatia (HR) is not included in this figure.
Source: DG AGRI (2013).

[47] The relevant Eurostat domain is *ef_oluft*.

On balance, therefore, we conclude that EU direct payments have contributed to increasing the utilised agricultural area albeit this is likely to be mostly marginal, low-productivity agricultural land.

3.3.3 Impact of direct payments on investment behaviour

In the long-run, the impact of direct payments on the willingness and ability of farmers to invest in more efficient technologies and new production methods may be the key determinant of their production and trade effects. It has been shown that even decoupled payments can have effects on investment through a variety of channels. The most obvious is the credit access channel where decoupled payments relax financial constraints on borrowing. Insurance and wealth effects are other channels where decoupled payments reduce the volatility of income for risk-averse farmers, or where farmers' aversion to risk is reduced as their wealth increases.

Latruffe et al. (2010) present evidence that the introduction of the CAP in Lithuania has provided incentives to pursue expansionist farm strategies for both financially constrained and less financially constrained farmers, but farmers that were constrained before accession were even more likely to be willing to grow than less constrained farmers. O'Toole and Hennessy (2015) also emphasise the importance of the credit access channel for Irish farms. They find a negative and statistically significant effect of decoupling on credit constraints; as income is increasingly earned from risk-free decoupled subsidies, financing constraints are lowered. This effect is strongest for younger farmers and is increasing as farm size increases.

In a series of papers based on detailed survey data from 248 farms from eight different Member States including two new Member States, Viaggi and co-authors emphasise that changes in investment behaviour due to decoupling can go in all directions (both increases and decreases) relative to the previous partially-coupled payments regime (Viaggi, Raggi, and Gomez y Paloma 2011). For about half of farms in their sample, the stated intentions of farmers indicated that decoupling would lead to no change in investment, while the dominant change among farms showing some reaction was an increase in on-farm investment (Viaggi et al. 2011). Agrosynergie (2013) finds in a simple correlation analysis that the policy change in 2005 had the effect of decreasing farm investments in regions implementing the historical and hybrid models but of increasing farm investments in regions implementing the regional and SAPS models. This difference may reflect pre-existing differences in the levels of farm capitalisation in these different regions. Using a reduced form econometric model, it finds farm investments were positively affected by coupled payments and investment subsidies but no significant effects were found either for decoupled payments or Pillar 2 payments. Its survey of farmer opinion reveals that, in the opinion of the majority of farmers investing in farm assets after 2005, farm investments were facilitated by the introduction of the SFP.

Only a couple of papers have tried to estimate the insurance and wealth effects of CAP payments once risk is taken into account. Sckokai and Moro (2006) investigate the importance of these effects for arable farms in Italy using data from the 1990s (i.e. partially-coupled payments). They conclude that in the CAP arable crop regime the total impact of the effects related to risk is important. They find that the size of the wealth effect is positive but quite small (inducing between 0.6% and 1.1% more production), while the insurance effect is more significant, since it may generate up to a 7% increase in acreage. In a later paper (Sckokai and Moro 2009), the authors extend this model to a dynamic farm decision-making context. Once uncertainty and investment decisions are taken into account, they find that wealth and investment effects lead to some degree of coupling of SFP payments, but the magnitude is very low. They conclude in this paper that the common presumption of an effective decoupling of the SFP seems reasonable, at least for the Italian case that they

analyse. Finally, Koundouri et al. (2009) in a study of Finnish grain farmers highlight that the CAP policy regime can itself influence the risk preferences of farmers and thus affect production through choice of crop mix and input use. Their policy simulation comparing the decoupled SFP payment with the previous area-based support found that the decoupled payments increased producers' willingness to take risk. As producers become less risk averse, the optimal input mix allowed for more risk but slightly decreased average production.

On balance, the empirical evidence supports the view that even decoupled direct payments have a positive impact in encouraging investment, mainly through the credit access channel and to a smaller extent through the insurance and wealth effects.

3.3.4 Impact of direct payments on farm competitiveness

The evidence presented in the previous three sections suggests that decoupled payments do attract additional resources (land, labour and capital) into the agricultural sector. However, whether overall production is higher or not depends on one further variable, namely, the productivity (efficiency) with which those resources are used.

Recent trends in EU total factor productivity (TFP) growth have not been impressive. According to DG AGRI, the average annual change of TFP between 2005 and 2014 (which smooths out yearly trends in the TFP index due to weather) was +0.7% per annum in EU-15, although the EU-13 experienced a much higher growth rate of +2.6% per annum.[48] This higher rate of TFP growth in the new Member States is largely due to a higher growth rate in labour productivity, due to the large outflow of labour from agriculture in these countries. It should be noted that these figures are surrounded by a large margin of uncertainty. OECD (2016) estimates a higher rate of total factor productivity growth of 1.5% per annum between 2003-2012 in the EU based on the USDA ERS Agricultural Productivity Database, which is just slightly below the global average figure of 1.7%. Using the same data, Fuglie (2012) estimates that TFP growth has been accelerating in Europe over the past three decades. He calculates an annual average of 3.0% growth in Southern Europe in the period 2001-2009. Contrary to DG AGRI, he estimates that TFP growth in the new Member States has been much lower (a figure of 0.8% per annum for the countries of Eastern Europe in the period 2001-2009) (Fuglie 2012).[49]

There are various explanations for the low productivity growth as measured by the DG AGRI series: low research expenditure devoted to productive agriculture; a decline in natural capital such as soil organic carbon due to poor farming practices; the impact of EU environmental policy such as the encouragement of organic farming and the requirement to manage certain lands primarily for nature conservation purposes; as well as the potential influence of direct payments in reducing efficiency.

Direct payments may have both positive and negative effects on efficiency and productivity through the income effect. Positive effects might arise if direct payments provide farmers with the necessary financial means to keep technologies up to date or to invest in efficiency-improving on-farm organisation. Negative effects might arise if farmers are less motivated to perform well with more income due to subsidies. Subsidies may give rise to technical inefficiency if higher profits lead to

[48] DG AGRI, CAP Context Indicators 2014-2020 27. Total Factor Productivity. 2015 Update, available at http://ec.europa.eu/agriculture/cap-indicators/context/2015/c27_en.pdf, accessed 22 May 2016.

[49] For an attempt to explain these discrepancies, see Matthews, A., "What is happening to EU agricultural productivity growth?", May 4, 2014, http://capreform.eu/what-is-happening-to-eu-agricultural-productivity-growth/, accessed 22 May 2016.

slack, a lack of effort and disinclination to seek cost-reducing methods. Subsidies also lead to a soft budget constraint, meaning that farmers might be inclined to over-invest leading to inefficient use of resources. Again, it is an empirical question which effect dominates.

Zhu and Lansink (2010) review earlier papers which measured the impact of CAP reforms on farm economic performance using efficiency and productivity analyses. Their own contribution was to quantify the impacts of CAP subsidies on technical efficiency, using a sample of German, Dutch and Swedish arable farms over the period 1995-2004 when the partially-coupled subsidies were in effect. They concluded that the share of total subsidies in total farm revenues (i.e. degree of subsidy dependence) had a significantly negative impact on technical efficiency of crop farms in all three countries investigated. In a study of French cereal farms using data from 1996 to 2003, Mary (2013) also found a negative relationship between CAP Pillar 1 subsidies and TFP growth over the period. This is despite the fact that set-aside of arable land was a compulsory requirement in place for larger cereal farms during the sample periods for both studies, and farmers would be expected to have set aside their lowest-productivity land. Mary also found a negative relationship for less favoured area payments and livestock subsidies. Nonetheless, poor efficiency and TFP performance during this period may be due to the conditions associated with receipt of these payments rather than the income effect described above.

Two studies have examined the relationship during the period when decoupled payments have been in force. Rizov, Pokrivcak, and Ciaian (2013) investigate the impact of CAP direct payments on farm productivity (both level and growth) in the EU-15 Member States (the absence of sufficiently long data time series precluded covering the new Member States). Their study addressed a number of econometric problems present in the earlier studies, and they are able to test for the impact of direct payments both before and after decoupling was introduced in the period 2005-06. They find evidence that the partially-coupled payments (prior to 2005) had a clear negative effect on both productivity levels and growth in most EU-15 Member States (the finding is statistically significant for productivity levels in seven of the 15 countries even if economically the magnitude of the effect is not great – a doubling of subsidies leads to a reduction of between zero and 3.7% in TFP depending on the country – and statistically significant for ten of the 15 countries for productivity growth). However, for the period when subsidies were decoupled, a more varied pattern of results is found. For ten of the EU-15 countries there is a positive relationship between subsidies and productivity, although this relationship is statistically significant for only six countries for both productivity level and growth. Overall, they conclude that decoupled subsidies after 2005 either have no effect or a small positive effect on productivity in the majority of EU-15 countries.

These findings are consistent with the study by Kazukauskas, Newman, and Sauer (2014) of Danish, Dutch and Irish farms using a similar methodology but with a uniform production function for each of the Member States (the Rizov et al. study estimated separate regressions by farm type in each Member State). They also found that decoupling had a positive and significant effect on productivity. These are net effects; the methodology does not distinguish between the separate effects of the allocative and technical inefficiency losses and the investment-induced productivity gains. What the results suggest is that, with decoupling, the allocative and technical inefficiency losses are reduced, and/or the positive investment effects due to the interaction of the subsidy with market imperfections are increased. However, in all cases, the economic importance of the effects identified is very small.

The overall conclusion from these studies suggests that the partially-coupled subsidies in place prior to 2005 may have lowered farm productivity, but that the change to decoupled payments after 2005 has eliminated this negative effect and may even contribute to a positive productivity effect, although the studies seem to agree that the economic importance of these effects has been small.

3.3.5 Impact of direct payments on farm structural change

In 2013, a total of 10.8 million farms operated in the EU-28, down from 12 million farms in 2010 (-11.5%). This continued the long-term decline in the number of agricultural holdings - between 2005 and 2013 the average annual rate of decline stood at -3.7%. This reflects the consolidation process towards larger, more competitive farms that is taking place across the EU, with an increase in the average farm size from 14.4 to 16.1 ha of agricultural land (+12.2%) between 2010 and 2013 ((DG AGRI 2015c).[50]

Yet despite this consolidation process, the majority of farms in the EU are still very small. More than two-thirds of all holdings operate on less than 5 ha of agricultural land and more than half have a Standard Output (i.e., a standardised sales value over the course of one year) below 4,000 euro before deduction of any production costs. The total area occupied by these small farms amounts to only 6% of the total utilised agricultural area, while more than half of agricultural land belongs to farms which have more than 100 hectares (DG AGRI 2015c).

Given this trend towards farm consolidation and the continuing existence of many very small farms, the question arises whether the system of direct payments has influenced this process of farm consolidation and, if so, in which direction. If direct payments slow down the process of farm consolidation, this would suggest that they slow down the rate at which resources are reallocated to more productive uses in response to new technologies or market conditions.

Direct payments can, in principle, influence the entry, growth and exit of farms. If direct payments are capitalised into land values and land rents (Section 3.4), increased land rents and prices may represent significant barriers to entry into the agricultural sector and may also impede restructuring within the sector. Direct payments can also influence a producer's decision to exit the industry, particularly for low-profit farmers. If the amount of the direct payment exceeds the loss associated with a particular productive activity, then there may be a cross subsidisation effect that will keep that producer in business. This effect will only arise if production is required in order to receive the payment. While eligibility for the SFP did not require production, it did require the activation of a hectare of eligible land which may have a similar effect as a production requirement and influence exit decisions (Rude 2008).

Given these potential impacts of direct payments on farm structure, two very different questions are posed in empirical studies. One question is whether the move from the partially-coupled compensatory payments in place prior to 2005 to mostly decoupled payments after 2005 has influenced the process of structural change. This question is, at least in principle, answerable given available data but it is not the interesting question for the purpose of this paper. The other question is whether the current system of direct payments influences structural change relative to a situation where these payments were no longer available. While this is a hypothetical question, it is the more relevant one if we are interested in the production and trade effects of the current CAP.

A simple first approach is to ask if there are any observable differences in the rate of structural change before and after 2005. However, any conclusions regarding the impact of the policy change assume that other factors affecting structural change have been constant over a relatively long period. Agrosynergie (2013) undertook this analysis in their evaluation report on the structural effects of direct payments, distinguishing between the different models of implementation of

[50] Changes in the minimum size threshold to be included in the farm structure surveys and in the definition of utilised agricultural area in some Member States should be kept in mind when interpreting these trends.

decoupled payments, but found it difficult to draw robust conclusions. One caveat to their results is that any variation across regions classified by implementation models may be due to other unobserved variables which are also correlated across regions (e.g. the SAPS model is only implemented in the new Member States). It finds some weak evidence that "the implementation of the reform has contributed to speeding up the exit from the sector of smaller-sized farms and/or has encouraged some of these farms to grow in size".

The impact of direct payments on farm exit rates has been studied by a number of authors. Using data from the 1990s, Breustedt and Glauben (2007) found that exit rates were lower in regions with higher subsidy rates. Several authors have used stated intentions to examine responses to decoupled payments. Douarin and Latruffe (2006) report the results of a survey in three Member States (Sweden, Lithuania and Slovakia) in 2005 comparing farmers' intentions under the post-2005 decoupled payments regime relative to the previous regime of partially-coupled compensatory payments. In Sweden, the policy change was expected to lead to a reduction in production and in the willingness to remain a farmer, although not so in the two new Member States (these countries acceded to the EU in the previous year and direct payments were still being phased in, which may have influenced these responses). Bartolini and Viaggi (2013) report responses from a sample of 2363 farm households in nine Member States when asked their intentions under two different CAP scenarios: a Baseline scenario, characterised by the decoupled payments in place in 2009; and a No-CAP scenario, assuming the elimination of all CAP payments and regulatory measures. Of their sample of 2363 farm households, 363 stated their intention to exit the farm sector under the Baseline scenario, while a further 587 farmers indicated they would exit under the No-CAP scenario. Controlling for those who intend to leave the sector, the survey results also indicated that fewer farmers would consider increasing their area farmed either through land purchase or rental under the No-CAP scenario.

Brady et al. (2009) examine the impacts on farm structure in different regions under three different scenarios using a spatial agent-based modelling approach. Their scenarios are a continuation of the pre-2005 partially-coupled payments (AGENDA), the decoupling scenarios actually implemented in each region in 2005 (REFORM) and a hypothetical scenario (BOND) in which all support is converted to a lump-sum income transfer or bond (and thus may be taken as a proxy for the absence of agricultural support). Compared with the continuation of AGENDA, REFORM slows the rate of farm exits and growth in farm size in all regions. The authors note that this effect is strongest in grassland regions where the option to maintain land in good agricultural and environmental condition without production (GAEC) provides an attractive alternative to the outside option of off-farm employment. On the contrary, the BOND scenario in which direct payments are eliminated would considerably accelerate the rate of structural change. This study thus provides evidence that decoupled direct payments including the possibility to maintain land in GAEC have a clear negative impact on farm consolidation.

Kazukauskas et al. (2013) exploit the fact that the decoupling reform was introduced in different years in different EU countries over the period 2005-2007 to investigate the impact of the policy change from partially-coupled to mostly-decoupled payments on farmers' decisions to contract production and disinvest (taken as a proxy to indicate a likelihood to exit, given that significant farm exit is unlikely to be observed in the immediate aftermath of the policy change). Disinvestment is measured by simultaneous reductions in the capital stock investment in farming and in total land area. They find consistent evidence that the probability of disinvestment decreased due to the policy change. They attribute this result to the greater certainty of the decoupled payment which might both encourage risk-averse farmers to undertake new investment as well as relax capital credit constraints more than partially-coupled payments. Decoupled payments may also capitalise more into the value of land (Section 3.4), thus increasing wealth and available collateral for loans. One

exception to this is that, for livestock farms, they find strong evidence to suggest that farms with a greater proportion of livestock output in total output are more likely to exit farming due to the introduction of decoupling. They attribute this to the fact that many livestock farmers were producing for the sole purpose of receiving payments under the partially-coupled regime.

In summary, there is evidence at least for the EU-15 Member States that the change to a decoupled payments regime after 2005 may have reduced the rate of farm consolidation in the EU (Brady et al. 2009; Kazukauskas et al. 2013). There is also evidence from survey intentions and simulation modelling (Bartolini and Viaggi 2013; Brady et al. 2009) that decoupled payments slow down the rate of structural change relative to a situation of no agricultural policy support. The conclusion is that the CAP's income support payments have created incentives for some farmers not to exit agriculture, reduced land reallocation towards more efficient farms, and helped to keep less efficient farms active. This mechanism thus mitigates any production-stimulating effect of these payments through other channels.

3.4 The capitalisation of EU decoupled payments

3.4.1 Theoretical considerations

Another way to evaluate the likely "degree of decoupling" of the EU's SPS is to examine the extent to which these payments are capitalised into land values and land rents. The degree to which support is capitalised into land rents can be described using basic economic theory. It is a function of three main factors: i) how the policy is implemented, specifically its initial incidence (targeted to land, inputs or labour); ii) the ease which land can be shifted to alternative uses (the elasticity of supply); and iii) the ease with which land can be substituted with other factors of production (the elasticity of substitution) (Floyd 1965; Latruffe and Le Mouël 2009). As noted by OECD (2008), the capitalisation of support into land rents tends to be inversely related to the degree of market distortion. A more decoupled program is less likely to affect production decisions, but its benefits are more likely to be capitalised into land. Put in other terms, a high rate of capitalisation of payments into land values implies a low transfer efficiency of support to farmers, and thus a lower likelihood that the payments will distort production.[51]

Other things equal, the move to decoupling EU payments after 2005 would be expected to increase the extent of capitalisation into land. Profitability increases because decoupling gives farmers more freedom in the choice of production structure and of whether to cultivate land. The production effect of coupled payments means that non-land input suppliers capture a greater share of these payments (O'Neill and Hanrahan 2016). Coupled payments may also lower market prices, depending on the elasticity of demand for the products concerned, further reducing the impact on land rents.

On the other hand, in the EU system of direct payments, a further factor is the role played by entitlements. Linking the payment to entitlements means that there is now only an indirect link to land, leading to the expectation that the SFP may be less capitalised into land rents than previous area-based payments. Recall that in the SFP (and carried over into the BPS), a farmer's payment is linked to the number of entitlements which he or she has been allocated. The SFP allocation method differed depending on whether a Member State adopted the historic, hybrid or regional system

[51] If agricultural land is owned by the farmer that uses it, then the benefit of capitalised support is retained by the farmer and may influence his or her behaviour. However, in the EU-28, only just over half (52%) of the agricultural area was farmed by the owner of that land in 2013 (Eurostat tenure statistics, domain ef_mptenure).

(Chapter 2).[52] In each case, however, the entitlement had to be activated by linking it to a hectare of eligible land.[53] Thus, in the EU system, the link between direct payments and land is indirect, and this has consequences for the degree of capitalisation. The other feature of the EU system which is important for the degree of capitalisation is that eligibility for direct payments depends on the farmer observing a set of cross-compliance standards and maintaining the land in good agricultural and environmental condition (Ciaian, Kancs, and Swinnen (2010) provides a thorough treatment of EU direct payments and land markets).

Theoretical models in Courleux et al. 2008; Kilian and Salhofer 2008; and Ciaian, Kancs, and Swinnen 2008 suggest that the extent to which EU decoupled payments are capitalised into land rents is limited due to the role played by entitlements. The important variable is the ratio of the eligible land area relative to the total number of entitlements within a Member State or region. If the number of allocated entitlements is less than the number of eligible hectares, then the SFP benefits the owner of the entitlement and is not capitalised into land values. However, if the number of entitlements is greater than the number of eligible hectares, then competition for eligible land to activate these entitlements will mean that the SFP gets capitalised into land values and will benefit landowners.

In those EU Member States applying the historical and hybrid SPS models, the number of eligible hectares largely exceeded the number of entitlements. In the historical model, the number of entitlements belonging to each farmer was set equal to the average annual number of hectares giving rights to direct payments in the reference period 2000-02, while the value of each entitlement was set equal to the average yearly amount of payments granted to that farmer in the same reference period. These rules in practice excluded a large amount of agricultural land from being awarded entitlements, especially in countries where products not giving a right to direct payments (i.e. fruits and vegetables, wine, permanent crops) represented a large share of land use, such as the Mediterranean countries. In the following years the SFP scheme was made more flexible, introducing the possibility of attaching the entitlements to any land used for permanent pasture, arable crops or permanent crops. The result was that the number of entitlements in these countries was generally much lower than the number of eligible hectares (Ciaian, Kancs, and Swinnen (2014) include a table showing the relationship between the utilised agricultural area and the activated area in each Member State in 2010). Since entitlements can be traded with or without land, the greater availability of eligible hectares under the historical and hybrid models should result in a rather low capitalisation rate.

In the regional model, however, the number of entitlements can be much larger, since they are computed including also farms (and the corresponding land) not having a right to direct payments in the reference period. Thus, in the (few) countries where the regional model had been adopted, the number of existing entitlements was much closer to the total eligible area. The SAPS model implemented in (most of) the new Member States also paid a uniform payment per eligible hectare but did not make use of entitlements. In these countries, the payment per farm varies each year according to the number of eligible hectares in agricultural use on that farm, subject only to meeting

[52] In the Basic Payment Scheme introduced in 2015 the historic and hybrid models are replaced by the partial convergence model.

[53] See footnote 20 for the definition of eligible land. The SFP entitlements are not linked to a specific area of land. They can be activated by any hectare of eligible land. In practice, a farmer must possess at least as many eligible hectares of land as the number of entitlements he or she wishes to claim. Farms can expand or reduce their number of entitlements by buying or selling on the market from other farms in the same country or region. In this respect, the implementation of the SFP differs from the Production Flexibility Contracts in the US which were tied to a given number of acres on a specific farm and therefore land transfers between farms directly resulted in transfers of subsidies between farms.

the cross-compliance standards. Table 9 shows the choice of SPS/BPS implementation model in each Member State.

Table 9. SPS/BPS implementation by Member State

Model SPS/SAPS	MS (start date)
SPS historical	Austria (2005), Belgium (2005), France (2006), Greece (2006), Ireland (2005), Italy (2005), Netherlands (2006), Portugal (2005), Spain (2006), UK (Wales and Scotland)
SPS regional	Malta (2007), Slovenia (2007)
SPS static hybrid	Luxemburg (2005), Sweden (2005), UK (N. Ireland, 2005)
SPS dynamic hyrid	Denmark (2005), Finland (2006), Germany (2005), UK (England 2005)
BPS regional	Germany, France (Corsica), Malta, UK (England) (2015); Netherlands, Austria, Finland, UK (Scotland and Wales) (2019), Sweden (2020)
BPS partial convergence	Belgium, Denmark, France (exc. Corsica), Greece, Ireland, Croatia, Italy, Slovenia, Spain, UK (Northern Ireland) (2015)
SAPS	Bulgaria, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia (2005)

Sources: Ciaian, Kancs, and Swinnen (2014); DG AGRI (2015b).

A second factor which influences the degree of capitalisation under entitlements (and which is also influenced by the SPS/BPS implementation model) is differences in the value of the per hectare payment between farms (Ciaian, Kancs, and Swinnen 2010). The larger the SPS differentiation between farms, the smaller will be the degree of SPS capitalisation. The intuition here is that farms with high-value entitlements compete with farms holding low-value entitlements. Farms owning high-value entitlements can afford to bid more for land parcels or rented land that comes on the market, but only need to bid up the price or the rent as far as the low-value entitlements. Farms owning low-value entitlements can only use these to compete for land and thus low-value entitlements will determine the SPS capitalisation at the margin (Ciaian, Kancs, and Swinnen 2014). Differences in per hectare payments between farms are largest in the historic (SPS) and partial convergence (BPS) systems whereas payments per hectare have the same value in the regional model. This is a further reason to expect that the capitalisation of decoupled payments into land values will be smaller in the historic and partial convergence implementation models. This argument is related to, but different from, the conclusion that the capitalisation rate can differ between farms with different levels of SFP payments. As Michalek, Ciaian, and Kancs (2014) note, given that the rental price change due to the SFP is region specific and the same for every farm before and after its introduction (what they call the general equilibrium effect), the capitalisation rate will always be higher for farms possessing a lower amount of the SFP.

Also, in the EU, farmers in receipt of direct payments must observe a series of farm management measures incorporated in cross-compliance conditions. These are of two kinds: statutory minimum requirements linked to the respect of environmental, food safety, animal health and welfare standards which are part of the EU's regulatory framework and a set of good agricultural and environmental conditions which are defined at the Member State level and which mandate particular farming practices. While many of these conditions simply reflect good farming practice, others may add to the cost of production.[54] An example would be the requirement to establish buffer strips along water courses to help reduce the run-off and leaching of nitrates to surface and ground waters introduced in the CAP Health Check. Ciaian and Kancs (2012), focusing on the risk of land abandonment, argue that cross-compliance costs are likely to be higher in less productive areas where land would be abandoned in the absence of direct payments. However, many GAEC standards are more likely to require changes on more intensively-managed farms, so the relative incidence of

[54] The extent of this is disputed. Costa et al. (2009) state that evidence to date suggests that the majority of cross-compliance obligations have had little or no direct impact on farm production costs.

these standards on different types of farms may not be so clear-cut. Regardless of this debate, cross-compliance creates an ambiguity in the interpretation of the degree of capitalisation as a likely indicator of the distorting effects of decoupled payments. Because cross-compliance imposes additional costs on land use it reduces the degree of capitalisation. However, these additional costs work in opposition to any production stimulus from direct payments. Thus, in this instance, lower capitalisation means lower production distortions.

Also relevant to the extent of capitalisation are farmers' expectations with regard to the length of time they expect direct payments to continue into the future and at what level. There is no formal assurance that direct payments will continue beyond the period of the MFF in place at any point in time; as of the time of writing, farmers are not guaranteed that payments will continue after 2020. Previous CAP reforms have shown that the value of direct payments can be reduced and their design radically altered. Any expectation that payments will continue after 2020 is based on an assessment of a political equilibrium rather than a legal guarantee. The greater the uncertainty among farmers about the value of direct payments in the future, the smaller the degree of capitalisation we are likely to observe.

The empirical importance of these distortions will also be influenced by the structure of land markets in the individual Member States. According to Ciaian, Kancs, and Swinnen (2010), "…on average 53% of farmland is rented in the EU-27, but there is wide variation. Member States with a high share of rented land (more than 70%) include Slovakia, Bulgaria, the Czech Republic, France, Belgium, Malta, and Germany. Member States with a low share of rented land (less than 30%) include Denmark, Ireland, Poland, and Portugal. These variations also affect the extent to which farmers or non-farming landowners capture the gains if SPS is capitalised." The transmission of payments into land rents will also depend on land market regulations, particularly where rental price ceilings are in effect, and also depending on whether short-term or long-term rental contracts are more prevalent (Swinnen, Van Herck, and Vranken 2013). Where decoupled payments are capitalised into land values on owner-occupied farms, we expect larger production effects than on tenanted land (e.g. higher land values on owner-occupied farms may facilitate access to bank credit if credit markets are imperfect and thus stimulate on-farm investment and higher production). Where rents paid to non-farming landlords are increased as a result of capitalisation of decoupled payments, then the value of the payment leaves the farm sector and is not likely to influence production decisions.[55] Finally, the transmission process will also be influenced by the existence of imperfect competition and high transactions costs in the land market, as observed in some new Member States where large-scale corporate farms are dominant (Ciaian and Swinnen 2006). These farms are able to use their market power in local land markets to depress land rental prices to their advantage.

3.4.2 Empirical evidence on capitalisation of EU decoupled payments

Ciaian, Kancs, and Swinnen (2010) provide an extensive review of empirical studies that have attempted to measure the degree of capitalisation of direct payments into land rents and land values (see also Swinnen et al. (2013) for an updated version of their annex). Their review is heavily influenced by US studies and, in the original version, does not include studies after 2005 when the EU introduced its decoupled payments linked to entitlements. In this section, recent studies which have tried to estimate the degree of capitalisation of the EU's SPS payments are reviewed.

[55] While there is some farm-to-farm land renting in the EU, most of the rented out land is owned by non-farming landowners (Ciaian, Kancs, and Swinnen 2010).

The empirical evidence on the capitalisation of EU direct payments into land rental prices and land values must be informed by the fact that, as pointed out by Gohin (2006), EU land rental prices net of per hectare direct payments are generally negative. This immediately suggests that capitalisation must be incomplete and is used by some modellers to justify treating EU direct payments partly as a subsidy to land, and partly as a subsidy to capital and labour, with resulting production effects.

Kilian et al. (2012) analyse the capitalisation of subsidies into land rental prices in 2005 in Bavaria – a region which implements the regional SPS model. They find that 28% (historical) to 78% (regional) of the direct payments are capitalised into land rental prices, i.e. one additional euro of direct payments would increase rental prices by 28 to 78 cents. They also evaluated if the introduction of the SFP had any influence on the capitalisation rate. They found that the capitalisation rate to be higher after the reform. They estimated that an additional 15 to 19 cents are capitalised into rental prices, leading to a total capitalisation of 44-94% of the direct payment**.** However, because they use traditional estimation techniques (OLS and IV estimators), and only one year of cross-section data (2005 – the first year of the SPS), they are not able to control for key econometric issues, such as the unobserved farm-specific effects, implying that their estimates might be biased.

Michalek, Ciaian, and Kancs (2014) apply a generalised propensity score matching estimator to a balanced panel of farm-level data for the EU-15 from 2004 to 2007. They show that the capitalisation rate differs across regions, across farms and across implementation models. Their results show that the aggregate capitalisation rate, which is calculated as the weighted average of average farm-level capitalisation rates, is relatively low, namely, 6-7% of the direct payment received for the full sample. They find slightly higher values for the hybrid and the decoupling subsamples at 10% and 9%, respectively. They observe considerable variation in capitalisation across countries, ranging from 5% in Denmark and Germany to 14% in Spain and 18% in Portugal when averaged across all farms, although capitalisation is also found to vary within countries across different farm sizes and for different levels of payments per hectare (for very small payments per hectare, the capitalisation rate is as high as 94% of the direct payment).

Guastella et al. (2014) focus on a sample of Italian farms specialised in field-cropping only. Their time span is long enough to break the whole sample into two sub-samples based on the implementation of partially-coupled (1994-2004) and decoupled (2005-2008) payments. Their results suggest that neither partially-coupled nor decoupled payments have been capitalised into farmland rents. A study by Karlsson and Nilsson (2014) employed a spatial analysis and a hedonic pricing approach with a sample of mainly small- and medium-sized Swedish farm transactions. They found that decoupled SFP payments have no influence on farm prices when measured at local and regional levels, although they allow that there is a positive effect between “harvest areas” (areas with similar natural conditions for agriculture in terms of soil quality, topography and land fertility). Price formation is profoundly driven by residential quality characteristics and accessibility to urban areas.

O’Neill and Hanrahan (2016) make use of Irish farm-level data covering both the periods of partially-coupled and decoupled payments. They found that the partially-coupled subsidies for dairy, sheep and tillage farms were capitalised into land values with 77 cents, 67 cents, and 90 cents of each euro of support being bid into rents respectively in the long run. For cattle farms the point estimate suggests 54 cents per euro of support is bid into rents although this is not statistically different from zero. Thus, they conclude that a considerable proportion of CAP supports accrue to landowners in the form of higher rents rather than to the formal recipients. Following the 2003 CAP reform, they observe a reduction in the extent of capitalisation even though landowners continue to capture a sizable share of the SFP payments. For cattle farms capitalisation decreases to 7 cents (21 cents) per euro of support in the short (long) run. For dairy farms 12 cents (41 cents) per euro of support and for tillage farms 25 cents (53 cents) per euro of support were capitalised in the short (long) run. For

sheep farms the capitalisation fell to 9 cents (35 cents) and is not significantly different from zero. Their results are in line with the *a priori* reasoning that capitalisation is low in countries where there are more eligible hectares than entitlements which has been the case in Ireland. One specific reason which contributed to this in Ireland was the possibility to "consolidate" entitlements. This consolidation option was introduced to recognise the very short-term nature of the land rental market in Ireland (often less than one year), which meant that some farmers who might have had difficulty in renewing their rental agreements could have been allocated more entitlements than they had eligible land. To avoid this outcome, consolidation allowed farmers whose land rental agreements had expired to effectively transfer payments from areas which they no longer rented to land which they still possessed. Because of consolidation, the demand for land to activate entitlements was much reduced.

Finally, there are a couple of studies which examine the capitalisation of SAPS payments in the new Member States. Ciaian and Kancs (2012) investigate SAPS capitalisation using a unique set of farm level panel data with 20,930 observations for the period 2004-2005. They find that almost 20% of the SAPS payment is capitalised in land rents. Van Herck and Vranken (2012) also find a positive and significant impact on land rents in a cross-country study of six new Member States. They conclude that an increase of one additional euro per ha in direct payments increases land rents by 13 to 25 cents. They note that the degree of capitalisation is influenced by the way credit markets work and by the share of agricultural land used by corporate farms.

In summary, studies of EU decoupled payments give conflicting results of the extent of capitalisation. This reflects the use of different data sources, the different implementation models as well as the different extent to which these studies have controlled for econometric problems which may bias the results (Guastella et al. 2014). Estimates from empirical studies range from as low as 6-7 cents to as high as 80-90 cents for each euro of direct payments received being capitalised into land rents, with median estimates of around 20-25 cents.[56] This low rate of capitalisation may be due to a number of factors: the role of entitlements in the EU SFP (where the number of entitlements is less than the number of eligible hectares, no capitalisation is foreseen); the differentiated value of entitlements (farms with a high-value SFP entitlement per hectare have lower capitalisation intensity than those with a low-value SFP entitlement per hectare, implying that the former significantly offsets the latter when calculating the SPS-weighted average capitalisation over all farms); the requirement for cross-compliance (the additional costs of compliance would be expected to lower the degree of capitalisation) and the existence of land market regulations (rental price controls or provisions on the duration of rental contracts), in the presence of which land rents would not adjust rapidly to changes in payment levels or design; and finally, uncertainty among farmers in their expectations regarding how long, and at what level, direct payments can be counted on to continue. Furthermore, leakages to landowners are only a proportion of the capitalisation effect given that around one-half of all utilised agricultural area in the EU-28 is owner-occupied.

These findings raise at least the possibility that even decoupled payments in the EU may have production and thus trade effects. If the payments are not captured by the owners of land (assumed to be relatively fixed in supply), then they are captured by labour and capital inputs. Given a positive supply elasticity for these inputs, this will lead to a *ceteris paribus* increase in the use of these inputs in agriculture, and presumably to higher production as a result.

[56] A recent US study also found that for every dollar of US farm subsidies, about 25 cents leaked to landowners while 75 cents were retained by farmers (Kirwan 2009).

3.5 Measures to restrict production

For some commodities (milk, sugar, wine and arable crops and ruminant livestock in the past) the positive incentive on production of higher support prices and direct aids has been limited by the simultaneous use of supply control measures. In the case of milk and sugar, the production response to higher prices is limited by production quotas. In the case of arable crops, the production response was reduced by a land set-aside requirement implemented in 1994 and only finally removed in the context of high world grain prices in the 2008 Health Check. In the case of beef and sheep, the coupled premiums were limited to a fixed number of head by Member State and at farm level.[57] In the case of vineyards, a system of planting right restrictions has been in place since 1976. This introduced a ban on new vineyard plantings in order to limit the production of table wines and prevent structural surpluses, with limited exceptions.

The extent of the supply-limiting effect of milk and sugar quotas and vine planting rights could, in principle, be determined by the size of the quota rents these restrictions engendered. In the case of milk and planting rights, rents could be revealed through market trades in quota rights and planting rights, respectively, though these markets tended to be heavily regulated so market prices probably underestimated the true size of the rents. In any case these rents varied over time depending on producers' marginal costs and the expected return from product sales.

How effective were these measures in limiting supply? The impact study for the Commission in 2008 on the effects of eliminating the milk quota projected it would lead to an increase in EU milk production of 5.0% and a 10.3% decrease in the farm milk price (from the higher level it reaches under the baseline scenario) (Réquillart et al. 2008).[58] Earlier studies had suggested a production increase of 3% and a price decline of 22% (Lips and Rieder 2005) and a production increase of 4% and a price decrease of 7% (Binfield et al. 2007). The Health Check reform agreed on a gradual expansion of milk quotas in the years leading up to abolition in 2015. Nonetheless, because of the record high milk prices in the preceding year (2014), EU milk production surged in the first quarter of 2016 compared to the first quarter of 2015 (the last three months of the quota regime) by 7.2%.[59] The sugar quota regime remains in place until 2017. However, an impact study of its abolition by Burrell et al. (2014) also suggested that quota abolition will lead to an increase in EU sugar production and falling imports.

Since the 1990s, the CAP has also encouraged the expansion of farm forestry through the provision of plantation grants and annual forest premiums (paid through the CAP Rural Development Pillar 2). The diversion of agricultural land to forestry lowers the supply response observed from the higher agricultural prices. Farm forestry grants were reformulated as one of the accompanying measures in the MacSharry 1992 CAP reform specifically with a view to taking land out of agricultural production

[57] The OECD captured the combined effect on production and consumption of both higher agricultural prices due to government intervention and production constraints which limit the response to these higher prices in its concept and measurement of Effectively Decoupled Support (OECD, 2001).

[58] A provocative finding in this study is that milk quota liberalisation would reduce EU welfare. This result is explained by the fact that the EU is a significant player in world dairy markets. Increased production and net exports of dairy products after the removal of quotas drives down the world market price below its baseline level. Thus some of the gain from lower EU milk prices accrues to the countries purchasing EU exports rather than to the EU itself. Thus, the quota regime kept world dairy market prices higher than they would otherwise have been, but the welfare effects of this trade distortion depend on the net trade status of third countries.

[59] DG AGRI Dashboard – Dairy Products, available at http://ec.europa.eu/agriculture/milk-market-observatory/pdf/dashboard-dairy_en.pdf, accessed 15 June 2016.

and reducing EU agricultural supply.[60] However, the most significant supply-reducing policy in recent years is EU renewable energy policy which encourages the production of biofuels.

The EU has had a policy to encourage biofuels since 2003. In that year, a new premium for energy crops grown outside set-aside land was implemented under the CAP (these payments were abolished together with compulsory land set aside at the end of 2008 as part of the CAP Health Check). At the same time, the EU set medium-run targets for the percentage of biofuels to be incorporated into conventional fuel (2% in 2005 and 5.75% in 2010 on an energy basis). A companion Directive on energy taxation allowed Member States to grant tax reductions and exemptions to encourage the use of biofuels. However, these targets were not mandatory and there was no penalty for noncompliance.

In the EU, biodiesel (produced mainly from rapeseed) plays a more important role than bioethanol (produced mainly from wheat and sugar beet). As part of the Energy and Climate Change Package in December 2008, EU leaders committed to a binding minimum target of 10% to be contributed by renewable fuels in total transport fuel in each Member State by 2020. One study suggested that eliminating the biofuel mandate in 2020 would result in freeing up 6% of EU wheat production, about 8% of other cereals production, and about 7% of EU sugar beet production (Hélaine, M'barek, and Gay 2013). More than half of EU vegetable oil production would be used for biofuels in 2020 under the mandate.

While biofuels may help the EU meet its greenhouse gas reductions targets, biofuel production typically takes place on cropland which was previously used for other agriculture such as growing food or feed. Since this agricultural production is still demanded, it may be partly displaced to previous non-cropland such as grasslands and forests. This process is known as indirect land use change (ILUC). In 2015 new rules came into force that amend the current legislation on biofuels – specifically the Renewable Energy Directive and the Fuel Quality Directive - to reduce the risk of indirect land use change and to prepare the transition towards advanced biofuels. Second-generation biofuels get a double credit, meaning that biofuels made out of ligno-cellulosic, non-food cellulosic, waste and residue materials will count double towards the goal. More importantly, the amendment limits the share of biofuels from crops grown on agricultural land that can be counted towards the 2020 renewable energy targets to a maximum of 7% of transport fuel in the light of concerns about the impact of increased biofuel demand on food prices.

These supply management and supply-restricting measures should be taken into account when evaluating and modelling the impact of the CAP on world markets.

3.6 Trade effects of direct payments

The basic problem facing any empirical attempt to model the impact of the CAP and agricultural trade policy on production and trade is how to model the decoupled direct payments. Should they be modelled as a lump-sum transfer to farm households, as area payments, or as something else? (Courleux et al. 2008). If treated as a lump-sum payment to households, then CAP payments have no impact at all on farmers' production decisions, either in terms of input use (demand for land) or output supply (particularly yields).[61] However, lump-sum payments are not capitalised into land prices which is not consistent with the empirical evidence previously reviewed. Frandsen, Gersfelt,

[60] Between 2000 and 2010, the wooded area in the EU increased through natural expansion and afforestation by a total of 3.5 million hectares, a rise of 2.0 % (Eurostat, 2011) although not all of this area would be suited to productive agriculture.

[61] Some small effect may still arise through the impact of the additional payment on farm households' wealth arising from the expected additional income stream (Femenia, Gohin, and Carpentier 2010).

and Jensen (2003) argued that a fully decoupled payment could be modelled as a uniform hectare payment given to all agricultural land. For other analysts, this assumption is too extreme bearing in mind the various ways in which even decoupled payments are expected to affect production incentives and the empirical evidence reviewed above which showed that capitalisation of direct payments into land values is only partial and incomplete. They have preferred to assume that some share of the decoupled payments accrues also to labour and capital employed in agriculture and thus affects production response.

Urban, Jensen, and Brockmeier (2016) conduct an analysis that reveals the effect of different assumptions regarding the degree of decoupling of SFP payments. They model different degrees of decoupling of the SFP, starting from a 100% fully decoupled SFP that is allocated at a homogeneous rate across primary agricultural commodities to land. They then stepwise increase the share of the re-coupled component of the SFP that enables the representation of various assumptions about the effect of other coupling channels by progressively distributing increasing shares of the SFP by sector at a homogenous rate according to capital, labour and land. They show that reducing the degree of decoupling in this way affects the change in the EU's net trade balance and also the trade balances particularly of net exporters of agricultural and food commodities. The difficulty is that choosing the appropriate degree of decoupling is largely an ad hoc decision, given the lack of agreement in the literature as to what the correct value is. Most modelling studies simply make an assumption about the degree of decoupling and the empirical results reflect this assumption rather than providing evidence about it (Balkhausen et al. 2008; Helming et al. 2010). The results of some recent empirical studies on the impact of EU agricultural support on world markets are reviewed in Section 4.9.

Rude (2008) provides a comprehensive review of the empirical evidence of the production and trade distortion effects of CAP direct payments. The studies he reviews mainly assess the significance of the decoupled payments introduced from 2005 relative to the partially-decoupled payments introduced in the 1992 MacSharry reform and extended in the Agenda 2000 reform (see also the surveys in Gohin (2006) and Balkhausen, Banse, and Grethe (2008)). The models generally reported that this reform reduced production incentives, substantially for beef and to a lesser extent for arable crops. Gohin summarises their results as follows:

> "*In general, these results all point in the same direction. Arable crop production decreases mainly through a reduction of land allocated to these activities; yield per hectare marginally increases. Milk production is virtually unchanged because of binding milk quotas. Non-ruminant production is only indirectly affected by the reform and thus the effects are very limited. Finally beef production also contracts, despite increases in fodder and pasture areas, due to the development of more extensive production techniques, i.e. less production per forage area. Another empirical regularity across all studies is the more pronounced effects observed on the beef market compared with those obtained on the arable crop markets. On average …, wheat production is estimated to decrease by 1.8% compared with 3.2% for beef production, despite greater increases in the domestic price for the latter (5.5% compared with 1.6%*)." (op. cit., p. 416).

Gohin's own study focused on the way the previous partially-coupled payments were modelled when making the comparison with the 2005 decoupled payments. His view is that the studies tended to overestimate the degree of decoupling implicit in the MacSharry treatment of arable crops but to underestimate the degree of decoupling in the case of the beef enterprise. When he modifies his model to take account of these insights, he confirms that the 2005 reform would be expected to lead to reduced production, but he finds larger effects for arable crops than the other studies he surveys. The main message of his paper, again, is that the way direct payments are modelled determines the model outcomes.

Mittenzwei, Britz, and Wieck (2012) use the partial equilibrium CAPRI programming model to simulate impacts of the instruments classified by the EU under the Green Box (thus including, e.g. agri-environment payments and less favoured area payments as well as decoupled income support payments). They explicitly assume that decoupled payments are fully capitalised into land rents, as they argue that by 2020 (the date for their simulation) urbanisation and other forces will lead to a decline in the agricultural area such that eligible land rather than entitlements is the limiting factor. Other direct payments are modelled relatively closely to their definition in legislation (i.e. as output subsidies for coupled payments, as area-based subsidies for less favoured area payments, as labour and capital subsidies for Pillar 2 payments, etc.). With this modelling set up, their conclusion is as follows:

> "*The main finding from the simulated changes in production and net trade if the green box is abolished is the perhaps astonishing overall coherence between the classification of the green box measures (especially for the SFP) as minimal trade distorting and the behaviour of CAPRI.*"

Nonetheless, they report that the removal of the SFP leads to a further 5% reduction of land use of agriculture, with a consequent drop in agricultural output and net exports. Arable production seems to fall more than meat production in their results. They warn that the continued existence of border support in their simulation scenario may dampen production responses by preventing a rapid response of imports to changes in EU prices. The limited reaction of imports allows for an increase in EU domestic prices which buffer the output reduction (Table 10).

Table 10. EU production and price effects of removing domestic support in 2020, per cent

Commodity	Net production	Domestic price
Cereals	-1.7	0.2
Wheat	-1.9	0.3
Maize	-0.8	0.2
Oilseeds	-3.1	0.6
Vegetables and permanent crops	-0.8	0.6
Meat	-1.7	1.4
Beef	-0.8	1.0
Pigmeat	-1.7	1.1
Sheepmeat	-2.8	1.8
Poultrymeat	-2.2	2.4
Raw milk	-0.8	0.0
Eggs	-1.5	1.6
Dairy products	-0.6	1.7
Butter	-1.3	3.7
Skimmed milk powder	-1.3	3.9
Cheese	-1.0	1.7
Oils	-1.1	0.9
Oil cakes	-0.3	0.2
Sugar	0.0	n.a.

Source: Mittenzwei, Britz, and Wieck (2012). The original sources also gives details of changes in trade flows. n.a. = not available.

Model studies of the impact of decoupled direct payments cannot be taken directly as evidence for their effects. The assumptions that modellers make on how to incorporate decoupled payments are responsible for the results, and there is as yet no empirically-grounded way to justify handling decoupled payments in one way rather than another. Further modelling results are reviewed in Section 4.10 below.

3.7 Trade effects of Pillar 2 payments

Most criticism of the CAP for distorting global agricultural markets focuses on its farm income support and market management measures financed by Pillar 1 (including the trade policy measures discussed in Chapter 4). However, as expenditure on Pillar 2 rural development measures has increased and now makes up almost one-quarter of CAP expenditure (Chapter 2) it should not be overlooked. The measures supported by Pillar 2 include support for knowledge transfer, investment aids, regional assistance programmes, environmental programmes, forestry, risk management support and locally-led job creation initiatives in rural areas (Chapter 2). All expenditure on these measures is notified as green box expenditure in the EU's WTO notifications (Table 7) but they may still have some production and thus trade impacts. In some cases (e.g. agri-environment measures) the impact is likely to reduce EU production relative to a non-policy benchmark. In other cases (support for knowledge transfer and innovation, measures to improve physical and human capital) the measures are likely to strengthen the EU's production capacity even if they are exempted from the limit on domestic support.

There have been a limited number of efforts to empirically evaluate the production impacts of these Pillar 2 measures. The task is a complicated one for a number of reasons: 1) it is not always obvious how best to actually represent the various policy instruments in a modelling context and 2) the income and employment effects of Pillar 2 policies are likely to be small. "The available EU-wide data on RD measures provide budgetary data only at a rather higher aggregation level of measure groups, which requires strong assumptions and simplifications to simulate the impacts of RD measures on the economy, sectors, households or budget" (Schroeder, Gocht, and Britz 2015).

One of the first studies to attempt to measure the impact of Pillar 2 spending in the context of a CGE model for the EU as a whole was Nowicki (2009). These authors investigated the consequences of modulating (transferring) resources from CAP Pillar 1 to Pillar 2. They developed the approach to measuring the impact of Pillar 2 spending which has been adopted in all subsequent studies. Pillar 2 measures were aggregated into groups according to similarities in the economic mechanisms underlying them which were then modelled as output- or input-augmenting technical change as appropriate. The way in which this mapping is done, and the parameter values adopted, essentially determines the outcome of the modelling. Their simulations showed a small positive impact on primary agricultural production (+0.4%) due to Pillar 2 spending, mainly due to support for physical capital investments.

This same approach was used in the SCENAR 2020-II study which examined the impact of eliminating Pillar 1 measures (market measures and direct payments) and trade measures and doubling Pillar 2 spending (Nowicki et al. 2009). They present a decomposition analysis of the individual CAP instruments relative to other macro-economic drivers of agricultural production in which doubling the Pillar 2 budget is shown as having a small positive effect on overall agricultural production.

Boulanger and Philippidis (2014) used the MAGNET CGE model to estimate the impact of the MFF funding agreement for the CAP budget for the period 2014-2020, involving a reduction of 13% in Pillar 1 spending and 19% in Pillar 2 spending in real terms in comparison to a 2020 baseline. In this study they model decoupled payments as production-neutral, calibrating them to the land factor assuming equal subsidy rates across all agricultural sectors. Consequently, the main production effects in their study arise from changes in Pillar 2 expenditures and their associated productivity effects in EU Member States.

They use a similar approach of grouping Pillar 2 spending according to the economic mechanisms involved and modelling them as output- or input-augmenting technical change. They find that the reduction in Pillar 2 spending leads to slower productivity gains in both the agricultural and non-agricultural sectors (except in those Member States which devote a large share of Pillar 2 spending to agri-environment schemes). Overall, agriculture and food production falls in the EU although by less than 1%. They conclude that EU28 agriculture and food net trade balances would deteriorate by €410 million and €260 million, with corresponding gains for non-EU28 agricultural net-exporting regions. They attribute these small effects to the cuts in Pillar 2 spending because of the modelling representation of decoupled payments.

Another attempt to empirically model the impact of Pillar 2 expenditure was made using the CAPRI-RD model (Schroeder, Gocht, and Britz 2015). This model combines nonlinear programming models for individual farm types in each EU NUTS-2 region with regionalised CGE models to capture RD measures targeting the non-agricultural sectors. Specific RD instruments are mapped to CGE shocks in the form of increased capital stock, production function shifts, demand shifts or changes in tax rates, as appropriate. A simulation of the impact of RD spending in the period 2000-2006 in Germany found that the effects were very modest. Farm factor income increased by 5% on average because of the Pillar 2 spending, with higher increases (14%) observed for grazing livestock farms. Overall, agricultural production was estimated to increase by 1% and by 0.5% in the food processing sector, although because additional land was brought into production supply per hectare decreased for all agricultural products. The authors cite other studies in support of the finding that RD support reduces agricultural productivity (principally because the significance of the agri-environment measures outweighs measures such as investment aids and knowledge transfer which might be expected to increase productivity).

3.8 Trade effects of market intervention measures

The CAP continues to make use of various instruments to support domestic prices during trough periods in the price cycle. These include intervention arrangements at safety net levels for some commodities, private storage aid, market withdrawal of fruits and vegetables undertaken by producer organisations, and temporary planning of supply during market crises (Chapter 2). The impact of these measures on trade is addressed in this section.

Some indication of the scale of these interventions for specific commodities is given in Table 11. Private storage aid is always a positive amount as this is an EU payment to private operators to store product. In the case of sugar and dairy products, much of this expenditure involves seasonal storage rather than a structural carryover from one marketing year to the next. Public intervention expenditure can be negative, indicating the sale from intervention of stocks purchased in previous years. Intervention expenditure, which was at relatively low levels even in the early part of the period, had virtually ceased by the end of the period. With difficult market conditions for fruits and vegetables, pigmeat and dairy products since the end of 2014, because of the Russian ban on imports of certain EU agricultural products and global market conditions, expenditure on intervention measures has increased again in 2015 and 2016.

These trends are confirmed by the figures on public intervention stocks for cereals, butter and SMP shown in Table 12. There were sizeable cereals stocks in store at the beginning of the period (though well below the levels seen in the mid-1990s) but these were completely cleared by the end of the period. Intervention purchases of butter and SMP took place following the 2009 milk price crisis but were quickly disposed of. However, stocks of SMP have been growing again in 2015 and 2016. By the end of 2015 there were 40,280 tonnes in public intervention and this had increased to 229,000 tonnes by mid-May 2016. As the buying-in ceiling of 218,000 tonnes at the guaranteed price during

the calendar year 2016 was almost reached, the Commission announced in May 2016 that it would increase the ceiling to 350,000 tonnes. At the time of writing (May 2016), no butter had been bought into intervention in either the 2015 or 2016 campaigns.

Table 11. Evolution of EAGF intervention expenditure, 2005-2014, € million, commitment appropriations

	Cereals	Sugar	Wine/alcohol		Dairy		Pigmeat	Others	Total	
Year	Public	Public	Private	Public	Private	Public	Private	Private	Private	Public
2005	442	232	76	179	62	-146	4	4	142	709
2006	338	134	100	189	57	-57		-1	156	601
2007	-226	-87	97	145	38	-75		1	136	-243
2008	-101	-27	88	114	34		37	40	162	-14
2009	24	-32	41	30	38	69	4	4	83	90
2010	96	0	1	11	13	-37	0	9	23	71
2011	-189	0	0	2	8	-73	56	58	66	-261
2012	2	0	0	0	8	-10	6	18	26	-8
2013	0	0		1	7		0	17	24	1
2014	0	0		1	4		0	0	4	1

Source: EAGF Annual Reports. The absence of an entry implies no expenditure. A zero entry implies expenditure less than €0.5 million after rounding. Olive oil is the most significant component of the "Others" category. Note there was no intervention expenditure on beef over this decade.

Table 12. Quantities in public intervention stores. 30 September, '000 tonnes

	Cereals	Butter	SMP
2005	14,935	131	12
2006	12,246	63	0
2007	1,370	0	0
2008	50	0	0
2009	1,559	77	260
2010	5,564	2	195
2011	165	1	50
2012	9	0	0
2013	0	0	0
2014	0	0	0

Source: EAGF Annual Reports (cereals): Milk Market Observatory for dairy products.

The conventional view is that domestic policies to stabilise agricultural markets destabilise international markets (Josling et al. 2010). This view developed on the basis of analysis of the variable import levy and export subsidy system used by the EU to stabilise domestic prices. Support provided through minimum support prices, intervention prices and other forms of administered prices usually relies for effectiveness on border measures, but the use of administered prices can by itself distort production and trade. The WTO Agreement on Agriculture therefore includes support through administered prices in the sum of certain domestic support that is subject to a limit. Arguably, however, genuine storage policies (a description which excludes market support policies masquerading as storage policies) can play a role in stabilising world market prices which may be welcomed by other agricultural exporters. By removing SMP from the market through storage in 2015 and 2016, the EU contributes to strengthening the world market price and provides a benefit to other dairy exporters. At the time when the purchases are made, storage also maintains the price

for EU producers and thus keeps EU production higher than it otherwise would be. However, when the stored products are eventually put on the market again, prices for EU and third country producers will be reduced below what they otherwise would have been. If producers are risk-averse, then more stable prices will result in somewhat greater production than if prices had been more volatile, so even pure stabilisation policies may have a trade-distorting effect. In any case, the scale of the EU's intervention in domestic agricultural markets has been very minor in recent years, and thus the size of any impact on global agricultural markets is also correspondingly very small.

3.9 Trade effects of risk management measures

Risk-related policies have the potential to distort production and trade. Where risk is reduced, farmers will tend to expand risky production activities at the expense of diversification and other risk management activities. Overall resources employed in agriculture are also likely to expand when policy measures make farming less susceptible to risk. Where governments reduce farmers' risks relative to other countries, global agricultural trade is likely to be distorted. Production impacts are enhanced if, for political economy reasons, risk-related policies are used as a politically convenient vehicle for farm income support (Tangermann 2011).

Risk reduction has small effects, but if the accompanying income support (due to government subsidies) is taken into account, overall effects are potentially higher. In the EU, direct payments, which are largely fixed and known in advance, and which account for over one-quarter of factor income or 45% of entrepreneurial (family farm) income, provide a significant element of risk reduction for EU farmers although the relative importance of this characteristic of direct payments compared to the other possible channels through which they can affect production and trade is difficult to determine (Section 3.3).

The North American literature has found relatively small production responses to crop insurance subsidies (Glauber 2015). OECD has developed a methodology to assess the distortion impacts of risk-reducing elements in agricultural support policies. This converts the risk-reducing implications of policies into equivalent increases in the incentive prices faced by farmers. On this basis, it estimates the production and trade impacts of the "pure" risk reduction effects of the policies concerned (OECD 2011b). Applying this methodology to US loan rates and counter-cyclical payments, it found the production impacts were relatively small, equivalent to an increase in average price support for US agriculture by mostly less than 0.5%. This is confirmed by the relatively few EU studies on the topic. For example, Garrido, Bielza and Sumpsi (2003) in an econometric study estimated that a 35% increase in subsidies to yield insurance in Spain had about the same effect on cereal production as a 1% increase in cereal prices.

Empirical research on the impact of farm income safety nets draws largely on Canadian experience because of the importance of this policy tool in that country. Income safety nets, probably even more than some other risk-related policies, have the built-in feature of providing income support, simply because they act in an asymmetric way, adding to farm incomes when they are low while not subtracting from them when they are high. As a result they have a tendency to distort production, markets and trade, even when they are in line with the WTO criteria for inclusion in the green box.

The EU has introduced the option of income stabilization tools under Pillar 2, but the amount of subsidies going into such schemes is relatively small (Chapter 2). In consequence, the distortion implications are limited. Furthermore, with a given overall amount of budgetary resources for rural development programmes, the farm income safety nets at the Member State level under Pillar 2 displace other Pillar 2 policies. Whether the measures displaced would have been more or less distortive than the new farm income safety nets is not clear as we cannot know how the individual

Member State governments would have structured their rural development programmes in the absence of this option.

3.10 Impact of the 2013 CAP reform on production and trade

This section asks whether the most recent reform of the CAP in 2013 is likely to further reduce any distorting effects of the CAP on trade or to increase them. The 2013 reform consisted of many individual elements, so the combined impact is not immediately obvious. Five elements of that reform are particularly pertinent:

- The overall cut in the CAP budget between 2014 and 2020, due in large part to the fact that direct payment amounts are held constant in nominal terms;
- The implications of both external and internal convergence of CAP payments for the degree of trade distortion;
- The implications of the introduction of the new green payment and its associated conditionalities for farmers;
- The implications of the increase in recoupled payments.
- The final abolition of milk and sugar quotas and the replacement of planting right restrictions for vineyards by a system of planting authorisations.

Differences in payment levels per hectare between Member States and between farms within Member States partly reflected different levels of earlier CAP support provided to various commodities but even more differences in productivity, given that payments originally reflected historical yields and, for grazing livestock, stocking densities. Matthews (2011) notes that the practical effect of both external and internal convergence of direct payments is to shift payments from more productive and more intensive to less productive and more extensive farms (measured in terms of output per hectare). The small farmer scheme and the redistributive payment which increases payments for the first hectares may also slow structural adjustment. Two studies which examined the impact of **greater convergence** in payment levels per hectare across the EU concluded that, indeed, overall EU agricultural production would fall but the magnitudes are small, in line with their a priori assumptions that the SFP payments are largely decoupled.

One study by Erjavec et al. (2011) used the partial equilibrium econometric AGMEMOD model. Their scenario involved moving to a uniform flat-rate per hectare payment across the EU as a whole. However, their scenario also assumes that existing coupled payments would be made decoupled and that there would be an overall reduction in the CAP budget for direct payments (by around 54% in the final year of implementation). In the AGMEMOD model direct payments are incorporated as add-ons to the relevant producer price to form a reaction price (livestock, livestock products) or expected gross returns (crops). Coefficients reflecting the "degree of decoupling" are applied to these add-ons to determine their production effect. The coefficients used in AGMEMOD vary across countries and commodities to reflect differences between the historic and regional SPS systems. For historical payments the coefficients vary between 0.3 and 0.6 and for regional payments between 0.1 and 0.5, while the coefficients for coupled payments lie between 0.5 and 1.0. The reported results focus on soft wheat, barley, maize, beef, pork and milk. Despite the more severe assumptions than simply moving towards greater convergence of payments alone, the production effects are estimated to be very marginal (ranging from 0% to -0.8% of commodity production in 2020) apart from beef where production is estimated to fall by -3.3%.

A second study by Gocht, Britz, and Adenauer (2011) uses the farm type module of the partial equilibrium CAPRI model to analyse the impact of a flat rate for direct payments at regional, Member State and EU levels (with the level of redistribution and potential impacts increasing in

moving to an EU flat rate) (see also Gocht et al., 2013). Partial rather than full capitalisation of direct payments is achieved by assuming a somewhat elastic total land supply function as well as a transformation function describing the substitution between arable and permanent grassland. The elastic supply function means that, if direct payments fall sufficiently, land moves out of agricultural production and overall production will fall. This study also shows relatively small production and price impacts. In the EU flat rate scenario, which represents the most radical redistribution of direct payments, production generally falls (by -1.3% and -1.9% for cereals, by -1.7% and -0.8% for oilseeds, and by -0.6% and -0.2% for meat in the EU-15 and EU-10 respectively). The maximum price increase was for cereals of 1.5% for the EU-15 and 2.9% for the EU-10, while for meats prices are projected to increase by 1.1% in the EU-15 and 1.2% in the EU-10. The small magnitude of the impacts is due in part to the role of entitlements in limiting land use expansion while allowing for some substitution between grassland and arable land.

Further effects of convergence might be expected through its impact on the degree to which the BPS, green and other payments are **capitalised into land values**. Ciaian, Kancs, and Swinnen (2014) consider this issue but conclude that it is difficult to generalise the direction of impacts because of the many differences between Member States in the ways they have implemented the BPS and the heterogeneity of farms. They conclude that the overall cut in the budget for direct payments, the addition of more targeted payments (young farmers, redistributive payment) and the introduction of the greening requirements will all reduce the degree of capitalisation. On the other hand, the move to greater use of the regional model together with the resulting reallocation of entitlements, as well as the updating of the base year for the allocation of entitlements and the reduction in payment differences between farms also in the partial convergence BPS model, will tend to increase the degree of capitalisation. As they use a conceptual model, they cannot conclude which is likely to be the stronger effect. They do not take into account the greater use of coupled payments within the direct payments envelope in their model.

Compliance with the practices required for the **green payment** will increase the costs of farming in the EU either directly or in the form of loss of income in the short-term. The rationale behind the greening practices was to provide a substantial funding resource (30% of the direct payments budget, approximately €12 billion per annum) to support improved environmental management on all agricultural land in the EU-28. The green practices (the requirement to maintain the 2015 ratio of permanent pasture, the requirement for crop diversification and, particularly, the ecological set-aside) will reduce supply and increase market prices. In the longer-term, there may be a positive feedback from more sustainable agricultural practices in terms of higher yields, but the likely importance of this positive feedback is hard to quantify. The Commission made some estimates of the cost of implementing these greening practices in its impact assessment; these were based on the original proposals and not on the legislation as eventually adopted. It concluded that the total cost to EU farmers of complying with the greening practices would amount to approximately €5 billion; this would be equivalent to an increase in input costs on average by a little over 2% (Matthews 2011). However, the final package is considerable weakened compared to the initial proposals, so the impact of greening will be considerably less.

The generous ceilings in the new direct payments regulation and the choices made by Member States mean that **coupled support** will increase significantly in 2015 compared to recent years. While the distorting impact of these choices (both with respect to those sectors in other Member States which are not subsidised as well as for third countries) will be limited by the requirement that the coupled payment schemes should be production-limited, they nonetheless represent a backward step in the historical process of CAP reform. Member States get a second bite at the cherry before August 2016 and thus, conceivably, the share of coupled payments could be increased after 2017.

As discussed in Section 3.5, **supply restrictions** have helped to counter the production incentives provided by border policies and domestic support in the case of milk, sugar and wine. The abolition of milk quotas (which had already been agreed in the 2008 Health Check) took place in 2015 and has contributed to the observed increase in EU milk supplies since then. A similar increase in sugar production is expected once sugar quotas are abolished in 2017. On the other hand, some in the wine industry fear that the new system of planting authorisations could be implemented even more restrictively by Member States than the former system of planting rights.[62]

Finally, the steady decline in the **CAP budget** over the period 2014-2020 should be noted. Total EU agricultural spending also includes national spending by Member States, both to co-finance EU spending and to add to it. However, there is no evidence that national spending is increasing enough to offset the decline in EU spending.

3.11 Summary

In the past, EU agricultural support had a highly distorting impact on trade due both to the market management measures regulated by the CAP and high import tariffs under the CCP. Chapter 2 traced the changes in the EU's agricultural policy over the past 25 years. Market intervention measures now play a very much smaller role than in the past. Most CAP expenditure is now spent on direct payments, the great majority of which are decoupled from production. Whether the CAP (as opposed to the CCP) now distorts world markets now revolves primarily around the question whether the EU's direct payments influence production and thus trade, and if so, to what extent.

The evidence reviewed in this chapter suggests that the EU's direct payments have measurable but small effects on production and trade. Some direct payments remain coupled to production. Even for the decoupled payments, there are positive effects on production when account is taken of their impact in a world of risk and uncertainty. There is only partial capitalisation of decoupled payments in land values, supporting the view that a proportion of these payments help to attract additional inputs, labour and capital into agricultural production. Decoupled payments also ease access to credit for credit-constrained farmers, and thus facilitate investment in improved technology. These positive effects on production are offset by the reduced pressure on farmers to improve their allocative and technical efficiency when a high proportion of their income is contributed by decoupled payments, and by the role that decoupled payments play in slowing down structural change and thus the reallocation of land from less to more productive farmers. Any net positive impact on production is also mitigated by various supply-limiting and supply-reducing measures including milk and sugar quotas, vineyard planting rights, support for non-food production and cross-compliance obligations for the receipt of direct payments.

[62] See CEEV, "Open letter on the future vine planting rules in Europe", 15 April 2014, available on the internet at www.ria.fr/Download/var/la_vigne/DocumentsUtiles/CEEV__Members_OPEN_LETTER.pdf, accessed 23 May 2016.

4. TRADE IMPLICATIONS OF AGRICULTURAL TRADE POLICIES

4.1. Introduction

This chapter deals with the EU trade policies regarding the agricultural sector. For quite a long time, trade policies were a crucial component of the CAP since maintaining minimum market prices required insulation from world market influences. Initially, the EU applied a complex system of border protection, regulated by each Common Market Organisation (CMO). For most products the EU applied import levies and export refunds that varied with international prices in order to guarantee high and stable domestic prices. After the 1994 Uruguay Round Agreement on Agriculture (AoA), EU variable levies were substituted by tariffs and gradually reduced according to the EU commitments included in its schedules submitted to the WTO. Starting from the mid-nineties and along with the subsequent reforms of the CAP and the gradual decoupling of the EU domestic agricultural policies, the level and nature of EU agricultural trade policies have progressively been "decoupled" from the CAP itself, and mostly managed as "pure" trade policies by the trade policy Directorate within the European Commission. In most recent years, and especially after the Fischler reforms, this process has been completed and current decisions about agricultural trade policies are mostly disentangled from those about domestic policies.

As was pointed out in Chapter 2, only a few trade issues, e.g. import licensing rules, imposition of special safeguard duties, the entry price system for fruits and vegetables, management of tariff rate quotas and export subsidies, are managed in the CMO regulation. By and large it is the Common Commercial Policy (CCP) that now governs overall import protection (e.g., the EU's Common External Tariff (CET), the opening of Tariff Rate Quotas (TRQs) as well as the conclusion of multilateral and bilateral trade agreements). Even if these policy instruments are not intrinsically linked to the traditional CAP anymore, they do provide support to the sector and play a crucial role in influencing world agricultural markets. On the other hand, it is worth mentioning that the "space" for domestic policies has always been constrained by trade agreements, as in the case of the zero rating of oilseeds, and more recently some domestic agricultural policies have been changed, as in the case of bananas, as a consequence of multilateral trade dispute settlement decisions.

This chapter analyses the main instruments of the current EU agricultural trade policies and reviews the available evidence about their distorting impacts on agricultural and food trade, while drawing attention to the most challenging modelling issues in assessing the trade impacts of agricultural trade policies. To set the scene, Section 4.2 provides an overview of EU agricultural and food trade patterns. Then we focus on the most traditional trade barriers – i.e., tariffs – starting with those agreed upon at the multilateral level in compliance with the so-called Most Favored Nation (MFN) clause. Agricultural tariffs have been included in the GATT/WTO schedule only at the end of the Uruguay Round, and Section 4.3 recalls the complexity (many specific and compound duties concentrated in the agricultural tariff lines) of the EU tariff structure.

The EU is the largest trading partner for many of the world's developing countries. Trade preferences make up one of the central policies aimed at improving integration between the EU and these countries. Non-reciprocal trade preferences for low- and middle-income countries have been used by the EU since at least the 1960s and have in a broader sense been at the heart of the North-South trade policy debate for the last half century. The EU was the first developed importer to introduce preferential policies, and since the 1971 Generalised System of Preferences (GSP), the tide of preferential schemes has continued to rise, significantly widening the number of countries and products covered: the most relevant agreements are presented in Section 4.4.

Section 4.5 provides some quantitative evidence on the protectionist impact of EU's tariff structure. The section highlights the methodological challenges around measuring the impact of tariffs and presents some original computations based on state-of-the-art indicators such as the Mercantilistic Trade Restrictiveness index. Also the assessment of the preference intensities is not an easy task: Section 4.6 surveys the empirical literature which has attempted to compute the preference margins regarding agricultural products.

Section 4.7 deals with tariff-rate quotas, i.e., two-tiered tariffs with a limited volume of imports that enters at a lower in-quota tariff and all imports exceeding the quota charged at a higher out-of-quota tariff. This is a trade policy instrument that is widely used by the EU to manage agricultural trade.

Section 4.8 deals with another trade policy instrument, export subsidies. They have been for many years a bone of contention in trade negotiations since the EU was one the heaviest user of these subsidies. However, the Section makes clear that export subsidies have (finally) been set to zero and the EU has accepted a WTO commitment to prohibit their future use.

With the reduction in tariffs under successive GATT/WTO agreements and growing consumer concerns about food safety and quality, NTMs are playing an increasing role in international trade. Agricultural and food products are extensively affected by these measures: Section 4.10 discusses the most relevant NTMs, and presents some evidence regarding the EU case.

The last part of the Chapter is devoted to modelling studies which set out to measure the impact of EU policies on world markets. More specifically, Section 4.10 focuses on empirical studies of the impact of EU agricultural support while Section 4.11 deals with studies simulating the impact of the Transatlantic Trade and Investment Partnership on agricultural trade flows.

The concluding Section 4.12 summarises the main messages of this chapter.

4.2 Structure of EU agricultural trade: an overview

Since 2013 the EU-28 has been the world leader in agri-food trade.[63] With €122 billion of exports and €104 billion of imports in 2014, the EU was the top agri-food exporter and importer in that year. Agri-food exports account for 7% of total EU exports and its agri-food trade surplus corresponds to 80% of the total EU trade surplus. In the last decade, the US and the EU have competed for the world leadership in agri-food exports, with Brazil and China behind; on the import side, the EU is by far the world leader, followed by the US and China.

The structure of EU agri-food trade differs from that of other major traders, such as the US. Primary products and commodities play a minor role in EU exports, while final products (processed foods, food preparations, beverages and non-edible products) account for over two-thirds of EU exports and for about 35% of imports (Figure 19). Its trade structure has not changed significantly in the past ten years, notwithstanding successive EU enlargements and the reforms of the CAP.

[63] Data reported in this section are mostly drawn from *Monitoring Agri-trade Policy* reports by DG Agriculture and Rural Development and exclude EU internal trade. Agri-food products here include chapters 1-24 (excluding fish and fish products) of the World Customs Organization's Harmonized Commodity Description and Coding System (HS) and a number of other headings in chapters 33, 35, 41, 51-53. It is worth mentioning that the definition of agri-food products used by the European Commission differs from the one used by US statistics.

Major changes in the EU trade structure had occurred earlier. In the 1990s, EU exports grew much faster than imports. As a result, the EU's agri-food trade deficit shrunk and, despite the euro appreciation and the 2004 enlargement which took in a number of net-importing countries, in 2006 the EU became a net agri-food exporter. Over this period the EU has specialised in the production and exports of food products, while losing ground in primary commodities.

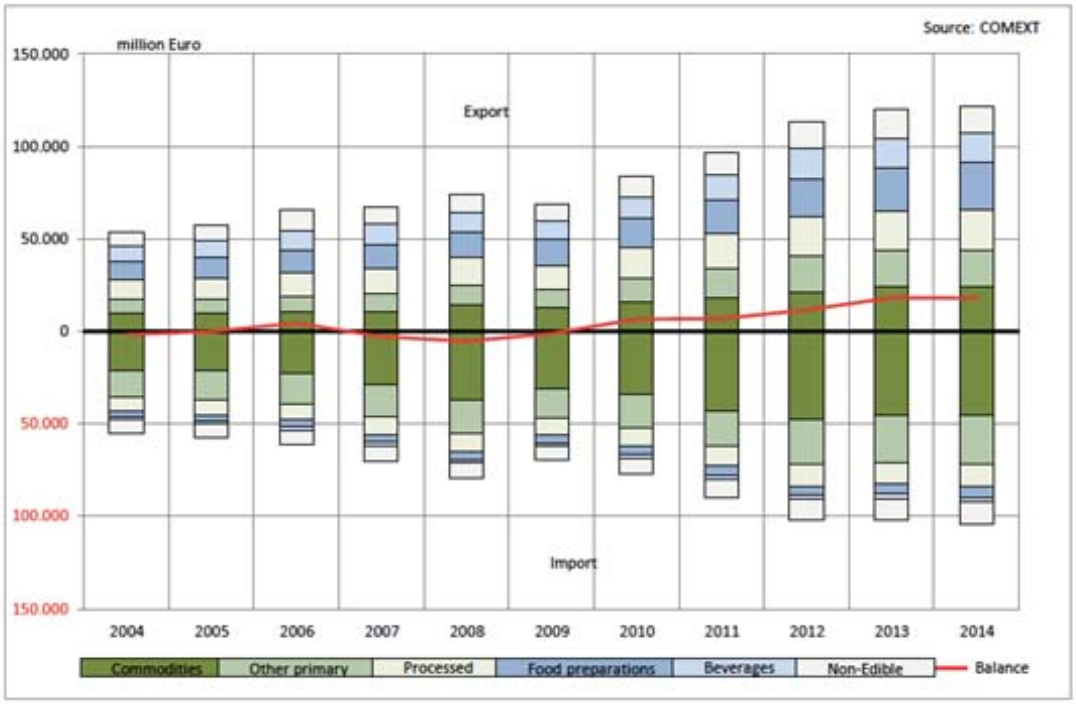
The top exported products in 2014 are "wine, cider and vinegar" and "spirits and liqueurs" (each of them representing 8% of total EU agri-food exports): roughly one third of these exports are sold in the US market (Figure 20). Wheat and "infant food and other cereals" are also quite significant (each of them accounting for 5% of total agri-food exports, respectively): the former is mainly exported to North African countries while the most relevant markets for the latter are China and Russia. Compared to the period 2004-06, the shares of wheat exports as well as wine and spirits exports have increased (from about 2% to the current 5%).

The EU imports mainly three types of products (Figure 21): fruit, nuts and spices, vegetable proteins and fats and coffee. Most of imports are geographically highly concentrated. About 75% of palm oil is imported from two countries (Indonesia and Malaysia) and over 70% of oilcakes imports are sourced from Brazil and Argentina, while the US share is about 5%. About 20% of "tropical fruit, nuts and spices" are imported from the US while 30% of other fruits are imported from Chile and South Africa.

The US is by far the dominant partner accounting in 2014 for 17% of total EU agri-food exports followed by Russia (9%), China (7%), Switerland (7%) and Japan (5%). China considerably increased its share in the past five years: in 2005 China was not in the group of the top six destinations but it became the fifth EU export market in 2010 and the third in 2014. The main source of EU imports of agri-food products is Brazil (13%) followed by the US (10%), Argentina, China and Indonesia (each country with a share about 5%).

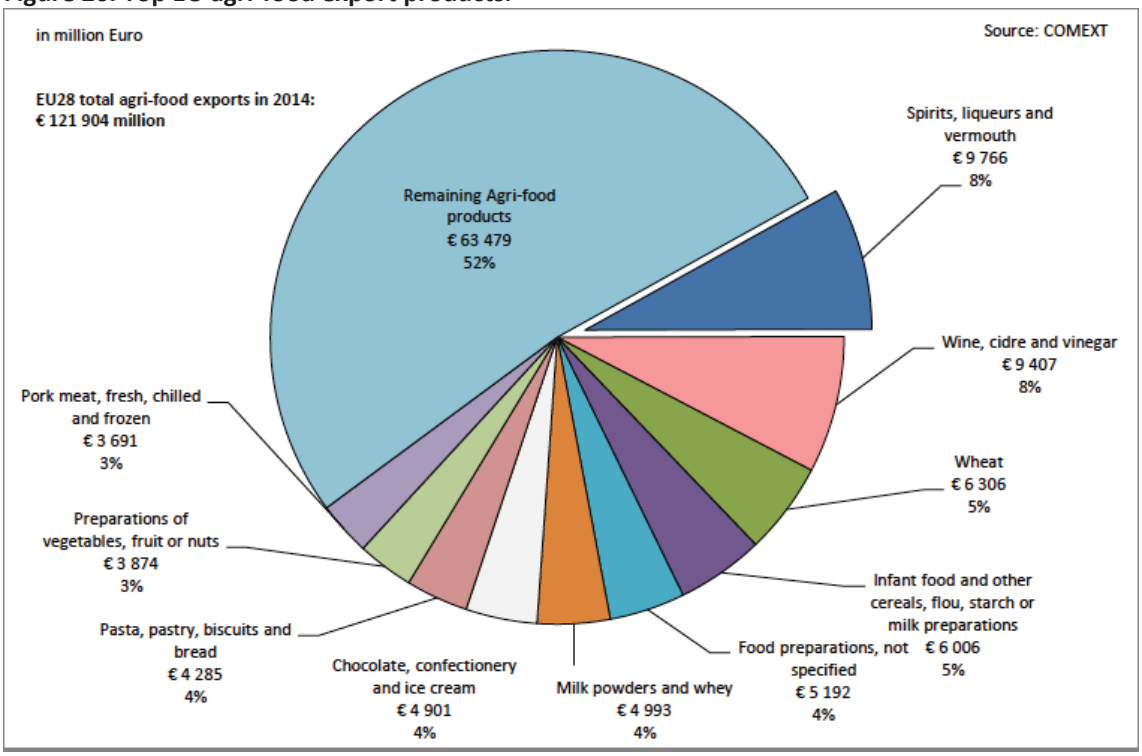
One peculiarity of the EU agri-food trade structure is the role played by developing countries, and in particular the least developed countries (LDCs). LDCs account for 2.9% and 4% of EU agri-food imports and exports, respectively. The EU remains by far the top importer of agri-food products from LDCs. In 2014, EU imports of agri-food products from LDCs reached almost €3 billion. Compared to the purchases of the other top world importers US, China, Japan, Russia and Canada - altogether importing from LDCs €2.5 billion - the EU imports by far outnumber their individual and cumulated imports. Two-thirds of EU imports from LDCs are commodities and other primary agricultural products, while the remaining one-third includes non-edible products, raw tobacco, cut flowers and plants. Coffee, raw tobacco and sugar account for 53% of EU agri-food imports from LDCs. The EU also continues to be the main supplier of agri-food products to LDCs. Compared to the other big agri-food exporters, this again is higher than their exports in absolute and relative terms.

Figure 19. The structure of EU agri-food trade



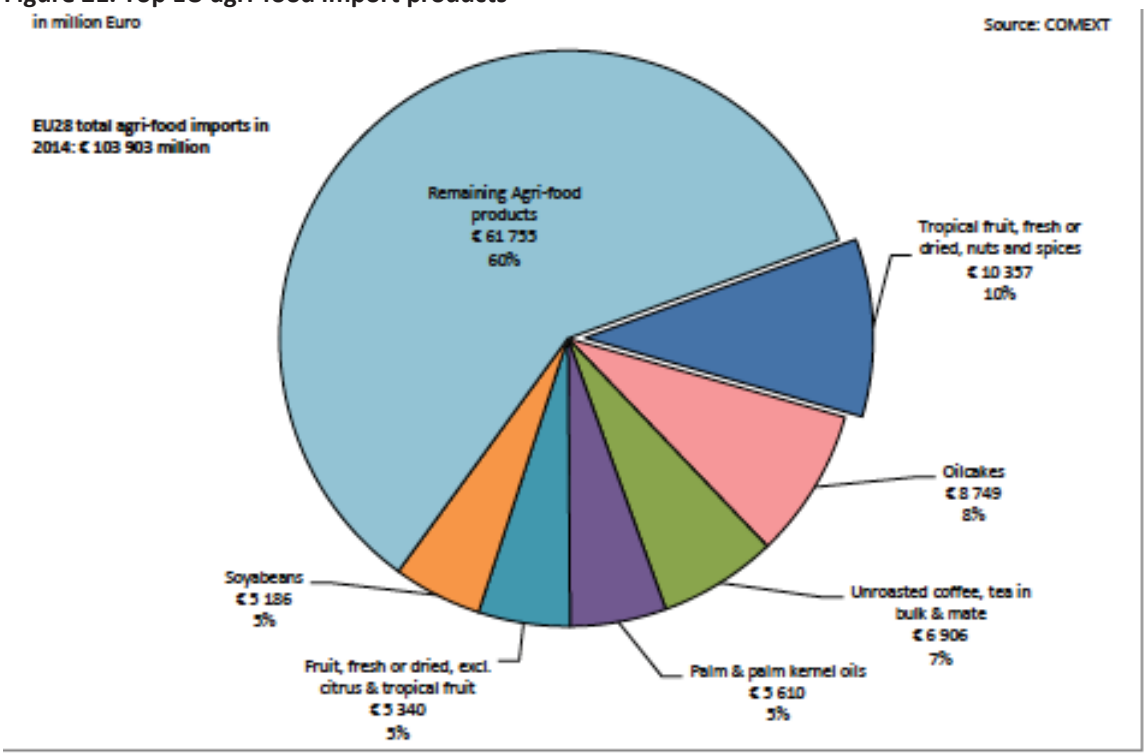
Source: European Commission, 2015b.

Figure 20. Top EU agri-food export products.



Source: European Commission, 2015b.

Figure 21. Top EU agri-food import products



Source: European Commission, 2015b.

4.3. MFN tariffs

The Customs Union is an integral part of the Common Commercial Policy under the exclusive competence of the EU. The 1994 WTO Agreement on Agriculture required the abolition of traditional variable import levies and of other measures and import charges provided for at the time. This meant the conversion of all measures restricting imports of agricultural products into customs duties ("tariffication") and the prohibition of such measures in the future.[64] The 2014 EU list of bound rates

[64] However, for certain product groups supplementary trade mechanisms not involving the collection of fixed customs were introduced. This is the case of the entry price system for some fruits and vegetables, such as tomatoes, cucumbers, artichokes, courgettes (zucchini), peaches and citrus fruits. The system consists of a two-tiered tariff. When the border price of exports to the EU is above the entry price, they must pay an ad valorem tariff. Exports priced below the entry price level must pay in addition a supplementary specific tariff. The amount of the specific tariff depends on the relationship between the entry price level and the border price of the shipment: the cheaper the product, the higher the specific tariff applied, the aim being to prevent the entry of cheap products that erode the market competitiveness of EU production. If the import price is lower than the entry price by less than 8%, besides the tariff, imports are also charged a specific duty that is roughly equal to the difference between the entry price and the import value. If the the latter is below 92% of the entry price, the specific duty applied besides the tariff is the maximum tariff equivalent which is generally so high that its charge would make imports unprofitable (Santeramo and Cioffi, 2012). In many cases, the system applies on a seasonal basis. The entry price level for each product and period is decided by the EU: to ease the implementation of the system, the European Commission calculates and publishes the Standard Import Value (SIV) for each day and origin, as a proxy of the border price of imports coming from every origin. The SIVs are the average of observed wholesale market prices from each origin in the EU minus a marketing

(*schedule*)[65] is coded on the Harmonised System (HS) 2012 basis,[66] comprising 9,379 lines at the eight-digit level: around one-quarter of all tariff lines are duty free (19% in the case of agri-food tariff lines); approximately 7% of lines are "nuisance" rates. The applied MFN tariff profile of the EU has not changed over recent years as the small changes to the simple average tariff are a reflection of changes in the unit prices used to compute the *ad valorem* equivalents (AVEs) (Table 13).[67]

Table 13. Structure of MFN tariffs (2011 and 2014*)*

	MFN applied		Bound
	2011[a]	**2014[b]**	**(2014)**
Bound tariff lines (% of all tariff lines)	100.0	100.0	100.0
Simple average tariff rate	6.4	6.4	6.4
Non-agricultural products (WTO definition)	4.1	4.3	4.4
Agricultural products (WTO definition)	15.2	14.4	14.6
Nuisance applied rates (% of all tariff lines)[c]	8.8	6.9	7.1
Number of lines	9,294	9,379	9,379
Ad valorem	8,319	8,382	8,372
Non-*ad valorem*	553	651	661
Duty free lines	2,319	2,356	2,244

Note: All tariff calculations exclude in-quota lines. Year 2011 tariff schedules are based on HS2007 nomenclature and Year 2014 schedule is based on HS2012.
a: *Ad valorem* equivalents based on 2010 import data at the eight-digit tariff from Eurostat database.
b: *Ad valorem* equivalents based on 2013 import data at the eight-digit tariff from Eurostat database.
c: Nuisance rates are those greater than zero, but less than or equal to 2%.
Source: WTO (2015a)

The simple average applied MFN tariff rate, including the *ad valorem* equivalents (AVEs) of non-*ad valorem* tariff rates, is 6.4%. In the EU WTO schedule, 25% of the tariff lines are duty-free. Given that agricultural duties were bound under the General Agreement on Tariffs and Trade (GATT) only at the end of the Uruguay Round, it is not surprising that industrial goods are characterised by lower MFN tariffs than the agricultural sector (based on the relevant WTO definition).[68] The average applied rate for agriculture fell to 14.4% in 2014 from 15.2% in 2011. This reflects increases in prices of agricultural products and the resulting reduction in the AVEs of non-*ad valorem* tariff rates applied on such products. Agricultural products have a higher average level of protection and greater variation from one tariff line to another (Table 14).

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and transportation margin. The SIV are compared with the entry prices to evaluate whether an additional tariff has to be charged and, if this is the case, to calculate the size of the additional tariff.

[65] The legally binding tariff commitments of a WTO member are specified in its Schedule of concessions and commitments, which defines the bound tariffs for a list of commodities. On 6 October 2015, the European Commission amended the tariff and statistical nomenclature on the Common Customs Tariff: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R1754&rid=2. The tariffs set out in it would be expected to correspond to the EU's WTO Schedule, one complicating factor being that the latest official WTO Schedule of the EU is that of the EU-15.

[66] The Harmonized System nomenclature, which has experienced several revisions over time, is the World Customs Organization's system of code numbers for identifying products. The Harmonized Commodity Description and Coding System is widely adopted (98% of world trade), but it is "harmonized" only up to the 6-digit level: beyond that, each country uses its own classification.

[67] The EU has reserved the right to use the special agricultural safeguard on 539 tariff lines. Such a safeguard allows to charge higher duties if volume or price triggers are surpassed. However, the mechanism has been hardly used in recent years (WTO, 2015a).

[68] The goods covered by the Uruguay Round Agreement on Agriculture include, in the Harmonized System classification, all of the items corresponding to Chapters 01, 02, 04 to 24 (i.e. all food and agricultural products, with the exception of fish products), and selected items of Chapters 29, 31, 33, 35, 38, 40, 41, 50, 51, 52, 53 (that is, non-food agricultural products, such as skins for leather, etc.).

The EU applies several types of tariff: *ad valorem* rates, charged as a percentage of the *cif* customs value, are the most widely used (roughly 70% of agricultural tariff lines at the HS-6 level), but there are several specific tariffs (i.e., specified in values per kilogram, liter, or head of animal), compound tariffs (sum of an *ad valorem* and specific component) or mixed tariffs (combinations of *ad valorem*, specific and compound tariffs with complex operators such as Max or Min). Around 11% of the total tariff lines are non-*ad valorem*, mostly on agricultural products. Agricultural imports continue to face complex tariff structures such as entry price systems and the "Meursing Table".[69] On average, non-*ad valorem* rates continue to provide higher protection than *ad valorem* rates. All rates above 100% are AVEs relating to agricultural goods, applying to, *inter alia*, whey and modified whey (635%), prepared or preserved poultry (288.9% and 143.2%), prepared or preserved mushrooms (183.5% and 159.5%), live poultry (156.4%), isoglucose (119.7%), and grape juice (116.2%).[70] Some products are also subject to tariff quotas and seasonal tariffs: more details on these tariff lines will be provided below in section 4.7. Finally, the EU tariffs not only combine *ad valorem* and specific elements, but also seasonal variations and tariffs which vary by the price of the import.

Table 14. Summary statistics of EU MFN tariffs (2014)

	Number of lines	Simple average (%)	Tariff range (%)	Standard deviation	Share of duty free lines (%)	Share of non-ad valorem tariffs
Total	9,379	6.4	0-635.4	12.0	25.1	10.6
WTO Agricultural products	2,069	14.4	0-635.4	23.5	19.2	46.5
Animals	351	20.2	0-288.9[a]	28.5	15.1	68.7
Dairy	152	36.1	0-635.4[b]	59.6	0	98.7
Fruit, vegetables, and plants	503	13.1	0-183.5	14.2	11.9	17.1
Coffee, tea, and cocoa	47	12.5	0-65.2	10.3	14.9	51.1
Cereals	230	15.7	0-75.8	12.0	8.7	80
Oilseeds, fats, oil	174	6.4	0-117.1	12.7	35.6	6.9
Sugars and confectionary	44	25.7	0-119.7	29.9	4.5	88.6
Beverages, spirits and tobacco	303	13.6	0-116.2	17.8	18.2	55.8
Cotton	6	0	0	0	100.0	0
Other	259	5.2	0-85.8	10.3	51.0	22.0
WTO non - agricultural products	7,310	4.3	0-26	4.4	26.8	0.5

Note: Calculations for averages are based on the 8-digit tariff line level, excluding in-quota rates. Tariff schedule is based on HS2012. *Ad valorem* equivalents based on 2013 import data at the eight-digit tariff from Eurostat database.

[69] Many processed food products, such as confectionary products, baked goods, and miscellaneous food preparations, are subject to a special tariff code system in the EU. Under this system, often referred to as the Meursing table, the EU charges a tariff on each imported product based on the product's content of milk protein, milk fat, starch, and sugar. As a result, products that the United States and other countries might consider equivalent for tariff classification purposes sometimes receive different rates of duty in the EU depending on the particular mix of ingredients in each product. The difficulty of calculating Meursing duties imposes an unnecessary administrative burden on and creates uncertainty for exporters, especially those seeking to ship new products to the EU.

[70] The WTO Agreement stipulates that customs valuation shall, except in specified circumstances, be based on the actual price of the goods to be valued, which is generally shown on the invoice: this price equals the transaction value, which constitutes the first and most important method of valuation. Transaction values include insurance and all other charges up to the named port of destination (cost, insurance, freight – c.i.f. values).

a: The tariff peak is calculated on a tariff line for which imports in 2013 were 2 tonnes. The next tariff peak in the same sector is 143.2%.
b: The tariff peak is calculated on a tariff line for which imports in 2013 were 22 tonnes. The next tariff peak in the same sector is 93.5%.
Source: WTO (2015a)

4.4. EU preferential trade agreements

According to the most recent data, the EU not only has many preferential trade agreements in place, but it also has several agreements awaiting adoption/ratification (among them the Comprehensive Economic and Trade Agreement with Canada), and an even higher number under negotiation (Table 15). The latter include negotiations with MERCOSUR, Japan and, most importantly, the US.

The EU's reciprocal trade relations with the African, Caribbean and Pacific (ACP) countries are governed by Economic Partnership Agreements (EPAs). The EPA process involves seven regional configurations: CARIFORUM, Pacific, Central Africa, West Africa, Southern African Development Community (SADC), East African Community (EAC), and Eastern and Southern Africa (ESA). The state of the negotiations/implementation is summarised in Table 16.

EPAs with all CARIFORUM countries (except Haiti), four countries in ESA, Papua New Guinea and Fiji in the Pacific region, and Cameroon in Central Africa are under implementation. In addition, EPAs with West Africa, SADC, and EAC were concluded in 2014, which will replace interim EPAs that some of the partners had concluded with the EU. Countries that do not apply the EPA in ESA, Central Africa, and Pacific may receive unilateral preferences under the GSP; least developed countries (LDCs) continue to benefit from the duty-free and quota-free (DFQF) access to the EU market under the Everything But Arms (EBA) arrangement of the GSP.

The EU maintains the European Economic Area (EEA) agreement with Iceland, Liechtenstein and Norway, allowing these countries to participate in the internal market for free movement of goods, capital and labour. The EU also has customs unions with Andorra, San Marino, and Turkey. With regard to Switzerland, the EU has several bilateral agreements covering, inter alia, the free movement of persons, trade in agricultural products, public procurement, technical barriers to trade, transport, research, taxation of savings, and fighting against fraud.

The EU's Generalised System of Preferences (GSP) consists of three arrangements:

- standard GSP, which provides tariff preferences to beneficiary developing countries;
- GSP+, which offers additional tariff reductions to "vulnerable" countries that ratify and effectively implement core international conventions in the fields of human rights, labour rights, environmental protection, and good governance; and
- Everything But Arms (EBA), which offers duty-free and quota-free access for all products except arms and ammunitions from LDCs.

The new Generalised System of Preferences (GSP) began to apply on 1 January 2014. The GSP concentrates the benefits on fewer eligible countries - countries classed as high or upper middle income for the most recent three years by the World Bank or countries having equivalent or better preferential access under other arrangements were removed from the list of beneficiary countries. Hence, the number of GSP beneficiaries decreased from 178 under the previous GSP to the current 92, and is expected to decrease further.

Table 15.The state of EU preferential trade agreements

EU & Customs union	**EU28** (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom), Andorra, Monaco, San Marino, Turkey
European Economic Area	Norway, Iceland, Liechtenstein
Preferential trade agreement in place (FTA, EPA, DCFTA)	Papua New Guinea, Fiji, Republic of Korea, Jordan, Egypt, Israel, Palestine, Lebanon, Syria, Georgia, Switzerland, Bosnia Herzegovina, Serbia, Albany, Macedonia, Montenegro, Ukraine, Moldova, Algeria, Cameroon, Zimbabwe, South Africa, Madagascar, Mexico, **CARIFORUM** (Antigua and Barbuda, The Commonwealth of the Bahamas, Barbados, Belize, The Commonwealth of Dominica, The Dominican Republic, Grenada, The Republic of Guyana, The Republic of Haiti, Jamaica, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, The Republic of Suriname, The Republic of Trinidad and Tobago), Guatemala, Honduras, Nicaragua, San Salvador, Costa Rica, Panama, Colombia, Peru, Chile
Preferential agreement awaiting adoption/ratification	Vietnam, Armenia, **SADC*** (Mozambique, Swaziland, Botswana, Lesotho, Namibia), **EAC** (Tanzania, Burundi, Ruanda, Uganda, Kenya), Somalia, **West Africa** (Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Niger, Burkina Faso, Mauritania, Mali), Canada, Ecuador
Preferential trade agreement being negotiated	Thailand, Malaysia, Singapore, Brunei Darussalam, Philippines, Japan, India, Saudi Arabia, Oman, Alaska, United States of America, **Central Africa**** (Chad, Central African Republic, Equatorial New Guinea, Gabon, Congo, Dem. Rep. of the Congo), **ESA***** (Zambia, Malawi, Sudan, Eritrea, Djibouti, Ethiopia, Comoros, Mauritius, Madagascar, Seychelles), **MERCOSUR** (Argentina, Uruguay, Paraguay, Brazil)
Potential for free trade partnership	Australia, Indonesia, Laos, Azerbaijan, Angola, Bolivia, Cambodia, Lao
Stand-alone investment agreement being negotiated	China, Myanmar/Birma
Preferential agreement in the process of modernisation	Marocco, Tunisia

* Except South Africa and Angola.

** Except Cameroon

*** Except Zimbabwe

(Updated March 2016).

Source: http://trade.ec.europa.eu/doclib/docs/2006/december/tradoc_118238.pdf.

The EBA arrangement has no expiry date while the standard GSP and GSP+ beneficiaries have this status for ten years unless they graduate from the scheme. Products covered in the GSP are reviewed every three years: imports of a particular product from a beneficiary country no longer have preferential access when they exceed a certain level, defined as a percentage of total imports of that product from all GSP beneficiaries. The current threshold for product graduation is 17.5% (and 14.5% for textiles). Product graduation applies only to standard GSP beneficiaries, not to GSP+ and EBA countries. A total of 44 sectors from eight countries were set to graduate in the period of 2014-16. However as some of these countries qualified for GSP+ and/or exited the scheme due to the income criterion in the meantime, currently only 11 sectors from four countries have effectively graduated. Since 2011 the GSP rules of origin remained largely unchanged.

Table 16. The state of EPA negotiations

Regions	Countries	Status
West Africa		Signature process currently ongoing
Central Africa	Cameroon	Provisionally applied
ESA	Mauritius, Seychelles, Zimbabwe and Madagascar	Provisionally applied
EAC	Burundi, Kenya, Rwanda, Tanzania, and Uganda	Agreement prepared for signature
SADC		Agreement prepared for signature
Caribbean	CARIFORUM countries (except Haiti)	Under implementation
Pacific	a) Papua New Guinea and Fiji	Provisionally applied
	b) Cook Islands, Fiji, Kiribati, the Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu	Ongoing negotiations

(Updated March 2016).
Source: http://trade.ec.europa.eu/doclib/docs/2009/september/tradoc_144912.pdf.

To benefit from preferential tariffs goods must be either wholly originating or, if containing non-originating materials, must undergo a substantial transformation in the exporting country. This entails a change in tariff classification or minimum regional value added. Not all Rules of Origin are of equal stringency. For a number of agreements a large percentage of agricultural products are required to be wholly originating or entirely produced/raised in the exporting country. These are usually HS chapters 01 through 08, and 10 and 12 for which raw materials and minimal processing predominate. The European Free Trade Association as well as the EU-Canada Comprehensive Economic and Trade Agreement, for instance, tend to follow this pattern (Fulponi et al., 2011).

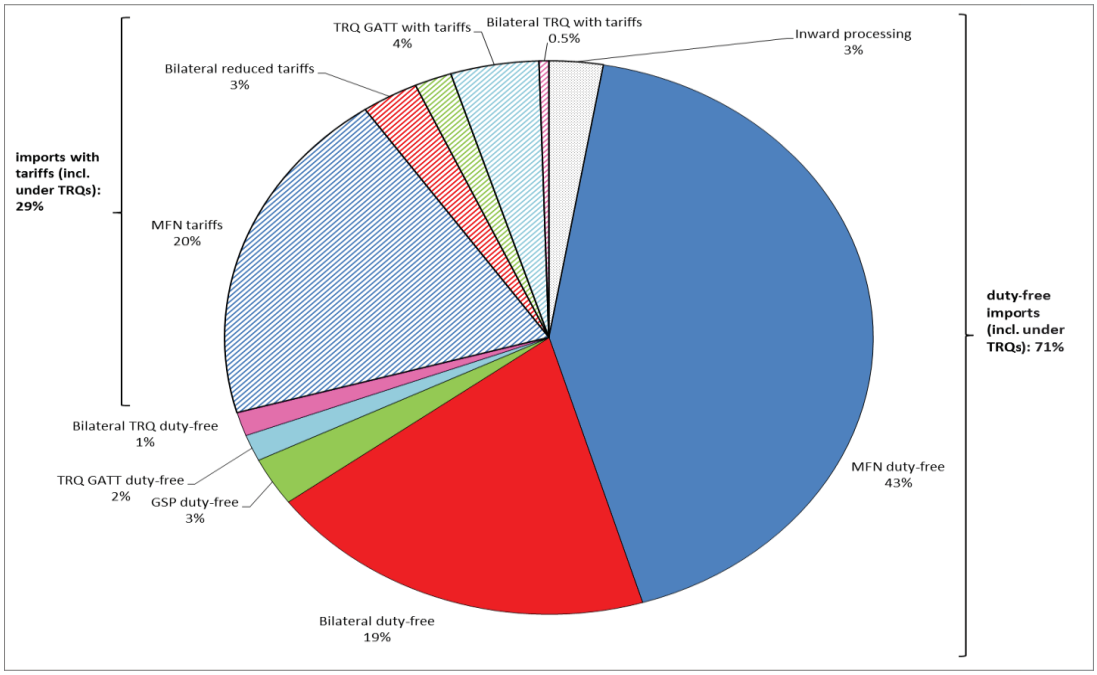
The cumulative effect of the various preferential arrangements already in place or under negotiation implies that only a few countries and territories trade with the EU on an MFN basis (although the GSP does not cover all products for all beneficiaries). Furthermore, the EU's deep and comprehensive trade agreements and its Economic Partnership Agreements go beyond basic terms for trade in goods and services and include trade-related policies in areas such as investment, non-tariff barriers, and intellectual property.

4.5 The protective effect of EU tariffs

According to EU Commission data (European Commission, 2015a), the majority of EU duty-free imports (and 43% of the value of all EU agri-food imports) concerns products that are already fully liberalised under the WTO agreement (MFN duty-free, see Figure 22). Most of the remaining EU duty-free imports benefit from liberalization in bilateral agreements (19% of the value of all EU agri-food imports). 12% of EU duty-free imports come in under the GSP scheme, including the EBA scheme, from duty-free TRQs (GATT and bilateral ones) and from imports through the inward processing regime (3% each).[71]

[71] Inward Processing is an EU customs duty relief procedure. It allows goods to be imported into the European Union, for the purpose of being processed there and subsequently exported outside the Customs territory of the Community, without payment of duties.

Figure 22. Distribution of EU28 imports of agri-food products by import regime, duty-free vs dutiable 2014



Source: European Commission, 2015a.

The way tariffs are aggregated plays a crucial role when discussing their protective effect. The simple average used in the previous tables has a poor level of economic relevance since it gives the same weight to a highly important traded product as to a marginal one. Also the trade-weighted average suffers from serious limitations (Cipollina and Salvatici, 2008). Some theoretically sound aggregators exist, such as the Mercantilist Trade Restrictiveness Index (MTRI) developed by Anderson and Neary (2005). This is the uniform tariff equivalent which would maintain the same volume of trade once all existing tariffs were eliminated (See Box on the next page).

Table 17. EU agricultural MTRI with respect to imports from selected countries, by product group

	USA	China	Japan	India	Argentina	Brazil	Russia
Total	**16.5**	**9.0**	**18.2**	**4.2**	**21.0**	**24.0**	**7.7**
Wheat	0.8	0.0	0.0	0.0	0.0	0.0	5.3
Vegetables, fruit, nuts	0.4	0.8	0.1	0.1	0.8	0.1	0.0
Other crops	0.5	0.2	0.7	0.4	0.0	0.4	0.0
Rice	0.0	0.0	0.0	0.2	0.1	0.0	0.0
Meat	7.4	0.1	0.2	0.0	18.1	11.6	0.2
Meat products	0.6	0.5	0.3	0.0	0.8	5.5	0.1
Dairy products	2.1	0.1	11.5	0.2	0.0	0.0	0.1
Processed rice	0.1	0.0	0.2	0.6	0.0	0.0	0.0
Sugar	0.0	0.0	0.0	0.8	0.2	4.4	0.1
Other Food products	2.7	7.0	4.8	1.7	0.7	1.8	1.2

Source: Own computations

BOX ***The mercantilist trade restrictiveness index***

A uniform tariff τ^{μ} is defined, yielding at world prices the same volume of tariff-restricted imports as the initial vector of (non-uniform) tariffs. This can be computed via import demand functions *M*, holding the balance of trade function constant at level B^0, according to:

(1) $$\tau^{\mu} : M\left[p^{*}\left(1+\tau^{\mu}\right), B^{0}\right] = M^{0}\left(p^{0}, p^{*}, B^{0}\right), \text{ with } p^{0} \equiv p^{*}\left(1+t\right).$$

where p^{*} denotes a vector of world prices (p_k^{*}) of *N* goods *k = (1,…,N)*, M^0 is the value of the aggregate imports at world prices in the reference period, and p^0 is the initial distorted price vector with *t* denoting the actual tariff schedule. Define the scalar import demand as

(2) $$M\left(p, p^{*}, B\right) \equiv \sum_{c=1}^{r}\sum_{k=1}^{N} p_{c,k}^{*} I_{c,k}^{m}\left(p, B\right)$$

where $I_{c,k}^{m}$ denotes the uncompensated (Marshallian) import demand function of good *k* from country *c*. Accordingly, the MTRI uniform tariff would lead to the same volume of imports at world prices as the one resulting from the actual (non-uniform) tariff structure, denoted by the *N-r* bilateral tariffs matrix *T* whose elements are $t_{c,k}$:

(3) $$\sum_{c=1}^{r}\sum_{k=1}^{N} p_{c,k}^{*} I_{c,k}^{m}\left[p^{\mu}, B^{0}\right] = \sum_{c=1}^{r}\sum_{k=1}^{N} p_{c,k}^{*} I_{c,k}^{m}\left[p^{0}, B^{0}\right]$$

In order to obtain information on the level of trade restrictiveness imposed on exports of each exporter *c*, we can compute a bilateral version of the MTRI uniform tariff. In equation (2) we sum over *k*, rather than over *k* and *c*, so that the bilateral uniform tariff MTRI (τ_c^{μ}) is defined as follows:

(4) $$\tau_c^{\mu} : M_c\left[p^{*}\left(1+\tau_c^{\mu}\right), B^{0}\right] = M_c^{0},$$

where $M_c^{0}\left(p^{0}, p^{*}, B^{0}\right) \equiv \sum_{k=1}^{N} p_{c,k}^{*} I_{c,k}^{m}\left[p_{c,k}^{*}\left(1+t_{c,k}\right), B^{0}\right]$ is the value of aggregate imports (at world prices) from country *c* in the reference period.

In order to compute the agricultural (*a*) MTRI uniform tariff ($\tau_c^{\mu a}$), equation 4 is modified as follows:

(5) $$\tau_c^{\mu a} : \sum_{k=1}^{Na} p_{c,k}^{*} I_{c,k}^{m}\left[p_{c,k}^{*}\left(1+\tau_c^{\mu a}\right), B^{0}\right] \equiv \sum_{k=1}^{Na} p_{c,k}^{*} I_{c,k}^{m}\left[p_{c,k}^{*}\left(1+t_{c,k}\right), B^{0}\right],$$

where *Na* is the number of agricultural products. We compute the MTRI uniform tariff considering border and policies, i.e., import tariffs and export subsidies.

4.6 Preferential margins

For comparisons across products, countries and over time it is necessary to construct measures that summarise the levels of trade preferences implied by the various schemes, for different commodities and countries. There is no clear and unequivocal definition of a preferential tariff margin in the literature: for instance, margins can be expressed in absolute or relative terms. However, regardless of the definition used and the way that it is expressed, EU preferential trade policy agreements vary widely across products and exporters. Therefore, analyses of preferential tariff margins should use the most disaggregated data available. Because of the wide variation in preferential margins across products and countries, margins need to be aggregated in order to provide an overall measure, and for trade policy analysis it is important to use the correct aggregation method.

Cipollina and Salvatici (2011) argue that trade volume seems to be the most appropriate reference standard, since countries enjoying trade preferences are expected to export relatively more than

countries still facing MFN tariffs, either bound or applied. Accordingly, they define a Mercantilist Trade Preference Index (MTPI) as the uniform relative margin which yields the same volume (at world prices) of tariff-restricted imports as the initial vector of (non-uniform) relative preferential margins. In other words, the uniform scaling factor (α) applied to maximum applied rate (τ^{max}) for each tariff line generates a counterfactual tariff vector that yields the same volume of imports as generated by the initial tariff vector of preferential tariffs. The Index is computed as the complement to the numeral one of the uniform percentage reduction ($1-\alpha$) in order to get larger values for higher preferences.

The calculation of the MTPI takes place in a partial equilibrium framework modeling demand through a constant elasticity of substitution (CES) functional form. Cipollina and Salvatici consider 4,879 products at the 6-digit level Harmonised System (HS) classification level, from 167 exporters to the EU (25 countries). Tariffs are taken from the MAcMap-HS6 database.[72] Trade flows are from the Eurostat Comext database. Information on elasticities of substitution and domestic expenditure is from Version 7 of the Global Trade Analysis Project (GTAP) dataset (Narayanan and Walmsley 2008). All data – i.e., tariffs, trade and domestic expenditure, elasticities – refer to 2004.

Table 18. MTPI and potential-MTPI

Sectors	*MTPI (%)*	*Potential MTPI (%)*
All products	**28**	**41**
Agricultural sector	**38**	**47**
Animal products n.e.c.	8	31
Beverages and tobacco products	14	16
Bovine cattle, sheep and goats, horses	47	88
Bovine meat prods	35	62
Cereal grains n.e.c.	25	30
Crops n.e.c.	38	48
Dairy products	35	54
Fishing	53	57
Food products n.e.c.	47	57
Forestry	36	48
Meat products n.e.c.	20	22
Paddy rice	24	29
Processed rice	61	61
Sugar	63	66
Vegetable oils and fats	23	26
Vegetables, fruit, nuts	60	67
Wheat	65	66
Non-agricultural sector	**25**	**39**

Source: Adapted from Cipollina and Salvatici (2011)

Imports actually receiving a preferential treatment represent only a (sometimes small) share of eligible imports. As a matter of fact, preferences are often limited to certain quantities and are always granted with some "strings" attached in terms of implementation costs, such as rules of origin. To shed some light on the relevance of the low utilization issue, Cipollina and Salvatici (2011)

[72] MAcMap provides a consistent assessment of protection across the world, including AVE rates of applied tariff duties and TRQ at the 6-digit level of the HS (http://www.cepii.fr/anglaisgraph/bdd/macmap.htm).

also compute a *potential-MTPI* assuming that all imports paid the preferential duty. Comparing the potential with the actual MTPI it is possible to assess to what extent exporters are actually constrained in using the preferences. In other terms, the *potential-MTPI* represents a sort of upper-bound of the possible value of the granted preference margins if they were fully utilised.

The MTPI margins for different sectors in the EU are presented in Table 18. The overall MTPI margin granted by the EU is 28%, but there are large differences across sectors. The agricultural sector is far above the average with a margin equal to 38%, and the highest percentages are registered by wheat and sugar (65% and 63%, respectively). In contrast, most industrial sectors present much lower figures (the overall margin is 25%), with a minimum equal to 9% in the case of electronic equipment.

The potential-MTPI is likely to underestimate the impact of regulations that do not allow a full exploitation of the existing preferences, since trade volumes might have been even larger than the actual ones. However, the comparison with the MTPI margins highlight the sectors—cattle, meat and dairy products—where traders cannot take full advantage of the right to sell into the EU market at a reduced duty because of restrictions on rules of origin, high administrative costs involved in securing preferential treatment or the presence of non-tariff barriers such as sanitary regulations.

The choice to use the maximum applied duties, rather than the bound ones, puts the emphasis on the actual margins with respect to possible competitors. It avoids an overestimation of the competitive advantage enjoyed by an exporting country receiving a preference, as would be the case if the highest applied duties were lower than the maximum ceiling allowed by the WTO commitments. The traditional measure of the extent of the preferential margin (i.e., computed by comparing the tariff offered to a recipient to a multilateral rate) may be important for some products and markets. However, the proliferation of preferential agreements over the last two decades means that it is relative preferences that matter because competing suppliers likely enjoy some preferential treatment of their own in the EU market. Cipollina et al. (2014) derive a micro-founded measure of relative preference margins analyzing the variation of margins across 10,174 tariff lines and 234 exporters to the EU market in 2004. In practice, they define the preferential margins ($pref_i^k$) as the ratio between the reference tariff factor (1+T^k) and the applied tariff factors faced by each exporter (t_i^k):

$$pref_i^k = \frac{(1+T^k)}{(1+t_i^k)}.$$

The critical issue is the measurement of the reference tariff T^k with respect to which the preference margin is determined. Any measure of preference margins should signal the possible disadvantage of one country with respect to other exporters. Accordingly, T^k can be lower than t_i^k and margins between 0 and 1 signal the existence of negative preferences, i.e. exporters are at a disadvantage with respect to other competitors independently from the (nominal) existence of a preferential treatment. More precisely, when T^k is greater than t_i^k, $pref_i^k$has a value greater than 1 signalling a positive margin. On the other hand, when T^k is lower than t_i^k, margins between 0 and 1 signal the existence of negative preferences. The bottom line is that exporters may be at a disadvantage or not with respect to other competitors independently from the (nominal) existence of a preferential treatment. In terms of practical implementation, Cipollina et al. argue that the theoretically consistent choice is to compute the price index T^k consistently with the assumed demand functional form, namely Constant Elasticity of Substitution (CES).

Table 19 disaggregates EU agricultural imports, both preferential and MFN (i.e., entering the European market without claiming any preferential treatment), according to the value greater, equal or lower than one of the preference margin ($pref_i^k$). Results are presented for the 4 sections of the Harmonised System (HS) including the agricultural goods.

Looking at Table 19, it turns out that not all preferential flows actually enjoy a preferential treatment: 1%, corresponding to imports of €6,958 million, face bilateral duties that, even though lower than MFN duties, are still higher than the ones faced "on average" by the competitors. Such a percentage is higher for agri-food trade reaching 6% in the case of Section III products. Our computation of the margin makes clear that almost one-fourth (€143,270 million) of non-preferential trade flows are negatively affected by the existence of preferential schemes: in the case of agri-food chapters, this percentage ranges between 19 and 31%. On the other hand, there are cases (corresponding to €576 million) in which the bilateral ad valorem equivalent MFN tariff could be lower than those faced by the competitors; this happens when particularly high bilateral unit values lower the value of the bilateral ad valorem equivalent. Accordingly, high quality exports could enjoy a preferential treatment even in the absence of an explicit preferential policy; these instances are obviously limited to the sections featuring specific tariffs, which by and large coincide with the agricultural ones (I-IV). Overall, the share of EU imports enjoying preferential treatment (16.8%) is lower than the share of trade facing duties higher than the CES reference tariff duties (22.9%).

Table 19. Trade flows according to CES preference margins, preferential status, and shares with respect to total EU imports (2004)

WTO Sections	Preferential trade flows (Millions of €)			MFN flows (Millions of €)		
	Margin > 1	Margin = 1	Margin < 1	Margin < 1	Margin = 1	Margin > 1
Total merchandise trade	105,133 (16.8)	43 (0)	6,958 (1.1)	143,270 (22.9)	370,096 (59.1)	576 (0.1)
I (Chapters 1-5): Animal products	4,945 (45.0)	6 (0.1)	238 (2.2)	3,387 (30.8)	2,398 (21.8)	17 (0.2)
II (Chapters 6-14): Vegetables	2,801 (16.1)	0	339 (1.9)	3,695 (21.3)	10,091 (58.0)	456 (2.6)
III (Chapter 15): Oils and fats	597 (56.5)	0	64 (6.1)	201 (19.0)	194 (18.4)	0
IV(Chapters 16-24): Foodstuffs	4,219 (30.5)	0	476 (3.4)	2,993 (21.6)	6,055 (43.8)	86 (0.6)

Source: Cipollina et al. (2014)

Cipollina et al. (2014) use the above mentioned measure of EU preferential tariff margins in a highly disaggregated, theoretically grounded gravity model in order to estimate the impact of trade preferences on bilateral trade flows. The estimated trade impact of EU preferences for the 4 agricultural sectors are presented in Table 20. The figures represent trade elasticities of substitution across exporters and are derived making use of the extensive variation available in bilateral trade data, controlling for exporters' supply characteristics and using bilaterally varying preference margins, to identify the substitution elasticity of import demand.

Table 20. Preference margin impact by sector

WTO Sections	Trade elasticity
I (Chapters1-5): Animal products	5.89***
	(4.58)
II (Chapters 6-14): Vegetables	0.28
	(0.12)
III (Chapter 15): Oils and Fats	6.79*
	(3.10)
IV(Chapters16-24): Foodstuffs	1.19*
	(2.46)

*Notes: t statistics in parentheses: *significant at 10 percent level; **significant at 5 percent level; ***significant at 1 percent level.*
Source: Cipollina et al. (2014)

The largest trade impact is registered in the case of Animal or Vegetable Fats (Section III) and Live animals (Section I) while the impact is much lower for processed food (Section IV). There is no significant impact in the case of vegetable products (Section II), where a large share (58 percent) of imports do not pay any duties, and Sections III (animal and vegetable fats) and IV (foodstuffs and beverages) present significant shares of "apparent preferences", i.e., preferential trade flows facing bilateral duties higher than the reference tariff.

Finally, Cipollina et al. (2014) compute the trade effect for Sections with significant preference impacts (Table 21). In all cases, the relative impact on trade depends both on estimated elasticity and on margin size, while absolute figures are obviously influenced by the Sections' shares of total imports. Using an "average" of the duties paid by different exporters as a reference tariff implies that some of these exporters face a negative preference. As a consequence, trade preferences also reduce trade, as could be expected given that providing preferential access to one exporter implies discriminating against all others. Overall, more than 30 percent of actual preferential trade flows would not exist without preferences. The percentage is much lower in the case of the agricultural sectors and the bottom line is that by and large EU tariff preferences appear to be less effective in agriculture than in other sectors. As a matter of fact, non-tariff barriers in general, and sanitary and phytosanitary measures in particular, play a major role in agriculture, and in the case of perishable products, tariff preferences cannot compensate for structural issues such as the lack of transport and logistics infrastructure.

Table 21.Trade effect: results for sectors with significant preference impacts (CES reference tariff)

Sections	Additional flows at world prices (Millions of €)	Trade increase: % of predicted trade (% of 2004 preferential trade)	Missing flows at world prices (Millions of €)	Trade decrease: % of predicted trade (% of 2004 preferential trade)
I: Animal products	799	7.2 (15.4)	650	5.9 (12.5)
III: Oils and Fats	83	7.9 (12.6)	22	2.0 (3.3)
IV: Foodstuffs	288	2.1 (6.1)	189	1.4 (4.0)
Total trade	**22,298**	**6.3 (31.1)**	**13,860**	**3.9 (19.3)**

Source: Cipollina et al. (2014)

The estimated trade elasticities can also be used to compute the counterfactual trade flows regarding each exporter. EU preferences provide a significant boost to developing countries' exports, particular the EBA and GSP Plus components of the EU Generalised System of Preferences (GSP). The additional trade flow of preferences under these schemes represents something more than 60 percent of trade generated by preferences under GSP.

4.7 Tariff rate quotas

Tariff rate quotas (hereinafter TRQs) are two-tiered tariffs, with a limited volume of imports that enters at a lower in-quota tariff and all imports exceeding the quota charged at a higher out-of-quota tariff.

There is considerable discussion about the intrinsic nature of TRQs. On one hand, TRQs are commonly considered as a way to improve market access when agricultural tariffs are very high or even prohibitive; hence, they are perceived as a tool to increase trade. On the other hand, evidence shows that they are widely used in the sectors showing the highest level of protection. The suspicion is that they are so popular because they help to maintain a high level of agricultural protection. An important feature of the TRQ is that it creates a rent – equal to the gap between the domestic and the world prices - which is captured by the importing or the exporting country, depending on who administers the licenses (entitlements to import at the low tariff rate). The distribution of rents within the importing or exporting country is thus affected by the administration method.[73] By selecting who can import within the TRQ, administrative methods can create significant trade bias. Moreover, TRQs generate rent-seeking activities. The widespread support for maintaining this policy tool is probably explained also by the willingness to preserve TRQs rents.

To address this issue, it is first important to distinguish between the TRQs included in the EU's WTO commitments (hereinafter, MFN TRQs[74]) from those granted within regional trade agreements; for the sake of simplicity, the latter are here called "bilateral" TRQs.

The EU extensively applies TRQs in agricultural trade. The Uruguay Round Agreement on Agriculture (AoA) established TRQs with the aim of maintaining market access conditions and creating minimum access for products with very high bound tariffs. In 2013, the EU notified to the WTO 119 TRQs. In addition, the EU applies TRQs extensively within its regional trade agreements; there are over 284 TRQs currently applied by the EU on a bilateral basis (Table 22). Overall, more than 15% of the EU agricultural tariff lines are covered by a TRQ and more than 20% of EU agricultural imports enter the EU under a TRQ regime (Gouël *et al*, 2011).

MFN TRQs were introduced by the AoA with the aim to provide "minimum" or maintain "current" market access in sectors that are highly protected by tariffs. In the following years, additional TRQs were introduced to compensate for subsequent EU enlargements and to settle trade disputes. After the Uruguay Round negotiations, many concerns have been raised regarding the effectiveness of TRQs in increasing market access (Abbott, 2002). One major concern is the large amount of TRQs that are currently underfilled (de Gorter and Kliauga, 2006). Underfill of TRQs may be due to market factors, that is, the quota is not binding because it is higher than the equilibrium quantity under the in-quota tariff. Country-specific TRQs may also result in underfill when quotas are allocated to countries that are unlikely to export that product to the EU. However, in many cases the suspicion is that the quota is underfilled because of frictions and inefficiencies in the quota administration.

Three major issues dealing with TRQ liberalization are currently under discussion within the Doha Development Round of agricultural trade negotiations: reduction of the in-quota tariffs for existing TRQs; expansion of the quota for TRQs applied to imports of sensitive products; and reform of the method of TRQ administration. While there has been little progress in the negotiations about the

[73] The WTO has identified several methods of TRQ administration; the most common are "license-on-demand", "first-come-first-served" and "historical importers".

[74] WTO TRQs include both those open to the generality of WTO members (referred to as "erga omnes TRQs" by the EU) and country-specific TRQs.

first two liberalisation options for TRQs, an important outcome is a decision about TRQs administration, adopted by the Bali WTO Ministerial Conference in December 2013. The *Understanding on Tariff Rate Quota Administration Provisions …* introduces an "underfill mechanism" which could be initiated when the fill rate of a TRQ in an importing country is "persistently" below 65%. After three years the importer has to provide "unencumbered" market access by means of a first-come, first-served method or an "automatic, unconditional" license on demand system.

A large number of agricultural TRQs are currently granted by the EU within regional trade agreements and, in particular, within the many free trade agreements (FTAs) signed by the EU in the last decades (Table 23). In some FTAs, bilateral TRQs are used to progressively liberalise trade; countries agreed to gradually increase and then eliminate the quota after a certain phase-out period. However, in several EU FTAs, agricultural TRQs are, by and large, permanent. Compared to a full free trade regime, permanent (binding) TRQs are in fact trade restricting.

In the following sections, we first provide an overview of the EU MFN and bilateral TRQs. Then, a discussion of the potential trade liberalization impacts of EU TRQs follows, with a view to highlighting the most challenging modeling issues.

4.7.1 Overview of the agricultural MFN TRQs applied by the EU

Since the first years of implementing the AoA, the TRQs notified by the EU to the WTO have increased over time as a consequence of successive EU enlargements – to compensate third countries - and of other agreements with MFN exporters for specific products, such as rice. There were 85 TRQs in the initial schedule resulting from the Uruguay Round and this number increased to 93 in 2006, 112 in 2009 and to 119 in 2013.[75]

In-quota tariffs are generally significantly lower than the out-of-quota tariffs, being about 33% and 40% of the out-of-quota tariffs for current and minimum access TRQs, respectively. This gap appears to be relatively uniform across tariff lines, which suggests that the EU's strategic use of high in-quota tariffs to protect the most sensitive products has been rather limited, at least when compared to other countries (Bureau and Tangermann, 2000).

Table 22 reports the distribution of the TRQs notified by the EU in 2013 across sectors and according to the fill rate.[76] (Table 32 in the annex to this chapter provides the same data for 2009 to show that little has changed over this period). Meat and fruit and vegetables account for about the half of EU MFN TRQs, while in the dairy sector the number of TRQs is relatively low. The average fill rates provide us with a preliminary broad idea of the extent of quota fill across sectors. Overall, the average fill rate in 2013 is rather low (about 46%) and even lower than in 2009 (see Annex Table 32). Average fill rate is particularly low for a number of products (dairy, live animals, swine meat, processed fruit and vegetables) and rather high for others (processed cereals, beverages, rice, sheep meat, chicken and poultry). More informative than the average fill rate, is the distribution of TRQs according to the fill rate. About 35% of TRQs are currently not used or almost not used (the fill rate is

[75] Over this period, a number of TRQs were eliminated and new TRQs were gradually introduced, as a result of the 2004 and 2007 enlargements and the subsequent WTO negotiations with third countries about compensations.

[76] The simple count of TRQs may obviously provide biased information about their relevance across the various sectors. A large number of very small TRQs granted to low value products clearly are less important than a small number of large TRQs applied to imports of high value products. Hence, caution has to be used when interpreting the data reported in Table 22. Hereinafter, we confine our discussion to the issue of how frequent the phenomenon of quota underfill is in the EU case. Table 23 reports both minimum and current access TRQs.

below 10%). On the other hand, for 27% of EU TRQs the fill rate is 100% and the quota is therefore binding. For some of these products (for example, some poultry products), there are large amounts of out-of-quota imports at the MFN tariff rate because the quota is country-specific and the other exporters have to export to the EU at the full MFN rate. In other cases, quotas are not allocated to countries, but there are anyway large amounts of out-of-quota imports (examples are lemons, almonds, maize).

It is worth noting that for only 42% of EU TRQs the fill rate in 2013 was above the 65% threshold agreed in the Bali Ministerial decision. For a large part of EU TRQs, underfill is likely to be "persistent". Indeed, the picture in year 2009 is rather similar to that of more recent years (Annex Table 32). By that time, for less than half of the EU TRQs the fill rate was above 65% and there was underfill for the same tariff lines as in more recent years. Quota underfill appears to be concentrated in a number of sectors, such as live animals and swine meat sectors, and for most of dairy products and processed fruit and vegetables TRQs.

For 70 agricultural TRQs, hence, underfill could become an issue for the EU in the next years. As mentioned, persistency of quota underfill may be due to market reasons or to possible inefficiencies in the administration system. Hence, it is worth analyzing what administration methods are used by the EU (Table 23).

Table 22.The EU MFN tariff rate quotas (2013)

	Number of TRQs	Average fill rate (%)	Number of TRQs with the fill rate			
			< 10%	10% - 65%	65% - 90%	> 90%
Live animal	4	0.0	4	0	0	0
Bovine meat	9	52.2	2	3	1	3
Swine meat	8	3.5	8	0	0	0
Chicken and poultry meat	17	65.3	3	3	4	7
Sheep meat	1	68.5	0	0	1	0
Butter	2	21.0	0	2	0	0
Milk	1	0.0	1	0	0	0
Cheese	9	20.5	4	5	0	0
Eggs	3	41.9	1	1	0	1
Fruit	10	59.6	2	3	0	5
Vegetables	11	48.4	5	1	1	4
Processed fruit and vegetables	5	18.5	3	2	0	0
Cereals	11	44.8	4	3	0	4
Processed cereals	2	100.0	0	0	0	2
Rice	8	66.0	1	2	0	5
Sugar and sugar confectionary	5	59.9	1	1	1	2
Beverages (wine)	3	66.7	1	0	0	2
Others	10	41.9	2	2	0	6
Total	**119**	46.4	42	28	8	41

Source: Own calculations based on EU notifications to the WTO.

About two-thirds of EU TRQs are allocated on demand, with "pro rata" cuts when the requests are greater than the quota.[77] The second most used method is the licensing system: about 20% of TRQs are administered by means of licenses and in most cases licenses are allocated to the exporting countries. In a few sectors, the quota is allocated mainly to historical importers (less than 10% of TRQs), while only for maize TRQs does the EU Commission fix the in-quota tariff so as to ensure that the quota is filled. Only one TRQ is managed on a first-come, first-served basis. A closer inspection of data reveals that the median of fill rates of TRQs administered through "on demand with pro rata cuts" is significantly lower than the median of fill rates for TRQs managed by means of other systems. In other words, compared to other methods, and in particular import licensing, with the method "on demand with pro rata cuts" a greater share of TRQs tends to show a relatively low fill rate. Whether this depends upon the method itself, or upon the EU implementation of this system, is obviously an open issue.

Table 23. The methods used by the EU for the allocation of MFN tariff rate quotas (2006)

	Firt Come First Served	Historical importers	On demand with pro-rata cuts	Licencing	In quota tariff	Total
Live animal	1	3	0	0	0	4
Bovine meat	0	1	2	6	0	9
Swine meat	0	0	7	0	0	7
Chicken and poultry meat	0	0	5	0	0	5
Sheep meat	0	0	0	0	0	0
Butter	0	0	1	1	0	2
Milk	0	0	1	0	0	1
Cheese	0	0	6	3	0	9
Eggs	0	0	3	0	0	3
Fruit	0	0	10	0	0	10
Vegetables	0	1	3	2	0	6
Processed fruit and vegetables	0	1	0	1	0	2
Cereals	0	0	5	2	2	9
Processed cereals	0	0	0	0	0	0
Rice	0	0	6	0	0	6
Sugar and sugar confectionary	0	1	1	1	0	3
Beverages (wine)	0	0	0	0	0	0
Others	0	0	7	0	0	7
Total	1	7	57	16	2	83

Source: Own calculations based on EU notifications to the WTO

[77] Information reported here about the TRQs administration system used by the EU is based on the last notifications under art. 18.2 - MA:1 by the EU, available on the WTO website as in August 2016, which date back to 2006; they cover 83 TRQs currently in force. Since then, as mentioned, new TRQs have been introduced.

4.7.2 TRQs applied within EU Regional Trade Agreements

Along with the increase in the number of FTAs signed by the EU, in the last decades the number of agricultural bilateral TRQs in force in the EU has significantly increased. Table 24 reports the number of TRQs applied by the EU as a consequence of the several FTAs signed under Article XXIV of the GATT. It is worth noting that the Table reports only trade agreements in force in March 2016. For this reason, agreements with Canada, Ukraine and Ecuador, for example, are not included, even though they are going to introduce new agricultural TRQs. In addition, we have here considered only "permanent" TRQs, and not those expiring after a phasing-out period.[78] Finally, in some cases the agreement refers to TRQs that are governed by other trade arrangements, such as the Sugar Protocol; these TRQs are not counted in the Table. Not all FTAs signed by the EU establish agricultural bilateral TRQs and FTAs without such TRQs are not reported in Table 24. Notable examples are some European countries (Switzerland, Iceland and Norway), Turkey and Cameroon.

Table 24. Tariff rate quotas and entry price system in the EU RTAs in force

RTAs	Entry into force	Agricultural TRQs	Entry price
Albania	2009	9	no
Algeria	2005	15	no
Bosnia and Herzegovina	2008	8	no
CARIFORUM	2008	2	no
Central America	2012	11	no
Chile	2003	16	yes
Colombia and Peru	2013	18	yes
Egypt	2004	31	yes
EPA Eastern and Southern Africa	2009	2	no
Faroe Islands	1997	9	no
Georgia	2014	1	yes
Israel	2000	33	no
Jordan	2002	12	no
Korea	2010	2	yes
Lebanon	2003	13	no
Marocco	2012	7	yes
Mexico	2000	21	no
Moldova	2014	6	yes
Montenegro	2010	8	no
Palestinian Authority	1997	2	no
Serbia	2010	6	no
South Africa	2000	43	no
Tunisia	1998	9	no
Total		**284**	

Source: EU Regulations

Overall, the EU currently applies 284 bilateral TRQs. Although the simple count is not very informative about the trade relevance of these TRQs, it provides us with an idea of the extent to which this trade policy instrument is still used by the EU. The in-quota tariff for bilateral TRQs, by

[78] Examples of transitional TRQs are a part of those included in the agreement with South Africa.

and large, is set at zero,[79] while generally the out-of-quota tariff is the MFN one or a percentage of it (where a preference is given).

Although most TRQs cover very small shares of EU imports, and sometimes also minor shares of the exports from the originating country, in the context of a FTA, permanent TRQs represent a limitation to free trade and, hence, the widespread use of them by the EU denotes itself a departure from the objective of free trade. From this point of view, the nature and trade impact of bilateral TRQs are rather different with respect to MFN TRQs, because of the different counterfactual (what if TRQs were eliminated?): free trade for the former, and the MFN tariff for the latter.

TRQs are not the sole agricultural trade-restricting tool used by the EU within FTAs. A number of FTAs introduce the entry price system. As already mentioned, according to this system a specific supplementary tariff is charged when the import price is below the entry price. This system is extensively applied in a number of agreements (Morocco, Chile, Egypt, Colombia and Peru), very often on a seasonal basis, especially for vegetables and fruit products (Table 25).

Table 25. Bilateral EU TRQs by product

	Agricultural TRQs
Live animal	0
Bovine meat	7
Swine meat	2
Chicken and poultry meat	4
Sheep meat	2
Fish	35
Butter	1
Milk	4
Cheese	3
Eggs	3
Fruit	41
Tomato	5
Vegetables	40
Processed fruit and vegetables	61
Cereals	2
Processed cereals	7
Rice	4
Oilseeds	0
Oils and fats	6
Sugar and sugar confectionary	19
Beverages	17
Others	21
Total	**284**

Source: EU Regulations

Bilateral TRQs are broadly used by the EU in the FTAs with Mediterranean and Central and South American countries, while the EPAs signed with the ACP countries included a few transitory TRQs limited to some key products, such as sugar. A number of TRQs for products perceived as sensitive

[79] In-quota tariffs are different from zero only for a few TRQs, such as some of the TRQs granted to Balkan countries.

by the EU (fish and wine) are also included in the association agreements with many of the European neighboring countries.

More than the half of the EU bilateral TRQs are applied to imports of vegetables and fruits, fresh or processed, and most of them are in the agreements with the Mediterranean countries (Israel, Morocco and Egypt alone account for the 50% of bilateral TRQs in force these sectors) (Table 25). About 10% of TRQs concern fish products, while several bilateral TRQs are applied to the imports of wine (for example, the TRQs agreed with the Balkan countries); meat and dairy products TRQs are definitely fewer compared to the role they play in the MFN TRQs. Bilateral TRQs are, by and large, managed by the EU by means of different administration methods, but there are cases where licenses are allocated by the exporting country (for example, the TRQs granted to Mexico).

4.7.3 Assessing the trade impacts of EU TRQs

Assessing the impact of EU TRQs is challenging, because this is a rather complex instrument. Modeling TRQs means taking into account of two tariffs, one quota, the administration method, and three possible regimes. Indeed, depending upon market conditions, we can identity three different circumstances. When imports are lower than the quota - the quota is underfilled - the in-quota tariff is binding, i.e. it determines the level of imports, and quota rents are zero. When imports are equal to the quota, the quota is binding and there are positive quota rents, with the unit rent depending upon the domestic price. When imports are greater than the quota, the out-of-quota tariff is binding and the unit rent equals the difference between the out-of-quota and the in-quota tariff. Under the last two regimes, the EU or the exporting country has to allocate the rights to import within the quota.

The majority of papers do not explicitly model TRQs, but transform TRQs into *ad valorem* equivalents (AVE). The most common assumption is the one used in the Mac Map-HS6 database (Boumellassa *et al* 2009). If the quota is not filled, the in-quota tariff is used; if the quota is binding, an average of in-quota and out-of-quota tariffs is computed; if imports are greater than the quota, the out-of-quota tariff is used with the rent being equal to the gap between the two tariffs. This approach may have a number of drawbacks. Raimondi *et al* (2011) have shown that the simple average of the two tariffs may be misleading in the presence of fixed trade costs and may lead to an overestimation of the AVE; they show that a weighted average would be more appropriate.[80] Most importantly, when the AVE is used in equilibrium models for ex-ante assessments, the implicit assumption is that exogenous shocks do not result in a TRQ regime shift; partial trade liberalization is *a priori* assumed not to imply a shift, for example, from a quota-binding to an out-of-quota tariff-binding regime. Also for this reason, many studies simulate only a full TRQ liberalization scenario, because of the difficulties in handling regime changes.

A number of papers have explicitly represented EU TRQs in equilibrium models (e.g. Grant *et al* 2009; Gouel *et al* 2011; Himics, Britz, 2013) by introducing them in a Mixed Complementarity Problem (MCP) framework. The typical representation is by means of three complementarity conditions, reflecting the three different regimes. The main advantages of this modeling approach are that simulation of partial TRQ liberalization (a quota expansion or a reduction of the in-quota tariffs) can be performed and regime changes are explicitly taken into account.

Another difficulty is how to deal with aggregation, both by products and by countries. As for products, when using the AVE the usual tariff aggregation problems apply; however, because TRQs

[80] Accordingly, if imports are no greater than the quota, the tariff equivalent is the in-quota tariff; alternatively it is the weighted average of the two tariffs

are often defined at tariff lines more or less aggregated than the level of the analysis, additional simplifying assumptions are often needed.[81] When the quota is not country-specific, given the lack of detailed data about exporting countries' quota allocation, further simplifying assumptions are needed.

Because of these modeling complications, available evidence about the impact of TRQ liberalization by the EU is rather limited. Empirical results obtained by using an AVE of TRQs have been presented in sections 4.4 and 4.5. We review here the evidence for the EU found by Gouel *et al* (2011) who do not use the AVE, but explicitly model TRQs.

Gouel *et al* (2011) extended the MIRAGE model to accommodate trade at the HS 6 digit level and explicitly represent TRQs by means of complementarity conditions. They find that the products most affected by a full liberalization would be those currently protected by TRQs. This is not surprising because, as mentioned before, a few products are currently responsible for a large share of EU agricultural protection and they are mostly protected by TRQs. Overall, the liberalization of EU MFN TRQs would account for 33% of the total trade increase, while the contribution of bilateral TRQs would be much smaller (3.3%).[82] As for partial liberalization scenarios, they simulate the impacts of variants of the Doha Development Agenda proposal of December 2008, which differ as for the treatment of sensitive products. More specifically, the scenarios include a range of reduced tariff cuts for sensitive products with the simultaneous creation or expansion of TRQs to compensate for the reduced tariff cuts. They find that, on aggregate, a tariff cut would be much more effective in terms of trade and welfare increase than a quota expansion; hence, they conclude that at the aggregated level the binding constraint is mainly the out-of-quota tariff rather than the quota, despite the almost-prohibitive level of protection for sensitive products. However, for a few products, things run in a different way. For paddy and processed rice, sugar cane and sugar beet, a quota expansion could increase trade more than a tariff cut; this is because the binding instrument is the quota and the simulated tariff cuts would not be sufficient to shift to the out-of-quota tariff regime. Overall, for more than half of the tariff lines, tariff cuts would result in significant EU import increases, while a quota expansion would be substantially ineffective. Hence, for these products high tariffs with quota expansions would result in the maintenance of a high level of protection.

4.8 Export subsidies

The latest notification on export subsidies from the EU is for the marketing year 2012/13 which indicated that the use of export subsidies had continued to decline in terms of both the budget allocation and the product coverage with poultry meat accounting for nearly all spending (€55.3 million out of a total of €59.05 million). Sugar exports of 1.35 million tonnes did not receive any export refunds but, as this is production in excess of the quota, it was deemed to be subsidised exports.

In July 2013, all export subsidy rates were set at zero. At the WTO Ministerial Conference which took place in Nairobi in December 2015, trade ministers clinched a deal to eliminate agricultural export subsidies. This decision groups together export subsidies with other types of export support instruments that can distort competition: export credits, export credit guarantees and other types of export financing; exporting state trading enterprises; and food aid.

[81] EU TRQs often include a group of HS-6 digit products and administrative data report in-quota imports under the overall TRQ: in a HS-6 digit analysis, assumptions about the allocation of the quota among the different HS-6digit products may be needed.

[82] It is worth noting that they use 2004 data and hence do not include a number of new bilateral TRQs agreed within the recent wave of FTAs signed by the EU.

The latter point could have some consequences for the EU since the Commission is (mid-2016) examining the feasibility of an export credit scheme, which could supplement the schemes which Member States are operating on a national basis. This would be one of the possible "exceptional measures" to be activated to further support European farmers facing periods of crisis.

4.9. Non-tariff measures

With the reduction in tariffs under successive GATT/WTO agreements and growing consumer concerns about food safety and quality, NTMs are playing an increasing role in international trade. Agricultural products are extensively affected by NTMs. On the one hand, the procedures required to comply with NTMs are costly, and may be costlier for foreign producers, so that domestic regulations may be imposed simply to put foreign competitors at disadvantage. On the other hand, NTMs can correct market failures, such as information asymmetry, improving market access by enhancing consumer confidence in the foreign products (van Tongeren et al., 2009). Notwithstanding the fact that the EU is a custom union with a single trade policy, exporters may still face different trade barriers in each member state. For instance, as indicated by the World Bank's *Doing Business* report, the time needed to complete import process varies among Member States: in more than half of the EU Member States it takes less time than the OECD average; whereas for the others it takes more time; e.g. up to 19 days for Hungary (WTO, 2013). Indeed, Chevassus-Lozza and Latouche (2012) showed, from French exporters' point of view, that the European market remains fragmented despite the absence of tariff barriers. Their results suggest that non-tariff barriers still shape significantly the trade pattern in food products in Europe notwithstanding the efforts made to eliminate barriers to trade in the European food industry.

Different measures of NTMs exist. Under the UNCTAD (United Nations Conference on Trade and Development) new Coding System, NTMs are classified according to their intended goal (Cadot et al., 2012). Sanitary and phytosanitary measures (SPS) and technical barriers to trade (TBT) are officially designed to achieve public policy objectives. Non-technical measures, such as contingent, quantity or price control measures, are trade regulatory instruments.

In force since 1995, the SPS Agreement allows WTO member countries to adopt measures in order to protect human, animal and plant health as well as the environment, wildlife and human safety. Under the SPS Agreement, WTO Members are obliged to provide an advance notice of intention to introduce new or modified SPS measures, or to notify immediately when emergency measures are imposed. The objective of an SPS measure falls under one or more of the following categories: (i) food safety, (ii) animal health, (iii) plant protection, (iv) protect humans from animal/plant pest or disease, and (v) protect territory from other damages from pests.

While no formal provision for "counter notification" exists, concerns regarding the failure to notify an SPS measure, or regarding a notified measure, can be raised as a specific trade concern (STCs) at any of the three regular meetings of the SPS Committee each year. According to the most recent Trade Policy Review of the EU (WTO, 2015b), several WTO members (including US) recently raised a concern about the EU regulation allowing member states to restrict or prohibit the use of genetically modified food and feed. If we take a longer time perspective, it appears that two STCs have been discussed on 18 or more occasions: on the one hand, the EU (and US) concern about import restrictions due to BSE; on the other hand, the concern raised by several countries (mostly Latin-American) about the application and modification of the EU regulation on novel food. A list of EU-specific SPS/TBT trade concerns raised by US exporters includes (Beckman et al., 2015):

- restrictions on the use of pathogen-reduction treatments;
- restrictions on the importation and use of agricultural commodities derived from agricultural biotechnology;

- prohibition on beef and beef products raised with growth-promoting hormones.

Technical regulations and mandated product standards are important for food and agriculture trade as these can set minimum quality characteristics of food products, such as the size, colour and weight or require specific label content and format. These regulations do not however cover those issues dealing with human, animal or plant health and safety which are covered by the SPS agreement.

Like the SPS agreement, the TBT agreement commits governments to making their standards, technical regulations and conformity assessment procedures compatible to ensure that measures are the least trade disruptive to and distorting of trade. Looking at the share of HS6 lines affected by at least one NTM, the EU (as do other OECD countries), notifies SPS and TBT measures on almost all agricultural products. The obligation not to discriminate, at least with respect to technical regulations and conformity assessment procedures, amongst products and suppliers of products from any other WTO Member, may be violated for instance if RTAs harmonise their TBT measures such that it discriminates against products and suppliers from third states. On the other hand, these RTAs may be WTO-plus in that they impose obligations beyond the scope of the WTO TBT Agreement.

Ti-Ting (2012) examines the TBT provisions in selected RTAs concluded by the EU. The depth of SPS provisions is frequently related to the sensitivity of the agricultural sector for the parties involved and the degree of integration sought by them. One distinguishing feature of the RTAs concluded by the EU with developing countries geographically closer to the EU is that they often require these countries to harmonise their standards, technical regulations and conformity assessment procedures to those adopted by the EU. In contrast, the RTAs concluded by the EU with Chile, Korea and Central America do not impose the obligation to harmonise their standards, technical regulations and conformity assessment procedures to those adopted by the EU. In the case of the Chile-EU agreement, parties are encouraged to make efforts to identify areas that allow the mutual recognition of SPS inspection, control and certification procedures.

Arita et al. (2015) investigate the effects of selected SPS and TBT on agricultural trade between the US and the EU using gravity model econometric methods (Table 26). A comparison of actual trade levels with predicted trade levels following the removal of NTMs can be used to estimate foregone levels of trade. From this, an ad valorem tariff equivalent (AVE) of NTM costs can be estimated.

In 7 of 9 cases examined, NTM effects on US exports were found to be statistically significant; EU NTMs on US exports of nuts and wheat were not found to be statistically significant. The table compares the estimated AVE effects of the NTMs to existing tariff rates. The tariff rates are from MAcMaps and include TRQs (AVE estimates). The AVE estimates of NTMs are significantly larger than existing tariffs for all but one case (EU NTMs on US beef). EU NTMs on US poultry, pork, and corn were found to have the most trade-impeding effects, with estimated AVE effects of 102, 81, and 79%, respectively. The AVE effect of EU NTMs on US vegetables (53%) and fruits (35%) were also found to be considerable.

Table 26. Summary of estimated effects of NTMs

EU NTMs on US exports	NTM significant?	Applied tariff rate	NTM AVE estimate
Beef: Growth hormones, PRTs	Yes	70	23
Poultry: PRTs	Yes	21	102
Pork: Beta agonists, trichinae, PRTs	Yes	25	81
Corn: Biotech restrictions	Yes	0	79
Soy: Biotech restrictions	Yes	0	17
Fruits: Maximum-residue limits	Yes	10	35
Vegetables: Maximum-residue limits	Yes	14	53
Nuts: Maximum-residue limits	No	1	n.s.
Wheat: Karnal bunt testing	No	19	n.s.

NTM = non-tariff measure. AVE = ad valorem equivalent. PRT = pathogen-reduction treatment. N.s. = NTM effect not significant

Source: Arita et al., 2015

4.10 Empirical studies of the impact of EU agricultural support on world markets

Before reviewing the results of some recent studies, some issues in interpreting the model results can be highlighted.

- The CAP consists of market management measures, domestic support payments and rural development (Pillar 2) payments. Agricultural support is also provided through import protection under the CCP. Most empirical studies of EU agricultural support liberalisation assume the removal of border measures as well as domestic support, and some in addition also assume the elimination of rural development payments. Not all studies disaggregate and report the impact of the agricultural and trade policy measures separately which would provide an indication of their relative importance in contributing to trade distortions. Where border liberalisation is simulated, this is most often in the context of a broader move towards global agricultural trade liberalisation (e.g. a Doha Round scenario). Where other countries also liberalise their agricultural and trade policies at the same time, the impact of EU policy changes alone on world markets will be attenuated.
- Studies of agricultural policy liberalisation are calibrated to a base year. The measured impact of EU agricultural support is sensitive to the estimated level of agricultural protection in that year. Particularly studies which make use of the GTAP database may simulate a policy regime which has since been reformed, unless specific provisions are made to take more recent policy changes into account.
- Studies differ in the extent to which they fully model all of the CAP instruments. The basic GTAP model, for example, does not take account of milk and sugar quotas or set-aside of arable land. Simulations which ignore the existence of these production restrictions in the base period (see Section 3.5) when simulating the impact of CAP liberalisation will over-estimate the impact of the CAP on world markets.
- We repeat the conclusion from Section 3.6 that no empirical model handles the treatment of decoupled payments in a satisfactory way. The assumptions that modellers make on how to incorporate decoupled payments are responsible for the results, and there is as yet no empirically-grounded way to justify handling decoupled payments in one way rather than another. The results of scenarios which model the elimination of decoupled payments are

thus dependent on the modeller's subjective view on how to include these payments in the model.

Bureau and Gohin (2009) provide a comprehensive review of the empirical evidence of the production and trade distortions due to the CAP up to that date. This section reports the results of the few empirical studies since their survey.

An influential simulation study which included among its scenarios one on CAP liberalisation was the SCENAR 2020-II study (Nowicki et al. 2009); the earlier SCENAR-I study is included in the Bureau and Gohin (2009) review. Two extreme scenarios were modelled. The first was a "Reference" scenario, in which reference policy decisions were carried forward in the time period of the study. For illustrative purposes it assumes a 20% reduction of CAP budget in real terms, the implementation of the Single Payment System as of 2013, full decoupling, the elimination of milk quotas, a 30% decrease in direct payments in nominal terms and a 105% increase in Pillar 2 spending. A Doha Round Agreement based on the December 2008 Falconer paper is assumed in which various livestock products are given sensitive status. The second is a "Liberalisation" scenario, in which all trade-related measures are discontinued. In addition, the CAP budget is reduced by 75% in real terms, all direct payments and market instruments are removed, and there is a similar increase in Pillar 2 spending as in the reference scenario.[83] In interpreting the results, it is important to note that the Liberalisation scenario took into account the impact of Doha Round liberalisation of agricultural policy in other countries too. This helps to attenuate the effect of CAP liberalisation on EU agriculture, and thus these scenario results cannot be taken as indicative of the impact of the CAP alone. A biofuel target of 10% in 2020 as set out in the EU Renewable Energy Directive at the time was incorporated in both scenarios.[84]

Results are provided in aggregate terms from the LEITAP CGE model and in more disaggregated commodity terms using the partial equilibrium model ESIM. Little happens to the EU agricultural sector according to LEITAP over the period to 2020 either in the reference or liberalisation scenarios. In the Reference scenario, agricultural output increases by just 4% over the 13 years 2007-2020. Under the Liberalisation scenario, output would increase by 3% over the same period (i.e. by just one percentage point less over 14 years, or a difference in annual growth rates of 0.08% per annum. This is despite expected growth of livestock production in the Reference scenario of +2% turning to a production decrease of -4% in the Liberalisation scenario over the 2007-2020 period. Growth of the main field crops (grains, oilseeds, sugar) would be +13% in the Reference scenario but only 3% in the Liberalisation scenario.

LEITAP results are only reported for crop and livestock aggregates. Individual commodity projections were made with ESIM which are deemed to be fairly consistent with the LEITAP results. Liberalisation would lead to some significant price reductions in the EU compared with the Reference scenario. Price changes range from more than -33% for beef, -18% for rice, -17% for sheep

[83] The Scenar-II study also examines the implications of a third scenario, labelled the "Conservative CAP" scenario, in which Pillar 1 direct payments are increased relative to the reference scenario and Pillar 2 payments significantly reduced (by 45%) to maintain the overall CAP budget constant.

[84] The modelling work employed a computable general equilibrium (LEITAP) model and partial equilibrium (ESIM, CAPRI) models. LEITAP is a global computable general equilibrium model that covers the whole economy including factor markets. It is a modified version of the global general equilibrium Global Trade Analysis Project (GTAP) model, with particular attention paid to the substitutability of land between different uses. The model can also address biofuels and rural development policies. The ESIM and CAPRI models are EU-27 partial equilibrium models for the agricultural sector at country and NUTS2 levels, respectively, with a strong focus on the Common Agricultural Policy. Results from the models are linked by harmonising scenarios and ensuring consistency between a selected number of model results and parameters (the CAPRI model is used to downscale the national results to regional level and thus is not further considered).

to about -1% for milk and eggs. ESIM shows a similar if rather bigger swing in livestock production (projected growth of +4% in the Reference scenario but a reduction of -6% for the EU-27 over the period 2007-2010 in the Liberalisation scenario). Declining beef prices would lead under Liberalisation to a strong decline in beef production by more than 30%. EU-27 poultry production would be 7% lower and pork production 3% lower than under the Reference scenario. EU cereal production would fall as a result of Liberalisation, mainly because of the withdrawal of decoupled payments and the complete abolition of trade policy measures. Coarse grain would show the strongest decline relative to the Reference scenario due to the remaining protection through import tariffs, which are reduced only partly under the Reference scenario. Oilseed production is unaffected by liberalisation.

In summary, the Scenar-II study concludes that, despite significant price falls for EU producers of some commodities, the impact of trade liberalisation and lower domestic support on production and trade is in general moderate. The land and (to a lesser extent) the segmented labour markets play a key role in keeping production levels up as they absorb the negative impact of liberalisation by a decline in land prices and a lower growth rate of agricultural wages. These two factors contribute to keeping European agriculture internationally competitive, along with the expected increase in productivity.

Costa et al (2009) simulate the impact of removing CAP protection on EU agriculture and world markets using the GTAP database Version 7 based on 2004 data. However, they update their policy data to reflect the situation in 2007, thus taking account of the decoupling decision in the 2003 CAP reform (specifically, they only represent decoupling for the crop sectors, maintaining sector-specific land and capital subsidies in the case of the livestock sectors to reflect their continued coupled nature in that year). They simulate the effect of removing direct payments, export subsidies and import tariffs (but not Pillar 2 spending) separately and together, although only aggregate results are reported. Direct payments in the crops sector are principally modelled as a land subsidy, while payments in the livestock sector are mainly modelled as a capital subsidy. They conclude that, as a result of the CAP in place in 2007, output of the EU farm and food processing sectors was about 8% and 6% higher, respectively, with correspondingly lower output of manufacturing and services. The additional EU farm and food output is estimated to depress world prices for these goods by between 1% and 4%, while world prices for manufactured goods and services are increased (Table 27). Overall, they estimate that the net effect of the CAP is to reduce global welfare by about $US 45 billion, with a cost to the EU itself of $US 30 billion. The largest contributor to this welfare loss is the border protection component of the CAP. Clearly, given the 2004 database used in this study, the results need to be interpreted cautiously in view of the changes in both the CAP and world market conditions since then.

Table 27. Effect of the CAP on world prices in 2004, per cent change

Commodity	World price change
Crops	-2.08
Livestock	-3.91
Forestry & fishing	0.16
Food processing	-0.83
Manufacturing	0.10
Services	0.18

Source: Costa et al. (2009)

Gohin (2009) uses a CGE model of the EU-15 to determine the effect of the CAP on world prices. His model has a detailed disaggregation of the agri-food sector (32 agricultural commodities, 30 food commodities and 10 animal feedstuffs, with the rest of manufacturing and services included as two

further sectors).[85] The model is open to trade with the rest of the world, which is modelled in a reduced form fashion using export supply and import demand functions for two regions, the EU-12 and the Rest of the World. His model is calibrated to a 2005 social accounting matrix for the EU-15 but the simulations are conducted against a baseline in 2015 which takes account of the decoupling of direct payments but assumes no agreement on further WTO trade liberalisation. A "normal" level of world market prices is assumed. A feature of the model is that it takes explicit account of EU biofuel targets for 2015 which, in the baseline, are partly met from domestic production due to high tariffs on imported bioethanol.

The simulation assumes the complete elimination of CAP policy instruments in 2015, including export subsidies, import tariffs, tariff rate quotas, the special safeguard mechanism, internal consumption subsidies, production quotas, direct payments and Pillar 2 payments. Direct payments are assumed partially coupled to production based on the results from a literature survey of decoupling effects. Pillar 2 payments are modelled as direct subsidies to labour and capital. He finds significant world market price effects from this simulation of the elimination of the CAP, particularly on world beef, maize and bioethanol markets (Table 28). World prices generally increase except for soft wheat. Although EU production decreases, demand falls by even more and EU net exports increase, partly because lower animal production reduces the demand for feed wheat, and partly because of reduced demand for domestic biofuel production once trade in bioethanol is liberalised. Sugar production also falls despite the removal of quotas and the EU becomes a net importer of sugar. There would also be a sharp fall in beef production which in turn leads to a fall in milk production despite the removal of milk quotas because of the sharp fall in the price of cattle, given that most EU beef production derives from the dairy herd. Production of pork and poultry would also decline, with a sharp increase in poultry imports in particular.

Table 28. Impacts of eliminating the CAP in 2015, per cent

Commodity	Change in EU production	Change in EU domestic price	Change in world price
Soft wheat	-13.7	-6.5	-6.5
Maize	-33.2	-17.5	22.5
Oilseeds	-0.7	1.1	1.1
Vegetable oils	-0.6	1.1	1.1
Oilmeals	-0.6	4.1	4.1
Sugar	-17.7	-18.1	37.8
Bioethanol	-100	-8.3	54.1
Raw milk	-5.0	2.7	n.a.
Butter	-18.8	-15.0	26.9
Skimmed milk powder	-38.9	8.5	4.4
Whole milk powder	-8.0	1.0	1.0
Beef	-23.0	-32.0	23.8
Pork	-4.6	9.7	9.7
Poultry	-11.8	3.7	9.2

Source: Gohin (2009), results reproduced in Bureau and Gohin (2009). The original sources also give details on changes in trade flows.

A study by Boysen, Jensen, and Matthews (2016) examined the impact of the EU's agricultural policy on Uganda in a sequential process using two CGE models. First, the border price effects for Uganda of eliminating both EU trade policy instruments and domestic support are estimated separately and together using the GTAP model Version 8 with 2007 data. The resulting changes in trade prices and quantities are then passed to a detailed national CGE model of Uganda as exogenous simulation

[85] The results of this study are summarised in English in Bureau and Gohin (2009).

shocks to assess their impacts on both the overall economy as well as their distribution across households and their impact on overall poverty rates. The results are driven partly by the 2007 database (when the EU still made use of export subsidies and tariff protection was higher than it is today), and by the modelling assumption concerning the SPS payments. This study adopts the assumption that these payments are coupled to output to some degree and thus bias the production pattern. Specifically, domestic support payments are calibrated in the model as input, output and land-, capital-, labour-based subsidies in proportion to the factor shares in value added in each Member State. The border price changes reported for relevant Ugandan import commodities show price increases ranging from 1-8% for agricultural commodities if the CAP were fully eliminated, while prices for EU exports of manufactured goods and services would fall. Because Uganda enjoys preferential access to the EU market as a least-developed country, removing CAP border protection alone has a (small) negative effect on Ugandan GDP and poverty levels due to the loss of trade preferences, while removing domestic support (which in the simulation is modelled as significantly affecting production incentives) would have a slightly larger positive effect on Ugandan GDP and poverty levels.

This review of recent modelling efforts to assess the potential impact of the CAP on production and trade highlights the small number of recent modelling efforts and their limitations. The results are very varied, depending on the methodology used, the time period used to calibrate the model, the simulation design, the coverage of CAP policies and the way direct payments are modelled. The largest impacts are found when trade policy is liberalised in addition to the removal of domestic policies. The impact of domestic policies depends on the degree of decoupling assumed for direct payments, but are generally small. However, all studies do find some continuing effect of EU agricultural support policies on world markets, with potentially significant effects for some individual products.

4.11 Agricultural trade implications of trade agreements: the Transatlantic Trade and Investment Partnership

There is a long tradition of studies examining the effects of border measures on agricultural trade. The main empirical framework to assess the impact of tariffs and NTMs is provided by the gravity equation. The gravity equation can be seen as a reduced form of the theoretical trade flow prediction, and by comparing expected and observed trade, we can estimate the effects of tariffs and NTMs on trade and compute the corresponding AVEs of NTMs (Cipollina and Salvatici, 2008). In the previous sections we presented some results both of AVE computation and estimates of trade preferences impact.

On the other hand, the reform of the CAP border measures is likely to take place only within comprehensive trade agreements either at the bilateral or multilateral level. CGE models are widely regarded to be the most appropriate tools to conduct ex-ante assessments of trade agreements. Their reliance on sound microeconomic modelling of agents' behaviour ensures that the analysis takes due account of the feedback from income effects and labour or capital markets, and the interdependencies across economies (Hertel, 1999). Also in this case, we already presented some results obtained from these models as in the case of the computation of the MTRI values.

Given the slow pace and uncertain outcome of the Doha Round, the bilateral negotiations between EU and US Trana Transatlantic Trade Investment Partnership (TTIP) are now the most relevant from the EU point of view and have attracted an increasing amount of research. Results from recent CGE-based quantitative analyses of TTIP studies examining the impact on EU agricultural imports are summarised in Table 29 which draws on Beckman et al. (2015):

Table 29. CGE-based quantitative analysis of TTIP

Authors	*Type of CGE model*	*Food and agriculture coverage*	*NTM estimation*	*T-TIP scenarios*	*Range of impacts (EU imports)*
Beckman et al., 2015	Static GTAP model, with GTAP-E and AEZs, V9 (2011) database	38 of 47 sectors	Gravity model	1. Tariffs and TRQs removed 2. Select NTMs also removed 3. Demand sensitivity	USA: +39.5% ROW: -0.8%
ECORYS, 2012	Standard CGE model, GTAP V7 (2004) database	Food and beverages sectors only	• Gravity model • Business survey • Literature	1. 25% NTMs eliminated 2. 50% NTMs eliminated	Total imports: 1. 0.88 2. 2.01
CEPR, 2013	Imperfect competition GTAP model, V8 (2007) projected to 2027 database	Agriculture (forestry and fisheries), other primary, and processed foods only	From Ecorys (2009)	1. 10% NTMs, 98% tariffs eliminated 2. 25% NTMs, 100% tariffs eliminated	1. • 3.84 • 0.78 • 6.26 2. • 5.22 • 1.05 • 10.07
EP, 2014	MIRAGE model, GTAP V8 (2007) database projected to 2025	17 of 31 sectors	Gravity model	5 scenarios with tariff removal and various NTM cuts and harmonization spillovers	Transatlantic bilateral agricultural trade volume: 1. 30.7 2. 116.3 3. 81.5 4. 137.3 5. 113.3
Erixon and Bauer, 2010	Static GTAP model, V7 (2004) projected to 2015	10 of 32 sectors	None	Tariff removal with various trade facilitation and productivity assumptions	US exports to the EU: 1. -3.41 – 223.41 2. 1.36 – 233.38 3. 0.76 – 233.01
Fontagnè et al., 2013	MIRAGE model, GTAP V8 (2007) database projected to 2025	6 of 34 sectors	Gravity model	1. Tariff removal 2. 25% NTMs 3. Harmonization spillovers 4. ECORYS NTM	Total USA exports: 1. 2.1 2. 10.4 3. 14.5 4. 5.4

Source: Own compilation based on Beckman (2015)

The impacts of the TTIP across products, however, can vary. Unfortunately, these TTIP-based studies have generally aggregated agricultural commodities. Thus, they are unable to provide estimates of the impacts on specific commodities.

In the following, we use the estimates presented in Table 20 and assume a very simple TTIP agreement where all EU tariffs on products originated in the US are eliminated, i.e., we do not consider that any agreement regarding self-recognition in norms and rules may lead to a change in the estimated behavioural parameters. In order to shed some light on the regions most affected by the TTIP, we also aggregate the sectoral results by countries.

Table 30 presents various results regarding the TTIP simulation and illustrates the importance of detailed and robust estimates at the tariff line level for such assessments. Additional import flows are significant overall (3.2% of predicted trade flows) but they are somewhat lower for the agricultural sections, especially in the case of food products (Section IV). These figures are lower than those simulated by CGE models (see Table 19) but it should be recalled that the assessment is partial since it does not take into account the substitution for domestic production.

Table 30. TTIP Trade effect: results for sectors with significant preference impact (CES reference tariff)

	EU Imports from the US		EU Imports from the Rest of the World (except US)	
WTO Sections	Additional flows at world prices (Millions of €)	Trade increase: % of predicted trade	Missing flows at world prices (Millions of €)	Trade decrease: % of predicted trade
I: Animal products	276	2.5	211	1.9
III: Oils and Fats	13	1.3	11	1.0
IV: Foodstuffs	108	0.8	80	0.6
Total	**11,673**	**3.2**	**8,255**	**2.3**

Source: Own computation

4.12 Summary

The main message to emerge from this discussion of the impact of EU agricultural trade policy on world market distortions is that the MFN tariff profile of the EU has not changed over recent years: changes to the simple average tariff are a reflection of changes in ad valorem equivalents of non ad valorem tariffs caused by changes in unit prices. However, market access for agricultural products has improved through preferential agreements and the reduction of applied bilateral tariffs. The EU is engaged in trade negotiations with some major trading partners, such as the United States, and has concluded negotiations with others, including Canada. It has also continued to apply its GSP and GSP+ schemes for developing and its everything-but-arms scheme for least developed countries. The cumulative effect of the various preferential arrangements already in place or under negotiation would mean that only a few countries and territories will be trading with the EU on an MFN basis. However, import and export licensing, Tariff Rate Quotas (TRQs) and special safeguards continue to apply to a number of products.

Annex tables to Chapter 4

Table 31. GTAP database aggregation

Commodities and services	Countries and regions
Paddy rice	Rest of Europe
Wheat	African Caribbean and Pacific
Cereal grains	Oceania, Australia, New Zealand
Vegetables, fruit, nuts	Euro-Mediterranean Partnership
Oil seeds	China
Sugar cane, sugar beet	ASEAN
Plant-based fibers	Rest of Asia
Crops	Rest of Latin America
Cattle, sheep, goats, horses	Japan
Animal products	India
Raw milk	Canada
Wool, silk-worm cocoons	United States of America
Forestry	Mexico
Fishing	Argentina
Raw materials	Brazil
Minerals	European Union (28 countries)
Meat: cattle,sheep,goats,horse	Turkey & Turkey
Meat products nec	Chile & Chile
Vegetable oils and fats	Korea & Korea
Dairy products	Russia & Russia
Processed rice	RoW & Rest of World
Sugar	
Food products	
Beverages and tobacco products	
Textiles	
Wearing apparel	
Leather products	
Wood products	
Paper products, publishing	
Petroleum, coal products	
Chemical, rubber, plastic products	
Mineral products	
Ferrous metals	
Metals	
Metal products	
Motor vehicles and parts	
Transport equipment nec	
Electronic equipment	
Machinery and equipment nec	
Manufactures nec	
Services	

Table 32. The EU MFN tariff rate quotas (2009)

	Number of TRQs	*Average fill rate (%)*	*Number of TRQs with the fill rate*			
			< 10%	*10% - 65%*	*65% - 90%*	*> 90%*
Live animal	4	0.0	4	0	0	0
Bovine meat	9	73.3	1	2	3	3
Swine meat	8	13.2	5	3	0	0
Chicken and poultry meat	11	84.0	1	1	2	7
Sheep meat	1	91.3	0	0	0	1
Butter	2	38.2	1	0	1	0
Milk	1	0.1	1	0	0	0
Cheese	9	51.9	4	1	2	2
Eggs	3	46.9	1	1	0	1
Fruit	10	66.1	3	0	2	5
Vegetables	11	56.6	4	1	1	5
Processed fruit and vegetables	5	39.8	3	0	1	1
Cereals	11	44.9	3	4	1	3
Processed cereals	3	66.9	1	0	0	2
Rice	8	46.5	1	2	0	5
Sugar and sugar confectionary	4	53.4	1	1	0	2
Beverages (wine)	3	33.3	2	0	0	1
Others	9	59.7	2	2	0	5
Total	**112**	**54.1**	**38**	**18**	**13**	**43**

Source: Own calculations based on EU notifications to the WTO

5. CONCLUSIONS

EU agricultural support policy has experienced significant change over the past two decades. As a result of these changes, its distorting impact on world markets is now much reduced. Overall spending on the CAP has been reduced. Domestic support now largely takes the form of decoupled income support payments. Price support guarantees are now limited to a relatively few products at relatively low safety-net levels. While MFN border tariffs have not changed significantly since the conclusion of the Uruguay Round (year-to-year changes reflect the impact of changing world prices on the AVE of specific tariffs rather than discretionary policy changes), market access for third-country exporters has been increased through the increasing number of free trade agreements to which the EU is a party. Most low-income and all least-developed countries enjoy duty-free access for all their agricultural exports to the EU market under various preferential schemes. A growing number of tariff rate quotas provide limited access for sensitive products protected by high border tariffs. Export subsidies are currently not used and will anyway be completely phased out by 2020 under the WTO Ministerial Decision in Nairobi in 2015.

While significant progress in reducing the trade-distorting impact of EU agricultural policies has been made, some issues remain. Decoupled income support is likely to have some impact on the level and structure of EU agricultural production even if it is limited. Tariff protection remains high for sensitive products. Rules of origin and other barriers can nullify the benefits of preferences for some exporters. Sanitary and phytosanitary regulations may add to exporters' costs and limit trade flows.

Agricultural policy remains a lively topic for debate within the EU. Already, discussion is starting on the future shape of EU agricultural policy after 2020. This debate is driven in part by the legislative timeline for the preparation of the next Multi-annual Financial Framework in the EU. This will come into force on 1 January 2021, but the Commission is required to submit its proposal by 1 January 2018. The MFF sets out the yearly budget ceilings for the EU budget as a whole, but also for the CAP. Some of the impetus behind the renewal of the debate on the CAP reflects concerns that the CAP budget may come under pressure in these negotiations.

There is also a sense of dissatisfaction among many stakeholders around the outcome of the 2013 reform, suggesting that it may not be a stable equilibrium among competing views of the purpose of EU agricultural policy. Farm groups, supported by some Member States, would like to see a greater emphasis on support for farm production and farm incomes. Their case is strengthened by the increased price and income volatility experienced in particular product markets in recent years. Environmental groups, who initially welcomed the shift to target a higher share of the CAP budget on measures designed to support the environment and climate action, were sorely disappointed by the outcome which they have described as "green-washing". They continue to seek a greater commitment to using CAP resources to support the production of public goods. The choice in June 2016 by the British people in a referendum in favour of the UK leaving the EU can have repercussions for the balance of forces in this debate (Matthews 2016; Swinbank 2016).

How this debate plays out in the coming years will also be influenced by the economic environment and political preferences. World food markets in the coming decade may not be as buoyant as some had hoped. The EU has accepted new obligations under the UN Sustainable Development Agenda and the Paris Agreement on climate change. The EU itself will need to take stock of the implications of the UK referendum result, should this be followed through, and the growing evidence of popular disenchantment with the process of European integration pursued since the end of the Second World War. There is some evidence of disenchantment with proposals for further trade liberalisation, not only among those who expect to lose out from greater competition, but also

among those who might expect to benefit from the lower prices due to greater competition, because they feel these may be at the expense of a lowering and dilution of standards to which they are also attached. All of these issues will influence how EU agricultural support policy affects world markets in the coming years.

These conflicting influences on future EU agricultural policy will also impact on its stance in future international trade negotiations. The EU remains committed to significant further liberalisation of agricultural policies in the context of WTO negotiations. It supported the decision to prohibit export subsidies on agricultural goods after 2020 and its most recent tariff offer foresees a significant reduction in its MFN tariffs, larger than that which it agreed to in the Uruguay Round. The EU continues to pursue an active policy of forging free trade agreements with third countries. In these negotiations, agriculture is often seen as a defensive interest and a brake on the scope of the tariff offers which the EU can make in these negotiations. The agreements concluded to date have had relatively minor repercussions for EU agriculture, apart from the agreement with Canada which has yet to be ratified. Agricultural interests in the EU have identified concerns in the ongoing negotiations with the United States as part of the Transatlantic Trade and Investment Partnership agreement and with the Mercosur countries of South America. These agreements have not yet been finalised and it remains unclear how these agricultural concerns will be reflected in any final texts and whether they might influence the ratification process within the EU.

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