Chapter 7
EU Agricultural Policy and Reforms

7.1 Background

At the initiative of France, the European Union (EU) began life in 1951 as the European Coal and Steel Community (ECSC), with the objective of pooling the raw materials required by industry in Germany, France, and the Benelux countries (Belgium, Netherlands, and Luxembourg), thereby reducing the chances of war. This was followed by the Treaty of Rome (1957), which actually consisted of two separate treaties: one established the European Economic Community and the other created the European Atomic Energy Community (Euratom). Thus, beginning in 1958, what was to become the European Union consisted of three separate communities and guidelines for developing future policies.

The objective of the EEC was to reduce custom duties among EU member states leading to an eventual customs union. This would be done by creating a single market for goods, labor, services, and capital. Further, the Treaty Establishing the European Economic Community (EEC) proposed development of common policies related to agriculture, transportation, and social welfare, as well as a European Commission (Brunet-Jailly, Hurrelmann, and Verdun 2018).

During negotiations on implementation of the EEC Treaty, French President Charles de Gaulle pushed for the creation of a Common Agricultural Policy (CAP) that would protect EEC farmers from outside competition, thereby facilitating exports of higher-cost French agricultural products into the large German market. Indeed, to protect French farmers from potential competition from producers in the British Commonwealth, de Gaulle vetoed the United Kingdom's application to join the EEC on two occasions (1963 and 1967). The United Kingdom (UK) finally

joined the EEC in 1973, along with Denmark and Ireland.

A number of treaties followed the Treaty of Rome. These sought greater integration of the member states comprising the EEC. For example, the Single European Act (1986) brought governance of the three communities under a single umbrella: the Schengen Treaty and Convention (1985) laid the groundwork for free movement of peoples without the need for border controls; the Treaty on European Union, or Maastricht Treaty (1992), laid the foundation for a single currency (euro); and the Lisbon Treaty (2007) founded the European Union as a legal structure, among other things, and gave the Union its current name.[1] During this time, the European Union continued to expand its membership as laid out in Table 7.1.

Table 7.1: Expansion of the European Union

Year	EU Members
1956	Germany, France, Italy, Netherlands, Belgium, Luxembourg
1973	Denmark, Ireland, United Kingdom
1981	Greece
1986	Portugal, Spain
1989	East Germany (integrated into Germany)
1995	Austria, Finland, Sweden
2004	Slovenia, Slovakia, Poland, Hungary, Malta, Czech Republic, Cyprus, Lithuania, Latvia, Estonia
2007	Romania, Bulgaria
2013	Croatia

Greece joined in 1981, followed by Spain and Portugal in 1986. After the collapse of the Berlin Wall in 1989, East Germany joined the European Union as part of a unified Federal Republic of Germany. Sweden, Austria, and Finland joined in 1995, making fifteen EU member nations (EU-15). A major expansion of the European Union that had particular relevance for

[1] Although the term "European Union" did not emerge until 2007, we will employ it throughout the remainder of this chapter rather than distinguish between EU and EEC according to dates.

agricultural policy occurred in 2004 when ten additional countries, primarily from Central and Eastern Europe, joined the European Union (see Table 7.1). Government outlays under the CAP were increased significantly to accommodate these countries. In 2007, the European Union was enlarged to include Romania and Bulgaria, and Croatia in 2013, bringing the total number of member states to twenty-eight (EU-28). Lastly, as a result of a June 23, 2016 referendum, British citizens voted to leave the European Union, a process that is supposed to be completed in 2019.

7.2 The Common Agricultural Policy (CAP)

After World War II (WWII), it was easy to establish an agricultural policy regime that provided farmers with large transfer payments. Three main reason can be identified. First, European citizens desired to avoid future food shortages such as they had experienced during and shortly after WWII. Second, a large proportion of the population was rural and dependent on agriculture, which meant that the agricultural constituency had political clout. Finally, the leader of one of the largest countries in the EEC, France, promoted and supported protection of agriculture. The result was the establishment of the Common Agricultural Policy (CAP) in 1962 by the six founding members of what later became the European Union (see below).

High levels of support to agriculture have continued under the CAP to the present despite large costs to consumers and taxpayers and a declining farm population. One reason was rent seeking by agricultural producers – as the farm population fell, fewer farmers could more easily organize, and had more to gain individually, and thereby had a greater incentive to lobby politicians. Meanwhile, consumers and taxpayers were less concerned with the costs of farm programs as the proportion of income spent on food declined. Further, consumers were increasingly concerned with food safety (e.g., BSE crisis, pig flu, hoof-and-mouth disease, etc.), which was then used as a rationale for continued government support of food and agriculture.

From a historical perspective, Articles 38-47 of the 1957 Treaty Establishing the European Economic Community (Treaty of Rome) defined the following five general objectives that a common agricultural policy should take: (1) increase productivity by promoting technical progress and ensuring the optimum use of the factors of production, especially labor; (2) ensure a fair standard of living for the agricultural community; (3) stabilize markets; (4) secure availability of supplies; and (5) provide consumers with food at reasonable prices. Three general objectives of the CAP that then emerged at the Stresa Conference (1958) were (1) market unity, (2) community preference, and (3) financial solidarity (Ackrill 2000). Agriculture was thereby included in the Community's Common Market, with member states required to remove quantitative restrictions and tariffs on intra-Europe trade and erect a common external tariff. A mechanism for supporting farmers' incomes was also established.

The Agricultural Guidance and Guarantee Fund (EAGF) was created at Stresa to provide agricultural payments, although a Council of Ministers in 1962 laid the groundwork for price support policy, border taxes and subsidies, production quotas, direct income support, and Common Market Organizations (CMOs). An ensuing CMO established for cereals included (1) target prices, (2) intervention prices (namely, a domestic floor price), (3) threshold prices (minimum import prices) supported by variable levies, (4) export restitution payments, and (5) levies (now tariffs) on the agricultural components of processed products. Different intervention prices were established for durum wheat, common wheat, barley, corn, sorghum, and rye. High intervention prices led to overproduction of cereal crops, such as wheat and barley, and the European Union shifted from being a major importer of cereals to a major exporter in 1984, remaining so ever since.

The original overarching theme of the CAP was to provide some price protection to domestic producers, with farmers receiving direct payments to grow commodities, such as

oilseeds, durum wheat, and olive oil. Initially, the system was expected to provide positive net returns, with revenues from import levies expected to exceed the cost of farm payments. But, as early as 1968, the EU Agricultural Commissioner, Sicco Mansholt, recognized that the CAP would result in overproduction, leading to the need to store or export surplus product. However, the costs of export refunds were greater than the levies from imported commodities (Tracy 1996), and there were increasing costs of storing commodities such as butter and skim milk powder (SMP). Reforms were clearly required, but how would this come about within the European Union's governing structures.

The main decision-making body for CAP affairs is the Agriculture Council in Brussels, which includes the agricultural ministers from each member state, or their representatives. Since the CAP redistributes income among members, each country has an incentive to lobby for policies that benefit its own farmers. Agricultural policy includes such things as price support levels and direct acreage payments and, once agreed on by the Agriculture Council, the policy must still be approved by the Council of Ministers. The Council of Ministers (now the Council of the EU) is meant to oversee the European Commission on behalf of the first Ministers (leaders of countries). Regulations approved by the Council of Ministers have direct force of law in all member states, and require no further national approval. However, Council directives have to be translated into national legislation. The formal decision-making procedure within the Council of Ministers is the qualified majority vote (QMV), but the European Union strives to achieve near consensus to avoid small states out-voting the large member states, although this often results in easy marginalization of some smaller member states. Farmers in all countries lobby their ministers not to lower levels of protection, and countries with strong farm lobbies (particularly France) exert undue influence over both the Agriculture Council and Council of Ministers. Since agricultural reforms can be

difficult to implement, individual countries are given some leeway over their own agricultural policies (see below).

7.3 Reforming the Common Agricultural Policy (CAP)

Mansholt's 1968 plan to reform EU agriculture promoted (1) the consolidation of small farms to increase farm size to take advantage of economies of scale, (2) the removal of more than two million hectares from crop production, and (3) reduced payments to smaller producers. These proposals were controversial, opposed by small farm holders and not acceptable to the Agriculture Council. Nonetheless, because of oversupply and growing support costs, the European Union slowly began to implement Mansholt's ideas in the 1980s. To reduce mounting stocks of butter and SMP, and reduce export subsidies on these products, a dairy production quota was adopted in 1984; it was known as a super-levy because it imposed high penalties on member states which exceeded their quota. At the same time, the increase in CAP spending was limited to the growth rate of EU-wide national income, and then to 74% of national income growth in 1988, although there was no credible enforcement mechanism (Ackrill, Kay, and Morgan 2008).

Then, beginning in the 1990s, agricultural reforms came about for reasons that had as much to do with the evolution of the European Union – the politics of EU enlargement and greater integration – as they did with agriculture per se. More specifically, agricultural reforms were driven by four factors: (1) the high and increasing costs of the CAP at a time when politicians wished to allocate more of the limited EU budget to other programs; (2) pressure for reform emanating from trade negotiations, particularly as a result of the World Trade Organization's (WTO) Agreement on Agriculture (1995) that requires the eventual elimination of export subsidies (see Box 7.1); (3) the integration of new members as the European Union expanded from the EU-15 prior to 2004 to the EU-28 (see Table 7.1) – more specifically, the implication for the CAP of adding several

nations with large, underdeveloped agricultural sectors; and (4) increasing environmental concerns (e.g., Buckwell 2017).

Consider first the impact of the CAP on the EU budget. Agricultural expenditures grew rapidly after establishment of the CAP in 1962 so that, by 1970, payments to the agricultural sector from the EAGF accounted for nearly 90% of the total budget of the European Union. While payments continued to grow almost every year, the proportion of the EU budget going to agriculture slowly declined. High levels of subsidization eventually harmed trade negotiations, while negatively impacting the agricultural sectors in developing countries – by lowering global agricultural prices, producers in developing countries were at a competitive disadvantage. Finally, as noted, the agricultural budget took away funds that politicians wished to use for other important programs. The evolution of the EU agricultural budget (including to 2016) is illustrated in Figure 7.1.

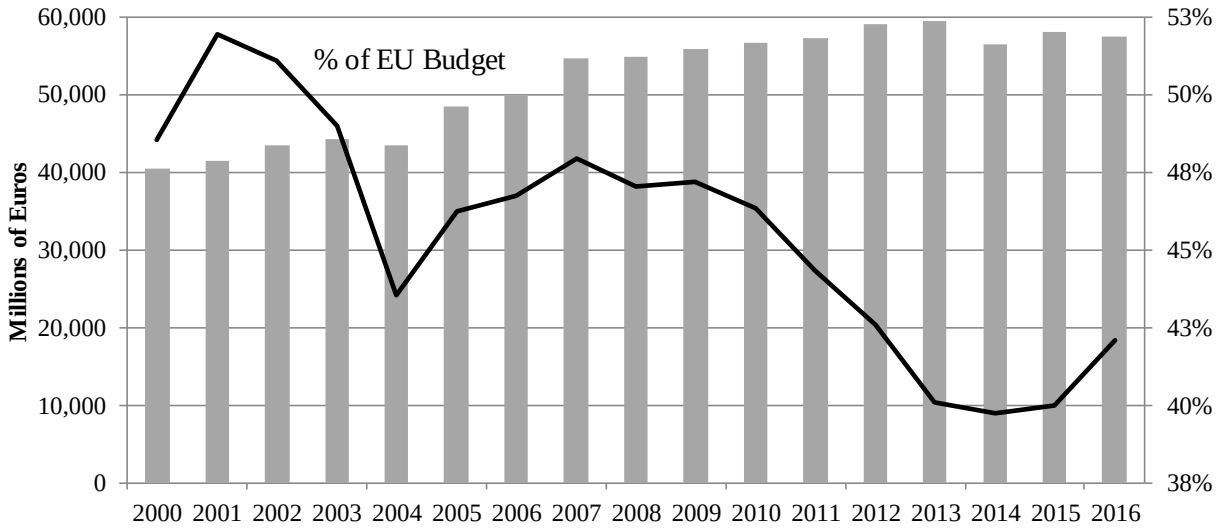

Figure 7.1: Agricultural Budget and Component of the Total EU Budget

Box 7.1: World Trade Organization (WTO) and Agreement on Agriculture

The Uruguay Round of the General Agreement on Tariffs and Trade (GATT) was concluded at the end of 1994. Beginning January 1, 1995, GATT was replaced by the World Trade Organization (WTO), which is an intergovernmental organization that regulates international trade. Included in its charter is an Agreement on Agriculture that was negotiated under GATT in an effort to resolve the obstacles that countries' agricultural support programs posed in reaching an agreement on reducing tariff and non-tariff trade barriers. The Agreement on Agriculture includes three categories of agricultural support payments, referred to as 'boxes.'

- *Green box* subsidies must not distort trade or, at most, cause minimal distortions. They have to be government-funded (so supply management is not permitted as the burden falls on consumers) and must not involve price support. Subsidies cannot target particular products but may provide direct income support for farmers if decoupled from current production levels or prices. Subject to certain conditions, environmental protection and regional development programs can be subsidized without limits.
- *Amber box* subsidies include all domestic support measures considered to distort production and trade and are not included in the other boxes. These include measures to support prices or subsidies directly related to production quantities. There are limits to support, however: *de minimis* (minimal) levels of support, referred to as the Aggregate Measurement of Support (AMS), are 5% of agricultural production value for developed countries and 10% for developing countries. Because amber box subsidies are trade distorting, countries are to reduce or eliminate them.
- *Blue box* subsidies may be considered as 'amber box with conditions' – conditions designed to reduce distortions. Any support that would normally be in the amber box is placed in the blue box if the support also requires farmers to limit production. Thus, agricultural programs that require farmers to set aside land for conservation use to be eligible for subsidies (cross compliance) are included, as are production-limiting programs, such as supply restrictions that might adversely affect trade. There are no limits on spending on blue box subsidies.

Under existing WTO rules and as argued by the United States, direct payments to agricultural producers fall into the green box because they do not incentivize production nor distort trade. There is no limit on what a country can spend on green box subsidies. Subsidization of crop insurance premiums can affect output, however, and are thus trade distorting. The United States has recognized that its yield and revenue insurance programs must be classified as amber box subsidies.

The objective of trade negotiations is to reduce or eliminate amber box subsidies, while green box programs continue to be exempt from trade reduction commitments. Blue box programs are tolerated but could be targeted by other countries for modification (e.g., supply management regimes have been singled out). Even so, some countries want to retain the blue box as it is, because they see it as a crucial means of moving away from distorting amber box subsidies without causing too much hardship.

One of the earliest reforms to the CAP included the transfer of income from farm support to regional development. It followed recognition that the agricultural budget needed to be tamed

and reform was required, but also that it would be necessary to compensate farmers if reforms were to be politically acceptable. The reforms began in earnest with the so-called MacSharry Reform (1992). MacSharry began to move the European Union away from "principally a commodity market intervention system to a system of direct compensation payments to individual farmers" (Buckwell 2017), while facilitating the conclusion of international trade negotiations and the creation of the WTO and Agreement on Agriculture. Additional reform measures initiated in 1999 (known as Agenda 2000) built on the MacSharry reforms by further lowering support prices. Agenda 2000 also revised the payment structure of the CAP by setting up two pillars. 'Pillar 1' provides market and income support measures that cover direct payments to farmers and support market-related subsidies, such as intervention prices, variable import levies, export restitution, public storage, and surplus disposal schemes. 'Pillar 2' constitutes rural development measures and environmental services, providing assistance to difficult-to-farm areas, promoting food quality and safety, and improving animal welfare. The reallocation of farm program payments from pillar 1 to pillar 2 is termed 'modulation,' with reforms shifting more of the focus toward the second pillar. Consequently, reforms have slowly improved the efficiency of farm programs.

In the following sections, the CAP reforms are discussed in greater detail. As part of this discussion, we highlight the implications that enlargement of the European Union has had on support payments and how this was dealt with.

7.3.1 MacSharry Reform (1992)

The 1992 MacSharry Reform was to be phased in by 1996, and affected cereals, oilseeds, protein crops, and beef. It lowered EU prices *toward* world prices and provided for direct compensation to farmers as the intervention price for cereal was reduced by 30% while that for beef declined by 15%. Compensation was provided because policymakers assumed that reductions

in support prices would reduce revenues. In the crop sector, direct payments were area-based and fixed in value (€/ha); they were determined as a five-year, Olympic average (highest and lowest removed) of yields and the area sown to cereals over the period 1986 to 1990. Beef cattle producers received enhanced payments on a complex array of per-head premiums based on the number of beef cattle kept. The area payment scheme also embraced oilseeds and certain other field crops, and sheep and goats were also brought into the package.

Importantly, the MacSharry reforms were meant to facilitate the conclusion of trade negotiations (see Box 7.1). While the direct payments offered under the MacSharry reforms were initially placed in the amber box (designated as trade distorting and thereby potentially limited by the European Union's *de minimis* amount), in a bilateral meeting with the United States in November of 1992, a 'blue box' category was created and subsequently inserted in the Agreement on Agriculture (Ackrill, Kay, and Morgan 2008). Subsidies that were viewed as partially decoupled as long as they met certain set-aside criteria were placed in the blue box. Thus, area and per-head payments were declared to fall in the blue box category (Swinbank 2008: 446). However, to be eligible for compensation, crop farmers with production exceeding 92 metric tons of grains or oilseeds were required to set aside 15% of the previous year's arable land, although the set-aside requirement was reduced to 10% in 1996; this set-aside program remained in effect until 2006-2007. Farmers who set aside more than the required limit, but up to 25% of cropland, could then receive compensation for doing so from the Arable Areas Payment Scheme. Although the reforms increased the level of CAP spending as direct payments replaced some price supports, the spending limits that were embedded in the new CAP payment structure led to a credible compliance mechanism (Ackrill, Kay, and Morgan 2008).

7.3.2 Agenda 2000 (1999)

The Agenda 2000 reform was primarily meant to address the EU enlargement planned for 2004 and the need to reduce intervention prices still further. The resolutions that were actually adopted deviated considerably from the proposals made by the EU Commission and from the agreement reached initially by the agriculture ministers. A short-term resolution limited the CAP budget to €40.5 billion. Intervention prices were lowered further (beef prices by 20%, cereal prices by 15%), but only half of the price reductions were compensated by direct payments. Even so, EU prices remained above world prices. The reduction in the intervention price for grain was split into two equal steps so that, by July 2001, the intervention prices for wheat, barley, maize, sorghum, and rye were all set at €101.31 per tonne. The intervention price for rye was abolished in 2004, but those of other cereals had to wait for further reforms. The import threshold price for cereals was fixed at 155% of the intervention price. Finally, Agenda 2000 imposed land set-asides on smaller crop producers and, importantly, laid the groundwork for future dairy reforms.

Enlargement was a stressor for agricultural policy development. As the European Union expanded to include new member states, especially the Central and Eastern European Countries (CEEC) in 2004, the agricultural policies of both new and pre-existing members were affected by changes to the CAP, which, in turn, altered the supply and demand conditions for commodities within both the entrant country and each pre-existing EU member (Banse 2003). For policymakers, the main concern was the budget implications. To address the ascension of CEEC countries whose agricultural sectors were quite large, policymakers initially proposed increasing the EU budget for agriculture from 1% of total GDP to 1.27%, but this was later revised to 1.05%.

There was also a concern about governance. Could the increased complexity in agricultural regulations work in the CEECs where accounting practices were less developed than in the EU-15 and corruption was a greater problem (see Pentland 2018)? Further, the CAP had been an obstacle to trade under the GATT, the addition of several countries with large agricultural sectors, most notably Hungary, Poland, and the Czech Republic, and later Romania and Bulgaria, would likely aggravate trade negotiations under the WTO.

To provide some indication of the problem, consider Tables 7.2 and 7.3. Although the data are for 2008, they provide a picture of the situation that the European Union faced in grappling with agricultural policy in the face of enlargement. EU policymakers addressed the problem by basing direct payments to farmers (see discussion below) on yields and area cropped during the period of 1995-1999, but not 2000-2002 as with the EU-15. Further, eligibility for full direct farm payments was phased in over a period of ten years, beginning with 25% in 2004. (Direct payments were phased in by 2013 for the ten members entering in 2004, by 2015 for Romania and Bulgaria, and 2022 for Croatia.) Overall, the direct payment provided agricultural producers in CEECs varied from €300 for small farms in Poland to €40,000 for large farms in Hungary and the Czech Republic. Although average payouts per farm were significantly lower in the CEECs than in the EU-15 and the original six member states, the citizens of the EU-15 (and original States) contributed more to agricultural support payments than they received in benefits (Table 7.3). Finally, the welfare implication of the EU enlargement is provided in Appendix 7 for the cereals sector which was impacted most.

Table 7.2: Population and Agricultural Statistics, EU Groupings, 2008

Grouping	Population (mil)	Farmland (mil ha)	# of farms ('000s)	Farm workers ('000s)
Original Six	214.7	60.4	3,334.00	3,116.30
EU-15	336.8	129.4	5,845.00	6,244.40
EU-25	410.9	162.8	9,691.00	9,468.40
EU-27[a]	440.1	182.1	14,482.00	12,564.10

[a] Excludes Croatia as it was added in July 2013.

Table 7.3: Agricultural Payouts by EU Groupings, 2008 (€)

Grouping	Contribution per citizen	Payout per citizen	Payout per hectare	Payout per farm
Original Six	126.4	99.6	353.7	6,411.20
EU-15	145.4	138.8	361.0	7,995.00
EU-25	126.9	128.7	324.9	5,457.80
EU-27[a]	120.0	120.2	290.5	3,652.80

[a] Excludes Croatia as it was added in July 2013.

7.3.3 Mid-term Review (2003) and 2008 Health Check

The 2003 Mid-term Review is sometimes referred to as the Fischler Reform after Franz Fischler, the then EU commissioner for agriculture. According to Swinbank (2008: 446): "It was recognized that the compensation payments introduced by the MacSharry Reforms of 1992 had become entrenched as a permanent, or semi-permanent, form of income support (but perversely focused on larger, rather than smaller, farm businesses) and as such could not be denied to farmers in the acceding states of central and eastern Europe." However, the Fischler Reform did not deal with the entrenchment of income support, nor did later reforms; if anything, the system of direct payments was expanded and thereby became even more engrained.

A key element of the Mid-term Review reforms was the decoupling of subsidies from production (with certain exceptions) via the use of direct payments. This allowed farmers to adapt their planting intentions to market signals and helped move the CAP further toward being WTO-friendly. For example, 75% of direct payments for arable crops became decoupled, along with 60% of durum wheat payments and about 70% of livestock payments. The default option was full

decoupling, but member states were given the option of partial decoupling (75% of the arable aid payments, etc.) and France, in particular, took up this option.

The Health Check reforms of November 2008 phased out almost all of this partial decoupling in individual states (although coupled support returned after 2013 as discussed below). The share of coupled aid in total direct aid fell from 15.0% in 2008 to 14.7% in 2010, 7.6% in 2012, and 6.7% in 2014 (Matthews 2015).

In terms of the direct payment, the Mid-term reforms introduced the *Single Payment Scheme* (SPS) that was gradually implemented between January 2005 and January 2007. Single-farm payments are direct payments made to farmers independent of production. The main aims of this payment system are to (1) allow farmers the freedom to respond to market demand, (2) promote environmentally and economically sustainable farming, (3) simplify CAP application for farmers and administrators, and (4) strengthen the EU's position in the WTO's agricultural trade negotiations. Direct payments were decoupled from production but linked to eligible farmland, although coupling elements were retained in dairy, cereals, sugar beets, and starch potatoes; however, after the Health Check the only formal coupled payments that would be allowed after 2013 are for suckler cows (beef rather than dairy cow), sheep, and goats; premia; and payments to cotton producers.

To determine the size of the fixed (direct) payment a farmer would receive, countries could choose one of the following approaches for determining a producer's reference yields:

- Historic: entitlements depend on farm-specific historical reference yields.
- Regional: entitlements depend on the region's outcomes for establishing a reference yield.
- Hybrid: a combination of the historic and regional approaches.

While the European Commission preferred the regional approach, the majority of countries opted

for the historical one. Only lands growing specific crops were considered eligible for fixed payments (€/ha) that varied by crop based on historic 2000-2002 yields. Payments were based on farm-specific entitlements, so their size differed significantly by type of farm and across farms. Further, they depended on cross-compliance measures linked to (1) food safety, (2) animal welfare, and (3) environmental standards; for example, farmers could not convert pastureland to arable crops or divert land to non-agricultural uses. This made direct payments eligible for the WTO's blue box. The Agriculture Council did not reduce the level of intervention prices for cereal crops even though reducing price supports was a significant part of the original 2000 reform agenda (Daugbjerg and Swinbank 2007).

With subsidies completely decoupled, output should be the same with or without subsidies, but production is indirectly impacted because flat-rate payments based on historic reference amounts result in an *insurance effect* (as it provides an effective lower bound on a producer's income) and a *wealth effect* (because it increases a farmer's wealth and thus reduces the producer's aversion to risk). Overall, however, decoupled payments do not affect price variability and thus are not expected to have an insurance effect, while the wealth effect is likely small and producer specific; wealth effects only occur when a farmer becomes less risk-averse with an increasing expected payoff.

There remained some problems with the Mid-term Review reforms. In particular, member states had extensive discretion at the time they adopted the reform, which could be any time during 2005-2007. States could determine the single payment in different ways (see above), including allocation of direct payment in ways that led to undesirable and unpredictable outcomes at the EU level, making for administrative problems. Initially, as discussed above, states could provide extra subsidies (up to 10% of previous ceilings) and ones tied to production, although this was eventually

eliminated with the Health Check. Further, the SPS distorted land use because payments differed across crops, thereby causing farmers to prefer the land uses in place in the 2000-2002 reference period. As an example, consider payments to Dutch farmers under the Mid-term Review (Table 7.4). Clearly, incentives favor the planting of sugar beet, followed by wheat and barley when other factors limit plantings of beet. As discussed below, these payments would be replaced by a single farm payment of €270/ha in 2015, which, based on the allocations of a typical Dutch crop producer, is close to the average payment of €282/ha based on the payment scheme in Table 7.4.

Table 7.4: Fixed, Crop Specific Payments based on Historic 2000-2002 Yields: Netherlands

Crop	Payment (€/ha)
Wheat	377.5
Barley	377.5
Potato (seed & edible)	0
Sugar beet	687.0
Onions	0

Source: Boere and van Kooten (2015: 7)

Several other drawbacks of the Mid-term Review include special provisions for organic farming that are essentially anti-genetic engineering; subsidies for growing durum wheat (which hurt a country such as Canada, for example); and subsidies for planting trees that are much larger than needed because they are essentially needed to offset CAP payments. Finally, the reforms require greater accounting requirements, which are a problem for some states as they lack the institutions and qualified accountants to handle the changes to programs (or even the programs themselves due to corruption and less-than-desirable rule of law).

7.3.4 The 2013 CAP Reforms

The CAP reforms that followed in 2013 introduced a single farm payment (SFP) that eventually provided the same level of support to every hectare of farmland in a region, independent

of the type of farm or crop grown. The SFP is a flat rate payment that was then, after 2015, renamed the basic payment (BP) – a scaled-down version of the previous Single Payment System. The 2013 CAP reform included new environmental requirements for farmers; producers were to be compensated for providing public goods in the form of environmentally-friendly farming practices – a so-called *greening component* added to the SFP if farmers are in compliance. The greening component imposes a set-aside requirement referred to as the Ecological Focus Area (EFA). They were also to be compensated for actions that improved animal welfare and food safety.

The 2013 CAP reforms began to take effect in 2015. Reforms required a minimum 5% reduction in subsidy payments in situations where such payments are worth more than €130,000 annually to individual farms. Although the European Parliament and European Commission wanted a mandatory cap, EU governments were only required to limit individual annual payouts at €275,000. Spending on the CAP remains the largest item in the EU's long-term budget for 2014-2020; in 2016, CAP expenditures were still running at about €38 billion, with €29 billion in direct payments to farmers. Long-term budget plans are to reduce the disparity in payments to farmers: for example, prior to the 2013 CAP Reform, agricultural producers in Italy, Belgium, and the Netherlands still received more than €130/acre compared to those in the Baltic states who received less than €53acre.[2]

The 2013 Reform took a major step backwards, however, because it reintroduced the use of coupled payments. According to EU Regulation 1307-2013, member states are allowed to use part of their national envelope for direct payments for coupled support in certain clearly-defined cases; in essence, Voluntary Coupled Support (VCS) should be limited to specific sectors or regions in a member state where specific agricultural activities are particularly important for

[2] See "European Union – Ag Policy," *Western Producer* 17 October, 2013. Canadian dollars reported in the article converted to euros using an exchange rate of $C 1 = €0.66.

economic, environmental or social reasons, including incentives to maintain current levels of output.

Member states are allowed to employ up to 8% of their national ceilings for such coupled support, or 13% where the level of coupled support exceeds 5% in at least one year during the 2010-2014 period or where farmers received a single area payment prior to 2015. Further, to maintain the protein-based autonomy of the breeding sector, countries can increase their support by upwards of two percentage points to support the production of protein crops. In rarer cases where it can be demonstrated that a certain sector or region is in particular need, and on approval, a member state can use more than 13% of their national ceiling (Matthews 2015).

The VCS policy option has been widely used to support various farm commodities by all states, except Germany. The extent to which countries have employed coupled support is provided in Table 7.5.

Table 7.5: Impact of the 2013 CAP Reform on the Importance of Coupled Payments by Member States: Total Direct Support and Proportion of Added Coupled Support

Country (ISO designation)	Total Direct Support 2013 (€ millions)	Share Provided by Coupled Payments 2013 (%)	2015 (%)
Belgium (BE)	566.8	16.1	17.0
Bulgaria (BG)	494.4	5.5	15.0
Czech Republic (CZ)	824.2	3.8	15.0
Denmark (DK)	939.1	1.4	2.8
Germany (DE)	5,254.0	0.0	0.0
Estonia (EE)	91.9	1.3	4.2
Ireland (IE)	1,250.3	1.8	0.2
Greece (EL)	2,282.3	12.0	7.4
Spain (ES)	5,237.3	13.5	12.0
France (FR)	7,967.5	11.5	15.0
Italy (IT)	3,959.6	3.2	11.0
Cyprus (CY)	43.8	7.5	7.9
Latvia (LV)	132.9	3.8	14.0
Lithuania (LT)	345.5	3.8	15.0
Luxembourg (LU)	33.7	0.0	0.5
Hungary (HU)	1,203.3	3.8	15.0
Croatia (HR)	--	--	15.0
Malta (MT)	4.8	0.0	57.0
Netherlands (NL)	822.9	2.0	0.5
Austria (AT)	706.4	11.1	2.1
Poland (PL)	2,769.5	3.8	15.0
Portugal (PT)	648.8	31.8	21.0
Romania (RO)	1,086.9	3.5	12.0
Slovenia (SI)	130.2	6.0	15.0
Slovakia (SK)	354.4	3.3	13.0
Finland (FI)	531.9	9.0	20.0
Sweden (SE)	689.3	0.4	13.0
United Kingdom (UK)	3,205.9	0.6	1.7
European Union (EU)	**41,658.3**	**6.8**	**10.0**

Source: Adapted from Matthews (2015)

VCS constitutes a direct payment for each hectare allocated to a crop in question. The payment effectively operates as a price subsidy, the value of which is equal to the per hectare payment divided by the crop yield. The Voluntary Coupled Support (expressed as a price equivalent) lowers the marginal cost curve, thereby incentivizing farmers to produce more – the VCS subsidy induces additional production that is likely to have a downward impact on market prices, thereby counteracting the VCS incentive. The extent of these shifts can only be determined

numerically, but one expects increased competitiveness that will put some countries at a disadvantage relative to others depending on the VCS rates employed.

7.3.4 Going Forward: Next Steps

Direct payments can only be considered a temporary measure. As Matthews (2017a) argues, it is "hard to rationalise direct payments as compensation for price reductions which took place twenty-five years ago, not least because they have been extended to farmers in the new Member States which never experienced those price reductions and where prices generally rose on accession to the EU." Direct payments have become capitalized in land prices, which resulted in higher costs for new entrants purchasing land and higher rents for tenant farmers, and there has been a high leakage of benefits to non-farm groups that has increased over time. Further, direct payments do not stabilize farm incomes in sectors with high risk, such as horticulture, with direct payments being made regardless of whether farm gate prices are good or bad – direct payments do not reduce income volatility. Eventually, a system of direct payments will need to be reformed, although care must be taken in doing so to avoid undue disruptions. "The next CAP must begin the process of phasing out direct payments, instead introducing and building on a more targeted set of policies designed to better equip farmers to face the changes of the future" (Matthews 2017a).

In a 2017 policy document entitled "The Future of Food and Farming," the European Commission (2017) proposes to retain direct payments, but attempts to cap them at between €60,000 and €100,000 per farm, primarily in an effort to focus on family farms. As experience with the United States has shown, such a policy incentivizes larger farms to subdivide their operations on paper, perhaps by reallocating ownership among siblings or partners in the farm enterprise, while still operating the enterprise as a single entity. The point is that direct payments in some form or other, and

made at the EU level, are likely to continue into the future.

Another major change that is envisioned regards subsidiarity – individual member states will be given greater responsibility over CAP programs. According to the Commission, this better takes into account "local conditions and needs, against appropriate objectives and targets." Decentralization of CAP programs raises issues of governance and potential corruption, although the Commission is confident that it can ensure 'credible performance reporting' and appropriate spending of the budget. While such a move is generally seen as an improvement as decentralization does take into account local conditions and needs, and can reduce transaction costs, there is no co-responsibility for spending on direct payments (see Matthews 2017b).

One of these challenges to further reform of the CAP is related to the environment (reduced pollution from agricultural activities), provision of public goods, climate change and the United Nations' Sustainable Development Goals (European Commission 2017). Clearly, agricultural activities have an overall adverse impact on the environment, with externalities potentially accounting for as much as one-fifth of gross value added in an intensive agricultural country such as the Netherlands (Jongeneel, Polman, and van Kooten 2017). While the agricultural sector plays an important role in achieving environmental and development goals, placing the burden for achieving these goals on agriculture may be too onerous, particularly given the plethora of goals (there are 17 sustainable development goals alone), their conflicting nature, and their vagueness; there are too few instruments available to agricultural policymakers to achieve these goals while also providing secure, safe, relatively inexpensive and high-quality food. Many instruments are already in play, including cross-compliance measures such as set asides, land retirement, reduced use of chemicals, et cetera. Under Pillar 2, agricultural producers are incentivized to provide public goods that include animal wellbeing measures, enhanced food safety procedures, increased forestlands, meadows for birds, and so on. Subsidiarity could improve the efficiency with which

Pillar 2 funds are spent. In some cases, EU funds are spent to protect a bird species, say, that is important to all Europeans; in that case, the European Union might pay for 90% to 100% of the costs of a program to protect the birds. However, if the primary beneficiaries of a Pillar 2 program are domestic citizens, the European Union might, for example, contribute less than 50% of the program costs; if, on the other hand, a country is unwilling to contribute funds, it would not make sense to proceed with the program. This would be one aspect of credible performance.

7.4 Analysis of CAP Reforms in Specific Sectors

Given the background provided in the previous sections, in this section we examine policies as they relate to specific agricultural sectors. The economics of CAP policies, such as the price support regime for cereals, are discussed using the generally accepted principles of welfare analysis (Just, Hueth, and Schmitz 2004; Schmitz, Schmitz, and Dumas 1997). Since the basic payment relates to land use (and per-head of livestock), we provide some notion of the allocation of agricultural land uses across member states in Table 7.6. In most states, cereal crops, such as wheat, durum wheat, and barley, dominate land use, followed by oilseeds (e.g., rapeseed, sunflower) and protein crops (peas, beans, lentils). Indeed, cereal plus oilseeds and protein crops account for more than half of arable land use in all member states except Malta (0%), the Netherlands (35%), Greece (42%), and Ireland (49%), and exceed 90% in Hungary, Luxembourg, and Slovakia.

Table 7.6: Agricultural Land Allocated by Use, EU Member States, 2013 ('000s ha)

Member State	Cereals	Oilseeds & protein crops	Other crops	Horti-culture	Total arable	Other use	Total agric. land
Belgium	332.5	44.1	280.6	3.9	661.1	646.8	1,969.0
Bulgaria	2,015.6	2,882.6	1,100.9	3.8	6,002.9	0.0	12,005.7
Czech Rep.	1,428.9	870.5	296.1	0.0	2,595.5	896.0	6,087.0
Denmark	1,434.8	684.2	384.1	1.9	2,504.9	114.4	5,124.3
Germany	6,533.7	3,604.7	2,150.8	8.8	12,297.9	4,401.6	28,997.5
Estonia	311.0	305.5	93.2	0.3	710.0	247.6	1,667.5
Ireland	307.8	258.1	590.4	1.6	1,157.9	3,801.5	6,117.4
Greece	1,001.8	536.0	2,119.4	14.1	3,671.4	1,185.4	8,528.2
Spain	6,408.9	6,803.4	3,401.1	60.9	16,674.3	6,625.9	39,974.6
France	9,623.2	7,579.5	2,985.7	38.8	20,227.2	7,512.3	47,966.6
Croatia	590.9	345.8	421.7	1.2	1,359.6	211.6	2,930.8
Italy	3,503.1	2,228.3	2,399.7	72.7	8,203.8	3,895.1	20,302.7
Cyprus	31.3	14.6	15.7	0.7	62.2	47.1	171.6
Latvia	583.5	620.5	326.7	0.3	1,531.0	346.8	3,408.7
Lithuania	1,216.1	1,189.4	279.7	2.7	2,687.9	173.4	5,549.1
Luxembourg	29.1	4.0	2.9	0.0	36.0	95.1	167.0
Hungary	2,437.6	2,506.1	458.4	9.8	5,411.8	-	10,823.7
Malta	0.0	0.0	2.9	0.1	3.0	7.9	13.9
Netherlands	210.2	29.6	430.7	12.1	682.5	1,165.0	2,530.1
Austria	821.6	394.2	579.4	1.8	1,797.0	929.9	4,523.9
Poland	7,479.5	3,853.4	2,688.8	58.4	14,080.1	329.8	28,489.9
Portugal	301.6	151.9	373.0	5.1	831.6	2,810.0	4,473.2
Romania	5,266.3	4,722.6	3,291.1	10.3	13,290.2	-	26,580.5
Slovenia	99.2	35.3	43.5	0.4	178.5	307.3	664.2
Slovakia	770.6	639.8	123.1	1.8	1,535.2	366.4	3,436.9
Finland	1,163.3	874.6	317.3	5.1	2,360.2	-	4,720.4
Sweden	989.3	656.8	482.8	1.5	2,130.3	905.6	5,166.3
UK	3,048.9	2,957.5	3,686.3	15.1	9,707.8	7,388.4	26,804.0

Source: European Union (2017) and authors' calculations

7.4.1 EU Policy in Cereals and Oilseeds and Protein Crops

Three policy instruments had been used to maintain the CAP price support regime for cereals prior to the reforms mentioned in the preceding sections. First, producers were guaranteed an intervention price that, in most years, was considerably higher than the world price. Intervention prices are those at which intervention agencies stand ready to purchase commodities produced domestically, thereby effectively creating a floor price. Second, the intervention price was

enforced by imposing variable import levies (tariffs) to keep foreign sellers from taking advantage of the internal intervention price. These variable import levies were adjusted on a weekly basis due to fluctuating world prices, and were set at a level equal to the difference between the intervention price and the world market price. This reduced imports to zero, except under rare market conditions. Third, to eliminate excess production, the European Union provided export restitution payments equal to the difference between the intervention price and the world price. Export refunds were managed by a Management Committee for Cereals of the European Commission. If the world price ever rose above the intervention price, the variable import levy was set to zero, export restitution payments were suspended, and producers might have been forced to pay an export tax equal to the difference between the (higher) world market price and the (lower) intervention price. Although very rare in historical terms, the 2007-2008 crop year gave rise to world market prices that were higher than the intervention price for cereals, but no export tax was imposed on farmers by the EU Council.

The welfare economics of this system are explored with the aid of Figure 7.2, which is drawn to represent EU cereal markets under average historical price levels. The aggregate supply curve for cereals in all EU countries is represented by S and the demand curve by D. The world market price for cereals is P_F, which is below the intersection of the supply and demand curves. Under average market conditions, in the absence of the CAP, the European Union would be a net importer of cereals (as it was prior to 1984). Therefore, in the absence of the CAP, if the free trade price is P_F, the European Union will produce Q_F^S, but EU consumers will purchase Q_F^D. The difference I_F will be imported in the absence of CAP. The three main policy instruments that had been used to enforce the structure of the CAP price support regime for cereals markets (intervention prices, import levies, and export subsidies) are illustrated in the figure.

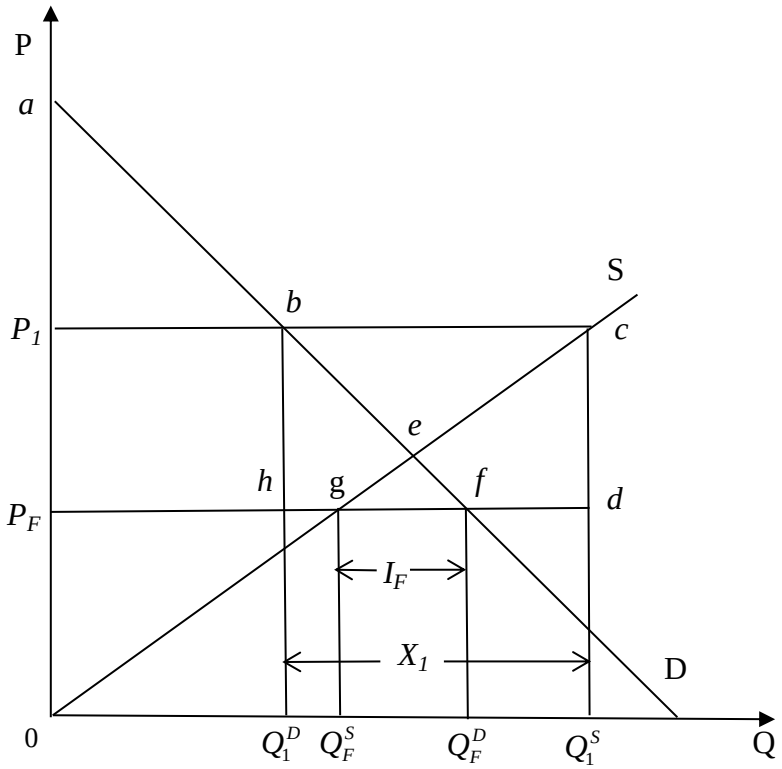

Figure 7.2: EU Price Support Policies in Cereals

Consider what happens when the intervention price is set at P_1, which lies above the intersection point of the domestic (EU-level) supply and demand curves. P_1 is the actual intervention price that EU cereal farmers receive under the CAP and, at this support price, the European Union will produce Q_1^S while EU consumers purchase only Q_1^D. The European Union maintains a variable import levy equal to ($P_1 - P_F$) to block potential imports. To eliminate overproduction, the difference between production and consumption, X_1, is exported at the world price P_F and producers receive government payments equal to the difference ($P_1 - P_F$).

If the CAP did not exist, producers would receive a total dollar amount equal to ($P_F 0g$), consumers would receive ($aP_F f$) in the form of consumer surplus, and the EU government would pay nothing. However, since the CAP does exist at a price support level of P_1, producers receive

($P_I 0c$) as producer surplus (quasi-rent) while consumers receive consumer surplus equal to (aP_Ib). Perhaps most importantly, the government (taxpayers) must pay (*bhdc*) as export restitution payments to producers, who gain (P_IP_Fgc) under the CAP at the expense of both consumers and taxpayers. Consumers lose (P_IP_Ff) because of higher prices. Additionally, taxpayers lose (*bhdc*) because they must ultimately pay the bill for the export restitution payments. The European Union loses (*bhf* + *gdc*) in total welfare – the European Union loses (*egf*) twice because, while both consumers and taxpayers lose (*egf*), producers never receive it. Essentially, producers receive a direct transfer of (P_IP_F *geb*) from consumers and (*bec*) from taxpayers. However, consumers lose (P_IP_Ffb) and taxpayers pay (*bhdc*) to fund this transfer. Essentially, for every Euro spent by the EU on CAP price support for cereals, only (P_IP_Ffb) / [(P_IP_Ffb)+(*bhdc*)] is transferred to producers; the remainder is a deadweight loss.

Unlike grains, there were no price support mechanism for oilseeds, although compensatory payments were made to growers of rapeseed, sunflower, and soybeans. The subsidized oilseed production area was limited by the U.S.-EU Blair House Agreement. Except for small producers, oilseed producers were required to set aside a certain portion of their land to qualify for payments. There were no tariffs on imports of oilseeds and meal, and a low or nominal tariff on vegetable oils other than olive oil.

When intervention prices, import levies, and export subsidies were abandoned in the grains and oilseeds sectors, individual countries still had the option to employ their VCS option to provide support in addition to the basic payment. In 2015, the proportion of the European Union's VCS funds that went to protein crops amounted to 10.7%, 2.1% went to support cereals, olive oil received 1.7%, and oilseeds received no support beyond the basic payment. Meanwhile, 4.2% of Voluntary Coupled Support went to sugar beet producers in 2015.

7.4.2 EU Sugar Policy

The European Union's intervention and export regimes for beef, dairy products, sugar, and fruits and vegetables have many characteristics in common with those used for cereals: producers sell the product either directly on the market or through intervention. The decision to sell directly depends on whether the market price is greater than the intervention price, where the market price is generally the world price. Intervention purchases are made only when market prices fall below the intervention price net of deductions for shipping and handling; thus, intervention purchases are roughly made at 94% of the intervention price.

The EU sugar regime was introduced in 1968, almost eight years after the inception of the CAP, and it targeted sugar beet growers; with minor exceptions, no sugar cane can be grown in the European Union. The EU sugar program became one of the most trade distorting of all the major countries' sugar programs (Schmitz 2002). Studies found that the EU sugar policy has a major impact on the world sugar market, with some studies indicating that, in the absence of the EU sugar policy, world sugar prices would have approached U.S. internal price support levels (Schmitz and Vercammen 1990, 1995; Roningen and Dixit 1989). Burrell and Pearce (1999) estimated that in the absence of both EU and U.S. sugar policies, world sugar prices would increase by some 30% to 38%. ABARE/Sparks (1999) estimated that, even if the European Union did not liberalize its sugar policy but other countries did, global prices would increase by roughly 25%; if the European Union also reformed, the world price would rise by over 40%. Finally, Koo (2002) estimated that the EU sugar policy reduced world sugar prices by roughly 20%.

Until the end of 2017, the European Union used country-level quota to maintain sugar prices at levels that are several times above world sugar market prices. Prior to 2006, the European Union employed three types of quota: the A-quota accounted for approximately 95% of the domestic market and received the highest price; the price of the B-quota was historically about

69% of the price of the A-quota; and the C-quota received the world price. Under special trade agreements, developing countries were provided access to the EU market through a duty-free tariff rate quota of about 1.3 million tonnes (Mt). The program was self-financing, paid for by a levy of 2% on A-quota holders and consumers paying the remaining costs in the form of higher prices. In essence, the earnings on A- and B-quota subsidized exports (C quota) – consumers subsidized exports.

Trade negotiations put this market arrangement under pressure. Major reforms were a response to Brazil's successful dumping challenge against the European Union through the WTO, which ruled that rents accruing to A- and B-quota constituted a subsidy to out-of-quota exports (Powell and Schmitz 2005). Policy reform began in 2006 with the elimination of the B-quota, public storage was limited, reference prices for sugar were reduced by more than 30%, and limits were imposed on C-quota (exports). Steps were then put in place to decouple EU support payments to sugar beet farmers from production. Thus, after September 30, 2017, all sugar quotas were eliminated and producers provided the same basic payment as other farmers. Abolition of the sugar quota was an important final step in the completion of the European Union's policy to increase the market orientation of its agricultural policies. As a result, the European Union fell from being the second largest exporter of sugar in the world after Brazil prior to 2006 to seventh place as a result of reforms, exporting 1.545 Mt of sugar (compared to 24.350 Mt by Brazil), but importing 3.185 Mt. With the elimination of the quota, it is expected that exports could rise to 2.1-2.2 Mt in 2017 (USDA 2017a, 2017b).

Recall that countries could still use their Voluntary Coupled Support payments to provide aid to crop producers, including sugar beet growers. The shift from classical price support to direct payments during the most recent CAP reforms (2014-2020) resulted in support that was largely

decoupled from production. But the option to permit member states to establish VCS goes against the philosophy of greater market orientation in agriculture. Coupled support can distort the level playing field between farmers and the processing sectors (supply chains), especially when support is granted unevenly across the European Union. This is precisely what happened in the sugar sector.

In 2015 and 2016, Croatia, the Czech Republic, Finland, Greece, Hungary, Italy, Poland, Romania, Slovakia, and Spain, and Lithuania in 2017, decided to apply VCS to the sugar beet sector, while Germany, the Netherlands, and other sugar-beet growing countries did not (see Jongeneel, Smit, and van Kooten 2018). VCS payments varied between €81 (Finland) and €784 (Greece) per hectare (ha), although the total EU area to which VCS could be applied was limited to about 480,000 ha in 2015. The impact of the eliminating the sugar quota and implementing Voluntary Coupled Support can be examined with the aid of Figure 7.3. It is assumed that there are no export subsidies as these were ruled out by the WTO as noted above.

Because some member states were unable to meet their EU-assigned quota, consider a high-cost producing state and a low-cost producing state, as depicted in panels (a) and (b) of Figure 7.3. The respective supply functions for the high- and low-cost producing countries are S_h and S_l., Under the quota regime, the level of assigned quota is given by $\bar{q}$, which may or may not be the same level in each of the states, while the EU-level price is p^q. The high-cost country will produce $q^o < \bar{q}$ in panel (a); the high-cost country produces less than its allowable quota and there is no quota rent as the marginal cost of growing beet, given by p^S, is equivalent to the marginal revenue given by p^q. The low-cost country will produce its quota $\bar{q}$ plus an amount $q^o - \bar{q}$ to sell at the world price p^w. The low-cost producer earns a quota rent of R for each unit of quota produced.

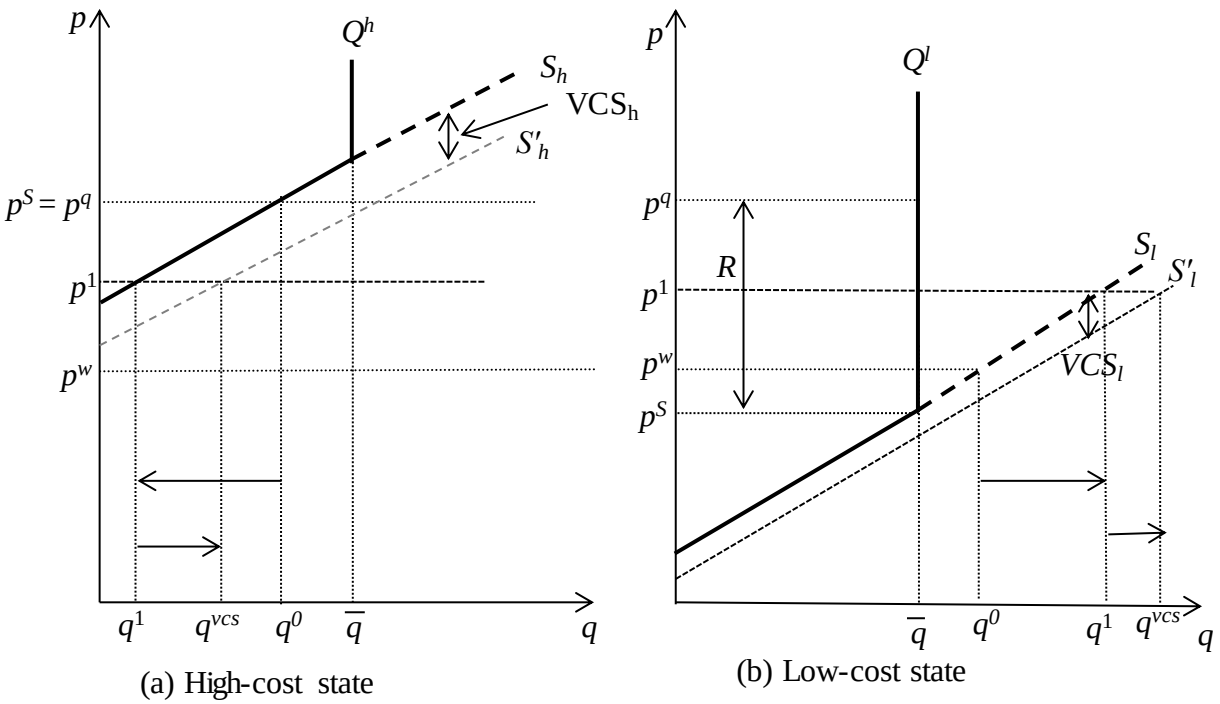

Figure 7.3: Elimination of Sugar Quota and the Use of Voluntary Coupled Support in the Sugar Beet Sector
(Source: Adapted from Jongeneel, Smit, and van Kooten 2018)

As a first step in the adjustment to a free market, the European Union lowered the price of sugar and compensated growers with a basic payment. Assume that the intervention price was set at p^1. In that case, the high-cost country reduces production from $\bar{q}$ to q^1 in panel (a) while the low-cost country increases production as indicated in Figure 7.3(b). Seeing the decline in production, policymakers in a high-cost country have an incentive to provide VCS payments (over and above the basic payment) to sugar beet growers, perhaps to ensure the survival of local sugar producers. This will shift the supply function from S_h to S'_h, so that output increases from q^1 to q^{vcs} in panel (a); however, unless the level of VCS is sufficiently large so that the vertical intercept of S'_h lies below p^w, the country will cease to produce sugar beets when the reform is completed. Since the low-cost producing country in Figure 7.3(b) exported sugar under the quota regime, it will continue to export sugar when markets are totally freed. In this case, VCS will only increase

exports even more than otherwise would be the case.

7.4.3 EU Dairy Policy

EU dairy policy was originally formulated in 1968 under CAP Regulation 804/68. Quotas on milk production were introduced in 1984, but the basic mechanism of public regulation had remained unchanged since 1968. Policy instruments included support prices for butter and SMP, import tariffs and tariff rate quotas (TRQs), export refunds, production and consumption subsidies, intervention buying of surpluses, and a marketing quota on milk. In the 1990s, EU dairy policy became constrained by the GATT, which imposed annual ceilings on the quantities of subsidized exports and on the value of export refunds for agricultural products. These commitments were strengthened over the six-year period of 1995 to 2000.

As indicated in Table 7.7, the European Union dominated the export market for dairy products, both in terms of quantity and value. The data in Table 7.7 are for the year 2013, prior to complete elimination of the dairy quota regime, but they are nonetheless indicative of the European Union's competitive position internationally as exports were expected to increase rather than decline as the quota was lifted. Within the European Union, the largest producers of milk are Germany and France, followed by Poland, the Netherlands, and Italy, with Germany, France, and the Netherlands the largest exporters (and the Netherlands ahead of France in the export value of cheese). Despite its relatively small size compared to the other four countries mentioned here, the Netherlands is considered the most efficient producer of dairy products, which has resulted in some friction as markets were liberalized (see below).

Table 7.7: Milk Production and Exports, EU States, U.S., Australia and New Zealand

Country	Milk production ('000s t)	Exports ('000s tonnes)				Exports ($US millions)			
		Butter	Cheese	SMP	Fresh	Butter	Cheese	SMP	Fresh
Austria	3,493.9	1.8	75.9	3.0	609.5	10.1	446.6	15.7	378.4
Belgium	3,689.4	91.3	120.2	142.0	542.0	458.1	667.2	521.8	337.4
Bulgaria	1,102.7	1.0	23.1	4.5	5.3	2.3	103.6	17.5	3.9
Croatia	711.4	1.9	1.8	0.0	14.8	8.4	7.5	0.0	12.7
Cyprus	164.6	0.0	11.8	0.0	0.0	0.0	103.0	0.0	0.0
Czech Rep	2,933.5	4.1	41.6	14.7	667.1	19.1	205.8	59.1	341.5
Denmark	5,191.1	38.2	289.3	26.0	208.2	236.3	1,556.3	105.3	150.1
Estonia	804.8	2.5	20.4	1.1	201.5	13.3	91.3	4.7	95.8
Finland	2,400.0	24.2	29.4	20.1	13.0	136.2	148.1	79.0	12.6
France	25,332.5	59.4	632.7	164.6	681.4	325.9	3,582.7	631.7	471.9
Germany	32,395.0	124.7	1,073.4	286.7	1,792.6	613.3	4,781.4	1,091.7	1,108.2
Greece	769.1	0.3	52.8	0.4	1.0	1.4	393.9	1.1	1.2
Hungary	1,875.7	0.9	12.2	0.1	331.7	4.0	63.5	0.3	178.4
Ireland	5,816.2	156.4	179.9	42.5	188.5	738.9	845.6	138.8	101.4
Italy	11,044.1	7.2	317.0	4.4	20.7	36.0	2,712.9	20.0	20.3
Latvia	968.9	4.3	15.3	7.6	244.8	21.7	67.8	30.6	110.5
Lithuania	1,791.1	5.8	71.7	22.1	111.0	31.4	354.6	88.1	70.6
Luxembourg	317.0	2.5	44.2	0.1	157.2	19.0	309.6	0.2	81.3
Malta	42.8	0.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0
Netherlands	12,473.0	120.3	654.8	88.8	359.9	606.2	3,659.8	362.0	227.9
Poland	12,985.5	29.9	159.8	61.0	200.5	147.1	723.1	238.0	142.7
Portugal	1,940.1	14.2	8.1	3.5	200.2	69.0	44.8	12.8	112.6
Romania	4,533.6	0.3	10.1	1.9	21.5	1.3	42.6	2.6	16.0
Slovakia	933.9	2.2	17.6	2.8	222.8	11.6	103.9	6.1	133.8
Slovenia	616.6	0.1	3.3	0.1	269.5	0.5	15.6	0.3	147.6
Spain	6,786.0	19.1	64.7	8.3	106.5	67.2	387.2	19.8	100.2
Sweden	2,973.0	3.6	18.9	27.3	37.3	17.0	93.0	108.3	23.8
UK	15,050.0	44.6	107.1	54.1	498.4	226.2	597.9	126.8	263.4
EU-28	**159,135.5**	**760.7**	**4,057.0**	**987.8**	**7,706.7**	**3,821.6**	**22,109.6**	**3,682.1**	**4,644.1**
Australia	9,542.0	40.9	151.0	121.0	94.4	170.3	646.8	478.8	113.4
NZ	21,317.0	461.1	255.6	392.0	89.9	1,823.6	1,060.9	1,621.8	92.0
U.S.	93,460.9	84.0	299.1	554.8	80.5	317.7	1,280.4	2,050.1	58.4

[a] Data are for latest available year: milk production data are for 2014, and export data are for 2013.
Source: FAO (2017)

Beginning with the 2003 Mid-term Review, the European Union began to phase out the dairy quota system.[3] This was done by reducing intervention prices for some products and increasing countries' quotas. Only butter and SMP were considered eligible for public intervention

[3] Information in this paragraph is based on Jongeneel, Burrell, and Kavallari (2011). See also Jongeneel and Tonini (2009).

because these products could be stored. In preparation for the phase-out, intervention prices were reduced beginning 2003-2004 as indicated in Table 7.8, but buying was restricted in a calendar year from March 1 through August 31. There were also limits as to how much the European Union would purchase – 109,000 tonnes (t) of SMP over the period from 2004 until the quota system ended; for butter, a maximum of 70,000 t would be purchased in 2004, but the amount would decline by 10,000 t annually until it leveled off at 30,000 t/year from 2008 onward, although the Commission could purchase more in times of emergency (Jongeneel, Burrell, and Kavallari 2011: 75). At the same time, the quota was slowly increased: by 15.5% in 2004-2006, 0.8% in 2006-2007, 3.3% in 2007-2008, 2.3% in 2008-2009, and by about 1% annually thereafter. Compensation for the consequent price reductions was paid in the form of a milk premium that was based on the producer's reference quota. The premium was €8.15/t in 2004, €16.31/t in 2005, and €24.49/t in 2006 and 2007, with the latter premium then converted to a single farm payment based on the farmer's refence quantity. The dairy quota regime was eliminated entirely in 2015, with producers then receiving a basic payment (equal to the single farm payment) whether or not they produced milk.

Table 7.8: Reductions in Intervention Prices on Butter and Skim Milk Powder, €/100 kg

Year[a]	Butter	Skim Milk Powder (SMP)
2003/04	328.20	205.52
2004/05	305.23	195.24
2005/06	282.44	184.97
2006/07	259.52	174.69
2007/08	246.39	174.69
2008 onwards	246.39	169.80

[a] The agricultural year begins April 1 and ends March 31.
Source: Jongeneel, Burrell, and Kavallari (2011: 74).

The EU dairy policy over the period from the establishment of the quota regime in 1984 through its demise in 2015 can be analyzed with reference to Figure 7.4.[4] Price and quantity in the absence of trade are given by P^* and q^*, respectively, in panel (b). With trade, EU producers face demand D_T, which is the sum of the domestic demand function (D_E) and excess demand by the rest of the world (ED_R). Abstracting from shipping and handling costs, the world price would be P^W with trade, q^{wd} would be consumed domestically, and the difference $q^W - q^{wd}$ in panel (b) exported to the rest of world – with equivalent imports indicated for P^W in panel (a).

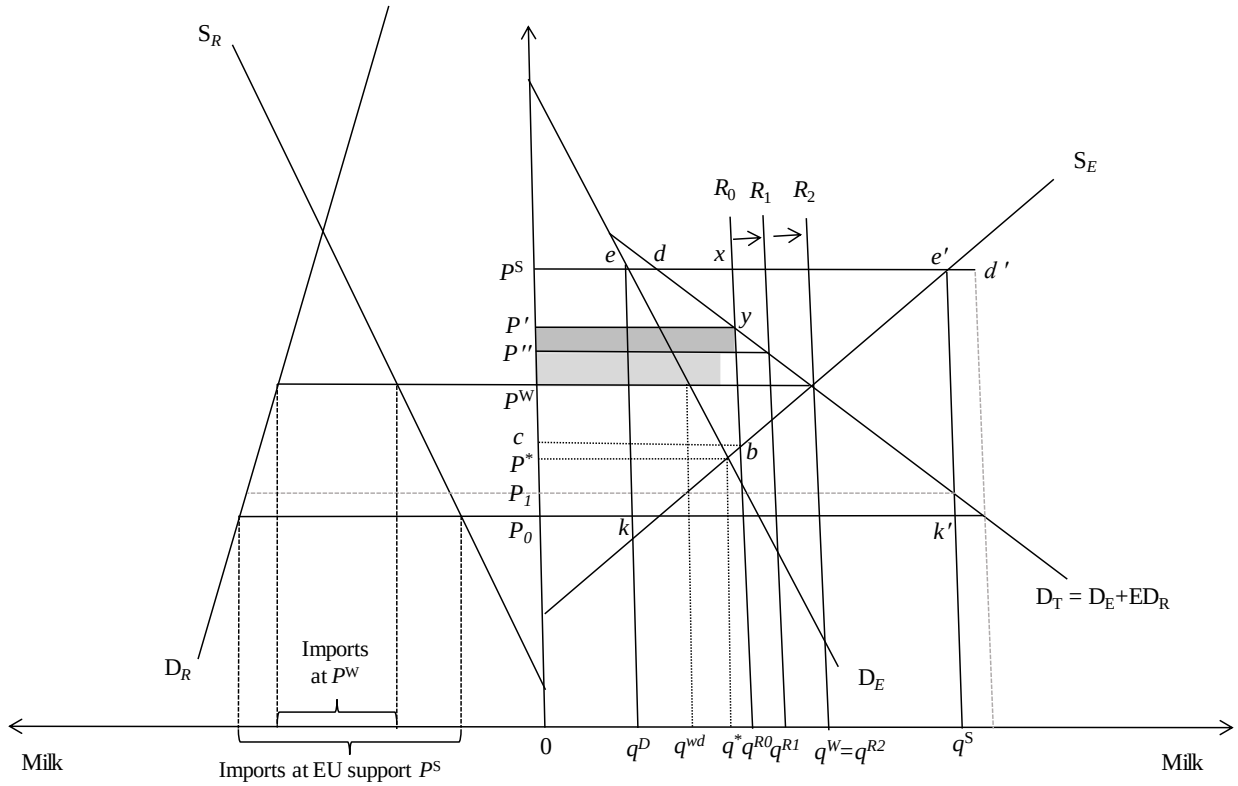

Figure 7.4: Europe's Dairy Regime and Its Demise
(Source: van Kooten 2017a)

[4] The following paragraphs are based on van Kooten (2017a).

When the EU dairy farmers face support price P^S, they produce q^S but only q^D would be consumed within the European Union at that price. Thus, the European Union must either store the excess production or subsidize exports. The cost of purchasing the overproduced dairy products (butter and SMP) is given by the area bounded by (eq^Dq^Se'). Since excess production equals ee' ($=dd'$), this is then used to establish the foreign price based on D_T, because amount ed is not sold at P^S. That is, the correct price in foreign markets is P_0 and not P_1, so that the export subsidy equals ($ekk'e'$) < (eq^Dq^Se').

To avoid accumulating stocks of dairy products or the high costs of export subsidies while still supporting prices, the European Union employed a quota beginning in 1984. Assume the quota was initially set at R_0. A dairy farmer would produce q^{R0}, and receive a price (P^S) greater than the marginal cost of production (c), thereby capturing a rent equal to (P^Scbx). EU consumers still pay P^S, so amount ex must be exported. Assuming for the convenience of explanation that ed ($=e'd'$) = $R_1–R_0$, the price foreigners pay would be P'' and the European Union would still be subsidizing exports by ex × (P^S – P'') in Figure 7.4(b). As a consequence of the WTO's Agreement on Agriculture, the European Union needed to eliminate the quota regime.

To eliminate the quota, the support price is initially removed while the quota remains. The price falls from P^S to P', with farmers provided an annual deficiency payment equal to the level of their initial individual quota (i.e., reference quantity) multiplied by the price difference (or milk premium), with the total deficiency payment equal to ($P^SP'yx$). The quota is then increased in steps to the level that would lead to the free market trade outcome, price P^W and output q^W. In the first step, the quota is increased to R_1, which causes price to fall from P' to P''. The milk premium paid to dairy producers increases from $P^S – P'$ to $P^S – P''$ (or by $P'– P''$). Thus, the total milk premium rises by the darker shaded area. In the next steps (but shown as one step in the figure), the quota is

increased to R_2 ($=q^{R2}$), but the total milk premium paid to producers is equal to the light-shaded area, which is only a proportion of the total decline in producer rent. That is, as the quota is slowly increased, the milk premium becomes a declining proportion of the fall in price. Increases beyond q^W are not needed as this is where price equals the marginal cost.

Once quotas on milk production were replaced with a basic payment and dairy products were sold in open markets, both domestically and abroad, the Dutch government, for example, encouraged farmers to expand their cow herds, because the Netherlands was one of the lowest cost producers of milk and dairy products (as evident from Table 7.7). In response, however, the European Union declared that the Netherlands had to comply with environmental regulations related to the disposal of manure, which meant that the country would exceed the limit on how much potassium it could dispose of on agricultural lands. At the same time, potassium was declared to be a hazardous waste, which meant that the manure could not be disposed of in adjacent countries, primarily Germany. These factors, in turn, meant that the expansion of the dairy herd had to be revoked, resulting in compensation to farmers who had expanded their herds on the advice of their government. Thus, the opening of dairy markets did not come without controversy.

7.4.4 Fruits and Vegetables[5]

The Common Agricultural Policy (CAP) includes all fruits and vegetables grown in EU countries, with the exception of potatoes, peas, beans for fodder, wine grapes, olives, and bananas, for which a separate arrangement existed. The European Union supports its fruit and vegetable (F&V) sector though its market-management scheme (part of the 'common market organization' in agriculture). The policies have four broad objectives:

1. A more competitive and market-oriented sector.

[5] Much of this section relies on information from the European Commission (2014).

2. Reduced crisis-type fluctuations in producers' incomes.
3. Greater consumption of fruit and vegetables in the EU (e.g., to reduce obesity).
4. Increased use of eco-friendly cultivation and production techniques.

As in most countries, however, the F&V sector does not garner the same support as cereals, oilseeds, protein crops, and livestock.

As a result of reforms in 1996, producer organizations (POs) became the cornerstone of the EU regime for the F&V sector. POs were meant to blunt the marketing power of downstream processors, plus serve as a conduit for addressing environmental concerns related to the production and marketing of F&Vs. Through the POs, the sector was able to access EU funds for implementing EU programs. Subsequent reforms in 2007 strengthened the power of POs by encouraging their merger and the formation of associations of POs in order that the sector could better deal with crises. This reform also removed export refunds and decoupled aid for fruit destined for processing, but requiring a minimum level of spending by POs on environmental activities. Since environment spending falls under Pillar 2, this meant that member states were required to contribute 40% to 50% of any funding support for POs.

From 2003 to 2010, EU farmland devoted to fruits and vegetables fell by 6%, while the number of F&V enterprises declined by 39.1% (compared with a 20% decline in total EU agricultural holdings), and thus indicative of increasing concentration in the sector. Not surprisingly, there was a rise in average F&V enterprise holdings by 1.9 ha in the EU-27 and 3.0 ha in the EU-15 as a result of the concentration of production in less farms. There was also a 3% reduction in the volume of F&V output in 2008-2010 compared to 2004-2006, although the value of production rose by 6.5% as a result of somewhat higher prices. A market crises emerged in 2009 that affected peaches, nectarines, tomatoes, and some other F&Vs, followed in 2011 by an E. coli

crisis and then a new market crisis for peaches and nectarines. Further, the 2008 financial and economic crisis likely affected domestic F&V consumption (resulting in lower demand and prices), access to export markets and credit, and input costs that negatively impacted the F&V sector and POs.

While the European Union will continue to provide some support to the F&V sector in the future, particularly through Pillar 2 with its focus on regional development and the environment, there is likely to be increased interest in agricultural business risk management programs, which are examined in greater detail, for example, by Jongeneel et al. (2018).

7.4.5 Brexit

On June 23, 2016, a majority of UK residents voted to leave the European Union, thereby triggering negotiations to determine what trade relations would look like after March 29, 2019, when the British Exit (Brexit) process is to be completed. The impact of Brexit on agriculture is difficult to determine and depends on what one assumes about the nature of the final trade relation between the United Kingdom and the EU-27. For one thing, French access to German agricultural markets will likely improve relative to that of Britain; as noted earlier, French concern about losing German market share originally delayed Britain's entry to the European Union.

To determine the potential impact on agriculture, two potential trade scenarios have been investigated (Jongeneel et al. 2016; van Berkum et al. 2018):

1. The United Kingdom and EU-27 enter into a free trade agreement (FTA) that does not grant the United Kingdom the same access as a single market. No tariffs are applied on bilateral trade, but border arrangements to identify country-of-origin, for example, will be required and this will increase transaction costs. The United Kikngdom would also accord most-favored-nation (MFN) status to extra-EU nations (e.g., Norway, Iceland) included

under the European Union's Common Custom Tariff.

2. The default WTO position whereby the United Kingdom and EU-27 trade on MFN terms, as well as with the extra-EU nations. However, the European Union's import concessions under tariff rate quotas no longer apply so that less is imported and UK prices for those products increase.

Jongeneel et al. (2016) point out that the United Kingdom contributes about €7.9 billion to the CAP budget, whereas its farmers receive only €3.8 billion. They estimate that Brexit would reduce the United Kingdom's expenditure on agriculture from between €4.1 billion to €7.3 billion, depending on the extent to which the United Kingdom's agricultural policy would continue to subsidize farmers. Given that the United Kingdom sought to reform the CAP by reducing direct payments to farmers under Pillar 1, the United Kingdom will likely reduce payments to its farmers. Regarding the CAP's Pillar 2 (rural development), Britain already has well established policies related to rural development, provision of public goods on agricultural lands, and animal welfare.

An indication of the importance of agricultural trade between the EU-217 and the United Kingdom is provided in Table 9. The United Kingdom's agricultural trade with the European Union is of less importance than agricultural trade with countries outside the European Union; 69.8% of the United Kingdom's exports go to countries other than the EU-27 and 65% of imports come from outside the European Union.The Netherlands, Ireland, Germany, France, and Spain are the major suppliers of agricultural commodities to the United Kingdom and could be harmed the most by Brexit, although little is know about the effects that Brexit might have on bilateral trade between the United Kingdom and individual EU states. Studies do suggest, however, that the impacts on EU-27 countries are likely to be small and may not all be negative; the same is true with respect to the United Kingdom (Jongeneel et al. 2016; van Berkum et al. 2018). As an

illustration, projections of the changes in UK production and prices are provided in Table 10 under the two scenarios identified above. Changes in the EU-27 are expected to be smaller due to the difference in size between the United Kingdom and EU-27 and because much of the UK agricultural trade is with countries outside the European Union. As noted, the impact on farmers' incomes depends as much on decisions regarding agricultural policy (e.g., level of direct payments) as it does on the future trade relationship between the United Kingdom and the EU-27. For example, Jongeneel et al. (2016) find that horticultural, poultry, and hog producers are likely beneficiaries overall, while grain producers lose or gain depending on final negotiations and domestic agricultural policy.

Table 7.9: UK Agricultural Exports and Imports by Category, 2016 (% of total)

	UK Exports to:			UK Imports from:		
Item	Intra-EU	Extra-EU	World	Intra-EU	Extra-EU	World
Propagation materials	3	2	2	3	1	2
Unprocessed products	10	7	8	8	8	8
Semi-processed products	28	21	25	22	30	24
Final products, not fresh	58	70	63	55	38	50
Final products, fresh	2	1	2	12	23	15
Total (€ billions)	**€16.5**	**€10.8**	**€27.3**	**€42.2**	**€18.1**	**€60.3**

Source: van Berkum et al. (2018)

Table 7.10: Estimated Changes in UK Prices and Production under Free Trade Agreement and Default WTO Scenarios, % Change in 2025 Relative to 2016 Baseline

	Free Trade Agreement	Default WTO

Agricultural Product	Price change (%)	Production change (%)	Price change (%)	Production change (%)
Wheat	4	2	25	10
Barley	-5	-3	-4	-19
Sugar beet	5	2	8	1
Tomato	3	0	6	0
Beef	5	-1	46	12
Pig meat	5	1	27	6
Poultry	5	2	11	8
Milk	4	1	26	11
Butter	5	0	74	20
Cheese	5	0	15	-9
Skimmed milk powder	5	17	24	426
Whole milk powder	6	15	49	464

Source: van Berkum et al. (2018)

7.5 Summary and Conclusions

The European Union's Common Agricultural Policy (CAP) has had a profound effect on the evolution of the EU agricultural sector and global agricultural markets. It has also had an impact on EU citizens as consumers of agricultural commodities, the governance structure of the European Union (as the budget for agriculture has dominated other spending), and movement toward greater integration of EU markets and the flow of capital, labor, and other resources. In the future, the EU agricultural sector is expected to take on more responsibility for the European Union's mission to achieve sustainable development goals, climate mitigation, and environmental improvement. This might be more than can be expected.

Initially, high levels of support through the EU CAP led to significant productivity increases in European agriculture. Indeed, since 1970, the European Union has shifted from being a net importer to one of the world's largest net exporters of wheat, sugar, beef, poultry, and dairy products. During the early- to mid-1990s, the European Union also went from being a net importer of agricultural commodities from the least developed countries to a net exporter in terms of

commodity value. The impact on the European Union was to raise overall food prices for consumers in contrast to the United States where farm programs have supported farm income without directly raising food prices. As a result, EU consumers spend a larger share of their income on food than do their U.S. counterparts.

Large outlays from the EU budget are necessary to support agriculture. Initially, the EU budget outlays for agriculture grew to nearly 90% of the entire EU budget in 1970, declining slowly thereafter. As indicated in Figure 7.1, even in the early 2000s, the agricultural component of the EU budget remained above 50%, while the information for 2016 indicates that it is still well above 40%. However, more of the spending has shifted from Pillar 1 (direct support for agriculture) to Pillar 2 (regional development, environment and other objectives). In the meantime, the European Union has moved continuously from payments tied to commodities to direct income support payments that have now been converted into direct payments, so that farm support is nearly decoupled from production and markets are permitted to function freely. Some coupling of payments remains, however, via such things as the voluntary decoupled support program.

As noted earlier, it is not likely that direct payments can be sustained in the future, mainly because of leakage (benefits accruing to those not in agriculture) and because these quickly get capitalized in land prices, thereby benefiting only landowners at the time the basic payment came into being, whether or not they were farmers, but do not benefit tenant farmers or those purchasing land. While decoupled from production, the basic direct payment simply ratchets up costs of production. Therefore, direct payments must be temporary. What is to replace them given that rent-seeking on the part of the agricultural sector, farmers, handlers, and processors, will cause politicians to continue support of agriculture? At this time, the European Union is looking toward greater use of agricultural business risk programs, with potential subsidies of crop revenue

insurance premiums, for example, as is done in Canada and the United States (van Kooten 2017b, 2017c).

In conclusion, EU agricultural policy has evolved under a complex political structure. The role of rent-seeking behavior in the context of the theory of public choice has been highlighted in several studies, including Swinnen (2008a, 2008b). This work emphasizes the need of understanding politics and the interface with special interest groups to determine why certain policies are in place.

Appendix: Welfare Analysis of EU Enlargement for a Net Cereals Exporter

At a summit meeting in Brussels on October 25, 2002, the EU heads of government agreed on terms for financing the expansion of the EU beginning in 2004. The agreement contained two major provisions. The first accepts proposals from the European Commission for phasing in subsidies for new EU entrants. The second caps the budget on market-related programs and on direct payments to farmers in an expanded European Union. Under the terms of the agreement, farmers in eight Central and Eastern European countries (CEEC), along with Malta and Cyprus, will receive 25% of their calculated SPS payment in 2004, increasing to 30% in 2005, 35% in 2006, 40% in 2007, and, thereafter, increasing annually by 10 percentage points to 100% in 2013.

Assuming a system of intervention prices and export subsidies, what happens to cereal markets in a new member country when it joins the European Union? The impact of EU enlargement to include a new entrant that was a net exporter of cereals prior to joining the European Union is illustrated with the aid of Figure 7.A1. Assume that the intervention price is P_1 and the world market price is P_F. In panel (b), the supply of cereals for the original EU members is *S*, while *D* represents the demand of the original EU members. The original members export ($Q_2 - Q_1$) to the rest of the world, with EU producers gaining a surplus (quasi-rent) equal (P_1za) and

consumers a surplus of (bP_1c); export restitution payments equal ($cdea$).

The cereals market for the potential entrant is represented in panel (a) of Figure 7.A1, where the new entrant's supply curve is S^* and the demand curve is D^*. The world market price P_F is above the intersection of D^* and S^*, because the new entrant is a net exporter of cereals in the absence of price supports. Prior to accession, the potential entrant exports ($Q_4 - Q_3$) at the world price P_F, producer surplus is ($g0P_F$), and consumer surplus is (bfP_F). We assume that no subsidies existed in the entrant country prior to its accession into the European Union.

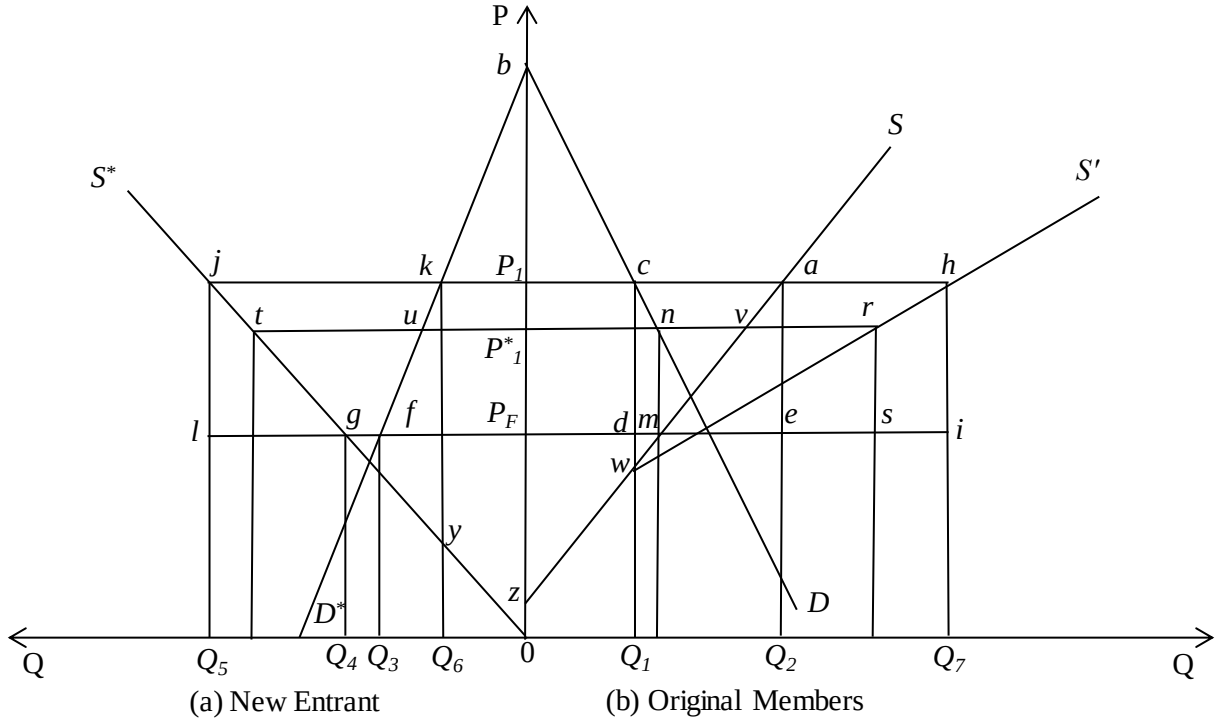

Figure 7.A1: Welfare Economic Effects of EU Enlargement on a New Entrant's Cereal Sector

Once the European Union's membership is enlarged to include a new entrant, it faces a new supply curve S' in panel (b) that is the horizontal sum of the original EU supply curve S plus the excess supply curve for the new member, which is the horizontal difference between S^* and D^* above the world market price. If the European Union were to keep the intervention price at P_1,

producers in the new member country will expand production from Q_4 to Q_5, causing its exports to increase from ($Q_4 - Q_3$) to ($Q_5 - Q_6$) in panel (a), which is equal to ($Q_7 - Q_2$) in panel (b). The consumer and producer surpluses accruing to the original member states will not change if the intervention price remains at P_1. However, EU taxpayers will now have to pay an extra amount equal to (*aeih*) in the form of additional restitution payments (export subsidies) to support producers in the new entrant. Producers in the new member country gain (jgP_FP_1) in producer surplus, but its consumers lose (kfP_FP_1) in consumer surplus. If the intervention price remains at P_1 and the budget to support cereals intervention does not change when the European Union is enlarged, the economy of the new entrant will gain (*jgfk*) in total welfare. If the combined economy of the European Union and the entrant is compared before and after entry, the newly enlarged European Union actually will lose (*jlg*) in panel (a) due to overproduction in the entrant country caused by the support price P_1. This then might explain why the European Union did not offer the same level of support to the CEEC on their entry in 2004, not to Bulgaria, Romania, or Croatia when these countries entered at a later date.

Suppose that, given the assumptions underlying Figure 7.A1, the CAP payments were to remain constant in real terms; then intervention price must be lowered to P_1^*, which represents the price at which (*nmsr*) is slightly larger than (*cdea*). The reason that the two areas are not identical is that, even if the portion of the EU budget of the original members used to support cereals intervention remains the same, the new entrant will add its contribution to the EU budget (Scrieciu 2007). Presumably, a small portion of the new member's contribution will go toward supporting the cereals intervention price, which will increase the total support for intervention in a newly enlarged European Union. If the intervention price is P_1^* once the new member joins the European Union, producers in the new member country will gain (tgP_FP_1) in producer surplus, its consumers

will lose ($ufP_FP_1^*$), and its taxpayers will lose the export restitution payments required to export the surplus it produces. The original EU producers lose ($P_1P_1^*va$), but the original EU consumers gain ($P_1P_1^*nc$). On net, after the EU enlargement, the economic gain to the entrant equals ($tgfu$), while the original EU members lose ($cnva$) on net. Thus, EU expansion under the CAP could actually benefit the economy as a whole (comprised of the original EU members plus the new EU member) as long as ($tgfu$) is greater than ($cnva$), which would depend on the intervention price, the world market price, and the relative supply and demand elasticities for both the new member and the EU as a whole.

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