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Evolution of Agricultural Support in Real Terms in OECD Countries and Emerging Economies

Jean-Pierre Butault

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Abstract

This report proposes a methodology to express OECD indicators of support in real terms and establishes specific purchasing power parities for a broad range of commodities so as to compare developments in output volume and prices at an aggregate level. It analyses the evolution of prices, farm receipts and support to agricultural producers in real terms in OECD countries and a number of emerging economies. In the OECD area, support to producers decreased between 1986 and 2009, but two periods can be distinguished. Prior to 1999, the producer support estimate (PSE) in real terms decreased by 20%, but as a percentage of farm receipts (%PSE), the reduction was only 2 percentage points as farm receipts also decreased in a context of falling world prices. Between 1999 and 2009, in a context of rising world prices and farm receipts the decline in both the %PSE and the PSE in real terms was more marked, and the gap between domestic prices and border prices was significantly reduced. This analysis has also been applied to seven additional countries for the period 1995-2007, including two that have since become OECD members (Chile and Israël). Output growth was very strong in these countries with the exception of Russia and Ukraine, leading to higher farm receipts in terms of purchasing power. Support to producers declined in Israël, Chile and South Africa, and increased in other countries, albeit moderately. As a percentage of farm receipts, it remains well below the OECD average.

JEL Classification: Q10, Q18

Keywords: Agricultural support, OECD support indicators, PSE, single commodity transfers, GDP deflator, purchasing power parity.

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SUMMARY AND CONCLUSIONS

Methodology

- In its annual report on agricultural policies in OECD countries, the OECD publishes indicators such as the PSE, expressed in national currencies, US dollars (USD) and euros (EUR). These expressions produce very different results and do not enable to judge the evolution of the PSE.
- As the PSE is a measurement of transfers to agricultural producers from consumers and taxpayers, it is appropriate to express it in terms of purchasing power. Over time, this results in deflating the PSE by the inflation rate, by using the GDP price index (or GDP deflator). A consistent solution for aggregating the PSE across all OECD countries is to use the purchasing power parities (PPPs) calculated by the OECD, Eurostat and the World Bank, which are a spatial index of GDP prices. The most desirable means of aggregation is to choose a base country and year, although trends are the same irrespective of which base country and year are chosen.
- This expression of the PSE in real terms is consistent with other relative support indicators published by the OECD, such as PSE as a share of gross farm receipts (percentage PSE) or the nominal protection coefficient (ratio between domestic prices and border prices). However, the analysis in real terms provides additional information in comparison to relative indicators. For example, when explaining the evolution of the nominal protection coefficient, real analysis enables a distinction to be made between the evolution of domestic prices and that of border prices.
- Using methods similar to those for establishing the purchasing power parity of gross domestic product (GDP) (EKS¹ indices extrapolated by Fisher indices), the OECD database enables the calculation of PPPs specific to virtually all arable crops and livestock commodities (the so-called standard MPS commodities for which market price support (MPS) is calculated in every country) for the different OECD countries, and hence of aggregated volume indices. This makes it possible to evaluate the evolution, in real terms, of domestic prices, border prices, commodity-specific support and PSEs for the OECD area and by country.
- The study has applied a special statistical treatment to the European Union (EU) member states. In the OECD database, countries are integrated into the European Union aggregate as and when they become EU members. However, data going back to 1986 is available for the 19 EU countries that were OECD members in 2009. The chosen approach was to conduct the study, throughout the period under review, by considering Europe from 1986 to 2009 as

1. Elteto-Köves-Szulc.

including only these 19 countries (EU19). This avoids the sudden increases arising from successive enlargements. Moreover, from an economic standpoint, it is appropriate to evaluate all the changes in the OECD area across a homogeneous EU area by taking into account the changes that preceded the accession of new EU member states.

Evolution of prices, farm receipts and the PSE, between 1986 and 2009, across the OECD as a whole

- During the period 1986-2009, which was marked in mid-term by the Uruguay Round Agreement on Agriculture (URAA) of 1994, there was marked progress in agricultural policy reform within OECD countries. In real terms, producer single commodity transfers (SCTs) fell by more than 60% and domestic prices (producer prices plus payments linked to the production of a specific commodity) converged with border prices. This led the nominal protection coefficient for the standard MPS commodities to fall from 1.7 to 1.15. Even though world prices fluctuated widely, their 1986, 2006 and 2009 levels were very similar, in the wake of the high prices of 2007-08. In real terms, domestic prices for the standard MPS commodities fell by 45%.
- These price falls were partially offset by the payment of increasingly decoupled direct aid to farmers. PSE components, other than SCTs, therefore doubled. The outcome of the evolution of SCTs and other PSE components was a 40% decline in the PSE, in real terms, between 1986 and 2009, with its share of farm receipts falling from 34% to 22%.
- Farm receipts depend on the evolution of world border prices, on the ratio between domestic prices and these border prices, on payments and on the evolution of the volume of farm output. For the standard MPS commodities, this output volume increased by 25%, at an annual rate of 0.8%. From 1986 (1986-88) to 2009, the drop in farm receipts in real terms was only 10% (5% when calculated as an average between 2007 and 2009).
- Two sub-periods can be distinguished, with 1999 marking the turning point. Until 1999, policies for aligning domestic prices were still tentative, with the nominal assistance coefficient for the standard MPS commodities falling from 1.7 to 1.5. These policies were conducted in a context of world prices that were fluctuating but on a downward trend. Around 1999, border prices were more than 20% below the 1986 level. The combined fall in world border prices and commodity support led to a reduction in domestic prices of more than 30%. PSE components other than SCTs partially offset this price decrease. Although the fall in the percentage PSE from 34% to 32% between 1986 and 1999 would seem to indicate that there was no reduction in support, in real terms the PSE fell by nearly 20% and farm receipts fell by 12%.
- After 1999, there were more marked agricultural policy shifts and, by 2009, SCTs had decreased by almost 50% compared with 1999 and the PSE, by more than 25%. However, these shifts were made in a context of rising world prices, stemming in particular from increased demand from emerging countries and probably from other factors.² While the price hikes of 2007 and 2008 may seem unusual, even in 2006 and 2009 border prices were nearly 25% higher than in 1998-2000. This, together with growth in output, explains the increase in farm receipts in real terms.

2. It is not the purpose of this report to explain the evolution of all observed phenomena, in particular as they concern world prices.

Evolution of prices, farm receipts and the PSE, between 1986 and 2009, by country

- All OECD countries, with the exception of Turkey and, to a lesser extent, Mexico, conducted policies to align their domestic prices with border prices, by offsetting the fall in prices with increasingly decoupled payments.
- SCTs declined, in real terms, by 85% in the 19 European countries. Although other payments grew by a factor of four, the PSE decreased by 65%.
- The PSE fell sharply in the United States by 50%.
- Countries that had supported their agriculture the least at the beginning of the period, such as New Zealand and Australia, virtually abolished support altogether. The fall in the PSE was smaller in Canada (43%), with continued market support (quotas) for some commodities, in particular milk.
- The PSE fell by 50% in Norway and Switzerland, by 40% in Japan and 13% in Korea. In these countries, the share of market support nevertheless remained significant.
- The PSE more than doubled in Turkey, stemming from its price support policy.
- In terms of the evolution of receipts, there were very wide gaps between countries, stemming chiefly from their initial situation regarding support. In countries that had provided scant support at the beginning of the period (New Zealand, Australia, United States and Canada), the fall in domestic prices was small owing to the favourable trend in world prices at the end of the period, and these countries took advantage of reductions in farm support and protection in other countries by significantly increasing production. This contributed to increasing farm receipts in real terms.
- In countries where support had been significant initially, the shift in agricultural policies, even where small, resulted in a simultaneous fall in farm prices and static output volume. In spite of the increase in payments, farm receipts plummeted by around 20% in the 19 European Union countries and Japan, for example.
- In the future, the evolution of domestic prices and receipts arising from the current reform process will, more than in the past, depend on the evolution of world prices. To judge by the forecasts of the Food and Agriculture Organization of the United Nations (FAO) and the OECD for continuing high world prices, the future looks bright for many OECD countries in terms of farm receipts. This even applies to the European Union, where domestic prices are virtually aligned with world prices at present. However, payments still form a large share of receipts and their continued existence remains uncertain with the likelihood of the European Union Common Agricultural Policy being reformed in 2013. By contrast, policy adjustments are likely to be more painful in countries that still provide significant support to agricultural producers.

Evolution of prices, farm receipts and the PSE, between 1995 and 2007, in seven emerging economies

- An additional analysis for the period 1995-2007 was made of five emerging economies (Brazil, China, Russia, Ukraine and South Africa), plus two countries (Chile and Israel) that became OECD members in 2010.

- Except for Russia and Ukraine, growth in output of the standard MPS commodities was very strong in all these countries (5% in Brazil and 2.2% in China).
- Support declined somewhat in Israel, Chile and South Africa. At the beginning of the period, the PSE was negative in Brazil, Ukraine and Russia, and programmes induced very moderate increases in the PSE. While PSE increased the most in China, percentage PSE was only 8% in 2007.
- Output growth generally resulted in an increase in farm receipts, in terms of purchasing power.

EVOLUTION OF AGRICULTURAL SUPPORT IN REAL TERMS IN OECD COUNTRIES AND EMERGING ECONOMIES

The reduction of support and protection in agriculture has been a subject of debate for the past two decades. For many years, agricultural commodities were excluded from the framework of international negotiations, in particular that of GATT, leaving countries free to determine their agricultural policies without constraints, even when such policies disrupted world markets. The Uruguay Round Agreement on Agriculture, signed in 1994, jointly with the creation of the World Trade Organization (WTO), brought an end to this exclusion of agriculture from the negotiations and started a process of agricultural support reductions. Even though some commentators deemed the agreement to be limited (see Butault *et al.*, 2004, concerning this debate), the majority of countries embarked on policies that reduce agricultural support and progressively decouple this support from the level of production.

The OECD has published an annual report on the agricultural policies of OECD members since 1988. The framework of analysis was extended to include a number of non-OECD countries. These reports are drawn up using a database that enables the monetary value of all agricultural policy-related transfers to be estimated. One of the main indicators published by the OECD is the PSE, which is the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, arising from policy measures that support agriculture.³

As with any such procedure, the database is presented with the problem of units of measurement and aggregation. The OECD therefore publishes indicators in national currencies, in USD and in EUR, which can produce very different estimations of the trends in indicators. It also uses relative indicators but these give incomplete information because their evolution depends as much on the trend in the numerator as in that of the denominator of the variables used to calculate them.

This report proposes a method of aggregation by expressing the data in real terms. As indicators such as the PSE are in fact transfers between economic agents, it is appropriate to express them in terms of purchasing power. Over time, this results in deflating the indicators by the inflation rate, by using the GDP price index, for example. A consistent solution for the aggregation, under certain conditions, is to use the purchasing power parities calculated by the OECD, Eurostat and the World Bank, which produce spatial GDP price indices.

Using methods similar to those of international organisations, this report also establishes specific purchasing power parities for a broad range of products (the standard commodities subject to market price support calculations in all countries in the OECD database). This procedure makes it possible to compare output volume at an aggregate level and hence to reason in price terms.

3. For a recent presentation of the methodology, see OECD (2009a), Jones (2010) and, for further details, see the Manual for calculating the OECD's producer support estimate and related indicators of agricultural support:
http://www.oecd.org/document/43/0,3343,en_2649_33773_41106667_1_1_1_1,00.html.

Section 1 discusses methodology problems. Section 2 compares the evolution of the PSE in accordance with the different aggregation choices to justify the use of real analysis. Section 3 examines the evolution of the PSE in OECD countries, in real terms, between 1986 and 2009, and section 4 examines its evolution between 1995 and 2007 in seven countries included in OECD (2009b), two of which became OECD members in 2010.

1. Concepts and methodology

1.1. Calculation of the PSE by the OECD

Estimated OECD support for agriculture corresponds to the sum of transfers from consumers and taxpayers arising from agricultural policies, after deducting import-related budget receipts. One of the main OECD indicators is the PSE.

There are two components of PSE: market price support (MPS), which is essentially a transfer to producers from consumers, and direct payments, which are charged to the budget. MPS represents the transfers arising from measures that create a gap between domestic market prices and border prices of specific agricultural commodities, after deducting taxes paid by producers to finance exports and the excess feed cost arising from these measures.

MPS is calculated for individual commodities. Certain payments relate to a specific commodity and are added to MPS to result in producer single commodity transfers (SCTs), which are calculated by individual commodity. The PSE is established only as an aggregate and broken down to take into account the increasing decoupling of support, depending on the link between these transfers and production. Payments are broken down according to whether the measure is based on current production, input use, area under cultivation, animal numbers, receipts, income (according to or irrespective of their current level) and related non-commodity criteria.

Apart from the measurement problem, the main criticisms are levelled at the calculation of market price support. According to Doyon *et al.* (2002), the calculation is based on artificial world prices, especially for milk, for which there is no world market as such. According to Gohin *et al.* (2006), on no account does the PSE measure the effects of policies and the scale of the distortions arising from these policies. The OECD is aware of these limitations (see Tangermann 2003 and 2006, for example) and stresses clearly that PSEs are transfers “regardless of their nature, objectives or impacts on farm production or income”. The PSE is calculated using a static framework, which makes it no less relevant. It is also used as an input in simulation models that estimate the effects of support on output, such as the OECD Policy Evaluation Model (PEM).

1.2. Exchange rate and purchasing power parities

An exchange rate is the relative "price" of currencies that is established on the foreign exchange market. The exchange rate is determined by numerous factors and does not necessarily reflect the purchasing power of the different currencies.⁴ The fact that one dollar can be exchanged for one EUR does not mean that it is possible to buy the same basket of goods with one dollar in the United States as with one EUR in the European Union. A currency is said to be undervalued if its market price is lower than its real purchasing power and overvalued if the opposite is true.

4. According to Gustav Cassel's early theory of exchange rates (1920), currency exchange rates should tend towards their purchasing power. In fact his theory is hotly debated. We shall not discuss this here as the concepts of currency undervaluation and overvaluation need to be further defined.

Currencies tend to be undervalued or overvalued depending on the respective changes in exchange rates and inflation rates.

The OECD, Eurostat and the World Bank base their calculations of purchasing power parities (PPP) on all the commodities that make up each country's GDP. This provides an indicator that can be used to deflate, across countries, economic magnitudes expressed in national currency, in order to evaluate them in terms of purchasing power. For example, the World Bank publishes the gross national income (GNI) per capita for the different countries in current dollars and in current international dollars (PPP). These two denominations result in different wealth rankings for countries. There is another debate on the contribution of the United States and China to the growth in world GDP: when they are expressed at the current exchange rate, their respective contributions are 27% and 12%, but when they are expressed using purchasing power parity exchange rates, they are 30% and 14% (Callen, 2007). This shows the scale of the measurement problems.

1.3. *Exchange rates and the PSE*

Before going on to discuss these measurement problems, it is useful to remember that exchange rate fluctuations can affect the PSE. This happens when the agricultural policy takes the form of price support or a subsidy fully coupled with output, as it affects the level of border prices after they are converted into national currency. Border prices increase in a country where the currency is depreciating and decrease in a country where the currency is appreciating. If two countries maintain the same level of price support for a given agricultural commodity, the support will fall in the first country and rise in the second.

There is nothing artificial about this exchange rate effect. In “unprotected” sectors, the devaluation of a country's currency stimulates the competitiveness of that country's export sectors, whereas a revaluation penalizes them. In the longer term, if we take into account inflation rates, currency undervaluations act as devaluations, while overvaluations act as revaluations. Countries with an undervalued currency therefore have fewer constraints on supporting their farm prices. During some periods, the European Union therefore had few problems in complying with its Marrakech commitments on the volume of subsidized exports because the dollar was strong compared with the euro, which reduced the level of export refunds accordingly.

1.4. *Exchange rates, purchasing power parities and measurement of the PSE*

According to the OECD, the PSE comprises transfers from taxpayers and consumers to agricultural producers. It is therefore appropriate to assess the evolution of the PSE in terms of purchasing power. In this case, the appropriate price indices for deflating the PSE in each country over time are those that allow for inflation, that is to say the variation in the purchasing power of these transfers: the GDP price index or the consumer price index. Expressing support in nominal national currencies makes little sense, especially in the long term, as inflation rates vary over time (in every country) and between countries.

Expressing a country's PSE in another country's currency unit makes no sense either. Aggregation of the PSE to the total of all OECD countries, using the currency of a particular country, will depend on the choice of currency. The OECD therefore publishes support indicators such as the PSE in both USD and in EUR, which, as we shall see, produce different PSE trends. As a general rule, for the same level of support in a country, the PSE will increase if it is converted into a depreciating currency and fall if it is converted into an appreciating currency. Unlike the preceding point concerning the relationship between the exchange rate and the formation of the PSE, in this case it is a measurement bias.

Using current PPPs does not resolve this problem, as the aggregation still depends on the countries' respective inflation rates. OECD statisticians advocate the use of constant PPPs for international comparisons (Schreyer *et al.*, 2002), that is to say, fixed-based PPPs.

In theory, neither the choice of the country for which GDP purchasing power parities (GDP PPPs) are calculated, nor the choice of the year of the rate, affects the resulting trends in the value of support. In fact, the PPP rate between two countries evolves as follows:

$$PPP_{t+1}^{A/B} = PPP_t^{A/B} \cdot \frac{PI_{t/t+1}^A}{PI_{t/t+1}^B},$$

where $PPP^{A/B}$ is the PPP between two countries *A* and *B*, and *PI* is the GDP price index between *t* and *t+1*.

Obviously the absolute value of support varies with the choice of reference PPP rate but, when it is expressed in indices, support trends are the same irrespective of which base country and year are chosen.

1.5. *Calculating specific purchasing power parities for agricultural commodities*

This study presents trends in the evolution of the volume of farm output and prices, across the OECD, for an aggregated list of commodities. This required multilateral indices of volume to be constructed, that is to say specific purchasing power parities.

There is a wealth of literature on constructing multilateral volume indices and purchasing power parities (Deaton *et al.*, 2009). It is based on index number theory and the axiomatic approach to index number theory, developed in particular by Diewert (2003). Index number theory links the choice of indices to microeconomic production and consumption theory. The axiomatic approach to index number theory guides the choice of indices rigorously based on the properties respected by each index. The most important properties are additivity, reversibility, transitivity and equicharacteristicity. Equicharacteristicity means that no country is privileged in the weighting. These properties are, of course, mutually incompatible.

As in previous studies (Ball *et al.*, 1997), we have used the same procedure as international agencies to establish GDP PPPs, that is to say, EKS indices. The EKS indices were established for one year (2005) and extrapolated over time by Fisher indices (Box 1). EKS indices meet the requirements of reversibility, transitivity and equicharacteristicity.

Box 1. Calculating a volume index of standard MPS commodities for the OECD area

Comparing the volume of output between two countries (i) and (j) at a particular time (t^0), is equivalent to the more common practice of comparing two periods of time (t and t^0) within a single country. The Laspeyres index (L) uses the price system (p) of the base country (j) to aggregate quantities (x) in the two countries.

$$L_{i/j}^{t^0} = x_i^{t^0} * p_j^{t^0} / x_j^{t^0} * p_j^{t^0}$$

The Paasche index (P) uses the price system of the other country (i).

$$P_{i/j}^{t^0} = x_i^{t^0} * p_i^{t^0} / x_j^{t^0} * p_i^{t^0}$$

Fisher's index (F) is the geometric mean of the Laspeyres and Paasche indices.

$$F_{i/j}^{t^0} = \sqrt{L_{i/j}^{t^0} * P_{i/j}^{t^0}}$$

If the comparison involves several countries ($n=m$), this index is not transitive, meaning that the direct index between (i) and (j) does not equal the index indirectly derived from comparisons between (i) and (k), on the one hand, and between (j) and (k), on the other. A transitive index is the EKS (Elteto-Köves-Szulc) index, which is a geometric mean of the direct and indirect indices.

$$EKS_{i/j}^{t^0} = \left(\prod_{k=1}^m F_{i/k}^{t^0} * F_{k/j}^{t^0} \right)^{1/m} \text{ regardless of the country pairs (i) and (j)}$$

The output volume for country (i) can then be compared with that of the OECD area by adding together the indices in relation to the base country (j). As the indices are transitive, the result will not be affected by the choice of base country (j).

$$Q_{i/OCDE}^{t^0} = EKS_{i/j}^{t^0} / \sum_{k=1}^m EKS_{k/j}^{t^0}$$

In fact, this index shows country (i) as a share of the total output volume (Q) in the OECD area. The sum of these shares equals 1 for the OECD area.

$$\sum_{i=1}^m Q_{i/OCDE}^{t^0} = 1$$

Established in t^0 , these volume indices (Q) can be extrapolated for another period (t) using temporal Fisher indices.

$$Q_{i/j}^t = EKS_{i/j}^{t^0} * F_{t/t^0}^i / F_{t/t^0}^j$$

From this we can indirectly calculate a temporal volume index for the OECD area.

$$Q_{t/t^0}^{OCDE} = \sum_{i=1}^m Q_{i/OCDE}^{t^0} * F_{t/t^0}^i$$

In addition to being transitive, the EKS is reversible. A purchasing power parity index can be calculated by reversing the prices and quantities given in the formula above and the product of this price index with the volume index is the value index. The EKS index also meets the requirement of equicharacteristicity in the sense that no country is privileged in the weighting.

1.6. Main conventions used in the study

The analysis is confined to the PSE and its components. It covers aggregate farm output and the standard commodities subject to MPS calculations in all countries in the OECD database (wheat, rice, milk, beef, pigmeat, sheepmeat, poultrymeat, wool, eggs, maize, sugar, soybean, rapeseed, sunflower and other grains), between 1986 and 2009 for the countries that were OECD members in 2009, and between 1995 and 2007 for the seven emerging economies included in the OECD report (2009b).

All the currency data for each country have been deflated by the GDP price index. Aggregation to OECD-wide level has been done using the purchasing power parities for 2005, calculated by the OECD and Eurostat. This procedure therefore leads to reasoning in terms of “constant” purchasing power parities. This means that trends are unaffected by the choice of either the reference year or the reference country.

Specific parities for the standard MPS commodities have been established for 2005 using the EKS method and extrapolated for the other years by Fisher indices, which allows volume indices and prices to be calculated for the aggregate output of the standard MPS commodities. These indices are calculated on the basis of output expressed as producer prices. In a previous study (Butault, 2001), we showed that the output volume results were not very sensitive to the choice of price system used for weighting (border price, producer price including payments).

As the analysis focuses on changes, it does not discuss the results in terms of absolute comparative prices (ratio between the specific PPPs for agricultural commodities and exchange rates, or GDP PPPs). However, they are given in the tables at the end of Section 3.

A special statistical treatment has been applied to European Union member states. In the OECD database, new member states are integrated into the European Union as and when they join. The data on the European Union therefore covers 12 countries until 1994, 15 countries as from 1995, 25 countries as from 2004 and 27 countries as from 2007. Only four of the EU member states that acceded in 2004 (Czech Republic, Hungary, Poland and Slovak Republic) were OECD members in 2009 and only their data are available in the database. From a political standpoint, it is understandable for the European Union to be considered as a variable area. However, from an economic standpoint, it is useful to reason in terms of a homogeneous area, to take into account all the factors that have influenced the evolution of agricultural support. Our report has taken this approach, by considering the 19 European Union countries that were OECD members in 2009 as representing the European Union from 1986 to 2009. This avoids the sudden increases arising from successive accessions, whilst remaining consistent across the entire OECD area. However, this convention should be borne in mind when interpreting the results (Box 2).

Box 2. The European Union of 19 countries

Considering the 19 European member states, three of which joined the European Union in 1995 (Austria, Finland and Sweden) and four in 2004 (Czech Republic, Hungary, Poland and Slovak Republic), as an area in its own right (EU19) throughout the period under review is not without influence on the results. Below are two examples, one on the evolution of output volume of the standard MPS commodities and the other on the evolution of the PSE.

If we consider the 19 European Union member states, as the OECD database does, by integrating new EU member states in the year in which they acceded, the volume of farm output increased by 39%. By applying our statistical treatment, the rise was a mere 6%. This low growth rate, compared with that of the other OECD countries stems partly from severe reductions in the output of the new EU member states prior to their accession.

Evolution of output volume of the standard MPS commodities in the 19 European countries

	1986	1994	1995	2003	2004	2009
EU19 in OECD database ¹	100	107.1	113.8	117.1	140.2	139.4
Austria-Finland-Sweden	100	91.6	n.c.	n.c.	n.c.	n.c.
EU15 over 1986-2003 ²	100	105.9	105.9	108.9	n.c.	n.c.
Czech R.- Hungary-Poland- Slovak R.	100	78.9	83.2	83.2	n.c.	n.c.
EU19 over 1986-2009 ²	100	100.6	101.4	103.3	106.5	105.9

n.c.: not calculated.

1. EU12 in 1986-94; EU15 in 1995-2003; EU19 in 2004-09.

2. Recalculated series including a constant number of countries over the period.

Prior to their accession, the output volume fell by 8% in the three Nordic countries (from 1986 to 1994) and by 17% in the four former socialist-bloc countries (from 1986 to 2003). These changes had a significant influence on the evolution of output in the area under consideration.

In the OECD database, the PSE fell from EUR 87 billion to EUR 80 billion between 1986 and 2009 in the European Union of 19 countries. If we reincorporate countries that have acceded since 1986, the PSE rises to EUR 112 billion in 1986. In 1986, the PSE was particularly high in the four countries that joined in 2004 and fell sharply prior to their accession.

Evolution of the PSE in the 19 European countries (EUR million)

	1986	1994	1995	2003	2004	2009
EU19 in OECD database ¹	86 613	89 283	94 382	98 136	108 260	79 682
Austria-Finland-Sweden	9 567	8 886	n.c.	n.c.	n.c.	n.c.
EU15 over 1986-2003 ²	96 180	98 019	94 382	98 136	n.c.	n.c.
Czech R.- Hungary-Poland- Slovak R.	15 693	4 488	3 422	3 922	n.c.	n.c.
EU19 over 1986-2009 ²	111 873	102 507	97 804	102 058	108 260	79 682

n.c.: not calculated.

1. EU12 in 1986-94; EU15 in 1995-2003; EU19 in 2004-09.

2. Recalculated series including a constant number of countries over the period.

As our analysis is based on changes in absolute terms (in purchasing power parities for 2005 [2005 PPP]), this discrepancy is problematic. All calculations are therefore based on the 19 countries throughout the period. It should therefore be borne in mind that the evolution of the PSE in the EU19 area incorporates the decline in the PSE in the four Eastern European countries between 1986 and 2003, which strictly speaking cannot be attributed to the European Union's Common Agricultural Policy.

2. Producer support estimate at current exchange rates, at current purchasing power parity rates and in real terms

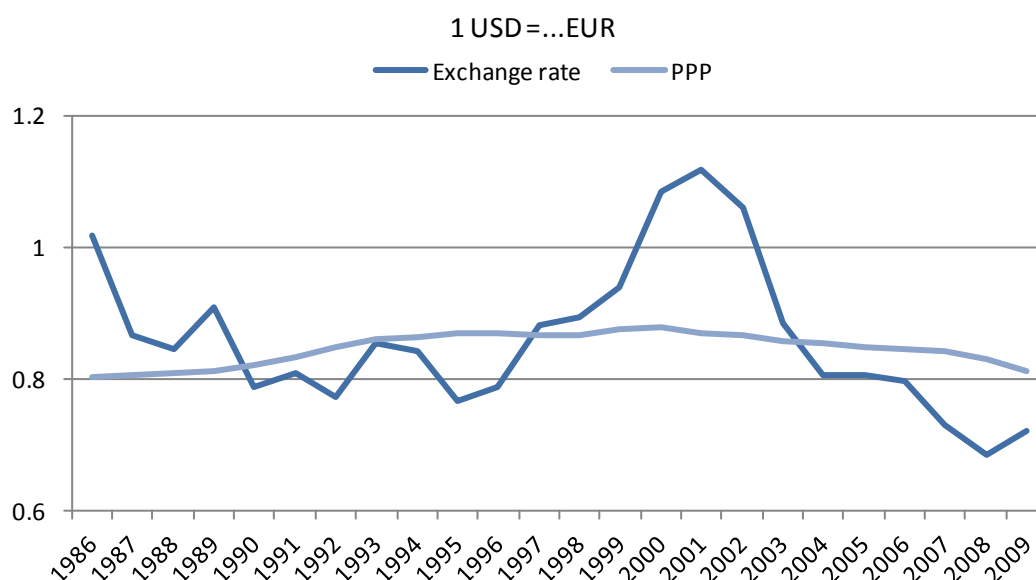
The main aim of this section is to address the problems of aggregating the PSE at OECD level and of taking into account inflation in the expression of producer support, by calculating support in real terms. We show first the biases introduced when aggregating the PSE to OECD totals by using current exchange rates or even current PPP rates. We go on to discuss the procedure for aggregating real PSE between 1986 and 2009. It is consistent with the results of relative indicators of support, such as the PSE as a percentage of gross farm receipts, whilst providing more information. We begin by assessing the evolution of the currency positions of the OECD countries.

2.1. Changes in exchange rates and currency positions

The period is characterised mainly by moderate inflation, at least for the major countries, especially in the latter years. Between 1986 and 2009, prices rose by 74% in the United States, an annual increase of 2.4%. Annual inflation rate was similar in the European Union (2.5%) meaning that, in purchasing power parity terms, the USD/EUR ratio remained relatively stable (at around USD 1 = EUR 0.85; see Figure 2.1). As USD/EUR exchange rates varied enormously, this must have stemmed from factors other than the inflation differential.

The first year of the study, 1986, marked the end of a period when the USD had been high and worth EUR 1.02 (Table 2.1). At that time, the USD was overvalued against all the leading currencies (as shown by the PPP/exchange rate ratio), with some exceptions, such as the yen and the Swiss franc. Three periods can be distinguished prior to 2009.

Figure 2.1. Current exchange rates and purchasing power parities (PPP) between the USD and the Euro, between 1986 and 2009



Source: OECD, author's calculations.

From 1987 onwards, the USD fell sharply but irregularly in value against all the leading currencies, until 1995, when it was worth EUR 0.77. As this depreciation of the USD could not be ascribed to particularly high inflation in the United States, the USD tended to be undervalued.

There followed a period when the USD rose until it was worth EUR 1.12 in 2001. After this, the dollar rate fell back to EUR 0.66 in 2008 and EUR 0.72 in 2009. Throughout the period, the yen and Swiss franc were seriously overvalued (Table 2.1). Inflation was particularly low in Japan and there was even some deflation during certain periods. The currencies of Australia, Canada and New Zealand often fluctuated between the USD and the euro.

Inflation rates were very high in Mexico, and especially Turkey, particularly in the early part of the period. As exchange rates varied less than inflation rates, the undervaluation of their currencies tended to be reabsorbed as measured by the PPP/exchange rate ratio.

2.2. Aggregation of the PSE at the current exchange rate and at the current PPP rate

The OECD publishes data on agricultural support, such as the PSE in national currency, in USDs and in EUR. In national currency, the value of support naturally varies between countries in line with their respective inflation rates.

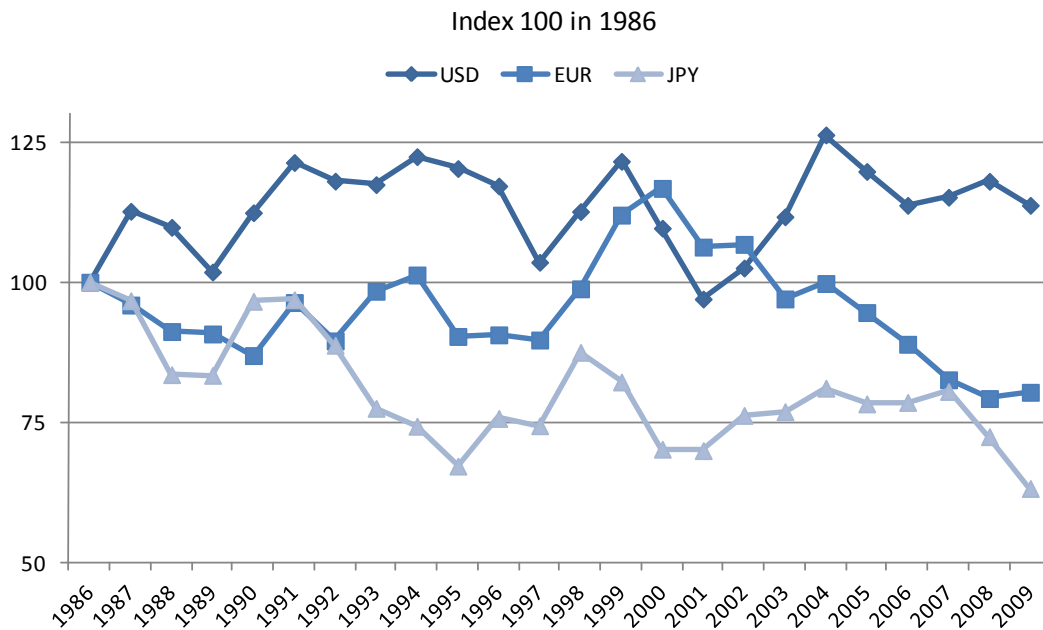
If the PSE aggregate for all OECD countries is given in the currency of a particular country, the trend will look very different depending on which currency is chosen. The PSE will tend to be high if it is expressed in a national currency that depreciates and low in a currency that appreciates.

PSE trends across the OECD area therefore differ significantly according to whether the PSE is expressed in USDs or in EUR (Figure 2.2). Depending on whether these two currencies depreciate or appreciate, the PSE may increase between two consecutive years when expressed in USDs and decrease in euros, or the reverse. If the PSE is aggregated in yen, the trend would look very different again: the upward trend in the yen would lower the PSE. Converting the PSE into Turkish lira would have the opposite effect (Table 2.2).

The use of current purchasing power parities, as proposed by Doyon *et al.* (2002), does not resolve the problem of aggregation. Current PPP rates vary from one country to another depending on their respective inflation rates and choosing one country as the base country would tend to modify the PSE by the base country's inflation rate.

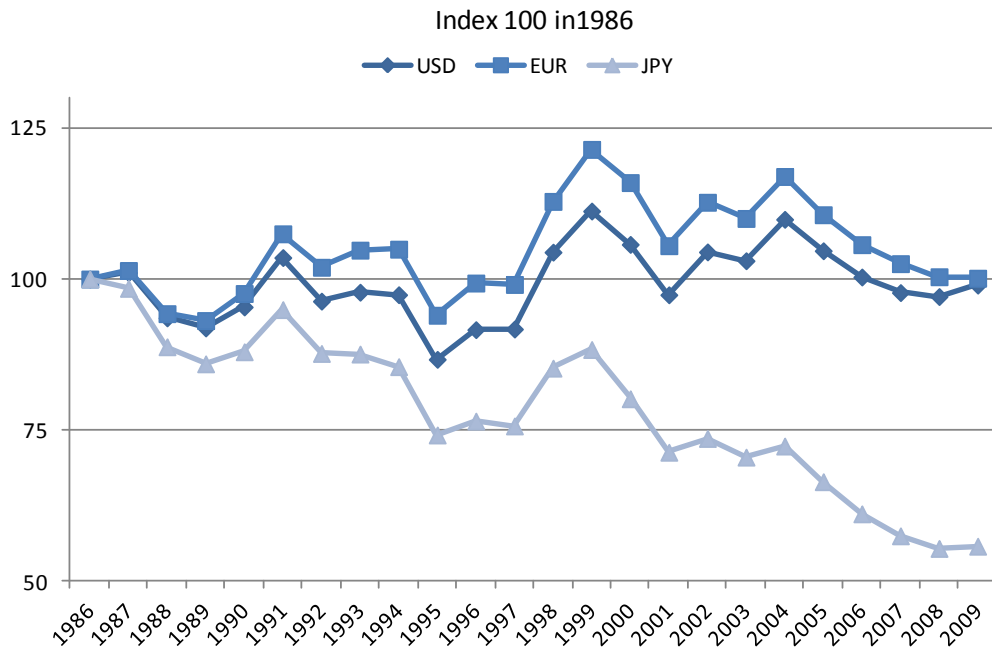
Trends in international USDs or EUR (current PPP) do not diverge too greatly (Figure 2.3), as inflation rates in the United States are fairly similar to those in the European Union (Table 2.1), leading to relatively stable purchasing power parities (Figure 2.1). However, when aggregated at the OECD-wide level, the PSE trends differ markedly when they are expressed in international yen (Figure 2.3), for example, from when they are expressed in international Turkish lira (Table 2.2). When aggregated in international yen, the PSE tends to be lower, owing to the low inflation rate in Japan but, when aggregated in international Turkish lira, it tends to be higher, owing to high inflation in Turkey.

Figure 2.2. Evolution of the OECD-wide PSE, aggregated using the current exchange rate in USD, EUR and JPY



Source: OECD, author's calculations.

Figure 2.3. Evolution of the OECD-wide PSE, aggregated at the current PPP rate in USD, EUR and JPY

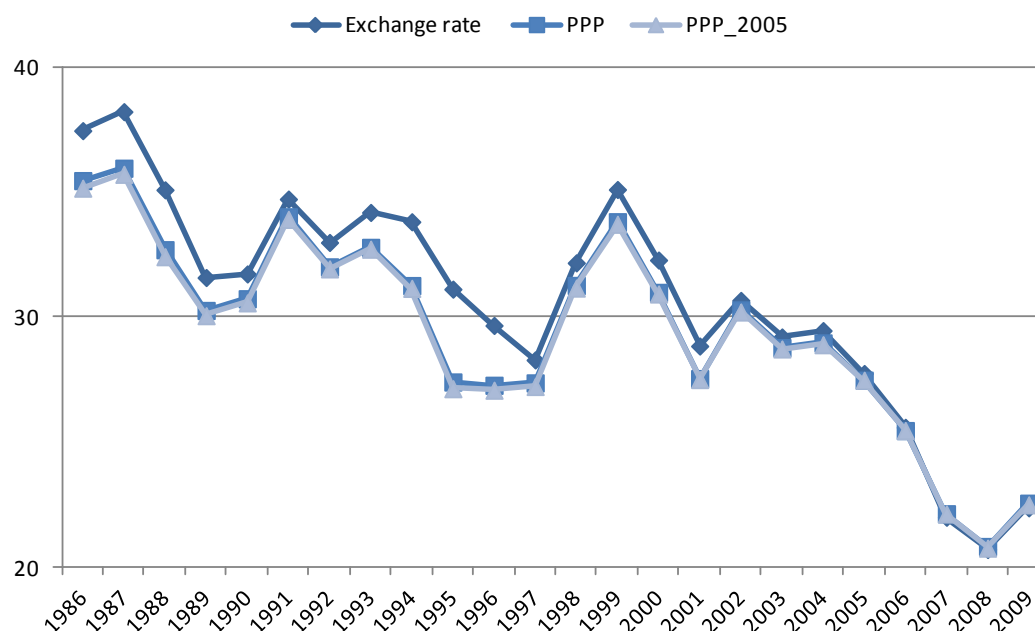


Source: OECD, author's calculations.

Therefore aggregating the PSE across the OECD area does not enable its evolution to be assessed in absolute terms, as this evolution differs according to the national currency unit used to aggregate it. That is why the OECD prefers to publish relative indicators such as the percentage PSE (or the nominal assistance coefficient).

If the PSE is aggregated to OECD totals at current exchange rates, the choice of the reference currency (USD, EURO or other) obviously does not affect the percentage PSE, as these conversion rates have an identical effect on both numerator and denominator (Table 2.2). The same applies to PSE aggregation at the current PPP rate. By contrast, the results differ slightly according to whether the exchange rate or the PPP rate is used to aggregate the PSE (Figure 2.4), as the country weightings differ in the two respective aggregations.

Figure 2.4. Percentage PSE in the OECD area between 1986 and 2009, at the current exchange rate, the current PPP rate and the purchasing power parity rate for 2005



Source: OECD, author's calculations.

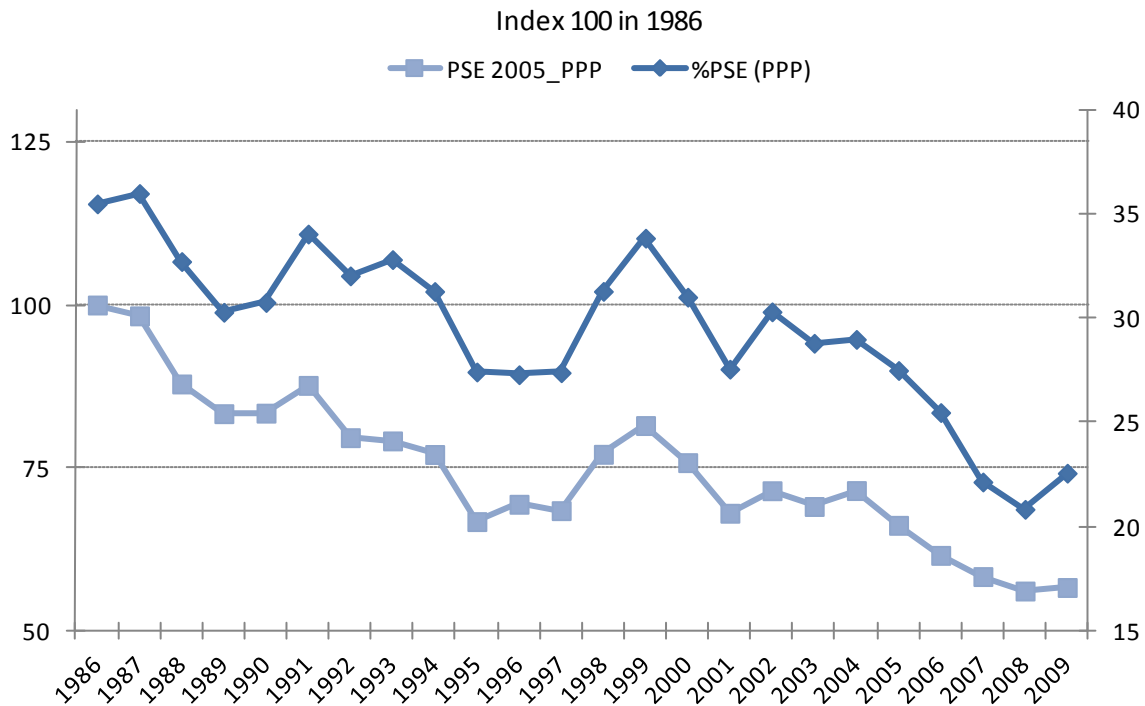
Nevertheless, trends in the percentage PSE, both throughout the period and year on year, are fairly similar using both procedures. The trend reveals a decrease in percentage PSE between 1986 and 1998, an increase between 1998 and 2000, and a steady decline from 2000 onwards: between 1986 and 2009, the percentage PSE fell from 37% to 22%. The same evaluations in absolute terms at current exchange rates or PPPs do not reveal this downward trend in the PSE.

2.3. Real PSE

As a transfer to agricultural producers from consumers and taxpayers, the PSE can be expressed in terms of purchasing power, that is to say, in real terms. The chosen procedure consists in using the GDP price indices and the GDP purchasing power parities between countries. This has been calculated using the USD and 2005 as the base year but, as has been shown, the trends are not sensitive to either the country or the year chosen.

In real terms, the PSE fell by 44% between 1986 and 2009. The decline was fairly steady, apart from a slight upturn in 1991 and a sharp rise between 1998 and 2000. We shall explain the reasons later in this report. The expression of real PSE confirms that agricultural support has indeed shrunk in recent decades.

Figure 2.5. Evolution in real terms of the PSE in the OECD area between 1986 and 2009, purchasing power parity and the percentage PSE



Source: OECD, author's calculations.

The evolution of the PSE in real terms is fairly similar to that of the percentage PSE. However, in some years there were discrepancies between the two indicators. For example, between 2008 and 2009, the percentage PSE increased from 20.8% to 21.6% whereas, in real terms, the PSE remained virtually the same. This discrepancy arises from the drop in farm prices following the price explosion of 2007 and 2009. Using a coherent unit of measurement, in this instance 2005 PPP, allows a breakdown to be made, which is not the case using relative indicators (such as percentage PSE). In the next part of the report we therefore analyse the evolution of real PSE and its components.

Table 2.1. Exchange rate*, PPP/exchange rate ratio and inflation rates in OECD countries between 1986 and 2009

	1986	1995	2001	2008	2009	1986	1995	2001	2008	2009	1986	2009
	Exchange rate: USD 1 = NC ...				PPP/exchange rate ratio				GDP price index: 100 in 1986			
Australia	1.50	1.35	1.94	1.20	1.28	0.80	0.98	0.69	1.24	1.14	100	220
Canada	1.39	1.37	1.55	1.07	1.14	0.88	0.89	0.79	1.15	1.04	100	170
Switzerland	1.80	1.18	1.69	1.08	1.09	1.13	1.68	1.09	1.52	1.50	100	144
EURO	1.02	0.76	1.12	0.68	0.72	0.79	1.14	0.78	1.21	1.13	100	178
Iceland	41	65	98	88	124	0.91	1.13	0.91	1.42	1.08	100	509
Japan	0.17	0.094	0.121	0.103	0.094	1.21	1.86	1.23	1.13	1.23	100	96
Korea	0.88	0.77	1.29	1.10	1.27	0.52	0.90	0.59	0.69	0.61	100	271
Mexico	0.64	6.42	9.34	11.15	13.50	0.33	0.46	0.68	0.70	0.61	100	7 377
Norway	7.39	6.34	8.99	5.65	6.29	1.22	1.45	1.02	1.61	1.38	100	238
New Zealand	1.92	1.52	2.38	1.43	1.60	0.69	0.96	0.62	1.10	0.99	100	197
Turkey	0.0007	0.05	1.23	1.30	1.55	0.45	0.54	0.35	0.74	0.65	100	595 003
United States	1	1	1	1	1	1	1	1	1	1	100	174

*(USD 1 = national currency [NC] ...)

Source: OECD, author's calculations.

Table 2.2. Results of aggregating the PSE to OECD totals between 1986 and 2009, in USD, EUR and JPY, at the exchange rate, the current PPP rate and in 2005 PPP

	1986	1995	2001	2008	2009	1986	1995	2001	2008	2009
PSE at the current exchange rate (index 100 in 1986)						%PSE				
USD	100	120	97	118	114	37.5	31.1	28.9	20.7	22.4
Euro	100	90	106	79	80	37.5	31.1	28.9	20.7	22.4
JPY	100	67	70	72	63	37.5	31.1	28.9	20.7	22.4
TRY	100	8 225	178 065	229 130	262 977	37.5	31.1	28.9	20.7	22.4
PSE in current PPP (index 100 in 1986)						%PSE				
USD	100	87	97	97	99	35.5	27.4	27.5	20.8	22.6
Euro	100	94	106	100	100	35.5	27.4	27.5	20.8	22.6
JPY	100	74	71	55	56	35.5	27.4	27.5	20.8	22.6
TRY	100	7 089	139 124	310 387	332 661	35.5	27.4	27.5	20.8	22.6
PSE in 2005 PPP (index 100 in 1986)						%PSE				
	100	67	68	56	57	35.2	27.1	27.5	20.8	22.5

Source: OECD, author's calculations.

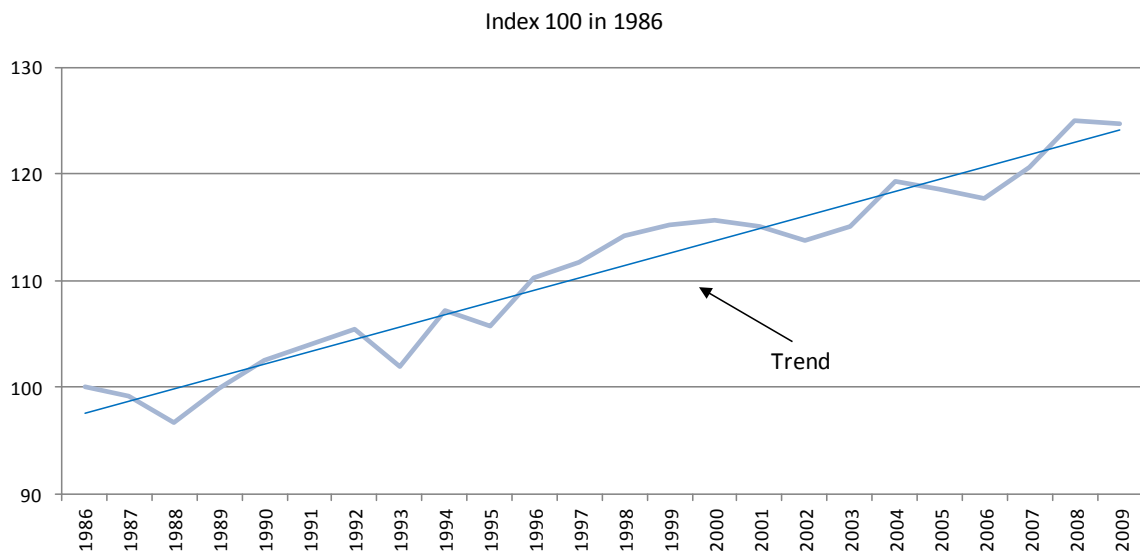
3. Evolution of the producer support estimate and its components, in real terms, in the OECD area between 1986 and 2009

The analysis starts by focusing on the 15 standard MPS commodities in the OECD database. It is useful to analyse these commodities because their output volume is known, which also makes it possible to compute price indices and unit support.

3.1. Changes in output volume of the standard MPS commodities

Output volume of the standard MPS commodities rose by 25% between 1986 and 2009, averaging an annual 1.1% increase. Across the OECD area, the increase was fairly steady, with the poorest years being 1998, 1993, 1995, 2002 and 2006.

Figure 3.1. Volume index of OECD aggregate output of the 15 standard MPS commodities between 1986 and 2009

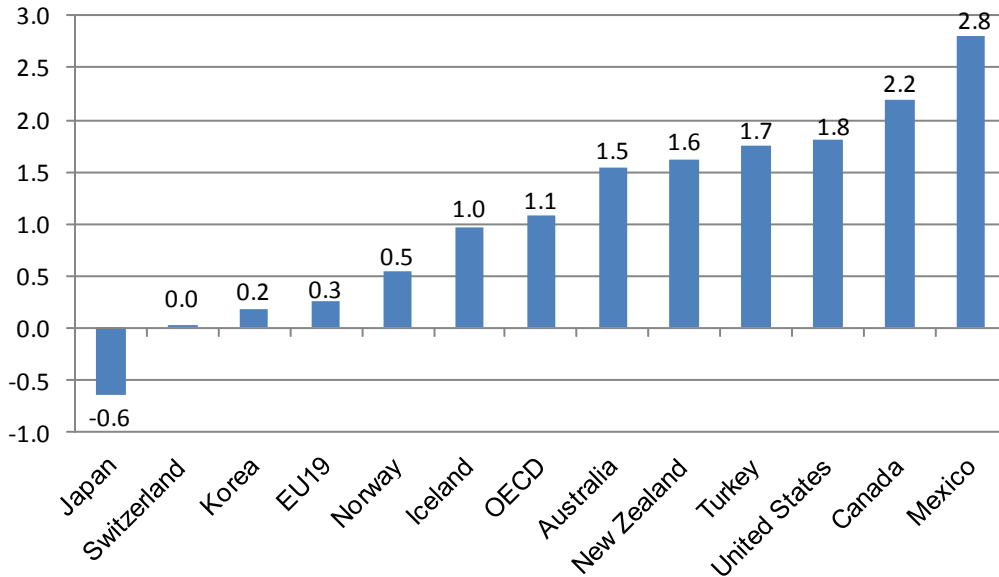


Source: OECD, author's calculations.

It was the 19 European Union member states that slowed this growth, with an annual growth rate of only 0.3%. This caused European Union's share of OECD aggregate output volume of the 15 commodities to fall from 44% at the beginning of the period to 37% at the end (Table 3.1). At the beginning of the period, the output reductions in former socialist-bloc countries (Czech Republic, Hungary, Poland and Slovak Republic) impacted heavily on the evolution of output from the EU19 area defined in this study (Box 2). Successive reforms of the Common Agricultural Policy (CAP), with reduced support prices, production quotas (set-aside) and subsidies, probably contributed to the low growth rate thereafter.

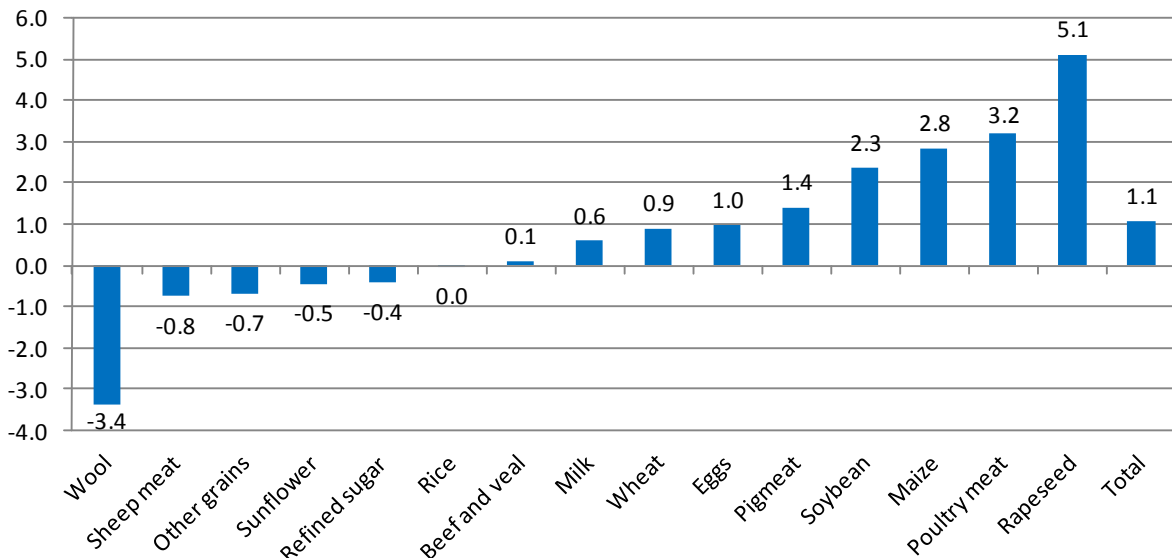
In the United States output grew at a fairly strong and steady pace, at an annual rate of 1.8%, with the US share in OECD aggregate output volume increasing from 33% to 39%. Growth rates were also high in Canada (2.2%), New Zealand (1.6%) and Australia (1.5%). Output volume of the 15 commodities fell in Japan, and growth rates were low in Switzerland (0%), Korea (0.2%), Norway (0.5%) and Iceland (1%).

Figure 3.2. Annual rate of growth in output volume (standard MPS commodities) in OECD countries between 1986-88 and 2007-09



Source: OECD, author's calculations.

Figure 3.3. Annual growth rate of OECD output volume by commodity between 1986-88 and 2007-09



Source: OECD, author's calculations.

These changes were linked to the decrease in agricultural protection and support, which we analyse later. We see that growth rates in farm production were particularly high in countries that had provided relatively little support to farm production at the beginning of the period, as lower agricultural protection and support at OECD level boosted their growth. By contrast, the lowest growth rates, or even a decline in output, can be seen in countries that provided the greatest support

to their farm sector at the beginning of the period and later shifted their agricultural policy, in particular by lowering support prices.

Relatively high growth rates can be seen in OECD countries like Mexico (2.8%) and Turkey (1.7%), even though these are temperate agricultural commodities.

Growth rates also differ from one commodity to another. Following the trend in demand, growth rates were highest for poultrymeat (3.2%) and pigmeat (1.4%), and hence for crops used for poultry and pig feed (rapeseed 5.1%, maize 2.8% and soybean 2.3%). Growth rates were lowest in grains for human consumption (rice 0%, wheat 0.9%). The output of sheepmeat fell (-0.8%) and that of beef levelled off (0.1%). Growth was moderate for milk (0.6%) and negative for sugar (-0.4%).

3.2. *Evolution of market price support and commodity support across the OECD area*

One of the main features characterising OECD countries throughout the period under review was a reduction in support linked directly to output. In real terms, producer SCTS for standard MPS commodities fell by 70% between 1986 and 2009: domestic prices converged towards border prices, with the producer nominal protection coefficient falling from 1.7 to 1.1 (Figure 3.4).

During the period, WTO was created and the Uruguay Round Agreement on Agriculture brought an end to the exclusion of the farming sector, with international trade negotiations being extended to include agriculture. Even though some commentators did not deem the agreement to be very binding (Butault *et al.*, 2004), undeniably it induced countries to change their agricultural policy. Agricultural support and protection have definitely decreased and, in fact, this process began before the agreement, with countries preparing for the negotiations.

At the end of the period, these shifts were facilitated by an overall upward trend in world prices⁵ following a period of price reductions. Between 1986 and 2000, world prices fluctuated but with a downward trend. This was likely the result of major productivity gains in the farm sector (Ball *et al.*, 2010), causing the volume of farm output to rise (Figure 3.1) while demand remained steady. World prices bottomed out in 1999, when they were more than 25% lower than in 1986 (Figure 3.4).

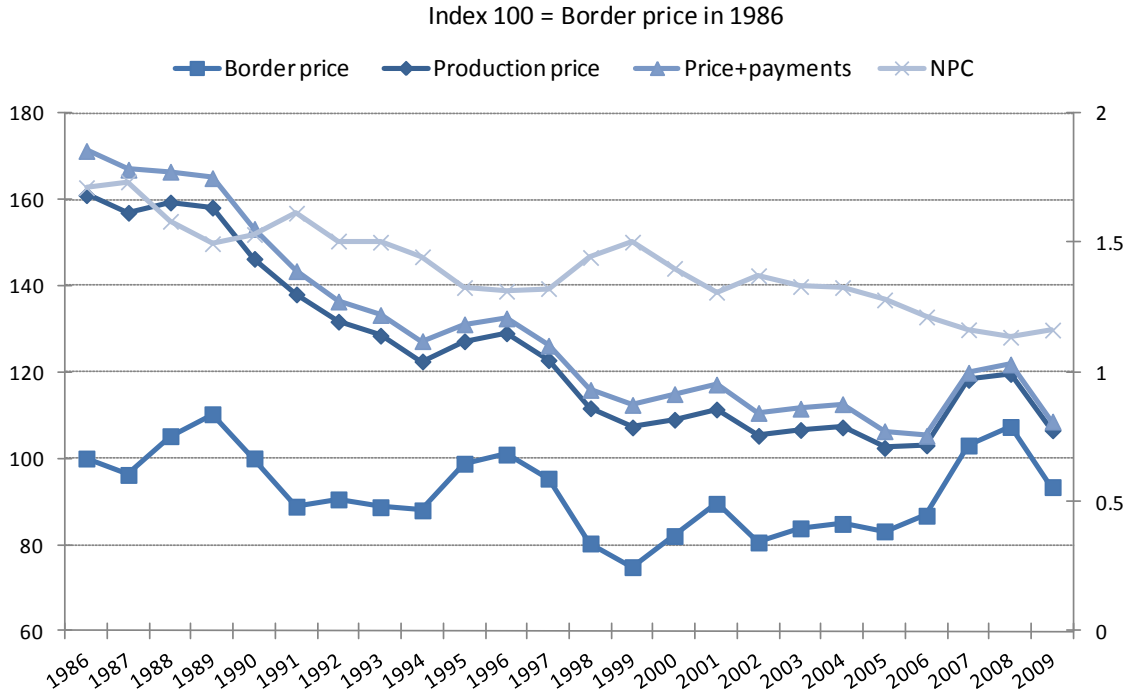
From 2000 onwards, real world prices followed an overall upward trend, probably as a result of rising demand from emerging countries, or other factors such as the development of biofuels.⁶ World prices were very high in 2007 and 2008, having risen by 17% and 22% respectively since 2006. In 2009, world prices fell back to roughly their 2006 level: compared with 1986, the drop in real terms was a very moderate -3% throughout the period.

The shift in the policies of OECD countries resulted in a gradual alignment between domestic and world border prices. Although border prices declined by only 3% between 1986 and 2009, producer prices and prices with payments fell by one-third. Throughout the period, market price support was greater than output-linked support: the level of prices including payments therefore remained very similar to that of producer prices (Figure 3.4).

5. The term world price is probably not the correct one to use here. In fact, they are reference (border) prices weighted by each country's output.

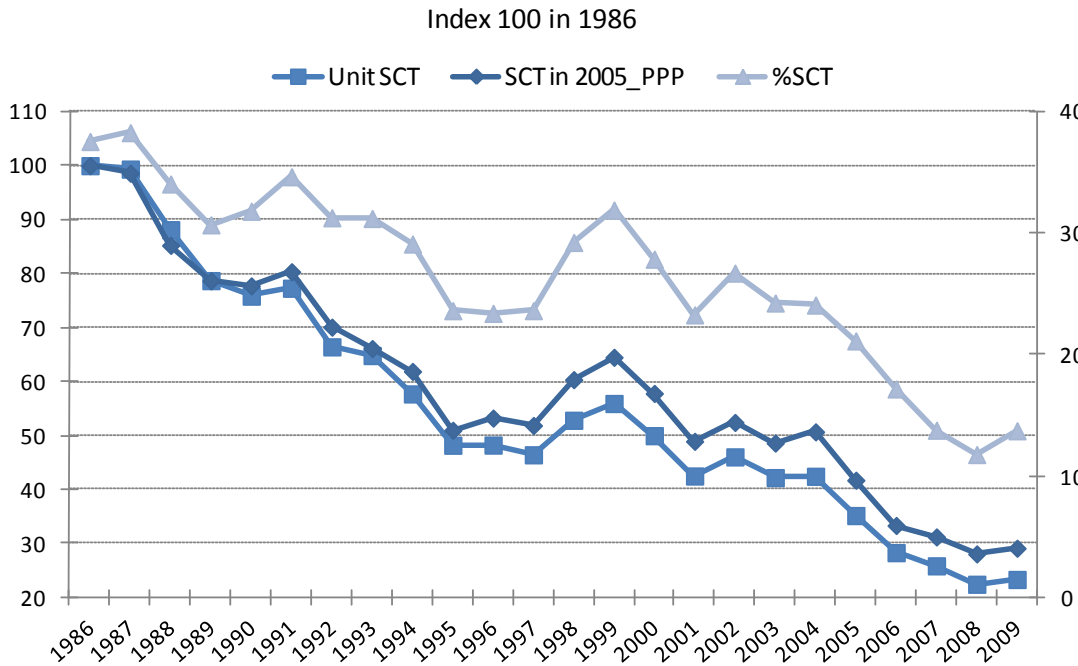
6. It is not the purpose of this report to explain these developments.

Figure 3.4. Evolution in real terms of reference border prices, producer prices and producer prices including payments for the standard MPS commodities in the OECD area between 1986 and 2009
Producer NPC



Source: OECD, author's calculations.

Figure 3.5. Evolution in real terms of producer SCTs by unit produced and as an aggregate in the OECD area between 1986 and 2009
Percentage producer SCT



Source: OECD, author's calculations.

Producer single commodity transfers (SCTs) by unit produced fell by more than 75% between 1986 and 2009 (Figure 3.5). However, at the beginning of the period, these transfers varied inversely to world border prices, which reveals that coupling was still fairly widespread. The 1999 drop in world prices was therefore partially offset by an increase in commodity support in 1999 and 2000.

As we shall see, this increase in commodity transfers in 1999 and 2000 stemmed mainly from the policy of the United States, which, in spite of its 1996 Farm Act instigating decoupled support, increased coupled support to offset the fall in world prices.

In the future, commodity support might be expected to be less sensitive to the trend in world prices, or at least to take another form. In 2009, commodity transfers represented a small share of farm receipts, of a little over 10%, compared with around 40% in 1986 (Figure 3.5).

Even though the output volume of the standard MPS commodities increased by 25% during the period, there was little divergence between the evolution of transfers per unit produced (-77%) and that of aggregate transfers (-70%: see Figure 3.5). The reason is two-fold: first, the increase in output came mainly from countries where transfers had been minor at the beginning of the period, and second, it concerned products receiving little support (poultrymeat and pigmeat).

In conclusion we note that, although there was convergence between border prices and domestic prices between 1986 and 2009, two separate periods can be distinguished with regard to developments in world border prices:

- Between 1986 and 1999, the nominal protection coefficient fell from 1.75 to 1.55, which might seem moderate. In fact, during this period, border prices fell by more than 25%, with the combined effects having caused a 35% drop in producer prices (including payments) (Figure 3.4). In real terms, unit SCTs fell by 45% (Table 3.2).
- Between 1999 and 2009, the nominal protection coefficient fell from 1.55 to 1.15. Following the Uruguay Round Agreement on Agriculture, the agricultural policies conducted in OECD countries resulted in a more marked convergence between world and domestic prices than in previous years. However, these changes took place in the context of a relative increase in world prices: even if we exclude the period 2007-08, border prices increased by nearly one-third in real terms between 1999 and 2009. The level of producer prices (including payments) therefore remained virtually the same between 1999 and 2009.

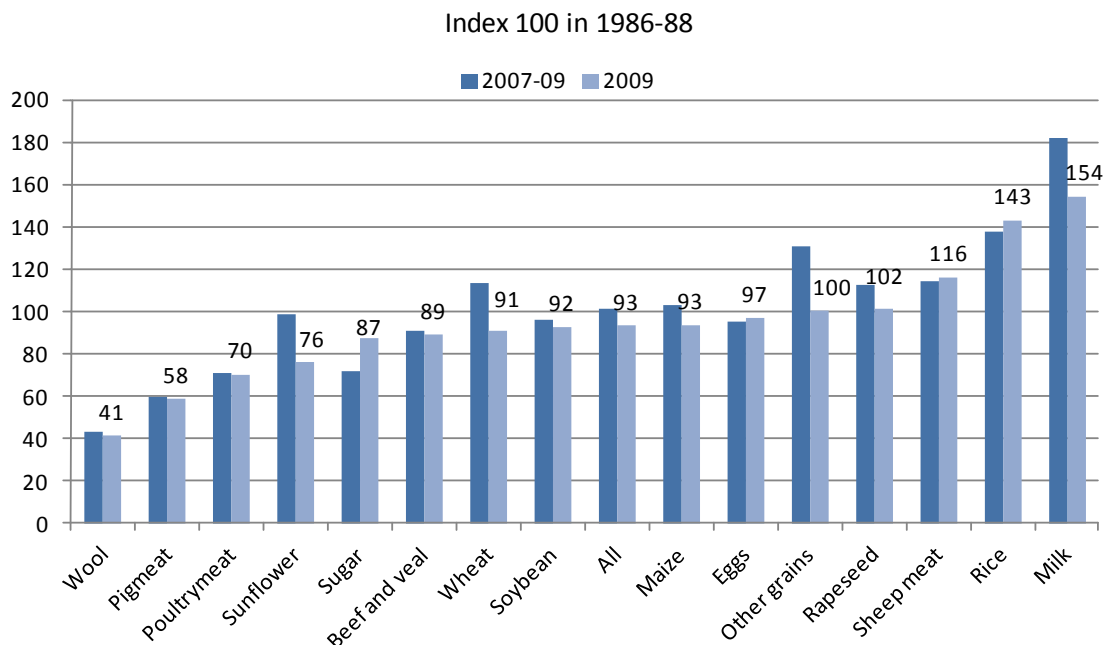
This confirms the usefulness of our analysis, which combines the use of aggregates in real terms with relative indicators. During the 2000s, there has been a debate about whether lower agricultural protection and support would or would not cause world commodity prices to rise. Our analysis, which remains highly empirical, does not resolve this debate and any explanation of the observed phenomena is beyond the scope of this report. Indisputably world farm prices increased during the most intensive years of reform, which is not without problems, especially for developing countries that are net importers of agricultural commodities. According to FAO and OECD projections, this rise is set to continue, unless a world economic slowdown curbs growth in emerging countries and with it their increasing demand for agricultural commodities. This should facilitate continued reform, even if new forms of regulation are needed to counteract the market instability which seems to be emerging and from which the poorest countries suffer.

3.3. Evolution of prices and support in real terms by commodity

Trends in prices and support for the different commodities are determined by factors specific to each commodity (productivity gains), as well as by the policy of individual countries, as some of these commodities comprise a predominant share of their output. In the OECD area, for example, support for rice is determined by the policies of Japan and Korea, while the United States has a decisive impact on soybean, and the European Union on rapeseed. This makes it difficult to analyse the evolution of commodity-specific support before analysing national policies. However, that is precisely what we propose to do in this section in order to expand upon the foregoing analysis of market support.

The trend in border prices⁷, expressed in real terms, differs in line with the commodity. Border prices for white meat (pigmeat and poultrymeat) fell by more than 30% between 1986 and 2009 (Figure 3.6). However, 2009 beef prices stayed much the same as in 1986, despite a 25% drop during the 2000s. The prices of these animal products varied very little during the 2007-08 period.

Figure 3.6. Evolution of reference border prices in real terms in 2007-09 and 2009



Source: OECD, author's calculations.

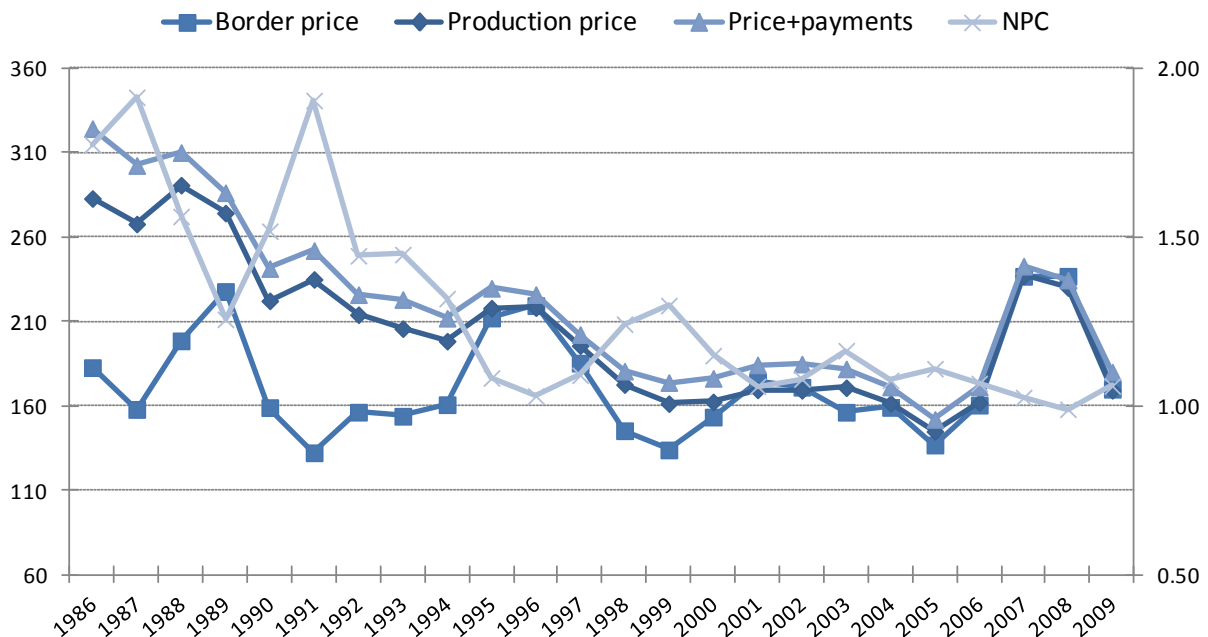
Taking 2009 as the reference year, prices for grains (excluding rice), oilseeds and sugar were also much the same as in 1986, albeit with large fluctuations in the interim. The border price of wheat, expressed in 2005 international dollars, was USD 183 per tonne in 1986 (Figure 3.7): it fell to its lowest level in 1999 (USD 134 in 2005 international dollars), rising to a peak in 2007 (USD 237 in 2005 international dollars), before shrinking to USD 170 in 2009. In contrast, the price of rice remained high in 2009 (+40% compared with 1986-88). The same happened with milk, the world price of which soared in 2008.

7. As these border prices are weighted by each country's output, they are not trade prices.

Commodity-specific support for grains (excluding rice) and oilseeds has virtually been abolished, with SCTs decreasing by 90% (Figure 3.8). SCTs as a percentage of gross farm receipts (percentage SCT) therefore fell from 40%-50% in 1986-99 to less than 10% in 2009. In the case of wheat, for example, domestic prices aligned with border prices in the 2000s and the two prices have evolved in tandem ever since (Figure 3.7).

SCTs fell by 80% for milk, by 65% for sugar and rice and by 50% for beef. At the end of the period, percentage SCT was 15% for milk and beef, 30% for sugar and 55% for rice (owing to continued support in Japan and Korea).

Figure 3.7. Reference border price, producer price and producer price including payments per tonne of wheat in 2005 international USD; Nominal protection coefficient

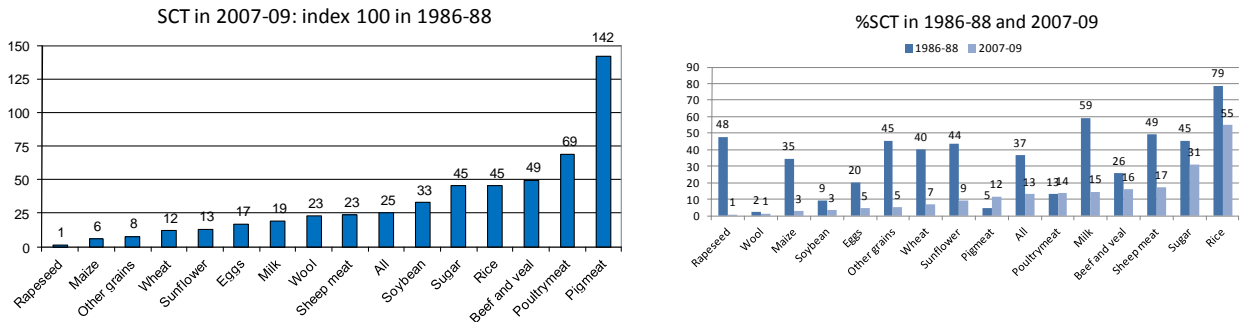


Source: OECD, author's calculations.

The evolution of domestic prices (sum of the producer price and payments) stemmed from a combination of changes in world prices and in support specific to each commodity (see for wheat, Figure 3.8). Owing to the 2007-08 period, the estimate changes a little according to whether the terminal year is considered to be the 2007-09 average or 2009 alone (Figure 3.9).

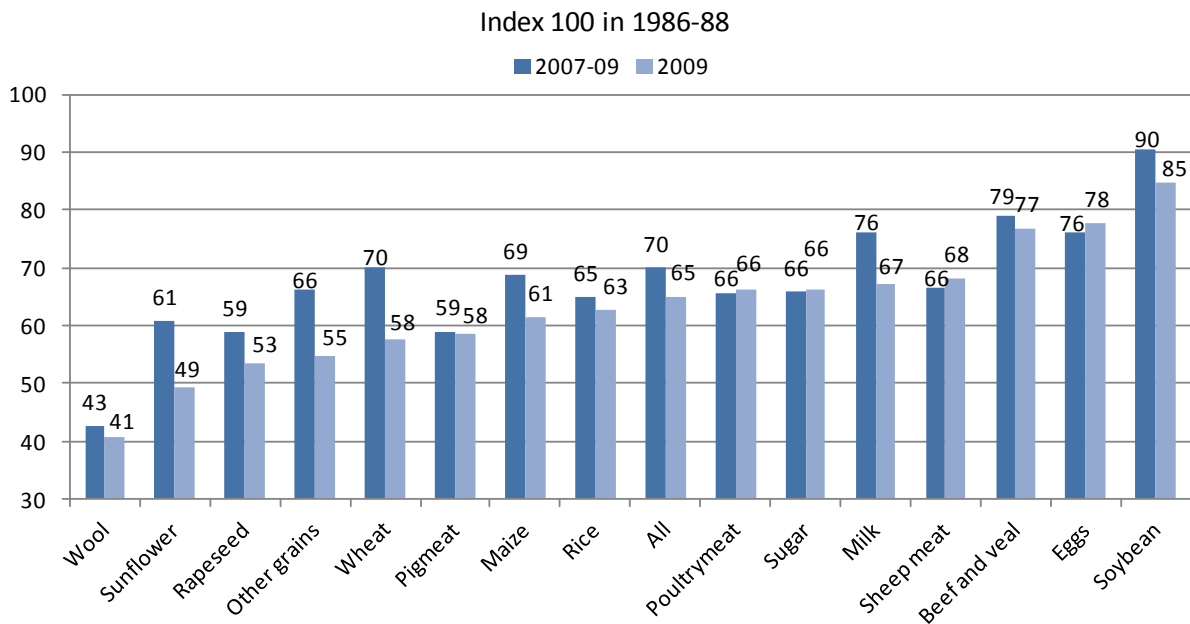
The predominant trend remains a drop in real terms of these producer prices including payments, as a result of a reduction in market price support and direct production aid. For the standard MPS commodities as a whole, compared with 1986-88, the level of prices including payments fell by 30% in 2007-09 and by 35% in 2009.

Figure 3.8. Evolution of producer SCTs between 1986-88 and 2007-09 and SCTs as a percentage of gross farm receipts (percentage SCT) by commodity



Source: OECD, author's calculations.

Figure 3.9. Evolution of producer prices including payments in real terms in 2007-09 and in 2009



Source: OECD, author's calculations.

In part, these trends are determined by the countries producing these commodities and on these countries' initial policies. For example, the soybean is the commodity for which the price held up best (-10% in 2007-09 compared with 1986-88), while rapeseed is one of the commodities that has suffered the steepest price drop (-40%): at the beginning of the period, the soybean was produced mainly in the United States, whereas rapeseed was produced predominantly in the European Union with large-scale production aid.

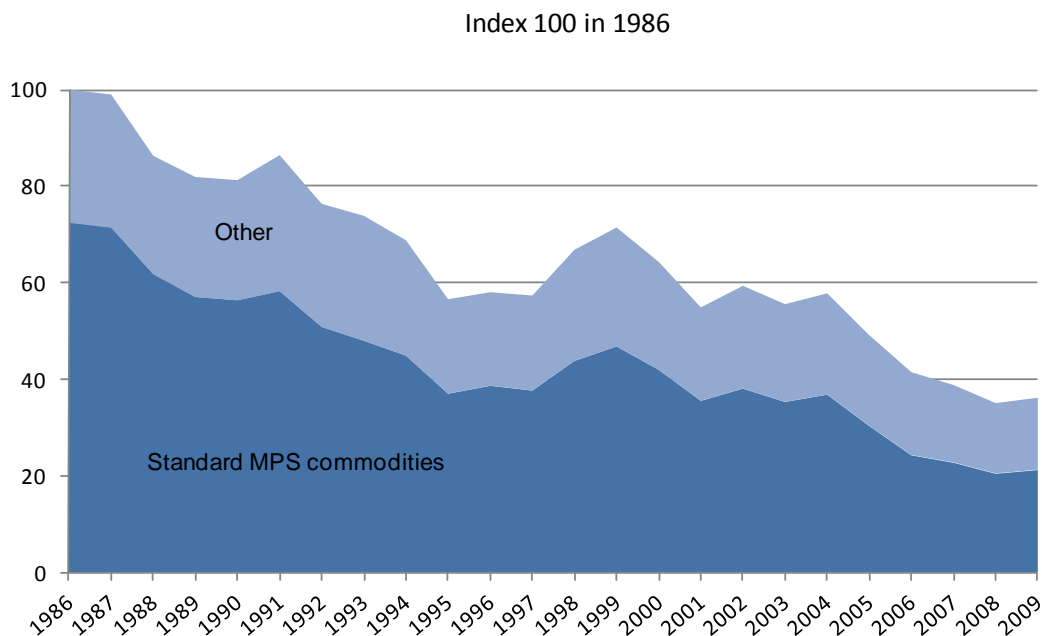
Considering 2009 as the terminal year, for most commodities the price reductions tended to range between 40% and 35%. However, the price falls were only 33% for milk and 23% for beef.

In the period under review, the evolution of commodity prices was, to a large extent, dictated by the trend in support. Owing to the convergence between world prices and domestic prices, in the future commodity prices will depend more on the evolution of world prices alone.

3.4. Evolution of the PSE in real terms in the OECD area between 1986 and 2008

The trend in SCTs for the standard MPS commodities was very similar to that for output as a whole. However, the share of the standard MPS commodities tended to diminish, falling from 72% to 58% of total SCTs. When SCTs decrease, they expand to include a wider range of commodities. Between 1986 and 2009, SCTs fell by 64% in real terms (compared with 71% for the standard MPS commodities).

Figure 3.10. Evolution of producer SCTs in the OECD area between 1986 and 2009 for the standard MPS commodities and for output as a whole

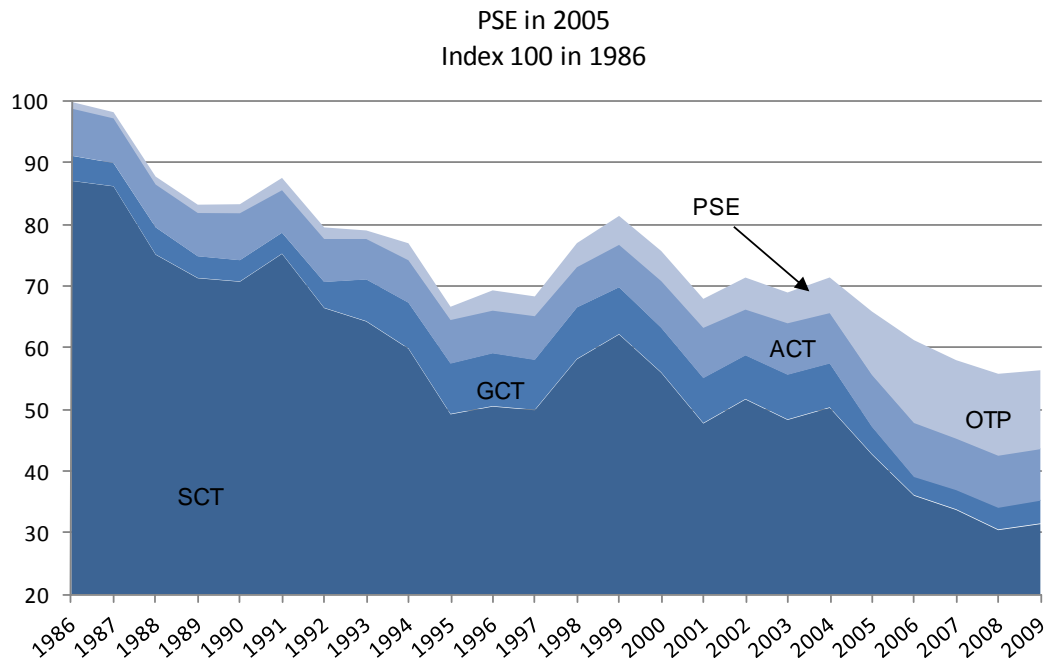


Source: OECD, author's calculations.

In all OECD countries, agricultural policies were directed at offsetting the fall in market support and in direct production aid by disbursing increasingly decoupled payments as time went on. As these payments represented only partial compensation, real PSE fell by 43% (Figure 3.11).

The share of SCTs in total PSE decreased from 87% to 55%. The evolution of their composition revealed the gradual decoupling of transfers not directly linked to the production of a single commodity. At the beginning of the period, these transfers were directed mainly at output as a whole, with a 60% share, owing to support for the environment and regional development in particular. At first, the reductions in market price support were offset, as in the European Union, by support for commodity groups, with their share totaling 47% of transfers not linked to a single commodity in 1995. From 2003 onwards, the share of other transfers, including decoupled payments, increased to 22% of total PSE in 2009 and to half of all transfers not linked to a single commodity.

Figure 3.11. Evolution of the PSE and its components in real terms in the OECD area between 1986 and 2009

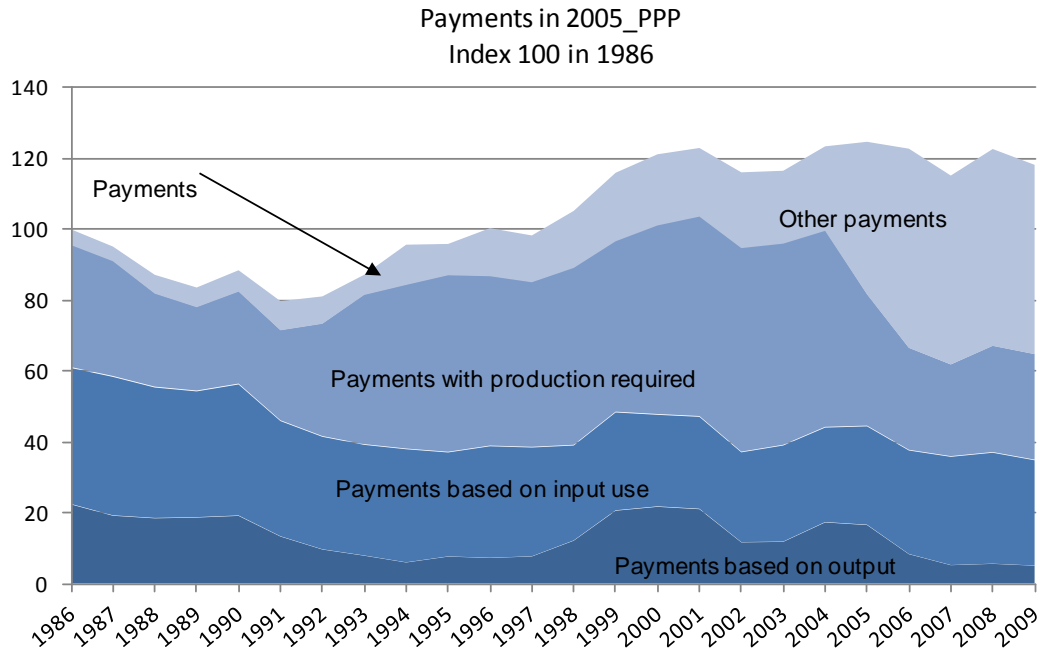


Source: OECD, author's calculations.

The trend in payments throws new light on the restructuring of support. Payments increased by 20% in real terms between 1986 and 2009 (Figure 3.12), to offset the decline in market price support as from 1992, especially in the European Union. Payments based on input use remained fairly stable. At first, payments were determined by the area or by the number of animals farmed by producers, or by producers' income, and were linked to an obligation to produce. Gradually, entitlement to support came to be determined by historical criteria and their payment was no longer conditional upon output, which led to an increase in other payments, as Figure 3.12 shows.

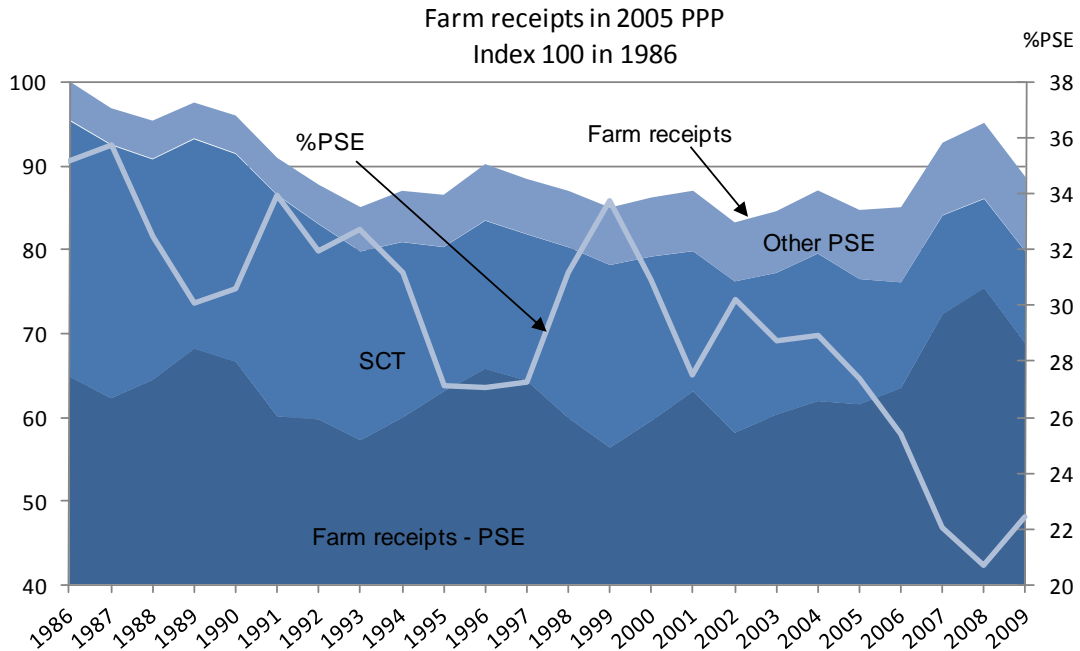
The evolution of farm receipts and their components in real terms shown in Figure 3.13 provides an overview of all the changes observed during the period and, in particular, makes it possible to distinguish the respective impact of the increase in output volume, shifts in agricultural policies in OECD countries and the evolution of world prices.

Figure 3.12. Evolution of payments and their components in real terms in the OECD area between 1986 and 2009



Source: OECD, author's calculations.

Figure 3.13. Evolution of farm receipts and their components in real terms in the OECD area between 1986 and 2009. PSE as a share of gross farm receipts



Source: OECD, author's calculations.

As with Figure 3.4, we were tempted to divide the period 1986-2009 into two subperiods, with 1999 as the turning point. Owing to the fluctuations observed, this division is somewhat

arbitrary and econometrics would probably be required to pinpoint the turning points more accurately.

- Between 1986 and 1999, world border prices were declining but with quite large fluctuations. The PSE partially cushioned the effect of the fluctuations and percentage PSE varied widely: in 1999, the year when world border prices bottomed out, percentage PSE (34%) was at almost the same level as in 1986 (35%). However, farm receipts fell by 13% and, even in 1999, when it was higher than in previous years, the PSE was 20% lower than in 1986.
- After 1999, the decrease in support was speeded up, with a steeper drop in the PSE but a context of rising world prices. This caused percentage PSE to decline from 34% to 22% between 1999 and 2009, even though farm receipts grew by 22%.

This leaves little doubt that progress in agricultural policy reform was facilitated by a world price trend favourable to producers, on the back in particular of increased demand from emerging countries. According to FAO and OECD forecasts, this pressure on farm prices should become more acute over the next decade, which is expected to lead to new trends.

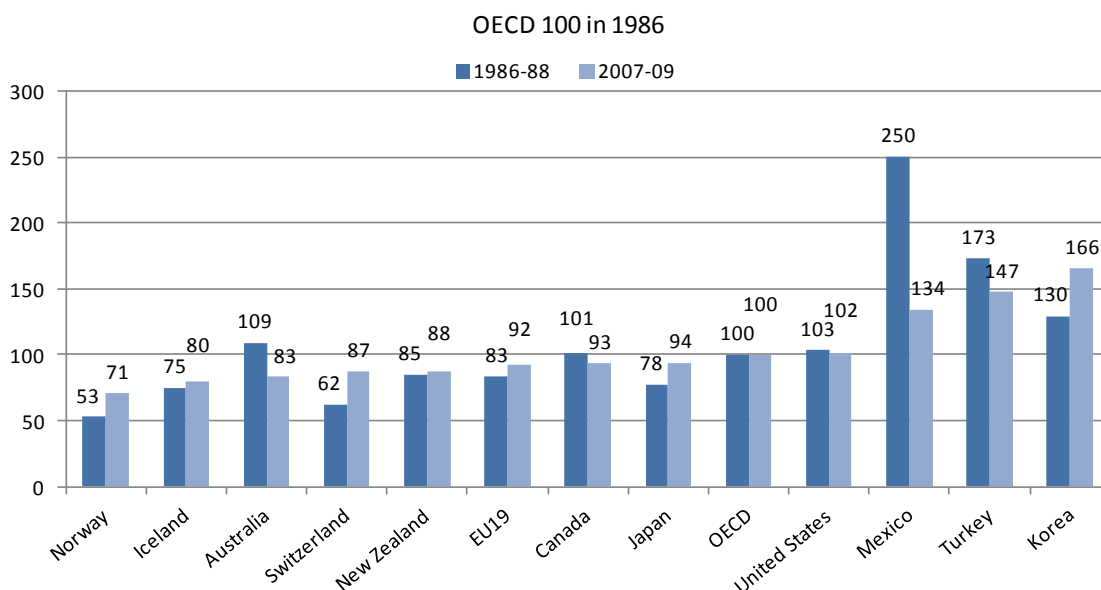
3.5. Evolution of prices and support by country

Evolution of single commodity transfers and producer prices including payments

Virtually all OECD countries shifted their agricultural policy by aligning their domestic prices with world prices and by reducing overall agricultural support. The only exceptions were Turkey and, to a lesser extent, Mexico.

The evolution of border prices in individual countries depends on their respective currency positions and commodity production. Figure 3.14 gives the index of border prices in 1986-87 and 2007-09 (OECD = 100), expressed in current PPP: it is therefore a relative index of the border price of agricultural commodities as a ratio of the price of the goods making up gross domestic product.

Figure 3.14. Index of the reference border price of standard MPS commodities in current purchasing power parity terms in 1986-88 and 2007-09

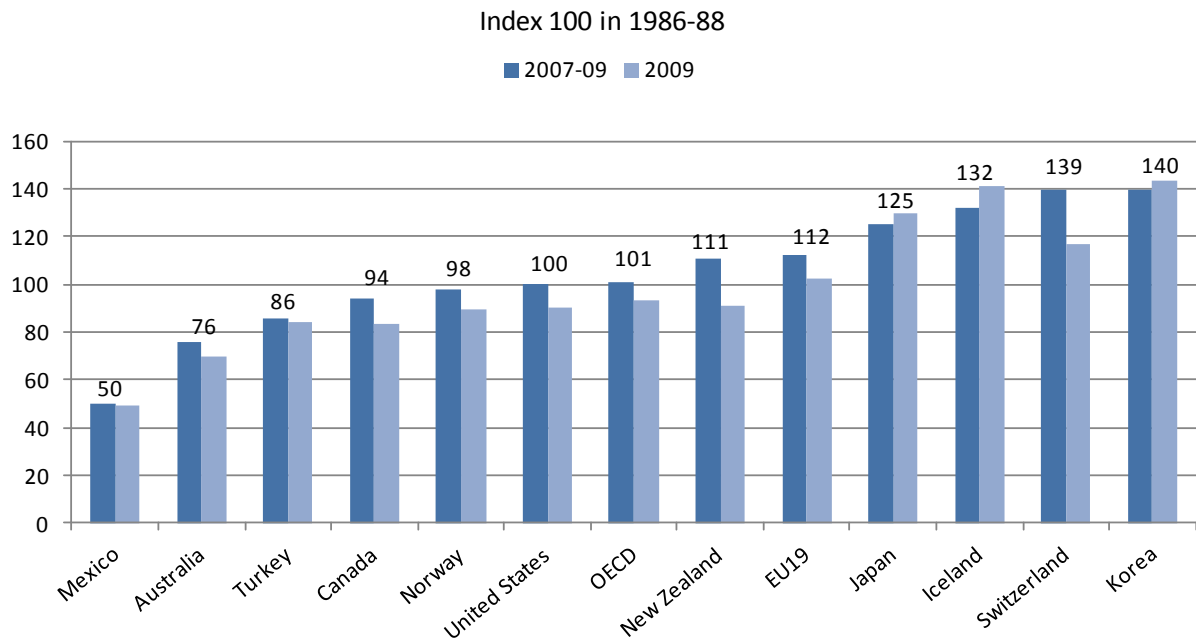


Source: OECD, author's calculations.

As a general rule, border prices are relatively low in countries whose currency is overvalued (Norway, Switzerland and Japan) and relatively high in countries whose currency is undervalued (Mexico and Turkey). The gaps narrowed during the period, as the current exchange rate converged with purchasing power parity: this caused a sharp reduction in the border price in Mexico (-45%) and Turkey (-15%).

The trend in this synthetic index of border prices also depends on the predominant commodity produced by individual countries: for instance, it increases at the end of the period in Japan and Switzerland, despite their both having a strong currency, owing to the evolution of rice and wheat prices respectively. For the majority of countries, border prices in 2007-09 exceeded 1986-88 levels. If we take 2009 alone, the reverse is true.

Figure 3.15. Evolution of reference border prices of the standard MPS commodities in 2007-09 and 2009 compared with 1986-88

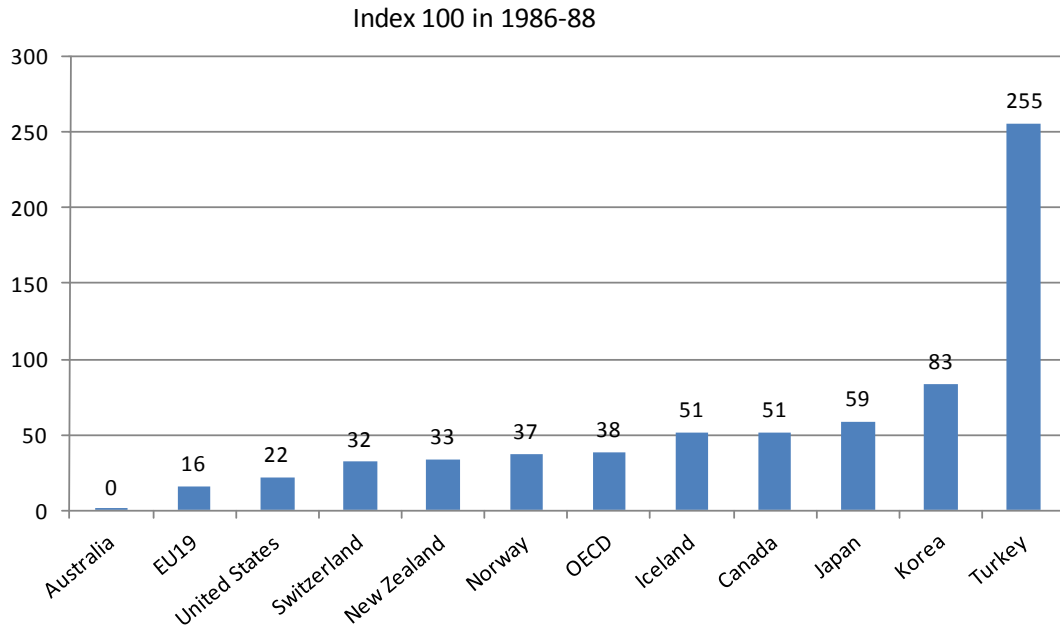


Source: OECD, author's calculations.

There was a particularly steep fall in SCTs in the European Union and the United States (-80% in real terms). In the European Union, the fall was fairly steady and independent of the trend in world border prices, owing to the reforms of 1993, 1999 and 2003. In the United States the resumed use of support instruments led to an upsurge in SCTs during the period of falling world border prices (1999-2000). Throughout the period under review, percentage SCT fell from 37% to 8% in the European Union and from 16% to 3% in the United States. Already negligible in 1986, New Zealand and Australia went on to virtually eliminate SCTs altogether.

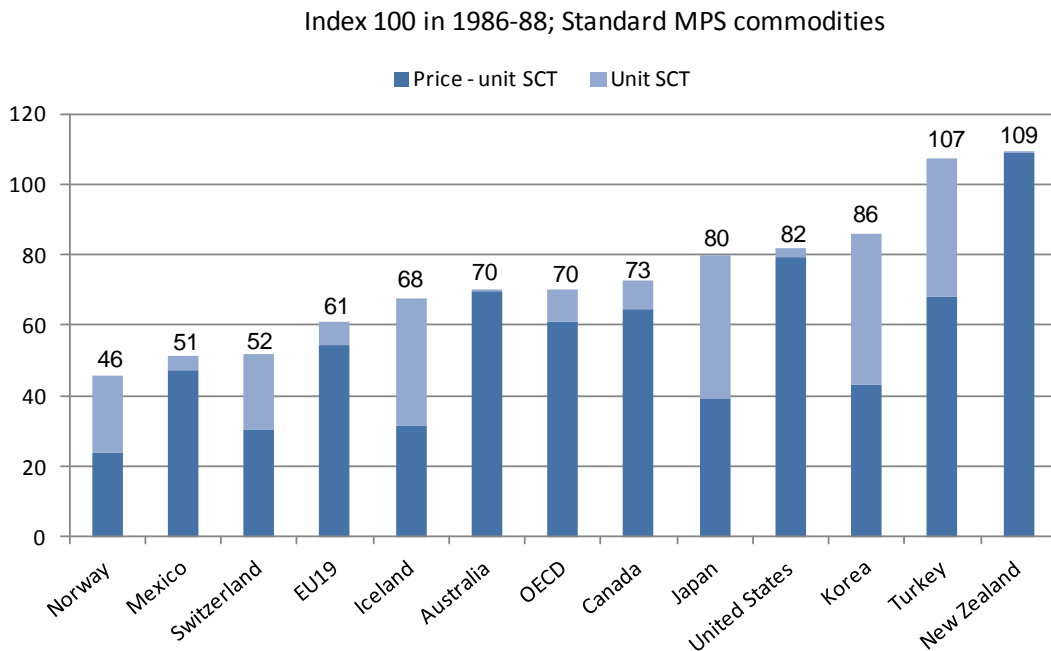
In real terms, the fall in SCTs was close to or exceeded 50% in Switzerland, Norway and Iceland. At the end of the period, percentage SCT was 30% in Switzerland, 34% in Norway and 50% in Iceland. In Japan and Korea, there was more moderate dismantling of these forms of support and percentage SCT remained high in 2007-09 (42% in Japan and 47% in Korea).

Figure 3.16. Index of changes in producer single commodity transfers (SCTs) in real terms between 1986-88 and 2007-09



Source: OECD, author's calculations.

Figure 3.17. Index of changes in producer prices including payments, in real terms, between 1986-88 and 2007-09



Source: OECD, author's calculations.

Turkey is one of the few countries where price support grew. SCTs therefore increased by a factor of 2.5 in real terms and percentage SCT rose from 16% to 30%. Mexico's agricultural policy led to negative transfers in 1986.8 These transfers later became positive before being increased to offset the highly unfavourable context arising from the evolution of border prices after the Mexican peso was revaluated.

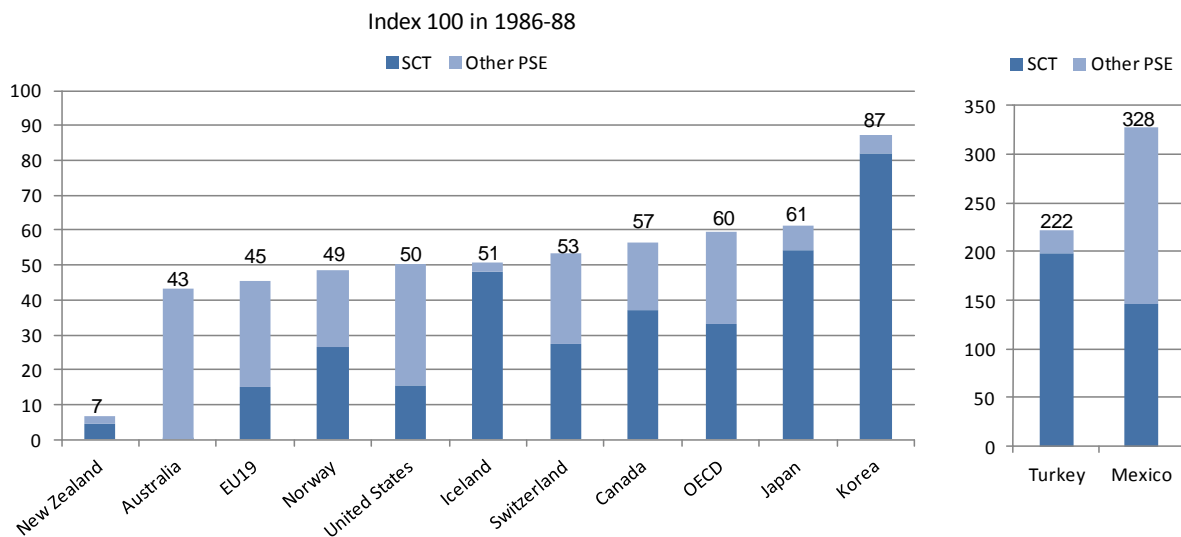
The fall in producer prices including payments (Figure 3.17) was particularly steep in countries where there had been significant commodity-specific support at the beginning of the period but where this support was later abolished. Prices fell by 50% in Switzerland and Norway and by 40% in the European Union member states. At the end of the period, New Zealand benefited handsomely from the increase in world border prices, especially for milk.

Evolution of the PSE and receipts

The majority of OECD countries offset the fall in commodity-specific support with increasingly decoupled direct payments. That was the case in the European Union, with the reforms of 1992, 1999 and 2003. Direct payments not linked to specific commodities therefore grew by a factor of four, in real terms, in the European Union member states. Such payments also increased in Switzerland (+70%) and the United States (+20%).

As these payments to offset price falls were only partial, real PSE diminished in all OECD countries, except Turkey, as well as in Mexico. For five economies (EU19, Norway, United States, Iceland and Switzerland) the PSE declined by between 55% and 45%, well above the average for the OECD area (40%). The fall in the PSE was more moderate in Japan (39%) and Korea (13%). The PSE increased by 120% in Turkey and 320% in Mexico.

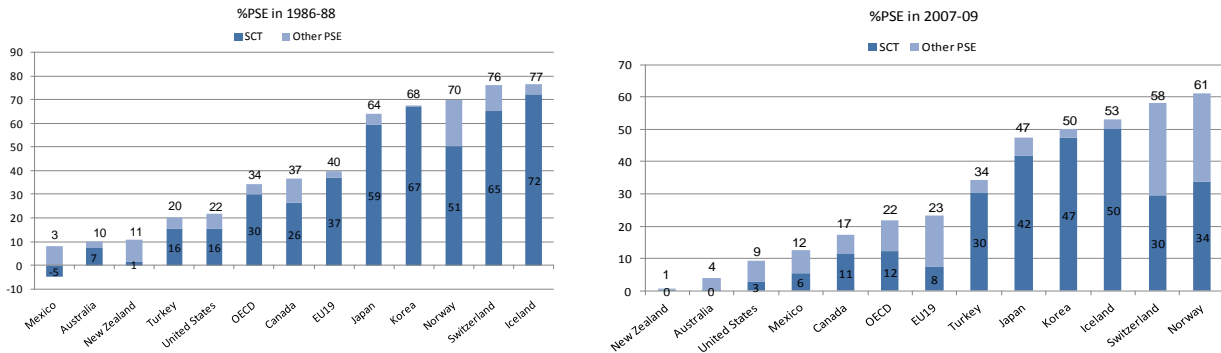
Figure 3.18. Index of changes in the real PSE between 1986-88 and 2007-09



Source: OECD, author's calculations.

8. In its annual reports, the OECD uses 1989-91 as a reference period.

Figure 3.19. SCTs and the PSEs as a percentage of gross farm receipts in 1986-88 and 2007-09

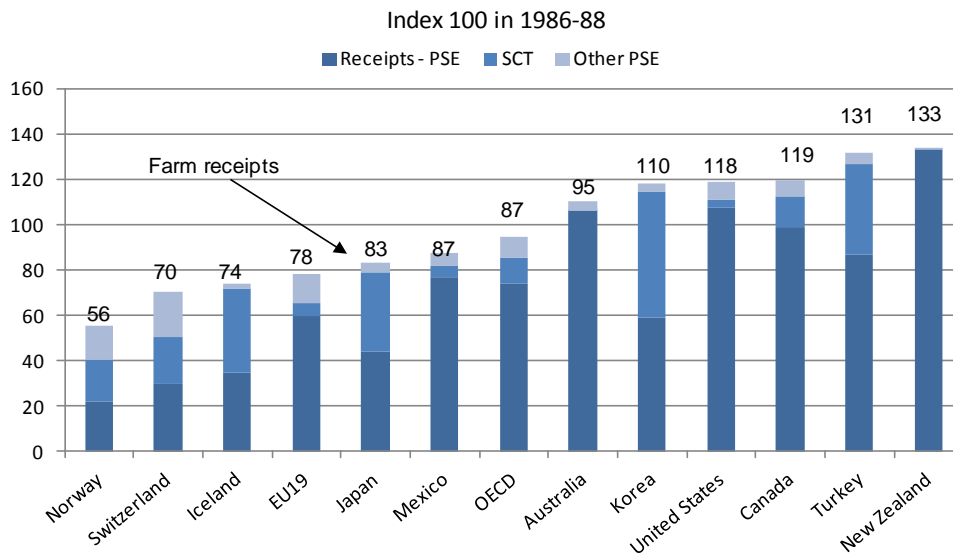


Source: OECD, author's calculations.

In all countries except Turkey and Mexico, percentage PSE declined between 1986 and 2009 (Figure 3.19). In countries of the European Union, it fell from 40% to 23%. At the end of the period it remained high in Japan (47%), Korea (50%), Switzerland (58%) and Norway (61%).

The evolution of receipts in real terms is the combined result of changes in output volume, producer prices and other payments. There were wide disparities between countries in the evolution of these receipts (Figure 3.20) because there is a correlation between these different variables, as we have already seen.

Figure 3.20. Evolution of farm receipts in real terms between 1986-88 and 2007-09



Source: OECD, author's calculations.

In spite of the context of favourable world prices, overall receipts declined between 1986-88 and 2007-09 in Norway (-44%), Switzerland (-30%), European Union countries (-22%) and Japan (-17%). These are all countries that had provided significant support to their farming sector at the beginning of the period, and where, given the shift in agricultural policies, a simultaneous stagnation of output (Figure 3.2) and a fall in producer prices (Figure 3.16), partially offset by direct payments, occurred.

Overall receipts levelled off in Australia and increased in the United States (18%), Canada (19%) and New Zealand (33%). These are countries that had provided little support to their farming sector at the beginning of the period and where the price trend was therefore not unfavourable (Figure 3.16). In addition, these countries enjoyed strong output growth (Figure 3.2).

Korea and Turkey are special cases, with weak output growth but high prices at the border in Korea and an increase in support in Turkey, causing farm prices to increase.

The future looks bright for European Union countries, to judge by FAO and OECD forecasts for continuing high world prices, as domestic prices are now aligned with world border prices. However, a large share of the receipts is still dependent on direct payments. Trends in receipts could turn out to be much more unfavourable in countries like Norway, Switzerland or Japan, with further reductions in the support that still comprises a major share of these receipts.

Table 3.1. Respective percentage share of OECD countries in output volume of the standard MPS commodities in 1986-88 and 2007-09. Annual rate of growth in output volume

	Share of output		Annual growth rate
	% OECD 1986-88	% OECD 2007-09	% 2007-09 / 1986-88
Australia	4.18	4.60	1.53
Canada	3.73	4.69	2.19
Switzerland	0.55	0.44	0.03
EU19	43.70	36.78	0.25
Iceland	0.02	0.02	0.98
Japan	5.06	3.53	-0.64
Korea	1.72	1.43	0.18
Mexico	3.40	4.85	2.80
Norway	0.32	0.28	0.54
New Zealand	1.56	1.75	1.62
Turkey	2.31	2.65	1.74
United States	33.45	38.96	1.81
OECD	100	100	1.08

Source: OECD, author's calculations.

Table 3.2. Reference border price, producer price including payments and unit SCTs by country, expressed as current purchasing power parity (index 100 = OECD) and in 2005 PPP (index 100 = 1986-88) for the standard MPS commodities
Nominal protection coefficient

Reference border price									
	Current PPP: 100 OECD		2005 PPP: 100 in 1986-88						
	1986-88	2007-09	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09
Australia	109	83	100	72	74	83	75	70	76
Canada	101	93	100	96	82	101	98	83	94
Switzerland	62	87	100	94	107	154	148	116	139
EU19	83	92	100	84	90	112	122	102	112
Iceland	75	80	100	92	96	116	138	141	132
Japan	78	94	100	88	106	119	126	130	125
Korea	130	166	100	103	112	115	161	143	140
Mexico	250	134	100	48	43	47	52	49	50
Norway	53	71	100	91	85	109	95	90	98
New Zealand	85	88	100	105	99	137	105	91	111
Turkey	173	147	100	86	88	89	84	84	86
United States	103	102	100	74	83	103	106	90	100
OECD	100	100	100	79	85	103	107	93	101
Producer price + payments									
	Current PPP: 100 OECD		2005 PPP: 100 in 1986-88						
	1986-88	2007-09	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09
Australia	70	72	100	68	68	76	69	64	70
Canada	88	91	100	76	66	77	73	68	73
Switzerland	172	131	100	64	53	52	55	48	52
EU19	104	90	100	64	58	62	64	54	60
Iceland	194	154	100	81	70	68	71	64	68
Japan	147	166	100	78	81	78	80	82	80
Korea	250	287	100	87	86	83	87	88	86
Mexico	156	127	100	57	44	49	53	52	51
Norway	135	124	100	66	49	45	43	49	46
New Zealand	52	76	100	103	98	135	103	89	109
Turkey	134	208	100	112	105	100	113	109	107
United States	77	91	100	69	70	86	86	74	82
OECD	100	100	100	68	64	71	72	65	69

Table 3.2. Reference border price, producer price including payments and unit SCTs by country, expressed as current purchasing power parity (index 100 = OECD) and in 2005 PPP (index 100 = 1986-88) for the standard MPS commodities. Nominal protection coefficient (cont.)

Unit SCTs									
	Current PPP: 100 OECD		2005 PPP: 100 in 1986-88						
	1986-88	2007-09	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09
Australia	15	0	100	16	1	0	0	0	0
Canada	66	80	100	36	31	29	22	39	30
Switzerland	342	417	100	55	39	26	31	31	29
EU19	128	74	100	49	32	18	14	12	14
Iceland	403	630	100	77	61	52	50	41	48
Japan	274	648	100	74	70	59	59	60	59
Korea	471	1091	100	80	74	68	54	64	62
Mexico	17	77	100	282	86	99	94	124	106
Norway	239	455	100	60	41	29	31	41	34
New Zealand	2	2	100	17	35	43	25	8	25
Turkey	76	582	100	202	161	142	222	198	187
United States	41	20	100	52	21	19	7	10	12
OECD	100	100	100	55	37	27	23	24	25
Nominal protection coefficient									
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09		
Australia	1.08	1.02	1.00	1.00	1.00	1.00	1.00		
Canada	1.47	1.16	1.16	1.12	1.09	1.20	1.13		
Switzerland	4.67	3.14	2.30	1.58	1.72	1.92	1.73		
EU19	2.10	1.60	1.35	1.16	1.11	1.11	1.12		
Iceland	4.34	3.83	3.15	2.52	2.22	1.98	2.22		
Japan	3.19	2.84	2.45	2.08	2.03	2.02	2.04		
Korea	3.26	2.75	2.50	2.33	1.76	2.00	2.00		
Mexico	1.05	1.26	1.08	1.09	1.07	1.10	1.09		
Norway	4.29	3.10	2.47	1.79	1.96	2.32	2.02		
New Zealand	1.02	1.00	1.01	1.01	1.00	1.00	1.00		
Turkey	1.30	1.70	1.54	1.46	1.75	1.69	1.64		
United States	1.26	1.18	1.06	1.05	1.02	1.03	1.03		
OECD	1.68	1.45	1.27	1.16	1.14	1.16	1.15		

Table 3.3. Reference border price, producer price including payments and unit single SCTs by commodity in 2005 PPP (index 100 in 1987-89)

Border price in 2005 PPP (index 100 in 1986-88)								
	1986-88	1998-2000	2004-06	2007	2008	2009		
Wheat	100	80	83	126	123	91		
Rice	100	84	90	113	157	143		
Milk	100	116	144	189	204	154		
Beef	100	81	88	90	94	89		
Pigmeat	100	57	63	60	60	58		
Sheepmeat	100	108	136	111	116	116		
Poultrymeat	100	73	69	69	73	70		
Wool	100	45	43	45	43	41		
Eggs	100	82	77	90	100	97		
Maize	100	68	68	108	108	93		
Sugar	100	68	69	62	65	87		
Soybean	100	58	63	99	97	92		
Rapeseed	100	88	83	105	131	102		
Sunflower	100	79	74	101	120	76		
Other grains	100	89	97	152	140	100		
Aggregate	100	79	85	103	107	93		
Producer price + payments in 2005 PPP (index 100 in 1986-88)								
	1986-88	1998-2000	2004-06	2007	2008	2009		
Wheat	100	57	53	78	75	58		
Rice	100	72	63	64	67	63		
Milk	100	80	73	80	81	67		
Beef	100	82	84	80	80	77		
Pigmeat	100	60	63	57	62	58		
Sheepmeat	100	80	80	66	66	68		
Poultrymeat	100	67	63	65	66	66		
Wool	100	45	43	45	42	41		
Eggs	100	69	63	71	80	78		
Maize	100	53	49	73	72	61		
Sugar	100	87	82	67	64	66		
Soybean	100	65	60	92	94	85		
Rapeseed	100	46	44	55	68	53		
Sunflower	100	48	46	63	70	49		
Other grains	100	56	52	74	70	55		
Aggregate	100	68	65	72	73	65		
SCTs by unit produced in 2005 PPP (index 100 in 1986-88)							Percentage SCT	
	1986-88	1998-2000	2004-06	2007	2008	2009	1986-88	2007-09
Wheat	100	26	13	13	10	13	40	7
Rice	100	69	56	51	43	41	79	55
Milk	100	64	35	21	14	20	59	15
Beef	100	87	77	57	44	47	26	16
Pigmeat	100	173	163	99	179	148	5	12
Sheepmeat	100	58	35	27	19	24	49	17
Poultrymeat	100	61	58	67	64	76	13	14
Wool	100	49	23	20	22	25	2	1
Eggs	100	30	20	11	20	20	20	5
Maize	100	26	15	9	6	2	35	3
Sugar	100	101	79	60	51	25	45	31
Soybean	100	130	28	23	69	7	9	3
Rapeseed	100	1	1	1	1	2	48	1
Sunflower	100	8	12	16	7	16	44	9
Other grains	100	28	11	3	6	15	45	5
Aggregate	100	55	37	27	23	24	37	13

Source: OECD, author's calculations.

**Table 3.4. Receipts, PSE and producer SCTs in 2005 PPP
(index 100 in 1986-88)**

Farm receipts								
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09	
Australia	100	113	109	112	114	105	110	
Canada	100	108	107	115	122	121	119	
Switzerland	100	75	71	68	72	70	70	
EU19	100	77	74	79	81	73	78	
Iceland	100	74	74	75	76	69	74	
Japan	100	82	81	83	83	84	83	
Korea	100	114	116	111	119	123	118	
Mexico	100	83	77	83	88	91	87	
Norway	100	74	58	55	54	58	56	
New Zealand	100	113	120	156	127	117	133	
Turkey	100	125	127	131	135	128	131	
United States	100	98	104	122	123	111	118	
OECD	100	88	88	95	98	91	95	
PSE								
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09	
Australia	100	45	42	56	45	29	43	
Canada	100	54	64	59	43	67	57	
Switzerland	100	71	62	49	54	58	53	
EU19	100	66	57	48	46	42	45	
Iceland	100	69	64	56	53	43	51	
Japan	100	76	68	60	62	63	61	
Korea	100	105	102	92	78	91	87	
Mexico	100	481	290	323	319	341	328	
Norway	100	74	54	45	46	55	49	
New Zealand	100	6	10	9	7	4	7	
Turkey	100	170	192	192	240	234	222	
United States	100	106	68	56	45	50	50	
OECD	100	82	69	61	59	59	60	
SCT								
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09	
Australia	100	26	1	0	0	0	0	
Canada	100	51	52	48	40	66	51	
Switzerland	100	55	42	26	34	36	32	
EU19	100	52	34	20	16	13	16	
Iceland	100	71	65	57	53	43	51	
Japan	100	76	68	58	59	59	59	
Korea	100	101	97	88	73	87	83	
Mexico	100	61	43	31	35	44	37	
Norway	100	20	47	54	34	12	33	
New Zealand	100	186	212	209	274	282	255	
Turkey	100	84	37	33	15	17	22	
United States	100	71	52	41	37	38	38	
Other PSE								
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09	
Australia	100	92	145	197	159	102	152	
Canada	100	61	93	88	52	69	70	
Switzerland	100	167	181	181	172	182	178	
EU19	100	240	337	390	416	404	403	
Iceland	100	32	44	44	48	42	45	
Japan	100	65	61	88	96	106	97	
Korea	100	488	568	507	550	481	513	
Mexico	100	51	68	72	79	69	73	
Norway	100	108	82	80	75	81	79	
New Zealand	100	4	5	2	3	3	3	
Turkey	100	114	122	132	123	69	108	
United States	100	162	149	114	121	133	123	
OECD	100	154	185	193	202	198	198	

Table 3.5. Producer SCT and the PSE as a percentage of gross farm receipts

Percentage SCT							
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09
Australia	7	2	0	0	0	0	0
Canada	26	12	13	11	9	14	11
Switzerland	65	48	39	25	30	34	30
EU19	37	25	17	9	7	6	8
Iceland	72	69	63	55	51	45	50
Japan	59	56	50	42	42	42	42
Korea	67	60	56	53	41	48	47
Mexico	-5	14	5	6	5	6	6
Norway	51	42	38	29	33	39	34
New Zealand	1	0	1	1	0	0	0
Turkey	16	23	26	25	32	34	30
United States	16	13	6	4	2	2	3
OECD	30	24	18	13	11	12	12
Percentage PSE							
	1986-88	1998-2000	2004-06	2007	2008	2009	2007-09
Australia	10	4	4	5	4	3	4
Canada	37	18	22	19	13	20	17
Switzerland	76	72	67	54	57	63	58
EU19	40	34	31	24	23	23	23
Iceland	77	71	66	58	53	48	53
Japan	64	59	54	46	48	48	47
Korea	68	62	60	56	44	50	50
Mexico	3	19	13	13	12	13	12
Norway	70	70	66	57	60	66	61
New Zealand	11	1	1	1	1	0	1
Turkey	20	27	31	30	36	37	34
United States	22	23	14	10	8	10	9
OECD	34	32	27	22	21	22	22

Source: OECD, author's calculations.

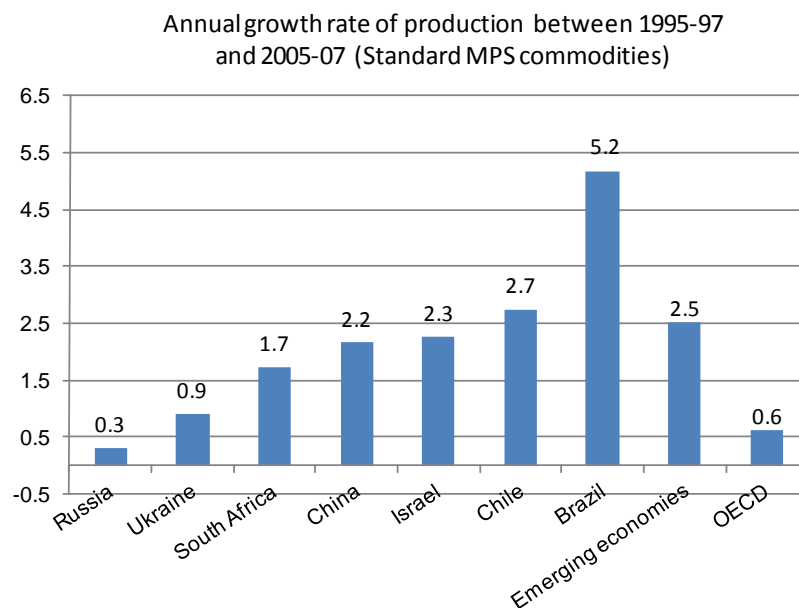
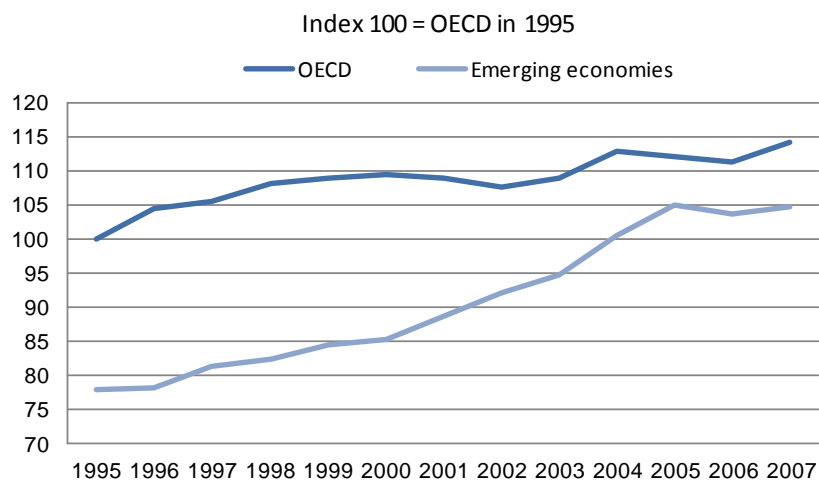
4. Evolution of support in real terms in seven emerging economies between 1995 and 2007

This section examines the evolution in support in real terms between 1995 and 2007 in five emerging countries that are not OECD members (Brazil, China, Russia, Ukraine and South Africa), as well as in Chile and Israel, which joined the OECD in 2010.

4.1. Evolution of the volume of farm output of the standard MPS commodities

Output of the standard MPS commodities grew much more vigorously in the seven countries than in the OECD area. Between 1995 and 2007, the aggregate growth rate of this group was 2.7%, compared with 0.6% in the OECD area.

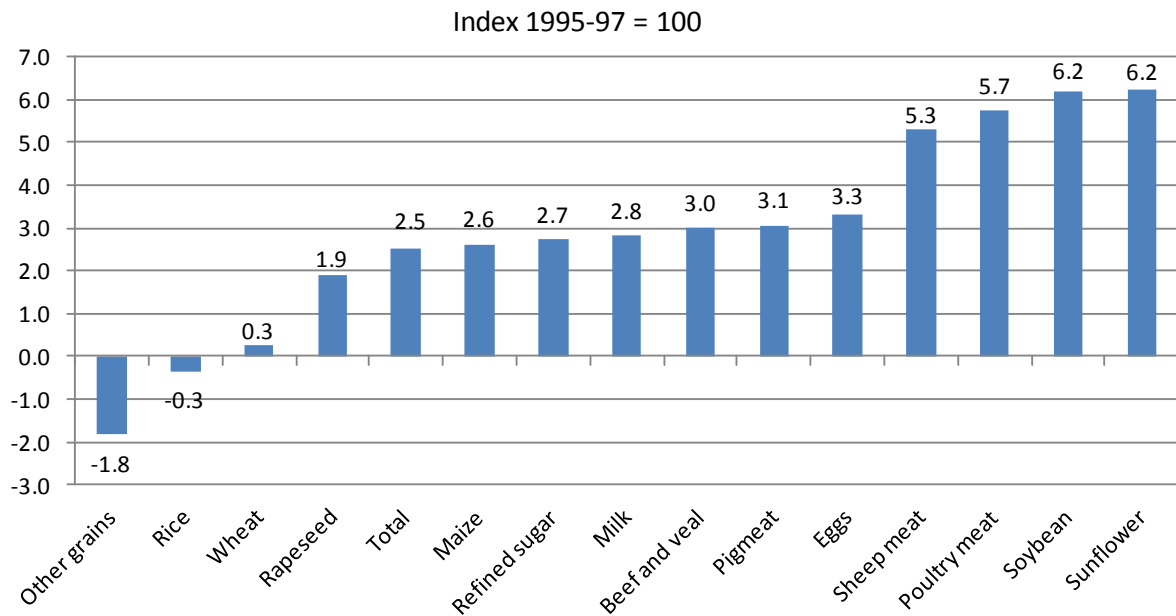
Figure 4.1. Growth in output volume of the standard MPS commodities in the emerging economies and in the OECD area between 1995 and 2007



Source: OECD, author's calculations.

Brazil's rate of output growth exceeded 5% per year. China, Chile and Israel had growth rates of between 2% and 3% and South Africa of 1.7%. Growth was still weak in Ukraine and Russia. There was a rise in output of all commodities, except grains, especially in oilseeds, as well as white and red meat, unlike in OECD countries.

Figure 4.2. Annual growth rate of output volume of the standard MPS commodities in the emerging economies between 1995-97 and 2005-07, by commodity



Source: OECD, author's calculations.

4.2. Evolution of support, prices and farm receipts in each of the seven countries

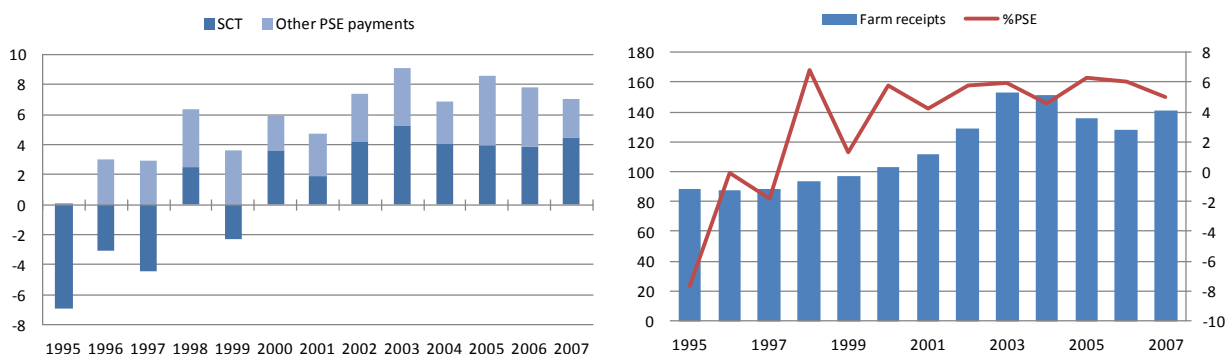
Trends in prices, receipts and support vary widely from one country to another. In this section we make a country-by-country analysis. It is less appropriate to aggregate the results for all seven countries than it is for the OECD area. Despite this, in the following section we do aggregate the seven countries in order to outline the major trends in the two areas.

Some of the trends in individual countries can be ascribed to their respective currency positions (Table 4.1). According to the PPP/exchange rate ratio, the currencies of all the countries, apart from Israel, were seriously undervalued. This undervaluation was especially severe in 2001, when the USD was very strong. Below we discuss monetary effects on prices in each country.

Brazil

As a result of Brazil's policies, domestic prices were below border prices at the beginning of the period, which resulted in negative market transfers (Table 4.3).

Figure 4.3. PSE and farm receipts in Brazil between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)



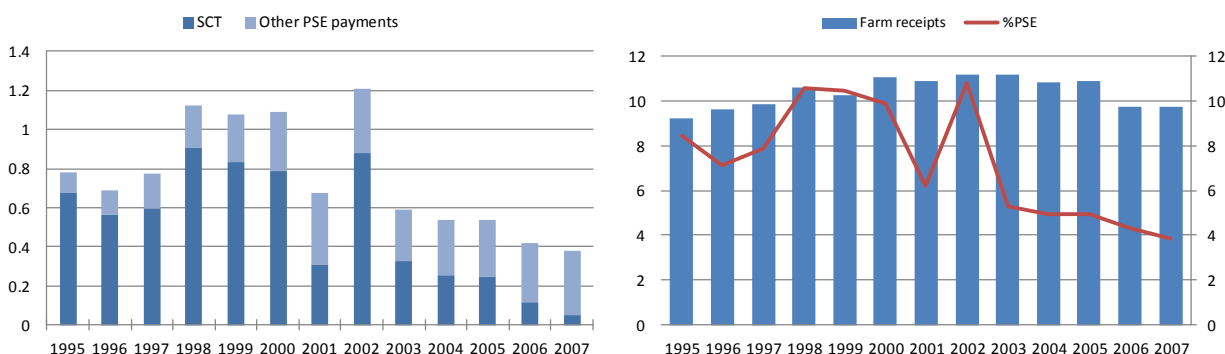
Source: OECD, author's calculations.

The expansion of aid programmes (OECD, 2009b) as from 2000 caused these transfers and payments to increase. At the end of the period (2007), the PSE represented only 5% of receipts. However, these receipts increased in real terms on the back of a sharp rise in output and higher world border prices. In 2005-07, receipts were therefore 50% greater than in 1995-97 (Table 4.4).

Chile

At the beginning of the period, the nominal protection coefficient for the standard MPS commodities stood at 1.1 and percentage PSE represented 8% of farm receipts. Some of the support measures were dismantled during the period, as domestic prices were aligned with border prices. Market transfers and real PSE therefore fell sharply in real terms, with percentage PSE decreasing to 4%.

Figure 4.4. PSE and farm receipts in Chile between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)



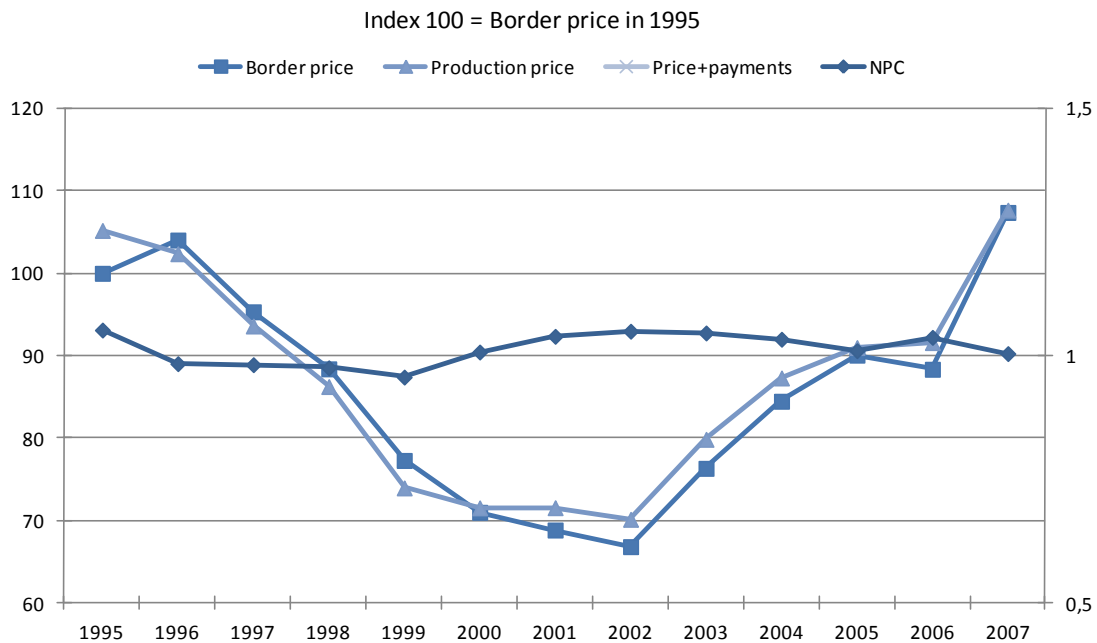
Source: OECD, author's calculations.

As a result of output growth, receipts remained virtually unchanged throughout the period. Price variations were unusual (Table 4.2) owing to the trend in the peso. Until 2001, the peso fell sharply in value and the fall in world border prices did not affect domestic prices. After 2001, the peso again rose in value and Chilean agriculture derived little benefit from the rise in world prices.

China

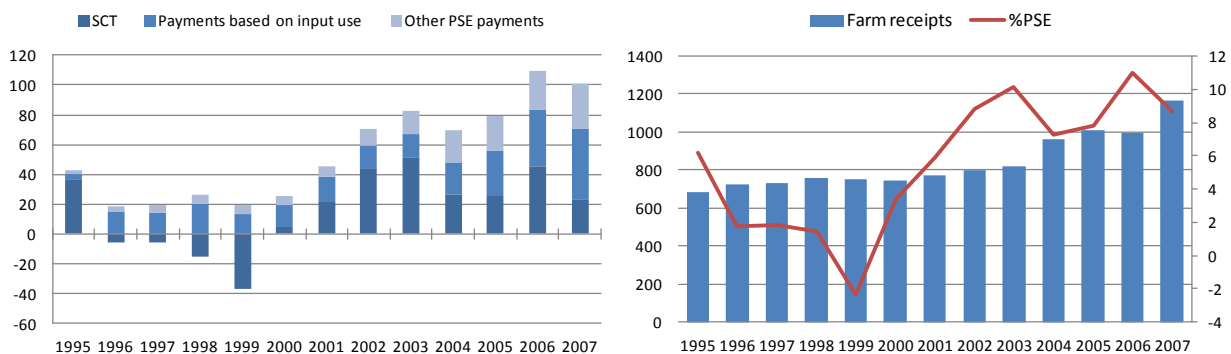
Throughout the period, the exchange rate between the yuan and the dollar remained virtually static, which meant that the yuan was undervalued by 60% according to the PPP/exchange rate ratio. The exchange rate for the yuan, however, did improve somewhat in 2007. Relative agricultural prices were therefore relatively high but border prices fell steeply until 2001 (Figure 4.5). In spite of this decline, domestic prices were somewhat lower than border prices, and market transfers and even the PSE tended to be negative (Figure 4.6).

Figure 4.5. Reference border price and producer price including coupled payments in 2005 PPP in China between 1995 and 2007. Nominal protection coefficient



Source: OECD, author's calculations.

Figure 4.6. PSE and farm receipts in China between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)



Source: OECD, author's calculations.

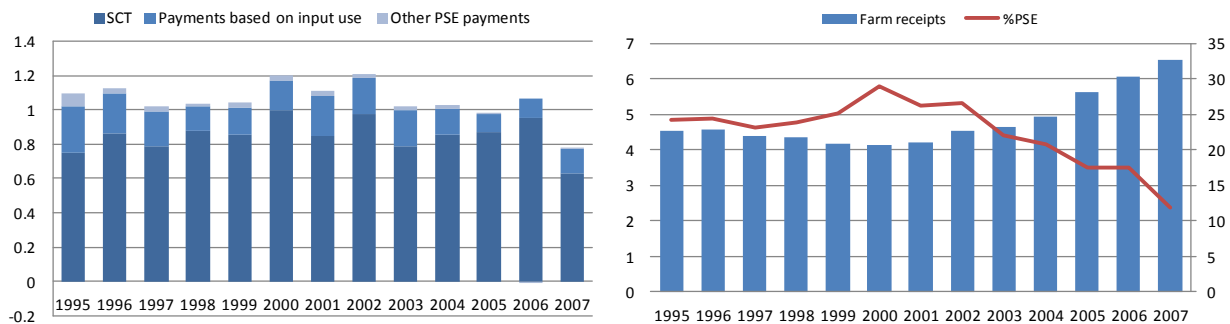
After 2000, domestic prices benefitted from the rise in world prices and, in addition, price support measures and payments (in particular those based on input use) were introduced. This led to a rise in the PSE, with percentage PSE increasing to 11% in 2006.

Even in the context of falling prices, farm receipts levelled off in real terms, owing to output growth. After 2003, receipts increased to 1.7 times their 2003 level in 2007.

Israel

During the 2000s, Israel's agricultural policy was to align domestic prices with border prices. This resulted in the nominal protection coefficient for the standard MPS commodities falling from 2.1 in 2000 to 1.3 in 2007. Owing to output growth, aggregate market transfers fell very little, except in 2007 (Figure 4.7). The same was true of the PSE, with percentage PSE falling to 12% in 2007, with a moderate decline overall.

Figure 4.7. PSE and farm receipts in Israel between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)



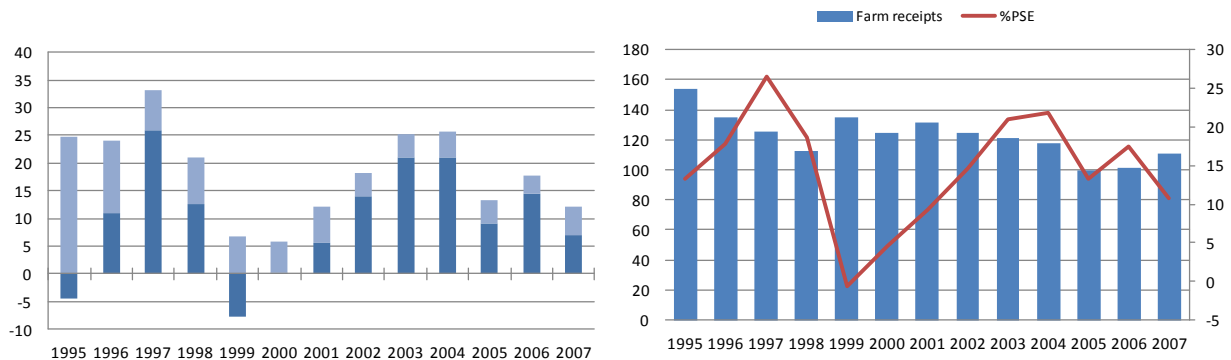
Source: OECD, author's calculations.

Throughout the period, the shekel tended to be undervalued, with the PPP/exchange rate ratio falling from 1.03 in 1995 to 0.87 in 2007 (Table 4.1). This led to a favourable trend in border prices and domestic prices (Table 4.2). Owing to output growth, farm receipts increased steadily, especially from 2001 onwards (Figure 4.7).

Russia

Trends in Russia were rather erratic as a result of fluctuations in currencies, farm production and agricultural policy. After implementing programmes, the PSE rose from 1999 onwards to reach 21% of receipts 2004, following which it decreased until 2007 (10% of receipts).

Figure 4.8. PSE and farm receipts in Russia between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)



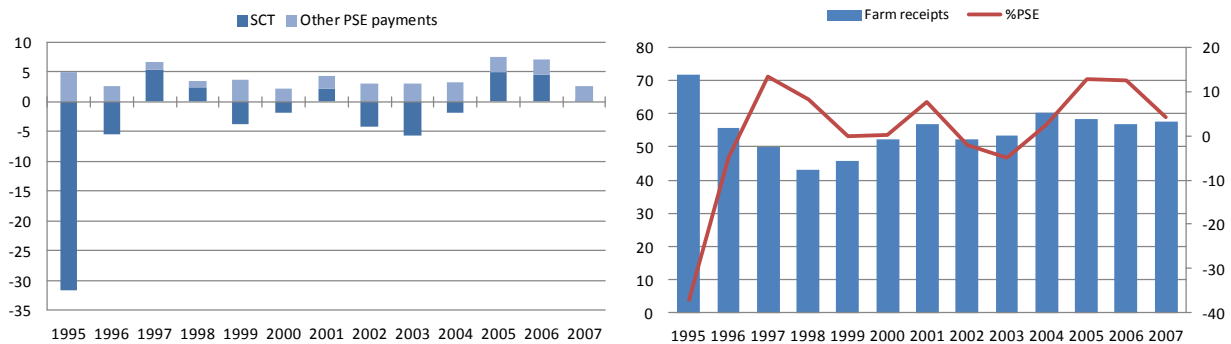
Source: OECD, author's calculations.

There was weak growth in farm output and receipts levelled off, as the monetary context at the end of the period (rise in the value of the rouble) was not conducive to an increase in prices.

Ukraine

In Ukraine, the PSE remained negative until 2003. After rising to 12% of farm receipts in 2006, it fell back to 4% in 2007. Farm receipts remained constant from 2000 onwards.

Figure 4.9. PSE and farm receipts in Ukraine between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)

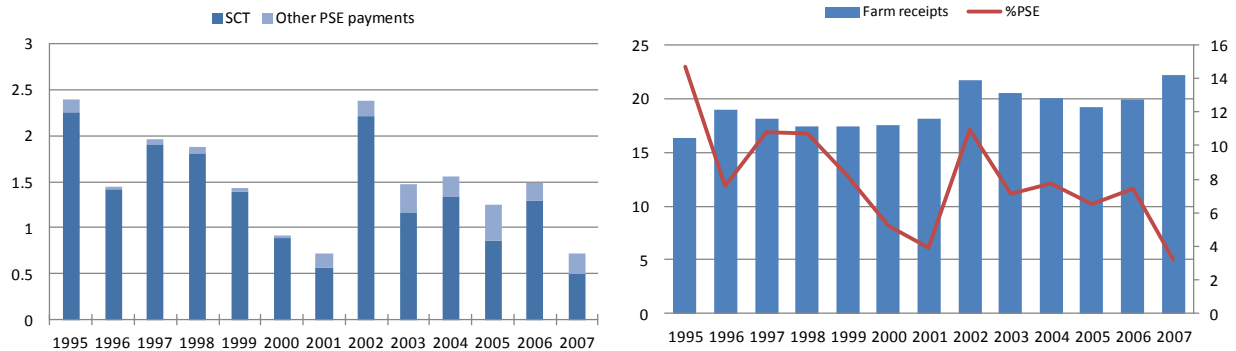


Source: OECD, author's calculations.

South Africa

In South Africa, market price support was gradually reduced without increasing payments. As a result, percentage PSE declined from 15% to 3% between 1995 and 2007, a year when transfers were negligible. In real terms, receipts varied very little throughout the period.

Figure 4.10. PSE and farm receipts in South Africa (ZAF) between 1995 and 2007, in billions of 2005 purchasing power parity dollars (2005 USD-PPP)



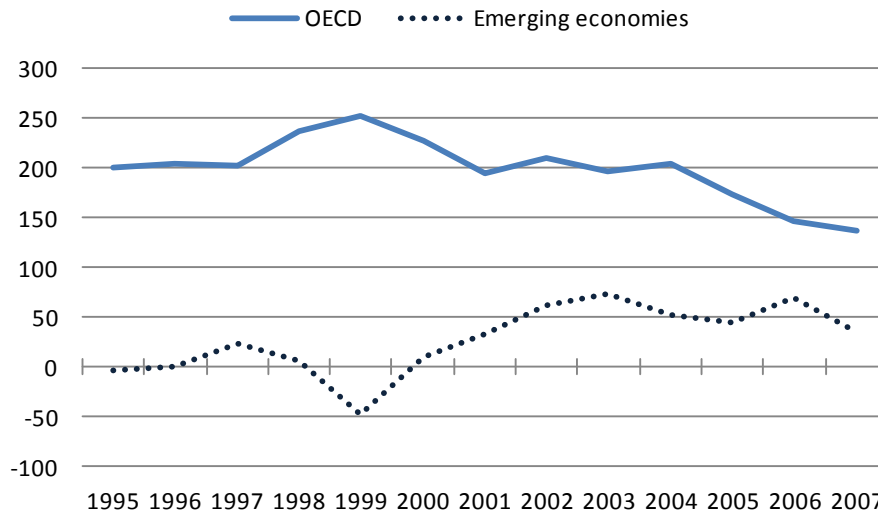
Source: OECD, author's calculations.

4.3. Overall trend in the seven countries compared with the OECD area

The seven countries were aggregated only to compare major trends with the OECD area. Clearly China, and to a lesser extent Brazil, account for a large share of these aggregate results.

Between 1995 and 2007, commodity transfers decreased in the OECD area, whereas they increased overall in the seven countries. In 2007, aggregate transfers in the seven countries represented one-third of the OECD total.

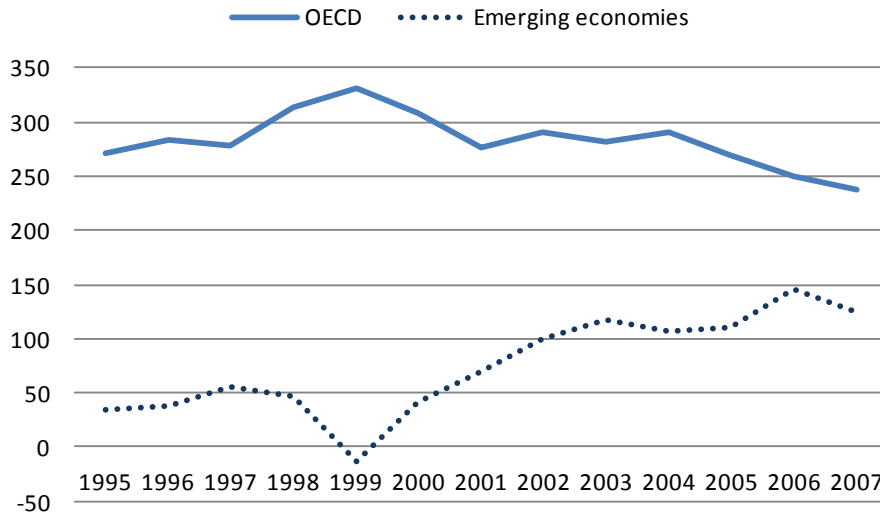
Figure 4.11. Producer SCTs in billions of 2009 purchasing power parity dollars (PPP-USD2009) in the OECD area and in the seven emerging economies



Source: OECD, author's calculations.

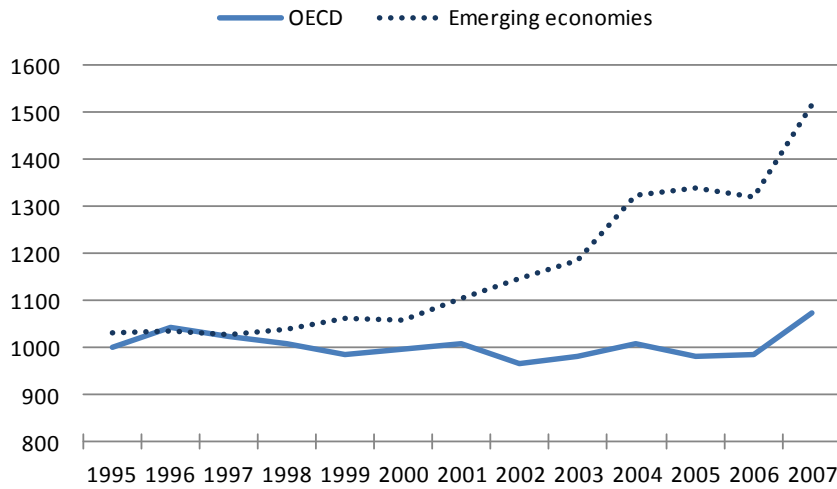
The same applied to the PSE. In 2007, the OECD aggregate PSE was PPP-USD2005 240 billion, compared with PPP-USD2005 120 billion for the seven countries.

Figure 4.12. PSE in billions of 2009 purchasing power parity dollars (PPP-USD2009) in the OECD area and in the seven emerging economies



Source: OECD, author's calculations.

Figure 4.13. Gross farm receipts in billions of 2005 purchasing power parity dollars (PPP-USD2005) in the OECD area and in the seven emerging economies



Source: OECD, author's calculations.

However, there were wide disparities in the evolution of farm receipts in purchasing power terms. Farm receipts remained at a standstill in the OECD area, whereas they grew by a factor of 1.5 in the emerging economies and Israel. For the poorest countries, this is an encouraging sign.

Table 4.1. Currency positions and inflation rates in the seven emerging economies

	1995	2001	2007	1995	2001	2007	1995	2007
	Exchange rate: USD 1 = national currency ...			PPP/exchange rate ratio			GDP price index: 100 in 1995	
Brazil	0.92	2.35	1.95	0.75	0.44	0.71	100	262
Chile	397	635	522	0.66	0.45	0.71	100	183
China	8.4	8.3	7.6	0.40	0.40	0.46	100	138
Israel	3.0	4.2	4.1	1.03	0.93	0.87	100	149
Russia	4.6	29.2	25.6	0.33	0.26	0.62	100	1 363
Ukraine	1.5	5.4	5.1	0.23	0.21	0.44	100	863
South Africa	3.3	8.6	7.1	0.72	0.39	0.60	100	234

Source: OECD, World Bank, author's calculations.

Table 4.2. Producer prices with coupled payments for the standard MPS commodities in the seven emerging economies and in the OECD area between 1995 and 2007 (index 100 in 1995 in 2005 PPP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Brazil	100	96	93	92	93	98	98	109	119	113	97	89	93
Chile	100	103	98	98	95	93	95	98	98	92	85	75	84
China	100	97	89	82	70	68	68	67	76	83	87	87	103
Israel	100	104	102	98	93	91	90	86	89	96	101	104	107
Russia	100	106	102	96	117	107	108	94	93	94	81	78	86
Ukraine	100	99	100	93	90	119	119	92	104	103	96	84	97
South Africa	100	97	94	90	83	80	90	104	91	84	77	87	97
Emerging economies	100	98	91	84	77	76	77	74	81	86	85	83	95
OECD	100	101	96	89	86	88	89	84	85	86	82	81	92

Source: OECD, author's calculations.

**Table 4.3. Producer SCTs, other PSEs and the PSE
in billions of 2005 USD purchasing power parity and as a percentage of farm receipts**

	1995-97	%	2005-07	%
SCT				
Brazil	-4.8	-5.5	4.1	3.0
Chile	0.6	6.4	0.1	1.3
China	8.5	1.2	30.9	2.9
Israel	0.8	17.7	0.8	13.5
Russia	10.8	7.8	10.1	9.7
Ukraine	-10.6	-17.9	3.2	5.6
South Africa	1.9	10.4	0.9	4.3
Emerging economies	7.1	0.7	50.2	3.6
OECD	202.9	19.8	152.4	15.0
Other PSE measures				
Brazil	2.0	2.3	3.7	2.7
Chile	0.1	1.4	0.3	3.0
China	14.4	2.0	65.7	6.2
Israel	0.3	6.2	0.1	2.0
Russia	15.0	10.8	4.2	4.0
Ukraine	3.0	5.0	2.5	4.2
South Africa	0.1	0.4	0.3	1.3
Emerging economies	34.9	3.4	76.7	5.5
OECD	75.1	7.3	99.5	9.8
PSE				
Brazil	-2.8	-3.2	7.8	5.8
Chile	0.7	7.8	0.4	4.4
China	22.9	3.2	96.5	9.1
Israel	1.1	23.9	0.9	15.4
Russia	25.8	18.7	14.3	13.8
Ukraine	-7.6	-12.9	5.7	9.9
South Africa	1.9	10.9	1.2	5.6
Emerging economies	42.0	4.1	126.9	9.1
OECD	277.9	27.2	251.9	24.9

Source: OECD, author's calculations

**Table 4.4. Farm receipts in billions of 2005 USD purchasing power parity
in 1995-1997 and 2005-2007**

	1995-97	2005-07	Index
Brazil	87.9	135.1	154
Chile	9.6	10.1	106
China	713.4	1057.9	148
Israel	4.5	6.1	135
Russia	138.1	104.0	75
Ukraine	59.1	57.7	98
South Africa	17.8	20.5	115
Emerging economies	1030.5	1391.4	135
OECD	1023.6	1013.5	99

Source: OECD, author's calculations

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