



Evaluation of Agricultural Policy Reforms in the United States



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Foreword

The purpose of the study is to analyse and evaluate the Food, Conservation, and Energy Act of 2008, in the context of the developments in US agricultural policy that have taken place since 1985. The study will cover five Farm Bills: the Food Security Act of 1985 (1985 Farm Act); the Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Farm Act); the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act); the Farm Security and Rural Investment Act of 2002 (2002 Farm Act); and the Food, Conservation and Energy Act (2008 Farm Act).

The author of the report is Dimitris Diakosavvas, of the Directorate for Trade and Agriculture. The study benefited from contributions from Roger Martini, for the PEM analysis and Scott Pellow, for the Aglink analysis. Editorial assistance was provided by Theresa Poincet. Françoise Bénicourt and Theresa Poincet provided secretarial support and prepared the report for publication.

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Executive Summary

The United States is one of the most important producers of agricultural commodities in the world, and, in addition to possessing a very large domestic market, it is the world's largest exporter of agricultural products. Moreover, the share of US agricultural production exported is more than double that of any other US industry and the trade surplus in agricultural products acts as an important stimulus to the US economy.

Agricultural production has been increasing over time, while, at the same time, real producer prices have been falling due to a continued steady increase in the total factor productivity of agriculture. Because of the size of the agricultural sector, US agricultural policies exert a strong influence on world agricultural markets.

Since the mid-1980s, considerable adjustments have occurred in the number and size distribution of farms, and in the mix of inputs used by the farming sector. While over the long-term, the number of farms has been declining, in recent years there has been an increase of 4% (between 2007 and 2002). The structure of farming continues to shift towards fewer, larger operations producing the bulk of commodities, complemented by a growing number of smaller farms earning most of their income from off-farm sources.

The majority of farms in the United States today are still small farms (or "rural-residence farms"), producing only a small share of total agricultural output. The bulk of production is associated with intermediate and commercial farms – particularly the latter – which constitute a relatively small percentage of the total number of farms. In terms of support, the larger farms receive over half of the government's total commodity payments. Moreover, larger farms would also benefit most from price support for dairy and sugar.

In terms of levels of income and diversity of employment, farm households have become virtually indistinguishable from non-farm households. In 2008, 89% of the average farm household income was from off-farm sources. US farm households as a group no longer experience chronically low incomes in relation to non-farm households: the average farm household in the US today earns more than the average non-farm household – mainly due to income earned from off-farm sources. The widespread importance of off-farm income would suggest that the majority of farm households are much more affected by the impacts of events in the wider economy than by the impacts of farm-specific developments.

The United States' agricultural sector receives a relatively low level of support, both in terms of its size and in comparison with other OECD countries. Over the 2007-09 period, producer support in the US was the third-lowest in the OECD area, and less than half the OECD average. In addition, the reform process has been characterised by a significant shift towards less production- and trade-distorting forms of support. However, notwithstanding

these achievements, ample scope remains for further advancing the market orientation of the agricultural sector.

The United States maintains an array of agricultural policies with goals that range from the traditional objectives of stabilising agricultural production and supporting farm income to those that have more recently increased in importance, such as assuring adequate nutrition, securing food safety, encouraging environmental protection and facilitating rural development.

Farm commodity programmes are an established part of the American agricultural landscape, with several of the present support programmes having their foundations in the 1930s. Most of the programmes now focus more directly on income transfers from taxpayers, rather than transfers from consumers through supply controls and price supports. But the main thrust of many programmes remains largely unchanged.

With the 1985 Farm Act, a gradual shift began – away from using production controls and price supports as the primary policy instrument – towards the increasing use of direct payments. The reforms were accelerated and strengthened in the 1996 Farm Act. This Act represented a radical departure from previous commodity programmes, as it fundamentally re-designed income support programmes by terminating target prices, price-based deficiency payments, discontinuing supply management programmes and stock accumulation by government for several sectors. The policy reforms envisaged under the Act were supplemented by various *ad hoc* emergency measures to compensate farmers for low commodity prices. These payments were institutionalised under the 2002 Farm Act – under which counter-cyclical payments were created – and continued under the 2008 Farm Act.

US commodity-specific programme support is directed towards a few major commodities (grains, oilseeds, cotton, sugar, pulses, dairy, sheep, wool, mohair and honey) which, together, constitute less than one-half of the value of total agricultural production. Farm programme crops (wheat, feed grains, oilseeds, rice, cotton, oilseeds and pulse crops) are supported mainly through government budget outlays. The systems that have evolved to support producers of these crops have revolved around the government underwriting minimum prices, with returns from the market being supplemented by additional direct government payments, as well as payments based on past areas and yields, and not requiring production. The rules governing them have varied over time.

The US dairy and sugar sectors – both import-competing sectors – have traditionally been insulated from the world market by border measures design to underpin high internal prices. Support policies for these sectors are very strongly entrenched and the fact that there have been no significant changes since 1985 has impeded US producers from adjusting to world market conditions. Although the policy regime is very complex for both sectors, it operates differently and consequently the degree of insulation from markets signals in these two sectors varies. While for dairy, market price support has been very variable over time, for sugar, it has been comparatively stable at relatively high levels.

Most other commodities, however, receive much less support, and wide disparities are also evident in the livestock sector: while the large beef, pig and poultry sectors receive little support, the dairy sector (which is also a very large sector) is highly supported.

Commodity support payments to farmers tend to exacerbate differences in incomes, rather than reduce disparities. Commodity support has often been justified on the grounds of addressing low farm incomes of farm households relative to non-farm households,

benefitting, in particular, family farms in rural areas. However, empirical evidence would suggest that the main beneficiaries of these support payments are, in fact, farmers with an average household income well above that of the average US household.

In 2007, 40% of all farms received government payments. Of those, the 84% of farms with sales of less than USD 100 000 received 24% of programme crop payments, while the 3% of the largest farms (with sales of USD 1 000 000 or more) received 30%. Moreover, because of the design of the payments – which are either based on current production (e.g. marketing loan-related payments) or on area and yield bases – the bulk of the payments go to farmers with either large production levels or large base areas. On the other hand, environmental conservation payments follow a different pattern, with small farms benefiting proportionately more.

The preliminary analysis tends to suggest that, overall, the 2008 Farm Act offers little potential progress towards market orientation. Overall, while maintaining the support programmes for crops entrenched in the 2002 Farm Act, it provides additional avenues and scope for commodity-linked support – including greater potential support to the dairy and sugar sectors – even in situations where market prices are higher than has previously been the case.

The 2008 Farm Act generally continues the farm commodity price and income support framework of the 2002 Farm Act for farm programme crops (i.e. grains, oilseeds, rice and cotton), with certain modifications. It places continued emphasis on direct payments, counter-cyclical payments and marketing assistance loan programmes for the 2008-12 crop years, with adjustments to target prices and loan rates for certain commodities.

Moreover, the 2008 Farm Act does not make any major policy reforms to the dairy and sugar sectors, which continue to receive high price support. Among the many features of dairy policy, the Dairy Product Price Support Program and the Milk Income Loss Contract programmes – which were among the 2002 Farm Act programmes due to expire in 2007 – were re-authorized, with certain modifications, in the 2008 Farm Act. The Federal Milk Marketing Orders do not require periodic re-authorization and import policies do not form part of the Farm Act. The Act maintains the Dairy Export Incentive Program, although the Export Enhancement Program is repealed.

The 2008 Farm Act also offers a new revenue support programme, the Average Crop Revenue Election programme; and replaces *ad hoc* natural disaster programmes. New provisions are introduced to address marketing and competitiveness of horticulture and livestock products. It also extends and expands many of the renewable energy programmes originally authorised in the 2002 Farm Act, including an extension of the tariff on ethanol imports. It also mandates more funding for virtually all agri-environmental programmes and expands the coverage of issues to be addressed, albeit without major alterations.

The fact that many policies are counter-cyclical to market prices means that support is inversely related to market prices. This would imply that the level of support to producers and the relative importance of the most production- and trade-distorting support could increase, should world commodity prices fall. Moreover, changing priorities – such as climate change, food security, enhancing competitiveness and efficiency – in tandem with budget problems as fiscal consolidation gets under way, may call for a re-think of the cost-effectiveness of commodity programmes, which represent a very important share of overall spending and are concentrated on only a few sectors and a relatively small share of farms.

Chapter 1

The Role of Agriculture in the US Economy

The United States is one of the world's largest producers, consumers, exporters and importers of agricultural commodities. This chapter gives an overview of the role of agriculture in the US economy. It examines the number and size of farms and how they have changed over time, and reviews the increased productivity of the agricultural sector. It also looks at the rise of farm-household incomes and at the expanding web of interactions between farm households and the surrounding non-farm communities.

1.1. Agriculture in the economy

Primary sector

The United States is one of the world's largest producers, consumers, exporters and importers of agricultural commodities: the value of agricultural production reached a record level of USD 365 billion in 2008, primarily as a result of higher commodity prices (Annex Table E.1). Agriculture is dominated by grains, oilseeds, cattle, dairy, poultry, and fruits and vegetables. Over the 2000-09 period, on average, crops accounted for 45% of total value of agricultural production, slightly higher than livestock (43%). The value of cattle and calf production is the largest (16.5%), followed by feed crops (11.8%) and poultry and eggs (10.1%).

With the productivity of US agriculture growing faster than domestic food and fibre demand, US farmers and agricultural firms rely heavily on export markets to sustain prices and revenues. With comparative advantage in many products, agricultural trade is a significant contributor to the overall US economy as well as to the rest of the world's economies. Although the share of agricultural exports in world exports has fallen over time (from 17% in 1980 to 10% in 2007), the United States remains the leading exporter and the largest single-country importer of agricultural products in the world (Annex Table E.2).

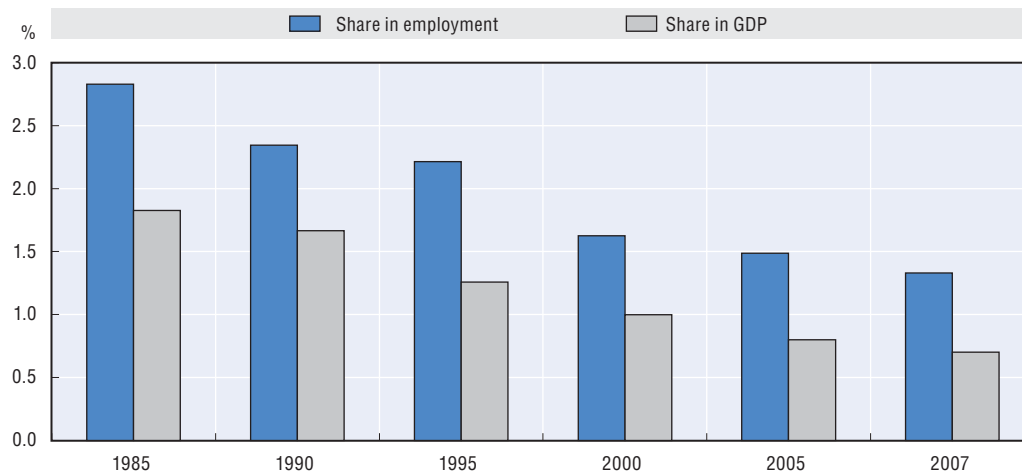
Moreover, the United States continues to be a net exporter of agricultural products, the surplus helping to counter the persistent deficit in its non-agricultural merchandise trade. Export values and the agricultural trade balance reached a record high in 2008, with agricultural exports totalling USD 115.4 billion and the agricultural trade surplus at USD 34.9 billion.

For the US economy, agricultural trade is an important source of generating output, employment and income. Analysis undertaken by the Economic Research Service (ERS) of the United States Department of Agriculture (USDA) shows that each dollar received from agricultural exports stimulates another USD 1.64 in supporting activities to produce those exports. In 2006, agricultural exports generated an estimated 806 000 full-time civilian jobs, including 455 000 jobs in the non-farm sector (Edmondson, 2008).

The primary sector, however, plays only a minor and declining role in the US economy as a whole, as rapid productivity growth has led to excess capacity in agriculture. In 2007, agriculture contributed only 1% to the gross domestic product (GDP) and provided jobs for only 1.8 million people – or 1.3% of the total workforce (Figure 1.1; Annex Table E.3).

Agro-food sector

The importance of agriculture in the United States is significantly underestimated if the discussion is confined solely to the primary sector, as farming is a critical component in the agro-food chain (commonly referred to in the US as the food and fibre system), which is one of the largest sectors in the economy, encompassing a vast range of sub-sectors, from farm suppliers to fast-food chains.

Figure 1.1. **Contribution of agriculture to the economy, 1985-2007**

Source: OECD calculations based on Economic Research Service, USDA and US Bureau of Labor Statistics data.

In 2002, the food and fibre system employed almost 24 million people (15% of the total US workforce) and contributed USD 1 240 billion (or 12.3%) to the country's GDP. Services and processing are the largest contributors to the total food and fibre GDP. The agro-food sector generates as much as 20% of rural employment.

1.2. Farm structures

Farm numbers and sizes

The long-term structural changes of US agriculture encompass the following key elements: a) a sharp increase in farm productivity; b) a decline in the number of farms, coupled with an increase in average farm size; c) a rise in farm-household incomes to match those in the non-farm economy; and d) an expanding web of interactions between farm households and the surrounding non-farm community (Table 1.1; Gardner, 2002; Effland, 2000; Hallberg, 2001). These interactions have taken the form of an expansion in off-farm work by members of farm households, as well as an increase in the amount of purchased inputs, which has led to greater on-farm specialisation.

Table 1.1. **Long-term trends of structural change in US agriculture**

	1930	1945	1970	1985	1990	1997	2002	2007
Number of farms (millions)	6.3	5.9	2.9	2.3	2.1	2.2	2.1	2.2
Average farm size (acres)	151	195	376	441	460	431	441	418
Average number of commodities produced per farm	4.5	4.6	2.7				1.3	
Farm employment ('000s)		8 580	3 951	2 760	2 568	2 432	2 113	1 829
Farm share of workforce (%)	22	16	5.7	2.9	2.5	1.7	1.4	1.3
Farm share of GDP (%)	8	7	2	1.8	1.4		0.8	0.7
Off-farm labour (%) ¹	30	27	55	66	55	60	93	93

n.a.: not available.

1. For 1930 and 1945, off-farm labour refers to the percentage of farmers who worked off-farm for an average of 100 days; for the other years, it refers to the percentage of farm households with off-farm income.

Source: OECD calculations, based on ERS, USDA, Dimitri et al. (2005); and USDA, *The Census of Agriculture*, 2007.

Perhaps the most striking long-term adjustment in the US agricultural sector over the twentieth century was the decline in the number of farms which, when set against slow declines in the total amount of land devoted to farming, implied substantial increases in average (mean) farm size. Farm numbers peaked at 6.8 million in 1935; from then until 1974, they fell sharply, at an annual rate of 2.7%. Farm numbers continued to decline until 2002, but at a much reduced rate (0.6% per year), while the average farm size stabilised (MacDonald, Hoppe and Banker, 2004). In 2007, there were just over 2 million farms, which is equivalent to 32% of the peak number in 1935.

There exists a wide diversity of farming types (Box 1.1).¹ Family farms are predominant, representing 98% of all farming enterprises and producing 78% of the value of agricultural output (Annex Table E.4). The majority of farms are small (classed as those with sales of less than USD 250 000), with nearly 50% of farms having sales of agricultural products between USD 1 000 and USD 10 000 and producing only 0.9% of total farm sales; 30% of farms have sales between USD 10 000 and USD 249 000 and account for less than 15% of total sales; large farms (those with sales of USD 250 000 or more) account for less than 10% and generate 80% of all sales (Annex Table E.5).

Box 1.1. Definition of farm types

Family farms: any farm for which the majority of the farm business is owned by the primary farm operator and individuals related by blood, marriage or adoption.

Small family farms (gross sales of less than USD 250 000):

- **Rural-residence family farms**
- *Retirement farms:* small farms whose operators report they are retired.
- *Residential/lifestyle farms:* small farms whose operators report a major occupation other than farming.

Intermediate family farms or primary-occupation farms: small, family farms whose operators report farming as their major occupation:

- *Low-sales farms:* gross sales less than USD 100 000.
- *High-sales farms:* gross sales between USD 100 000 and USD 249 999.

Large family farms or commercial family farms (gross sales of USD 250 000 or more):

- *Large family farms:* gross sales between USD 250 000 and USD 499 999.
- *Very large family farms:* gross sales of USD 500 000 or more.

Non-family farms: any farm not meeting the definition of a family farm. Non-family farms consist of partnerships, co-operatives, farms with hired managers, and small corporations with unrelated owners.

Grouping family farms into three types – commercial, rural residence and intermediate – based on both volume of sales and primary occupation, reveals key differences in terms of their numbers, share of production, land holdings and sources of farm-household income (Annex Tables E.4 and E.6). Most farms fall into the rural-residence family farms category. In 2007, this category accounted for 71% of all farms, 7% of total output and 64% of the land owned by farmers.

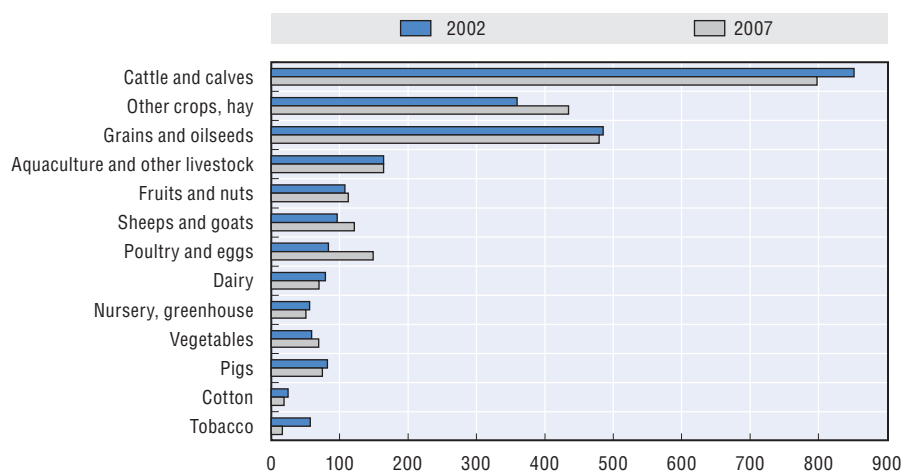
Concerning age, the data suggest that the average age of farmers is increasing rapidly. More specifically, the average age of principal farm operators increased from 55.3 in 2002 to 57.1 in 2007. In addition, the number of operators under 25 years of age declined by 30%, while the number of operators over the age of 75 grew by 20%.

Concentration

Although the number of farms has been on a declining trend since World War II, the 2007 Census of Agriculture data indicate a levelling of this trend, with a net increase of 75 810 farms (4%) from 2002. Most of the growth in the number of farms in the US came from small operations, where sales of no specific commodity accounted for more than 50% of the total value of production.

Even though the total number of farms increased nationwide, many individual sectors, including grains and oilseeds, horticulture, cattle and pig operations, experienced a decline in farm numbers (Figure 1.2). The relatively small net change in farm numbers masks substantial turnover, as farms are continually entering and exiting agriculture. Between 2002 and 2007, 291 329 new farms began operating. These new farms tend to be smaller in size and to have younger operators, who also work off-farm. On average, in 2007, new farms had an average of 81 hectares (ha) of land and USD 71 000 in sales, as compared with the average farm size of 169 ha and USD 135 000 in sales (*The Census of Agriculture, 2007*).

Figure 1.2. Number of farms by sector, 2002 and 2007 ('000s)



Source: OECD calculations, based on USDA, *The Census of Agriculture, 2007*.

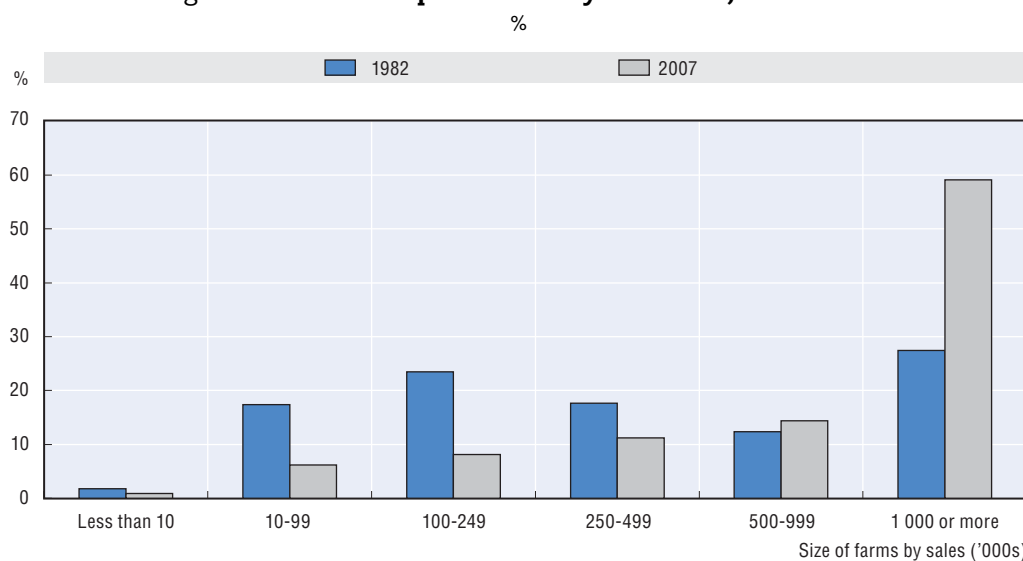
The Census of Agriculture, 2007, figures show a continuation in the trend towards an increase in the number of small and very large farms, and a decrease in medium-sized operations. The number of large farms (farms with sales of at least USD 250 000) grew steadily from 1989 to 2007, increasing from 85 000 to 265 000. The share of all farms in this group grew from 5% to 9.5%. Most of these farms had sales of between USD 250 000 and USD 499 999, but the number of farms with sales of at least USD 500 000 experienced the most rapid growth. Rising commodity prices and increasing yields are some of the drivers behind this shift into higher farm-sale categories. Between 2002 and 2007, the number of

farms with sales of less than USD 1 000 increased by 118 000, whilst those with sales of more than USD 5 000 000 grew by 46 000.

While the decline in farm numbers and the increase in average farm size have slowed over the last thirty years, the locus of farm production has shifted sharply to the larger farms (Figure 1.3; Annex Table E.5 and Annex Table E.7). In 1982, 431 634 farms produced 80% of the value of agricultural production, while in 2007 around half of this number produced 85%.

Another indication of the concentration of production in agriculture is the share of agricultural production produced by large farms (those with sales of USD 250 000 or more). The share of total sales accounted for by farms in this sales class increased steadily, from 57% in 1982 to 85% in 2007 (Annex Table E.5). Farms with sales of USD 500 000 or more largely increased their share of sales between 1982 and 2007 – a shift that was almost precisely mirrored by the decline in the share of production held by farms with between USD 10 000 and USD 250 000 in sales – down from 40% in 1982 to 14% in 2007.

Figure 1.3. **Value of production by farm size, 1982-2007**



Note: Sales figures are inflation-adjusted to 2007 USD.

Source: OECD calculations based on USDA, *The Census of Agriculture* (various years), as adjusted by prices using the Producer Price Index for farm products.

Commodity specialisation

Farms in the United States have become increasingly specialised, rather than diversified, with each farm producing fewer commodities (Table 1.1; Gardner, 2002). About half of the farms in the US produce one single commodity. Smaller farms are the most likely to produce just one commodity, but even large farms produce a limited number of commodities: for example, three-quarters of the farms with sales of at least USD 500 000 produce no more than three commodities. The commodities in which farms specialise also differ, according to farm-size: for example, farms with sales of less than USD 10 000 tend to specialise in beef cattle, while farms with sales between USD 50 000-99 999 frequently specialise in grain crops (e.g. maize, wheat, soybeans, rice) and field crops (e.g. tobacco, peanuts, cotton, sugar beet) (Annex Table E.7).

There has also been a shift in production away from traditional agricultural products towards higher value and value-added products, including fruit and vegetables, processed food products, dairy and nursery, and greenhouse products (Annex Table E.1). Production of high-value crops is heavily concentrated among very large family farms, which together account for 78% of the total (no more than 10% of any small farm-type specialises in these crops). High-value crops can generate a large volume of sales per acre, but may require much more labour than cattle farming, as well as more marketing expertise.

Contracting

An important feature of continuing structural change in US agriculture – which is closely linked to shifts in production to larger farms, increased specialisation on farms and greater product differentiation – is the increased integration of production and processing activities (MacDonald and Korb, 2008). About two-fifths of US agricultural production is produced or marketed under contract, although the share varies by commodity and type of farm. For example, virtually all of the sugar beet and poultry in the US are produced by farmers under contract. Contracting is also very important for cotton, tobacco, fruits, dairy products and pigs. However, only a small portion of wheat, soybeans or maize – all traditional field crops – is grown under contract.

The aggregate data show a slow and steady growth in contracting over the years, but change is more rapid for certain commodities – for example, the share of tobacco production covered by contracts went from 1% to 50% between 1995 and 2004. Between 2002 and 2007, although the number of farms producing under contract declined by 14%, the value of commodities produced under contract increased by 55%. The 2% of farms involved in contract production produced 16% of the total value of all agricultural products (*The Census of Agriculture*, 2007).

Contracting is closely tied to farm size, and governed 50% of production among the largest farms over 2002-07. As production has become consolidated among large farms, contracting has become more prevalent. Contracts covered just one-sixth of production of farms with less than USD 250 000 in sales, and over half (61%) of production of the largest farms (those with over USD 1 million in sales). Moreover, contracting increased among the largest farms between 2001 and 2003, but held steady or declined among smaller farms. Increases in contracting mirrored the volumes of production of large farms.

1.3. Farm household incomes and wealth

As shown in Annex Table E.1, the two key indicators of the economic well-being of farm households – net farm income and the debt-to-asset ratio – suggest a very robust agricultural sector as a whole. Over 1985-2008, net farm incomes steadily increased, while the debt-to-asset ratio decreased, as increases in farm debt were more than offset by growth in farm asset value. The debt-to-asset ratio reached a record low of 10.4 in 2007, from its peak in 1985 of 22.2. Net farm income reached an historically high record in 2008, driven by a large increase in crop production that was only partially offset by rising production costs for the farm sector (Harris et al., 2009).

In 2009, in the aftermath of the economic and financial turmoil, commodity prices – particularly for livestock animals and products – fell, leading to an estimated 35% decline in net farm incomes, relative to an historic high. The 2008 turmoil in national housing and credit markets, as well as rising unemployment, has increased the economic vulnerability

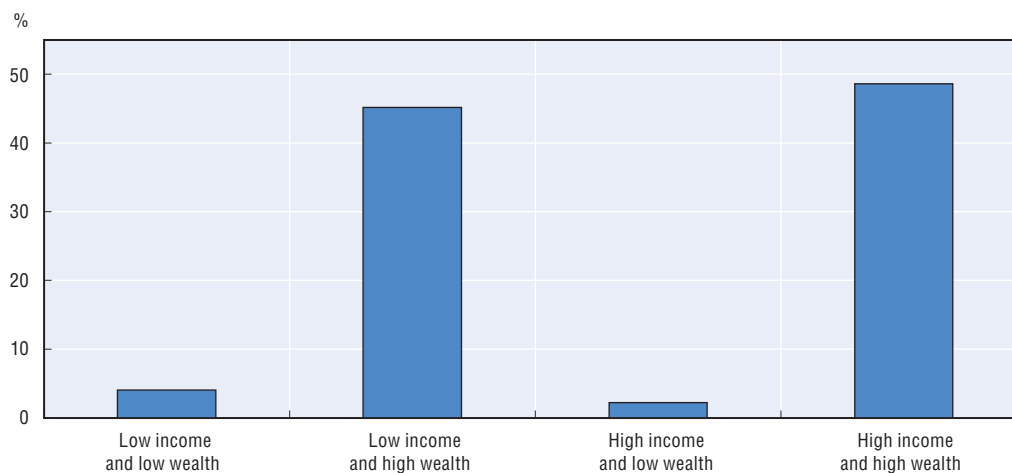
of some farm households to income and asset loss. Nevertheless, despite this decline, farm income remains high by historical standards and as farm households, on average, have greater overall wealth than the population as a whole, they are most likely to be better able to absorb short-term decreases in earnings (Harris *et al.*, 2009).

Gauging the economic well-being of farm households by looking solely at incomes might be misleading because agricultural returns are a combination of both revenue generation and wealth accumulation. To jointly consider both income and wealth, USDA's Economic Research Service has distinguished among four groups of farm households: those with low and high levels of income, and low and high levels of wealth, with the median levels of US household income or wealth as the dividing lines between low and high.

As shown in Figure 1.4, the big difference between farm and non-farm households is in the pattern of wealth rather than in income: i) less than 6% of all farm households – as compared to 50% of all US households – have wealth less than the US median household level; of the 96% of farm households with high wealth, 56% have higher income than the US median; only 4% of all farm households have both low wealth and low income.

In addition, evidence suggests that the average wealth of farms has increased since 2004 due to the rising value of farmland and equity held by farmers overall, coupled with a decline in residential property values (Harris *et al.*, 2009). Unlike non-farm households, whose net wealth lies predominantly in houses and other real estate, the net worth of farm households is closely related to the net wealth of their farm business (including the farmland).²

Figure 1.4. **Distribution of farm households by measures of economic well-being, 2008**



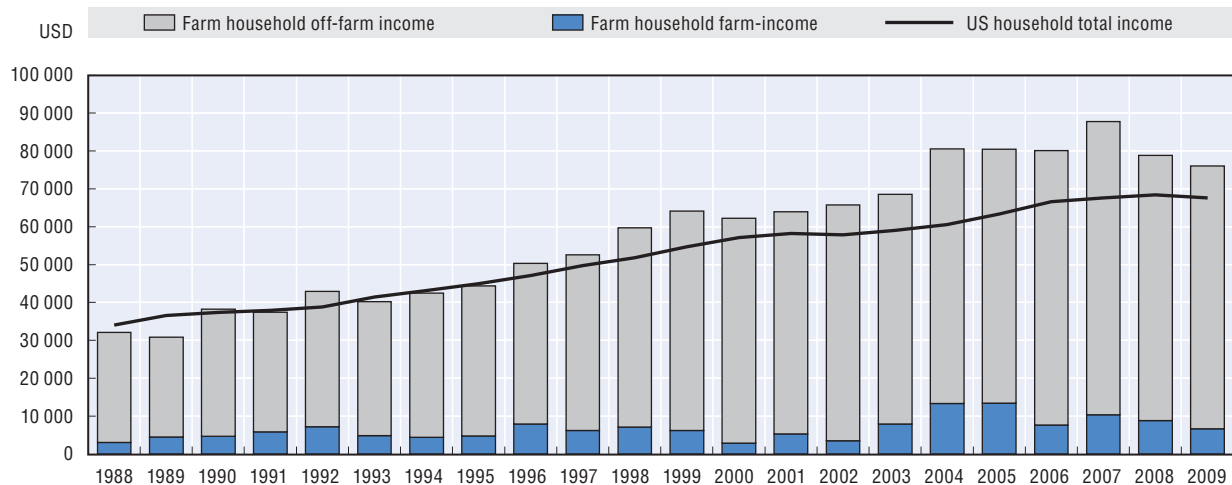
Source: OECD calculations based on ERS, USDA, Agricultural Resource Management Survey.

The role of off-farm income

In every year since 1996, the average income for farm households has exceeded the average US household income by 5-17% (Figure 1.5). However, given that incomes among farmers are highly skewed – there are many small farmers who do not produce very much, whilst most of production and incomes are concentrated on only a few farms – using income median rather than income mean may be a more realistic indicator to use to

compare farm household incomes to non-farm household incomes.³ Using medians still results in income that is higher or roughly on a par with income on farm households. In 2008, median farm-operator household income was USD 50 971, or 1.3% higher than the median for all US households, while in 2005 it was 16% higher (Harris et al., 2009).

Figure 1.5. **Average farm operator household income by source and total US household income, 1988-2009**



Source: OECD calculations, based on ERS, USDA, Agricultural Resource Management Survey.

While farm income exhibits considerable variability over time – due to fluctuations in farm output, commodity prices and business cycles, along with macroeconomic policies – farm household income is relatively stable. The economic portfolios of most farm-operator households are highly diversified and many farm households rely on off-farm income to stabilise their total household income.

Income derived from off-farm sources is the largest component of farm household income, and since 1998 it has even exceeded the average US household income (and incomes from farming actually make up only a small percentage of total farm-operator household income). Approximately 60% of farm households have either an operator (or a spouse) working off-farm. Usually, the households that operate large family farms (those with sales of USD 250 000 or more) have an average farm income that is greater than their off-farm income (Annex Table E.6).⁴ Most off-farm income comes from earnings, either through wages and salaries, or business income.

Figure 1.6 displays the sources of the average income of farm operators over the 2002-08 period. The average household income of family-farm operators in all sales classes exceeded the 2002-08 average for all US households (USD 65 462). However, farm households are following diverse paths to economic well-being. The households of the largest farms relied on farm income to a greater degree than the households of smaller farms.

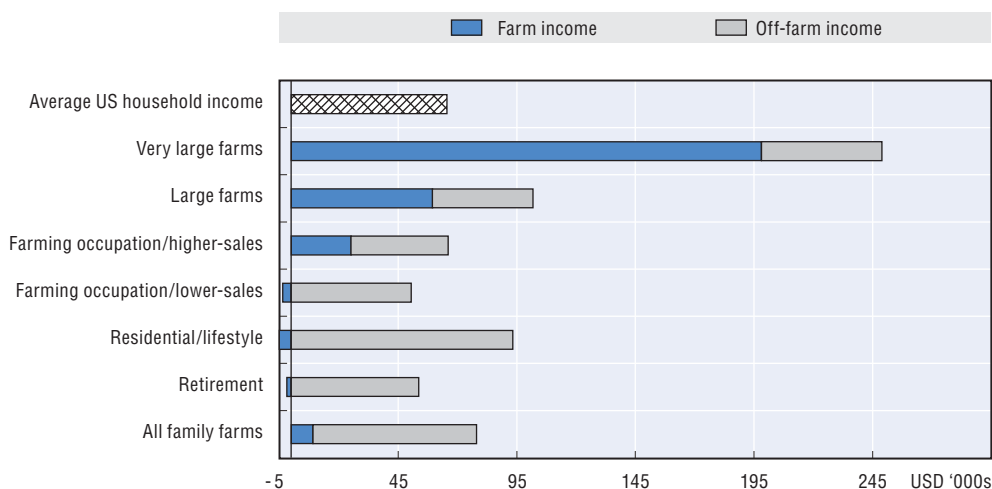
In 2008, farm income made up 73% of total household income of households operating large (or commercial-size) farms (Harris et al., 2009). In contrast, small farm households derive almost all of their income from off-farm work and from un-earned income from pensions and financial investments. Almost 80% of the smallest farms report negative

incomes from farming, but these losses are generally offset by substantial off-farm income that keeps most of such households at, or above, the national average.

Households operating “rural-residence farms” have higher income than the average US family, even when their net cash income from farming is, on average, negative (i.e. when the expense of operating the farm exceeds gross revenues) (Figure 1.6; Annex Table E.6). For example, while income from farming was, on average, negative (USD 6 345) over the 2002-08 period, earnings from off-farm sources were USD 93 327. Rural-residence farms usually combine non-farm incomes with farming, or are run by people who have retired, or who view farming as a way to enjoy rural amenities.

Households operating intermediate-sized farms have, on average, positive net cash income from their farming operations, but the largest part of their income comes from non-farming sources. Households operating large (commercial-size) farms have an average household income that is almost three times higher than the average US family income, but rely more than other households on farm income (73% in 2008) (Harris *et al.*, 2009).

Figure 1.6. **Farm operators' sources of income, average 2002-08**



Source: OECD calculations based on ERS, USDA, Agricultural Resource Management Survey.

1.4. Developments in farm output, inputs and productivity

Output trends

Although agricultural production can be influenced by a number of factors, such as weather conditions, and economy-wide and sectoral policies, total US agricultural output has been rising over time (Annex Table E.8). The level of US farm output in volume terms in 2008 was 31% above its level in 1989, having grown at an average annual rate of 1.31%, with the bulk of the growth coming from: poultry and eggs; oil crops; and, to a lesser extent, dairy. While cattle (and other meat animals) represent the largest component of the total value of livestock output (Annex Table E.1), poultry and eggs were the fastest-growing component of livestock output volume (3.11% versus 0.57% for meat animals for the 1989 to 2008 period).

Input trends

Table 1.2 reports the sources of output growth in the farm sector for the 1979-2008 period. Output growth can be attributed to growth in conventional inputs and growth in productivity. Aggregate input-use actually declined at an average rate of 0.6% between 1979-2008: thus, output growth during this period was solely attributable to productivity growth, which increased by an annual average rate of around 2%.

Table 1.2. **Sources of farm output growth, 1979-2008**

	(Average annual growth rates, %)			
	1979-1989	1989-1999	1999-2008	1979-2008
Output growth	0.72	2.18	0.58	1.33
Sources of growth				
Input growth	-1.60	0.65	-1.15	-0.65
Labour	-2.11	-1.29	-2.64	-1.87
Capital	-1.73	-0.81	-0.23	-0.94
Materials	-1.29	2.15	-0.95	0.07
Total factor productivity	2.32	1.53	1.74	2.06

Source: OECD calculations based on ERS, USDA.

The decline in total input level over 1979-2008 disguises larger shifts in particular inputs. For example, while labour and capital decreased, material inputs increased. Labour input in agriculture has decreased consistently over time. Over the 1979-2008 period, labour input declined at an average annual rate of nearly 1.9%. In 1979, 2.8 million people were employed in agriculture, compared with 1.8 million in 2008. Despite the fact that expanding economic opportunities off the farm for farmers and their family members have led to small increases in reliance on hired farm labour, there was a noticeable decline in hired farm workers during the 1999-2008 period, of around 5% per year.

A major force in this decline was the substantial substitution of the relatively cheaper capital and machinery inputs for the relatively more expensive labour input. Nevertheless, while productivity gains have gradually reduced the size of the total agricultural labour force, hired farm workers continue to play an important role in the sector, accounting for 60% of total farm employment in 2007 (Annex Table E.3). However, hired farm labour is mainly seasonal and concentrated in particular commodities (*e.g.* horticulture).

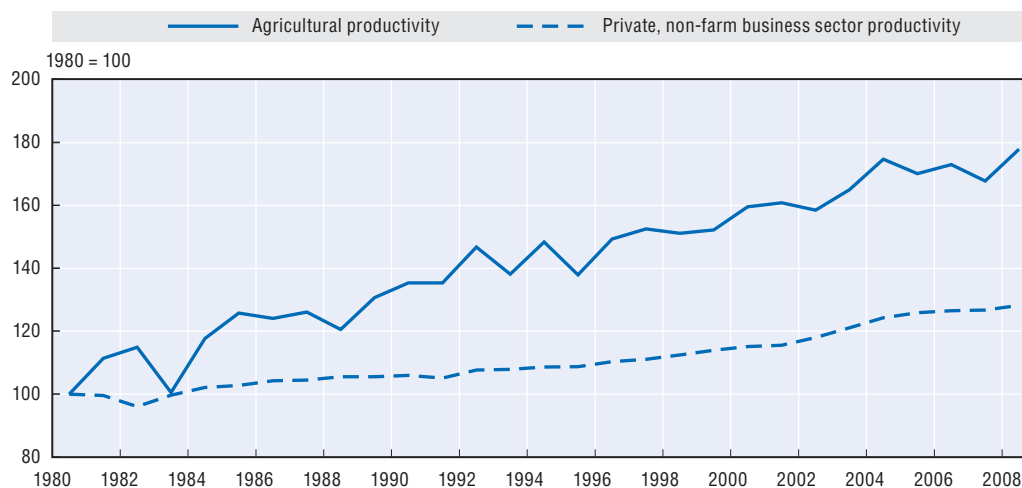
Moreover, while the number of workers employed in agriculture and the number of total hours worked have declined, the quality per hour worked has increased. For example, over the 1979-2008 period, labour productivity (*i.e.* farm output per unit of labour input) increased at an average annual rate of 3.9% (Annex Table E.8). In addition, internet access, which could significantly contribute to an increase in labour productivity, became more widely available. According to the 2007 Census of Agriculture, the percentage of farm operators with internet access increased from 50% in 2002 to 57% in 2007 (58% of whom reported having a high-speed connection).

Productivity trends

Improvement in productivity growth reflects the increased efficiency with which inputs are transformed into outputs. It is widely agreed that increased productivity is the main contributor to economic growth in US agriculture, as output growth is entirely the

result of productivity growth. Agriculture's total factor productivity performance – which is a ratio of total outputs to total inputs – compared with all other industries in the US economy, is noteworthy. Agriculture has one of the highest rates of productivity growth in the economy. While agricultural productivity increased at an average annual rate of 2.1% over 1979-2008, productivity in the private, non-farm business sector increased only by 1% a year (Figure 1.7; Annex Table E.8).⁵ Agricultural productivity is primarily driven by innovations in on-farm tasks, changes in the organisation and structure of the farm sector, and research aimed at improvements in farm production.

Figure 1.7. **Total factor productivity for agriculture and the non-farm business sector, 1980-2008**



Source: OECD calculations based on data from ERS, USDA; US Bureau of Labor Statistics.

The early 1990s saw a continuation of above-average rates of growth in productivity. Not only was growth in input levels fairly low in 1990-94, but output growth was at historically high levels. Agricultural output showed little growth during 1999-2002, while productivity growth was actually negative in 2000-02. But the return of favourable weather in 2003 and 2004 led to sharp increases in output and productivity, with productivity growing by 4.1% in 2003 and 5.9% in 2004. On average, productivity continued to grow rapidly over 1999-2008 (by 1.7% per year).

US agricultural productivity growth compares favourably to agricultural productivity growth in other industrialised countries, and to productivity growth in the overall US economy (Ball et al., 2007). Input growth has been typically the dominant source of economic growth for the aggregate economy, and for each of its producing sectors. Agriculture turns out to be one of the few exceptions: productivity growth dominates input growth.

Some of the more noteworthy productivity increases have been observed in maize and milk production. Average maize yields increased from 7 metric tonnes per hectare in 1985 to 9 metric tonnes per hectare in 2008. Average milk production increased from 6 metric tonnes per cow in 1985 to 9 metric tonnes in 2008.⁶ Rather large yield increases have also been observed in sorghum, wheat, rice, peanut, and cotton production. Main factors contributing to agricultural productivity growth include research and development, extension, education, infrastructure and government programmes. The sources of the

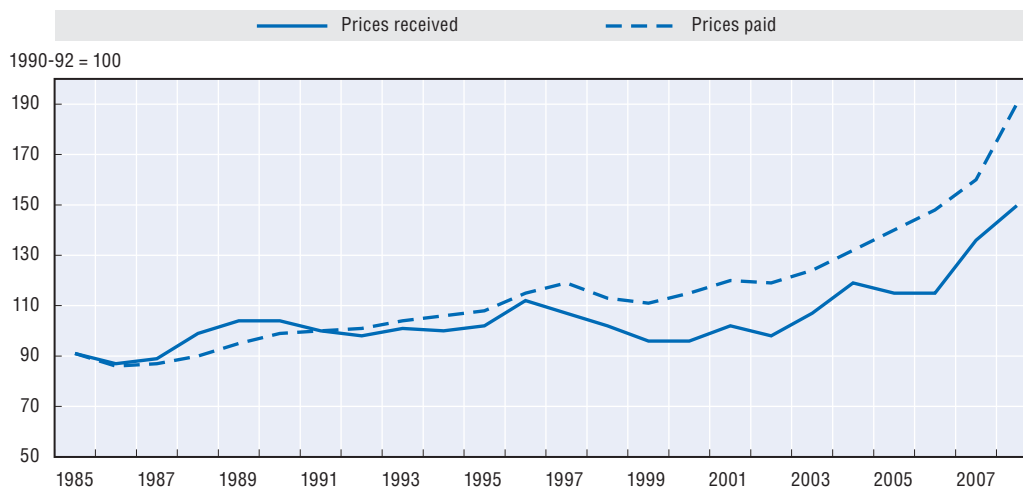
productivity gains over 1989-2008 were both internal and external to agriculture. Obviously, weather is a major, unpredictable factor affecting year-to-year variation in productivity, but other external shocks to the economy also indirectly affect relative prices and resource allocations in agriculture.

In fact, pressures on relative prices (for example, fuel) are often cited as an important source of technical innovation in agriculture – the so-called “induced innovation concept”. Farmers are sensitive to changes in the relative prices of inputs. For example, if the price of labour increases relative to the price of capital (because labour becomes more scarce relative to capital, or because of general wage increases in the non-agricultural sector), farmers will try to use more capital in place of labour. This change in relative prices may also induce private firms (for example, farm machinery companies) to develop new technologies that save on the relatively more expensive input.

Prices received and paid by farmers

During the 1985 to 1993 period, while the prices received by producers fluctuated somewhat, overall levels changed little (Figure 1.8). Over the same period, the index of prices paid by producers increased at an annual rate of 2%, but remained below the index of prices received. Since then, these trends have been reversed, with prices paid increasing at faster rates and outpacing prices received. The cost-price squeeze began in 1995 and has increased since then, particularly after 2005. Yet, the efficiency gains that resulted from rapid productivity growth have facilitated the maintenance of production increases even in the face of the cost-price squeeze.

Figure 1.8. **Prices received and paid by farmers (index), 1985-2008**



Source: OECD calculations based on data from ERS, USDA.

The impact of such developments on overall agricultural profitability and income can be important in view of the high proportion of gross farm revenue accounted for by production expenses (an average of 76% over the 2002-09 period) (Annex Table E.1). Rising energy prices, for example, mean increased input costs for farmers.

Results from an ERS study (Harris *et al.*, 2009) show that, historically, each 1% increase in the US price of imported crude oil has translated into a 0.7% rise in the farm price of

gasoline and diesel fuel. However, higher energy costs also mean increased prices for fertilisers and chemicals. Today's farming technology calls for a large and continual flow of materials and services purchased off the farm. In 2007, only 40% of value of inputs originated on-farm (Annex Table E.1).

Notes

1. USDA defines "farm" broadly as any operation with the potential to produce at least USD 1 000-worth of agricultural products during a given year. This definition has remained unchanged since 1975. The increasing concentration of agricultural production on large farms and the proliferation of small "rural residence" farms with little or no production have led to proposals to narrow the definition to more closely targeted "actively engaged" farms (*e.g.* by changing the threshold to USD 10 000). See O'Donoghue *et al.* (2009).
2. It would be more appropriate to make the comparison between farm households and other small business-owning households, but such data are unavailable.
3. In contrast to mean income values, estimates of median income values are not influenced by unusually large or small values.
4. Although this percentage has increased over time, off-farm work is not a new phenomenon – in the 1930s about 30% of operators reported off-farm work (Hoppe *et al.*, 2007).
5. In addition, productivity growth is a more important source of output growth in agriculture than it is for other industries. For example, while output growth in agriculture was entirely the result of productivity growth, output growth in the rest of the business economy was largely the result of growth in inputs (Ball *et al.*, 2007).
6. OECD calculations based on ERS/USDA, Commodity Costs and Returns: US and Regional Cost and Return Data.

Chapter 2

Agricultural Support in the United States

Farm policy in the United States has its roots in the New Deal of the 1930s and the 1949 Agricultural Act, and it has developed through subsequent Farm Acts in 1985, 1990, 1996, 2002 and 2008. This chapter offers a brief review of the policy background and then evaluates the evolution of agricultural support during the past 25 years.

2.1. Policy background

Much of today's farm commodity policy has its origins in programmes established under the New Deal in the context of the Great Depression of the 1930s. The Agricultural Act of 1949 constitutes what is known as the "permanent" legal framework that governs support for commodity prices and incomes in the United States. The US Congress regularly enacts legislation that amends the provisions of the permanent law through various Acts, also known as Farm Bills, the latest form of such legislation being the Food, Conservation and Energy Act of 2008 (the 2008 Farm Act), which became law in June 2008 (Jones, Hanrahan and Womach, 2001).

Although the various Farm Acts all give most prominence to the issue of farm income and commodity price support policy, they actually encompass a much wider range of concerns related to agriculture, including agricultural trade and foreign food aid, conservation and environment, forestry, domestic food assistance (primarily food stamps), agricultural credit, rural development, agricultural research and education, and marketing-related programmes.

Originally, commodity programmes were designed to stabilise and boost farm income through the provision of price and income support for a specific list of commodities, to aid economic recovery and development during the Depression and post-war eras. This was achieved through a combination of taxpayer-funded production payments and supply management, in the form of acreage limits and commodity storage programmes.

Since then, agricultural policies have been amended to address additional objectives. Over time, increased concern over the federal budget deficit strengthened pressure for agricultural policy reform. For example, beginning with the 1985 Farm Act, and continuing with farm legislation passed in 1990 and 1996, the United States undertook major initiatives in domestic agricultural policy reform, including the elimination of deficiency payments and the introduction of Production Flexibility Contracts (PFC) under the 1996 Farm Act (Annex A; Box 2.1). There was a gradual shift away from production controls and price supports as the primary instrument of policy for crops, and towards the increasing use of budgetary payments, culminating in the ending of the supply management commodity programmes in the 1996 Farm Act.

The policy debate concerning the 2008 Farm Act took place against the backdrop of the Doha round of multilateral trade negotiations (during which, discussions on farm subsidies led to the US being challenged as to the legality under the existing trade rules of some of its support programmes, particularly for cotton) – and of a high federal budget deficit. The Congressional Budget Office estimates the total cost of the 2008 Farm Act at USD 284 billion over FY 2008-12. More than two-thirds of the funds are projected for domestic food assistance programmes, with the overwhelming majority financing the Supplemental Nutrition Assistance Program (SNAP) (previously the Food Stamp Program).

Box 2.1. Key features of the Farm Acts since 1985

1985 Farm Act

- Reducing target prices.
- Freezing programme payment yields.
- Using percentage of past market prices for calculating loan rates.
- Giving the Secretary discretion to further reduce wheat and corn loan rates.
- Using stocks to calculate Area Reduction Programs (ARPs).
- Establishing marketing loans for cotton and rice.
- Setting up the Export Enhancement Program (EEP) and the Dairy Export Incentive Program (DEIP).
- Establishing the Conservation Reserve Program (CRP).

1990 Farm Act

- Introducing 15% “normal flex acres” and 10% “optional flex acres”.
- Extending marketing loan provisions to oilseeds in 1991 and to wheat and feed grains in 1993.
- Allowing oilseeds and alternative crops to be planted on land in a 0/85-92 programme without loss of payments.
- Using stocks-to-use ratios to calculate ARPs.

1996 Farm Act

- Replacing crop deficiency payments and target prices with payments decoupled from current prices and production levels.
- Retaining fixed payments yields.
- Eliminating most planting restrictions.
- Fixing and reducing over time federal income support payments.
- Retaining marketing loan provisions.
- Discontinuing authority for loan extensions.
- Phasing-out the dairy support price (although interim legislation modified this provision).
- Suspending sugar marketing allotments.
- Making peanuts a “no-net-cost” programme.
- Consolidating cost share and technical assistance programmes for crop and livestock producers into the Environmental Quality Incentives Program.
- Extending CRP authorisation and capping enrolment.

2002 Farm Act

- Continuing the marketing assistance loan program.
- Replacing production flexibility contract payments with direct payments for crops.
- Creating a new counter-cyclical payments programme.
- Increasing payments for environmental conservation and protection.
- Eliminating supply controls for peanuts.

Box 2.1. Key features of the Farm Acts since 1985 (cont.)

2008 Farm Act

- Retaining direct payments, counter-cyclical payments and marketing assistance loan benefits.
- Creating a new revenue support programme, the Average Crop Revenue Election.
- Introducing some changes to the dairy price support programme.
- Increasing support prices (e.g. loan rates and target prices) for a number of programme crops and sugar.
- Creating a new programme for diversion of sugar to ethanol; and increasing funding for biofuels research demonstration.
- Introducing a new disaster assistance programme to formalise previous *ad hoc* arrangements.
- Significantly increasing funding for domestic food assistance programmes.
- Ending the Export Enhancement Program.

Programmes for farmers are projected to receive 30% of the budget, of which: around 15% (USD 8.3 billion) is made up of farm support programmes; just over 7% of crop insurance; and 9% of support for conservation.

However, the real cost of the 2008 Farm Act is unpredictable, because the amount actually paid out varies with average annual market prices and crop yields. For example, higher commodity prices would lead to smaller price-related payments than otherwise would be the case.

Although successive Farm Acts have set down parameters and guidelines for policies for a specific number of years, the process of agricultural policy making is relatively continuous. For example, Congress has provided *ad hoc* emergency and supplementary assistance under separate legislation, such as the emergency payments made over 1999-2001 and the American Recovery and Reinvestment Act of 2009 (Box 2.2). Moreover, many of the federal programmes that currently support renewable energy production in general, and agriculture-based energy production in particular, are outside the purview of USDA and have legislative origins unconnected to the Farm Act.

Box 2.2. The American Recovery and Reinvestment Act of 2009

The American Recovery and Reinvestment Act of 2009 (ARRA), which became law on 17 February 2009, provides over USD 789 billion in tax and spending proposals aimed to stimulate the economy and create employment. Around USD 28 billion (3.5%) of this amount is administered by the USDA to be used for: nutrition assistance (74%); rural development (16%) conservation and forestry (5%); and farm assistance and trade (4%). An estimated USD 19.8 billion is allocated on a mandatory basis to increase the monthly benefits of the SNAP. The remaining USD 7.9 billion is to support more than 90 000 grants, loans and other employment-creating projects.

In particular, aside from funding the SNAP, the most important Farm Bill-related features of the Act are as follows:

- Increased assistance for other nutrition programmes.
- Expanded opportunities for broadband loans and grants to rural communities; construction of and improvements to water and waste facilities in rural areas.

Box 2.2. **The American Recovery and Reinvestment Act of 2009** (cont.)

- Direct and guaranteed loans for single family housing.
- Support for community facilities in rural communities.
- Assistance for farmers, including direct operating loans targeted to beginning and socially disadvantaged farmers.
- Funding for conservation programmes, including floodplain easements, watershed operations and watershed rehabilitation.
- Re-authorisation of the Trade Adjustment Assistance Program for farmers.
- Funding to protect and conserve national forests and farmland.

In the first year of implementation, the key landmarks include:

- Provision of over USD 100 billion in tax relief for businesses and families.
- Help for over 38 million people relying on food assistance by providing an average increase in benefits of USD 80 per month to low-income households of four.
- Provision of loans to 85 420 rural residents for the purchase, repair or renovation of their homes.
- Provision of USD 500 million to treat over 134 000 acres of forest to reduce the risk of wildfire.
- An increase of loans available to farmers through the long-standing Farm Operating Loan Program. 2 636 loans, worth USD 173 million, were provided to farmers to help them buy farm equipment, seed, feed and fuel. Approximately half of these loans went to beginning farmers and 25% to socially disadvantaged farmers.
- Provision of grants worth USD 50 million to finance renewable energy projects that will benefit 223 000 homes.
- Help for more than 5 000 schools to purchase equipment to improve the safety and quality of the food served to children.

In 2010, the remaining funds were to be allocated to the following areas:

- USD 3.4 billion investment to be committed to bring broadband internet to an estimated 1.2 million households, 230 000 businesses and 7 800 institutions, such as hospitals and schools across rural America.
- USD 900 million – on top of the USD 570 million already allocated – to be provided to help 300 businesses grow, innovate and create jobs.
- Nearly USD 750 million – in addition to the USD 470 million already committed – to be provided to finance more than 850 projects to improve healthcare for 3 million, and educational services for 2.5 million, rural residents.
- Nearly USD 1 billion – on top of more than USD 2 billion already committed – to be provided for water and waste water systems projects in 530 communities.

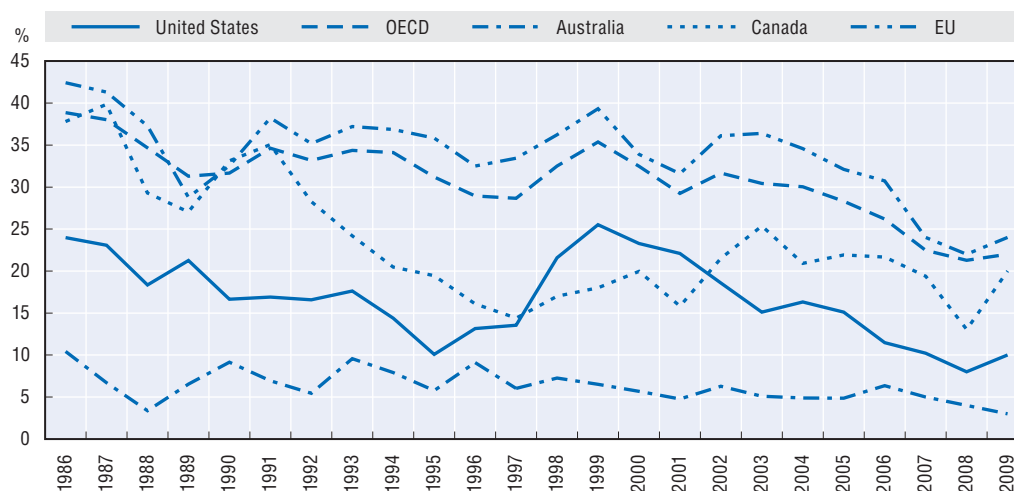
Source: www.Recovery.gov; www.usda.gov/wps/portal/arra?navid=USDA_RECOVERY.

2.2. Evolution of agricultural support

Transfers to producers

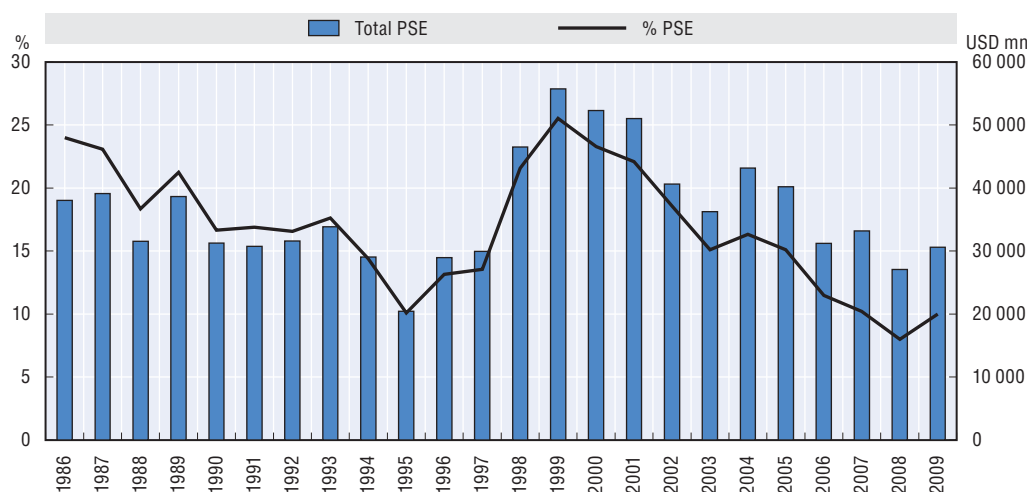
On average, US support levels to producers are relatively moderate in comparison with average levels in other OECD countries (Figure 2.1). Overall, although US support levels for agriculture have varied widely over time and across commodities, the evolution of the Producer Support Estimate (PSE) and related support indicators clearly indicate a substantial decrease since 1986 (Figure 2.2).

Figure 2.1. Evolution of producer support in selected OECD countries, 1986-2009



Source: OECD, PSE/CSE Database, 2010.

Figure 2.2. Evolution of US support indicators, 1986-2009



Source: OECD, PSE/CSE Database, 2010.

A feature of US support levels is that they move inversely with world commodity prices. Since 1986, support in the US has peaked twice. The first peak occurred in 1986-87 and the second lasted from 1998 to 2000 (Figure 2.2). Both peaks occurred at times when world commodity prices were depressed in terms of US dollars. Support levels subsequently declined somewhat and then fell to relatively low levels, when world prices rose rapidly. However, the price increase was temporary and US support increased markedly in the late 1990s, reaching record levels in nominal terms and very high levels relative to the value of production.

Likewise, the record high commodity prices witnessed in 2007 and 2008 led to very low levels of support. In 2007-09 support to the US was the third-lowest in the OECD area, after New Zealand and Australia (Figure 2.1). The % PSE fell from 22% in 1986-88 to 9% in 2007-09 – less than half the OECD average.

The level of market protection provided to producers, as measured by the Producer Nominal Protection Coefficient (PNPC), also decreased over time and is much lower than the corresponding average PNPC in the OECD area.¹ While in 1986-88 prices received by US farmers were 13% higher than world prices, in 2007-09 they were only 2% higher.

The US Nominal Assistance Coefficient (NAC), which measures the extent to which receipts come from the marketplace, declined at a lower rate than the OECD average, but still remains lower than the OECD average (Table 2.1). In 2007-09, US producers' gross farm receipts were 1.11 times higher than they would have been on the world market, while for the OECD area on average they were 1.28 times higher.

Table 2.1. **NAC and PNPC, United States and OECD average**

	1986-88	1999-2001	2007-09
Producer NPC			
United States	1.13	1.17	1.02
OECD	1.28	1.34	1.13
Producer NAC			
United States	1.28	1.31	1.11
OECD	1.59	1.48	1.28

Source: OECD, PSE/CSE Database, 2010.

The decrease in the level of the PSE between 1986-88 and 2007-09 is entirely the result of declining market price support (MPS) (Table 2.2). On the other hand, budgetary support has slightly increased, mainly due to the increase in payments that do not require production and, to a lesser extent, due to the increase in input payments. Increases in these two forms of support more than offset the decrease in payments based on current parameters and payments based on output.

Table 2.2. **Explaining the change in the PSE over time (%)**

	1998-2001/1986-88	2007-09/1998-2001	2007-09/1986-88
Change in PSE	41.9	-41.1	-16.4
Contribution of market price support	17.3	-25.6	-19.1
Contribution of budgetary payments	24.6	-21.9	2.7
Payments based on output	15.7	-15.1	-5.7
Payments based on input use	0.1	4.0	5.8
Payments based on current A/An/R/I, production required	-20.8	0.9	-19.6
Payments based on non-current A/An/R/I, production not required	25.8	-6.0	17.2
Payments based on non-commodity criteria	3.9	0.8	5.0

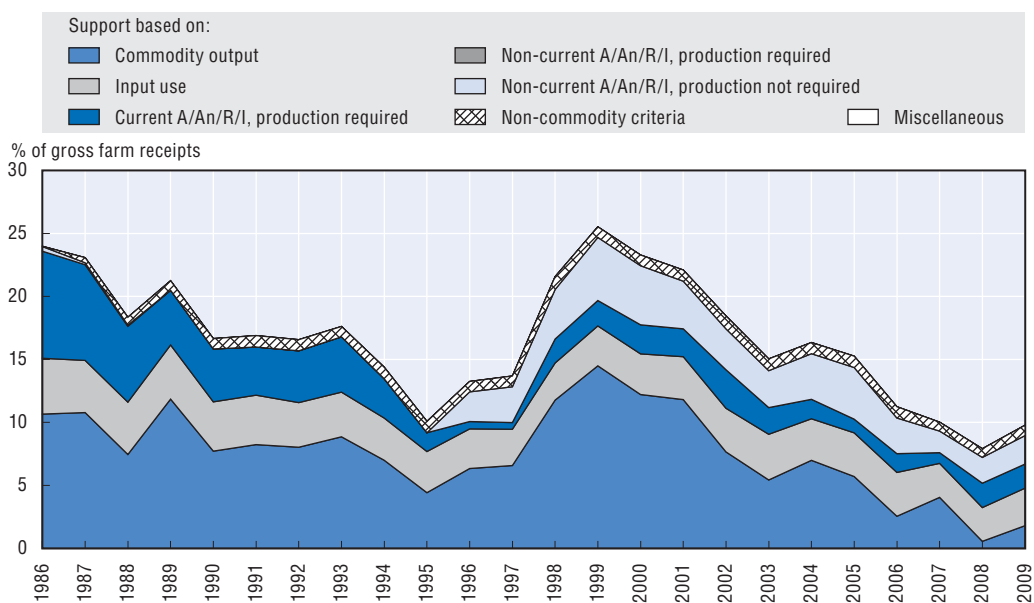
A = area; An = animal numbers; R = receipts; I = income.

Contribution to % change is calculated assuming all other variables are held constant.

Source: OECD, PSE/CSE Database, 2010.

On average, over the 1986-2009 period, the main form of support has been output-based, although it has declined significantly since 2006 (Figure 2.3). The combined share of the most distorting policies (commodity output and non-constrained use of variable inputs) in the PSE decreased from 52% over 1986-88 to 31% over 2007-09. On the other hand, the share of the least production-distorting and trade-distorting support (payments with no requirement to produce) increased ten-fold, reaching 30% over 2007-09. Moreover, payments based on non-commodity criteria are also important in the United States, and are mainly composed of payments based on long-term resource retirement (e.g. CRP).

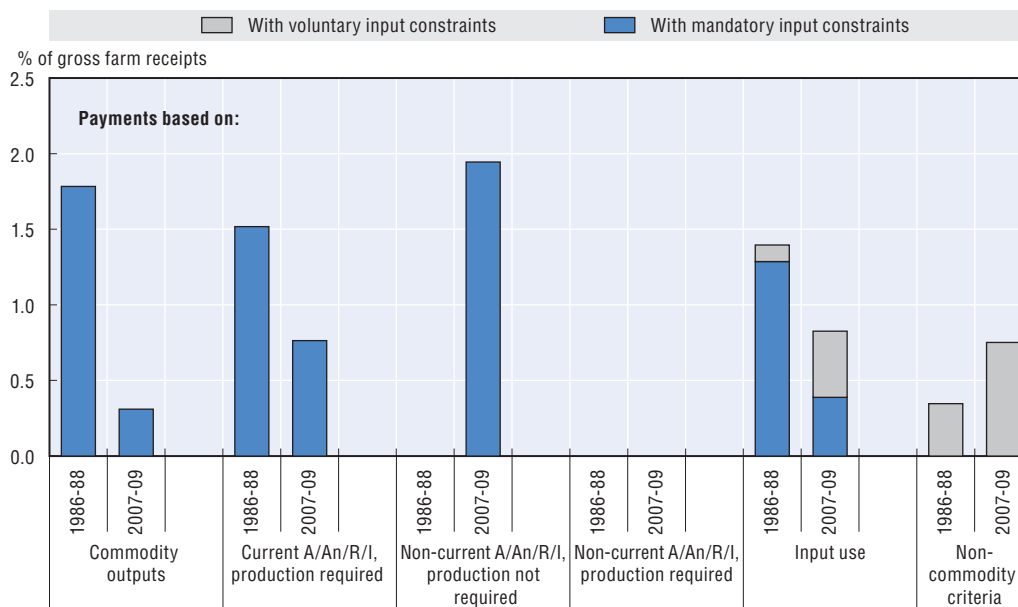
Figure 2.3. US PSE level and composition by support categories, 1986-2009



Source: OECD, PSE/CSE Database, 2010.

The majority of support payments are made with conditions attached, primarily environmental. In 1986-88, payments with input constraints comprised only 24% of total producer support and mostly represented support based on current production parameters such as output production, input use, area or animal numbers. By 2007-09, these payments accounted for half of total producer support and in the main represented support not requiring commodity production (Figure 2.4).

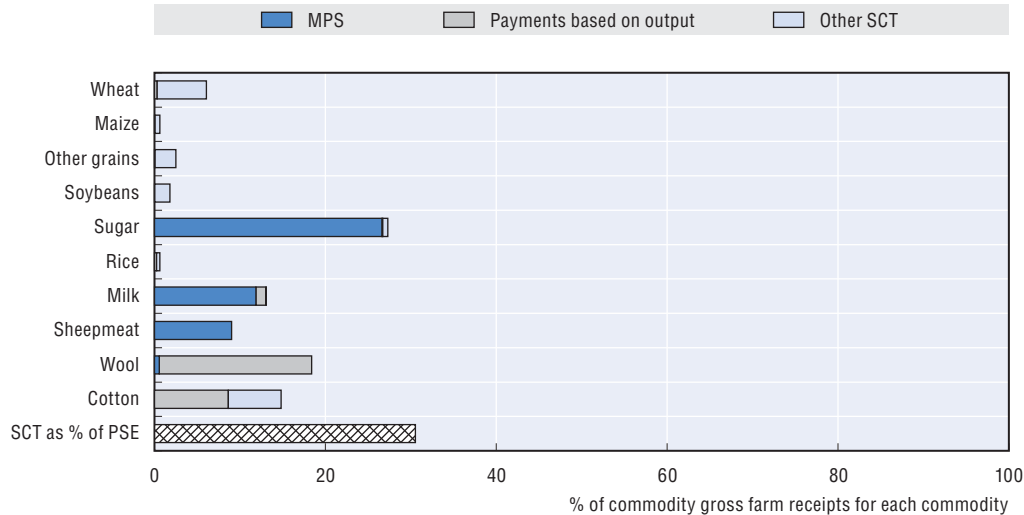
Figure 2.4. US payments with input constraints, 1986-88 and 2007-09



Source: OECD, PSE/CSE Database, 2010.

The increase in the relative importance of payments that do not require commodity production (e.g. Counter Cyclical Payments, Direct Payments and Production Flexibility Payments) is reflected in the decreasing share of support directed at specific commodities. The share of Single Commodity Transfers (SCT), to producers decreased from 71% of the PSE in 1986-88 to 31% in 2007-09 (Figure 2.5).

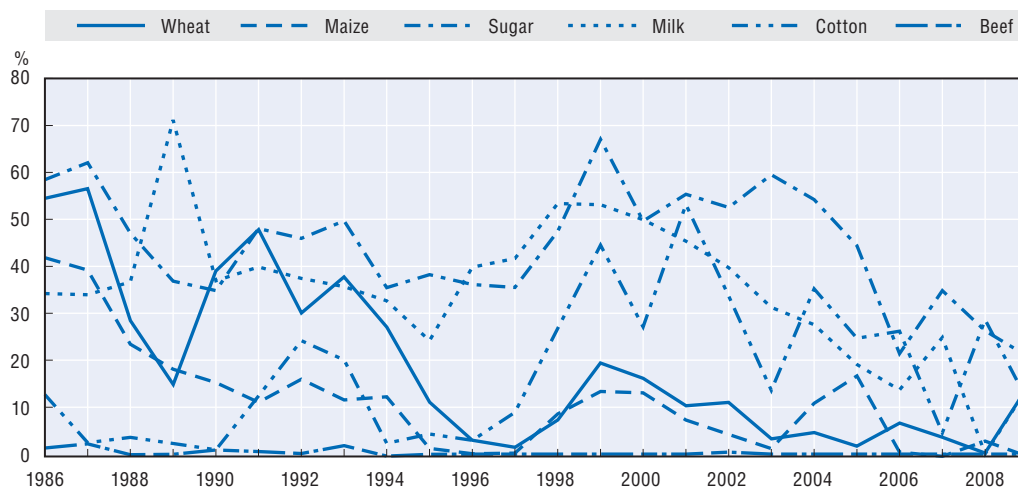
Figure 2.5. **Producer Single Commodity Transfers by commodity, 2007-09**



Source: OECD, PSE/CSE Database, 2010.

Two-fifths of this support is attributable to support provided to dairy, 9% to cotton and 6% to sugar. The % SCT of wheat decreased from 47% in 1986-88 to 6% in 2007-09; for maize, from 35% to 0.6%; for rice, from 50% to 0.6%; for sugar, from 56% to 27%; and for dairy, from 35% to 13%. For cotton, it increased from 1% to 15% and for sheepmeat, from 1% to 9%. While market price support dominates for sugar, dairy and sheepmeat, payments based on output represent the most important form of support for cotton.

Figure 2.6. **Evolution of Single Commodity Transfers by commodity, 1986-2009**

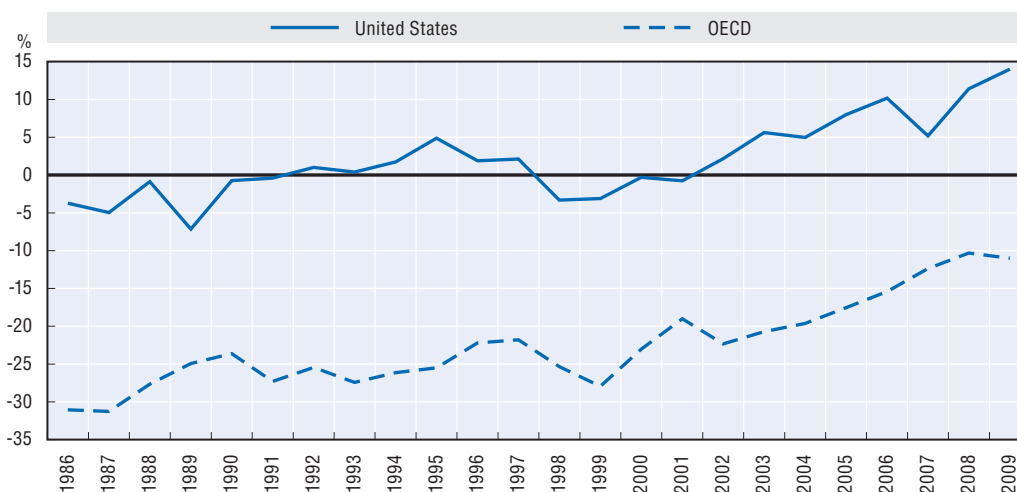


Source: OECD, PSE/CSE Database, 2010.

Transfers to consumers

Transfers to consumers associated with agricultural policies, as measured by the Consumer Support Estimate (CSE), follow different patterns from those of other OECD countries. The percentage US CSE, which is the share of CSE in consumption expenditure (measured at the farmgate) has remained positive for all years since 2002 (Figure 2.7). This implies that the CSE in the US constitutes an implicit subsidy, rather than tax – as is the case in the OECD area. This is primarily attributed to domestic food consumption aid, particularly food stamps.

Figure 2.7. **Evolution of Consumer Support Estimate in the United States and OECD average, 1986-2009**



Source: OECD, PSE/CSE Database, 2010.

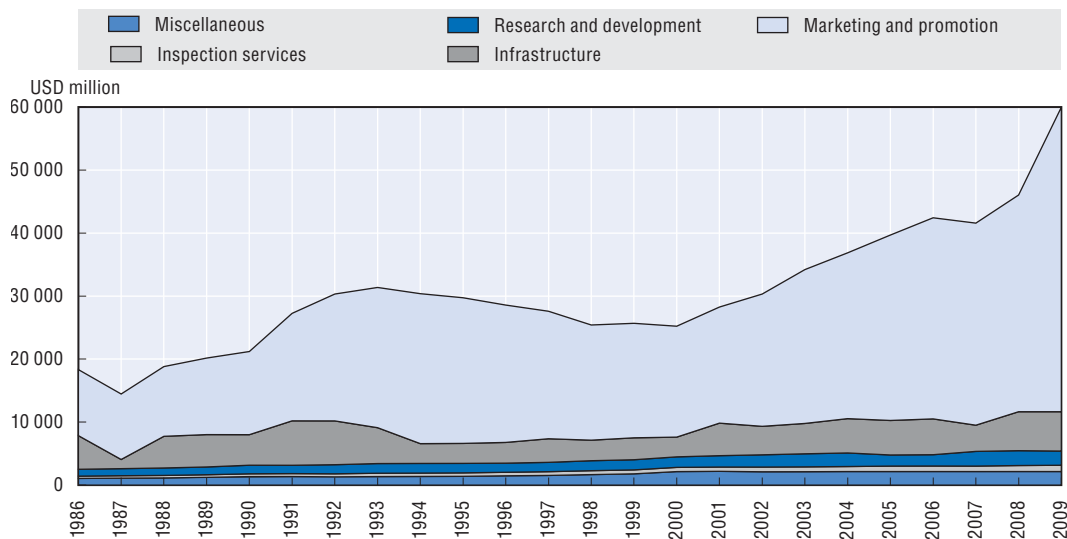
General support to the agricultural sector

Support provided to the sector as a whole, as opposed to individual producers, is measured by the General Service Support Estimate (GSSE) indicator. In the US, GSSE support to the agricultural sector has been growing in importance over time. In 2007-09, GSSE transfers comprised around 45% of total support to agriculture, compared with 27% in 1986-88. The overwhelming majority of GSSE expenditures are for marketing and promotion (primarily the post-farmgate share of domestic food assistance costs), which accounted for over three-quarters of total GSSE expenditures in 2007-09 (Figure 2.8).

Total support to the agricultural sector

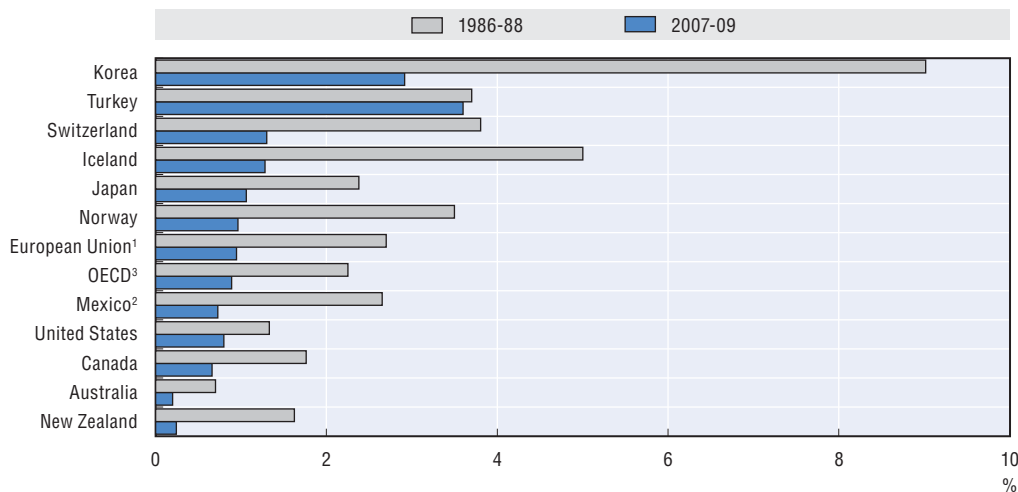
Total support provided to the agricultural sector as a whole is measured by the Total Support Estimate (TSE). The TSE is the sum of the PSE, GSSE and the cost to taxpayer of consumer subsidies, less import tariff receipts. The US percentage TSE, which is the share of TSE in GDP, is lower than the average of the OECD area and has decreased over time. In 2007-09, total support to agriculture represented 0.8% of GDP, down from over 1% in 1986-88 (Figure 2.9).

Figure 2.8. Evolution of support to General Services, 1986-2009



Source: OECD, PSE/CSE Database, 2010.

Figure 2.9. Total Support Estimate by country



Note: Countries are ranked according to 2006-08 levels.

1. EU12 for 1986-94 including ex-GDR from 1990; EU15 for 1995-2003; EU25 for 2004-06 and EU27 from 2007.
2. Austria, Finland and Sweden are included in the OECD total for all years and in the EU from 1995. The OECD total does not include the non-OECD EU member states. TSE as a share of GDP for the OECD total in 1986-88 excludes the Czech Republic, Hungary, Poland and the Slovak Republic as GDP data is not available for this period.
3. For Mexico, 1986-88 is replaced by 1991-93.

Source: OECD, PSE/CSE Database, 2009.

Distribution of commodity support

Diversity within the farm sector results in an unequal distribution of all government payments (including commodity and conservation programmes). The allocation of government payments depends on a number of factors, including farm size (area), location and types of commodities produced.

According to the 2007 Agricultural Resource Management Survey (ARMS), about 40% of all US farms (834 339 farms) received government payments in 2007 (Annex Table E.9). The

share is lowest (23.5%) for households operating the smallest farms (sales of less than USD 10 000). Over 50% of households operating farms in each of the larger size classes receive payments. In 2007, the average payment per farm, USD 9 792, was down 24% from 2006 – largely due to reductions in price-linked commodity programme payments brought about by high commodity prices (*e.g.* counter-cyclical payments, marketing loan benefits).

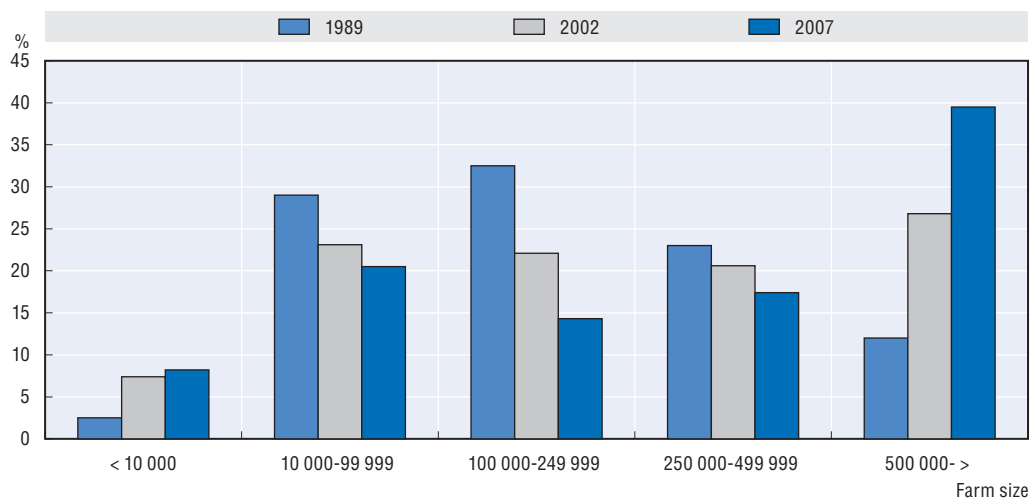
A large majority of farms do not receive government payments and are not directly affected by farm programme payments. Nevertheless, these farms – and the households that operate them – may still be affected indirectly by the impact of government payments on farmland values and commodity markets.² Among recipients, payment levels increase with production levels and base areas, and therefore the higher payments go to the farm households operating the larger farms, despite their higher average incomes and wealth.

Even for farms that receive payments, government payments typically represent a small share of gross farm income (revenue from farming activities, and government support payments) and an even smaller share of farm operator household income. The relative importance of government payments in gross cash income is disproportional to farm size (*i.e.* as farms increase by sales class, the share of payments in gross cash income decreases). In 2007, for example, for farms with less than USD 50 000 in sales, government payments represented 18-20% of gross cash farm income, while for commercial farms (farms with sales of USD 500 000 or more) government payments accounted for only 4%.

The amount of government payments varies by the sales classification of the particular farm operation. In 2007, 57% of all farms receiving government payments had less than USD 50 000 in sales. This group accounted for 19% of all programme payments to farmers. Payment farms with less than USD 10 000 in sales received, on average, USD 2 040. Average payment per farm increased as farm sales increased, with farms generating over USD 1 million in sales receiving USD 75 601, on average. Million-dollar farms represented less than 3% of all farms receiving payments in 2007, but received over 22% of all government payments. For farms that receive government payments, they account, on average, for around 5% of gross farm income, although for smaller farms the share is much higher than the average (*e.g.* 21% for farms with less than USD 10 000 in sales and 15% for farms between USD 10 000 and USD 49 999 in sales).

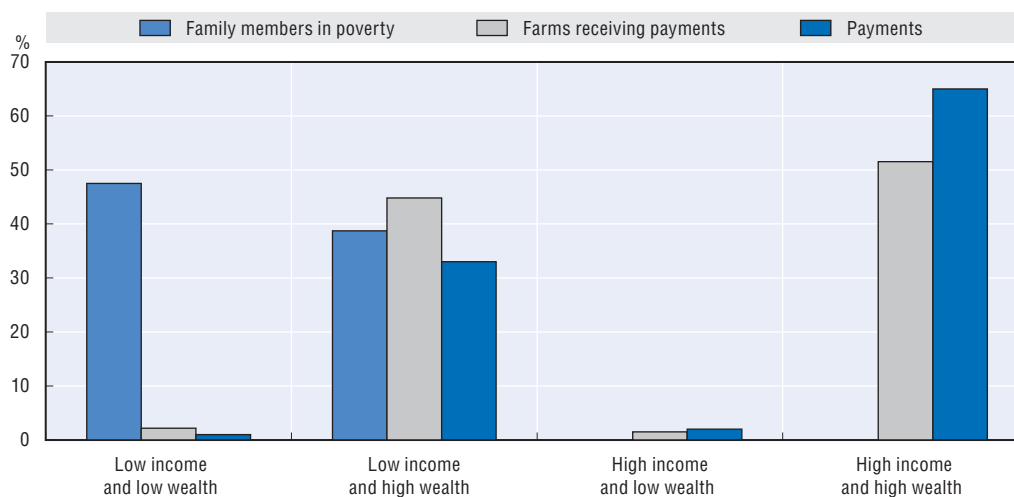
Most payments are received by larger farms as commodity production is concentrated on larger farms (Figure 2.10). While commercial farms received approximately half of government payments in 2007, they accounted for only 18% of farms receiving payments, and the average household income of their operators is almost three times higher than the average US household income. The largest of the commercial family farms (those with gross annual sales of USD 500 000 or more) received 15.4% of payments even though they accounted for only 4.3% of farms receiving payments.

The concentration of government payments to higher-income households has increased over time. In 1989, half of these payments went to principal operators whose households earned, on average, more than USD 45 808 (in 2003 dollars); one-quarter went to households earning, on average, more than USD 94 784; and 10% went to households with incomes, on average, above USD 189 149. By 2003, half of commodity payments went to households with income, on average, above USD 75 772; one quarter went to households earning more than USD 160 142, while 10% of payments went to households earning more than USD 342 918.

Figure 2.10. **Government commodity payments by farm size, 1989, 2002 and 2007**

Source: OECD calculations based on USDA, *The Census of Agriculture*, 2007.

The conclusion that most of the government commodity support does not benefit those with the greatest need is also confirmed when distribution of commodity payments is expressed in terms of measures of households' economic well-being discussed in Section 1.3. As shown in Figure 2.11, 98% of payments are received by those who have higher wealth than the average US household, and as much as 65% of payments are received by those who have both higher incomes and wealth. This latter group, representing 49% of all farm households, does not have family members below the official poverty threshold. In contrast, the low income-low wealth group which has 48% of family members in poverty received about 1% of government payments.

Figure 2.11. **Government commodity payments by farm household's economic well-being measures, 2008**

Source: OECD calculations based on ERS, USDA, *Agricultural Resource Management Survey*.

Overall, to the extent that there is some perceived low income problem that provides a rationale for government payments, the above analysis suggests that payments are not being distributed in a way which targets those farmers with income problems. In fact, the

very design of the programmes ensures that the bulk of the payments go to either farms with high production levels (in the case of payments linked to production such as marketing loan benefits) or farmers with large area bases (in the case of counter-cyclical payments and direct payments).

The skewed distribution of government payments for the programme crops in favour of farms with high sales and incomes is also observed for the dairy sector. According to the 2007 ARMS, dairy farms in the sales category between USD 100 000 to 249 999 received as much as 40% of the Milk Income Loss Contract (MILC) payments, and almost half of the payments benefited farmers belonging to income size class of more than USD 50 000.

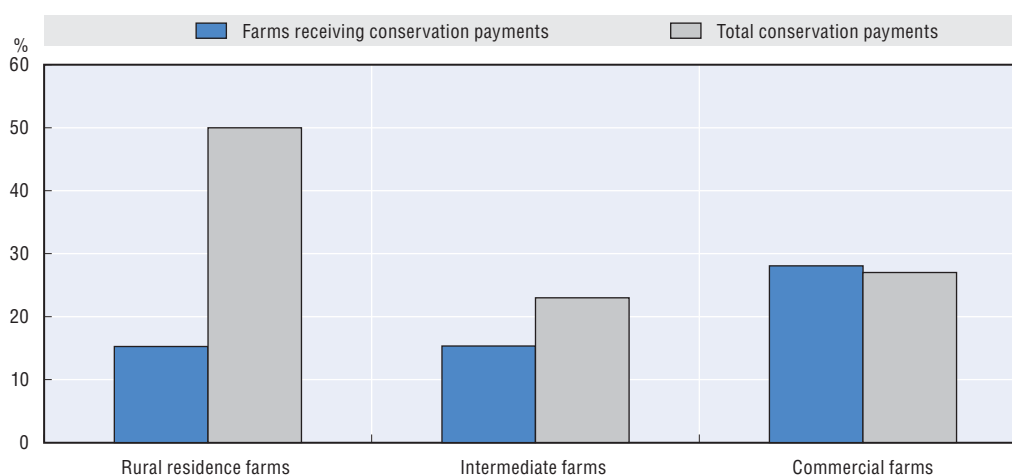
Distribution of conservation payments

Distribution by size and farm typology

As shown in Figure 2.12, about 17% (342 570) of all farms received conservation payments in 2007. These payments averaged USD 5 613 per farm, accounting for 7% of gross cash farm income and 49% of total government payments. Many farms that received conservation payments also received commodity programme payments and other forms of government support.

Conservation payments and payments from commodity-related programmes go to different types of farms. While price and income support payments are concentrated among larger farms, smaller farms and rural residence farms (which include retirement farms) are much more dependent on conservation payments as a source of income than other farms. Smaller farms tend to enrol a larger share of their farming operations in conservation programmes, particularly whole-farm enrolment in CRP, and operators of these farms often receive a larger share of their household income from land retirement payments and non-farm sources.

Figure 2.12. **Distribution of conservation payments by farms and farm typology, 2007**



Source: OECD calculations based on ERS, USDA, Agricultural Resource Management survey, 2007.

Of the farms receiving conservation payments, rural residence farms accounted for the largest share. In 2007, 59% of farms receiving conservation payments were rural residence farms, and they received 50% of total conservation payments. Commercial farms

made up 17% of the farms receiving conservation payments: they accounted for 27% of total conservation payments.

Around 15% of rural residence farms and 15% of intermediate farms received conservation payments in 2007, with payments averaging USD 5 620 and USD 9 887 per farm, respectively. Compared with rural residence and intermediate farms, a larger percentage of commercial farms received conservation payments, but these payments represented a smaller share of total government payments and gross cash income. In 2007, 26% of commercial farms received conservation payments. The average conservation payment for commercial farms was USD 8 984 per recipient farm, which represented 27% of all government payments and only 1% of gross cash income.

Conservation payments accounted for 84% of all government payments and 23% of gross cash income on rural residence farms in receipt of conservation payments in 2007 and represented over half (53%) of all government payments going to intermediate farms receiving conservation payments and accounted for 13% of gross cash income on these farms.

Distribution by farm and household income

In 2007, 13% of farms with net cash farm incomes of less than USD 10 000 received conservation payments, with payments averaging USD 3 759 per recipient farm. These farms received 39% of conservation payments and accounted for 59% of farms receiving conservation payments. In contrast, 25% of farms with net cash incomes of USD 100 000 or more received conservation payments and conservation payments averaged USD 10 152 per recipient farm. These farms received 17% of conservation payments and accounted for 9% of farms receiving conservation payments.

Farm households with household incomes of USD 200 000 or more (over 7% of all farm households and nearly 8% of all farm households receiving conservation payments), received 10% of total conservation payments. Twenty-seven per cent of all farm households receiving conservation payments had household income of USD 50 000-99 999: they received nearly 21% of all conservation payments in 2007. Forty-seven per cent of all conservation payments went to farm households with household incomes of less than USD 50 000 (46% of all farms receiving conservation payments).

Distortiveness, transfer efficiency and risk effects of producer support

To evaluate the changes in the composition of support over time, the OECD's Policy Evaluation Model (PEM) was used to derive indicators of the net effect of the policy set taken as a whole. Using an index number approach developed by Anderson and Neary (1996; 2003), the level and composition of support are combined to derive a single money-metric indicator of the impact of support with respect to a specific outcome – here, farm income, quantity produced, and value of exports.

The process works like this: Choose a specific form of support as a basis of comparison – market price support in this case – and ask the question “If all support were to be replaced with market price support, how much would be required in order to result in the same level of farm income (or quantity, etc.)?” The model answers this question by holding the outcome of interest constant and letting the level of MPS adjust in response to changes in other policies. By imposing a policy scenario where all other forms of support are removed, the model finds the amount of MPS that holds the selected outcome constant, yielding the desired measure of equivalency.

The PEM is a partial-equilibrium model of four major crop groupings, plus milk and beef, considered at an aggregate national level. While designed with the PSE in mind, not all policies in the PSE are included in the PEM. Payments involving input constraints, such as the Environmental Quality Incentives Program, or policies whose payments are based on non-commodity criteria, such as the Conservation Reserve Program, are not included in the model. Policies of this type have complex impacts that cannot easily be analysed within PEM, and are of increasing importance in terms of the PSE (Figure 2.13, Panel D). Nonetheless, the main support policies of the US are included in the present analysis.

By converting the entire complex policy set to a single “MPS equivalent”, a comparable indicator measured in dollar terms and with a straightforward interpretation is created. Anderson and Neary termed this the “tariff equivalence” of support. To highlight the objective with reference to which the index is defined, the term “Iso-income”, “Iso-production” or “Iso-export” index will be used here – “iso” meaning “to hold constant”. Beyond tracking the changes in level and composition of the PSE, these measures also take into account how support is distributed across commodities, capturing the often complex cross-effects of policies between markets. Generally, support that is more evenly distributed across commodities tends to be less distorting and more transfer efficient, but this rule of thumb can be affected by the particulars of market interactions, such as the feed market connecting crop and livestock producers, and the cross-elasticity of demand for commodities, to name only two.

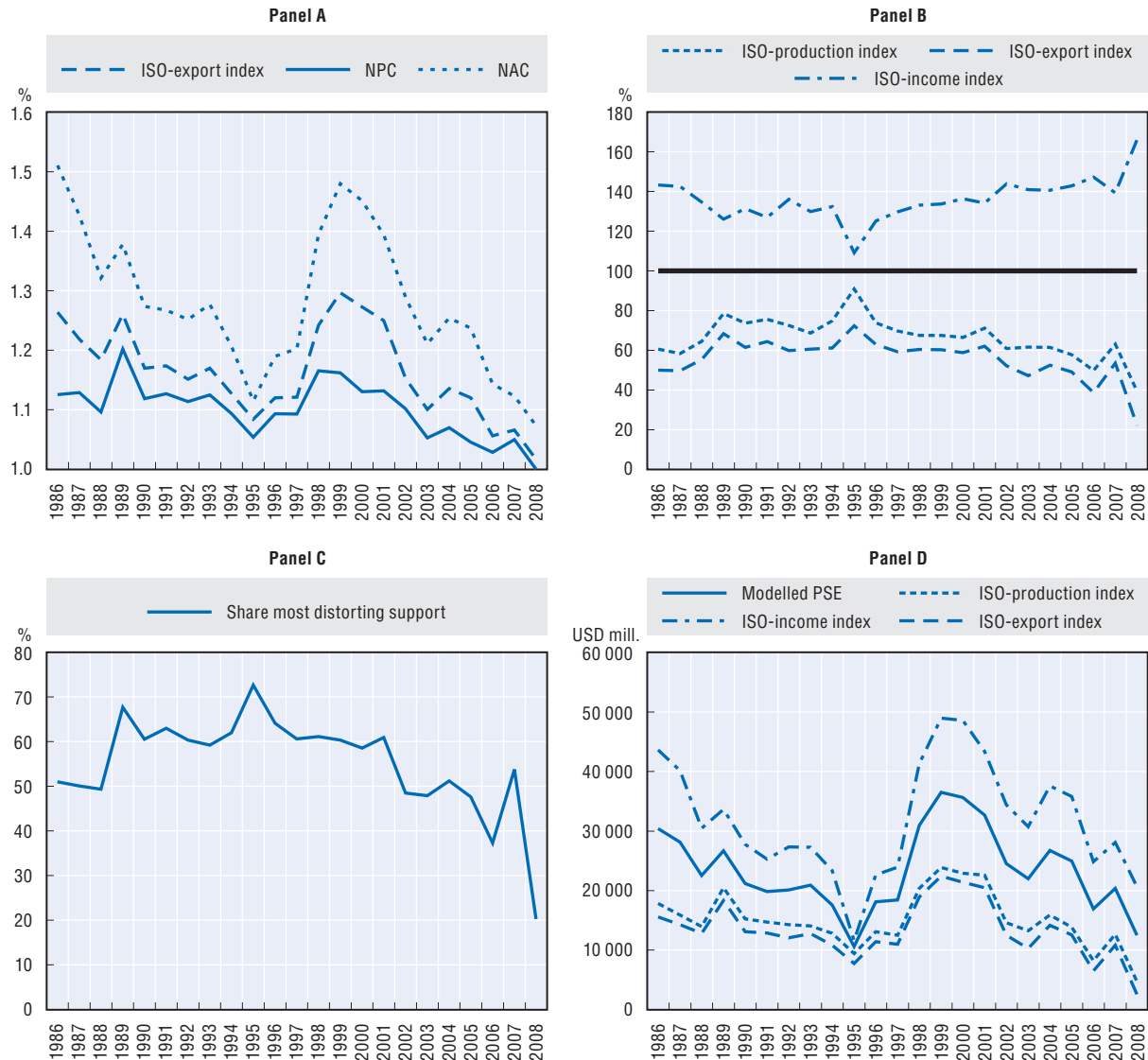
Two important indicators that derive from the PSE are the NPC and NAC (see Table 2.1). The NPC measures the amount of price protection offered by MPS, while the NAC measures the additional farm revenue provided by all forms of support. Unfortunately, the NPC can’t indicate the amount of effective protection provided by any type of support other than MPS, and the NAC cannot tell what the impact of the increase in farm revenue may be. The iso-index approach is helpful in resolving this uncertainty by measuring the impact of all forms of support in terms of an equivalent amount of MPS. The iso-export index measures the effect of US support programmes on export value, demonstrating that the effect is greater than that implied by the NPC, but less than that of the NAC (which implicitly treats all support as equal to MPS) (Figure 2.13, Panel A).

The iso-income index measures the amount of market price support required to achieve the same increase in farm income as that obtained by the policy set. As market price support is generally less transfer-efficient than other policies, more is required to achieve the same effect. The opposite is true for production and trade impacts of support, as MPS tends to be one of the most distorting forms of support. Calculating these indices as a percentage of the PSE provides an indication of the relative efficiency of the policy set at delivering increased farm income and its potential to distort markets. A value of 100% indicates no difference between MPS and the current policy set (highlighted in Figure 2.13, Panel B). For the iso-income index, the upward trend evident after 1995 is evidence of increasing transfer efficiency of the policy set. Reduced production and trade distortion is measured by the downward trend in the iso-production and iso-trade indices away from the 100% equality with MPS line, with the iso-trade index in 2008 showing trade-distorting effects roughly 20% that of an MPS-only policy.

The year 1995 stands out in the data, appearing as unusually market-distorting and transfer inefficient, but that year is in fact one of low budgetary payments. Deficiency payments decline strongly from 1994 to 1995, while PFC payments do not begin until 1996.

This leaves MPS in the dairy sector to form a relatively large share of overall support, making the overall policy set more “like” MPS (Figure 2.13, Panel C). When expressed as a percentage of the PSE, the iso-indicators show the impact of changes in the composition of support, but not its level. Overall, the PSE in 1995 was lower than in other years, but more of the support was in the form of MPS. Looking at the iso-index in level terms, the period of greatest support and market impacts is 1999, when the level of support surged due to higher loan deficiency payments and crop market loss assistance payments (Figure 2.13, Panel D).

Figure 2.13. Iso-indices, 1986-2008



Note: Modelled PSE refers to the portion of the PSE that is represented in the PEM model.

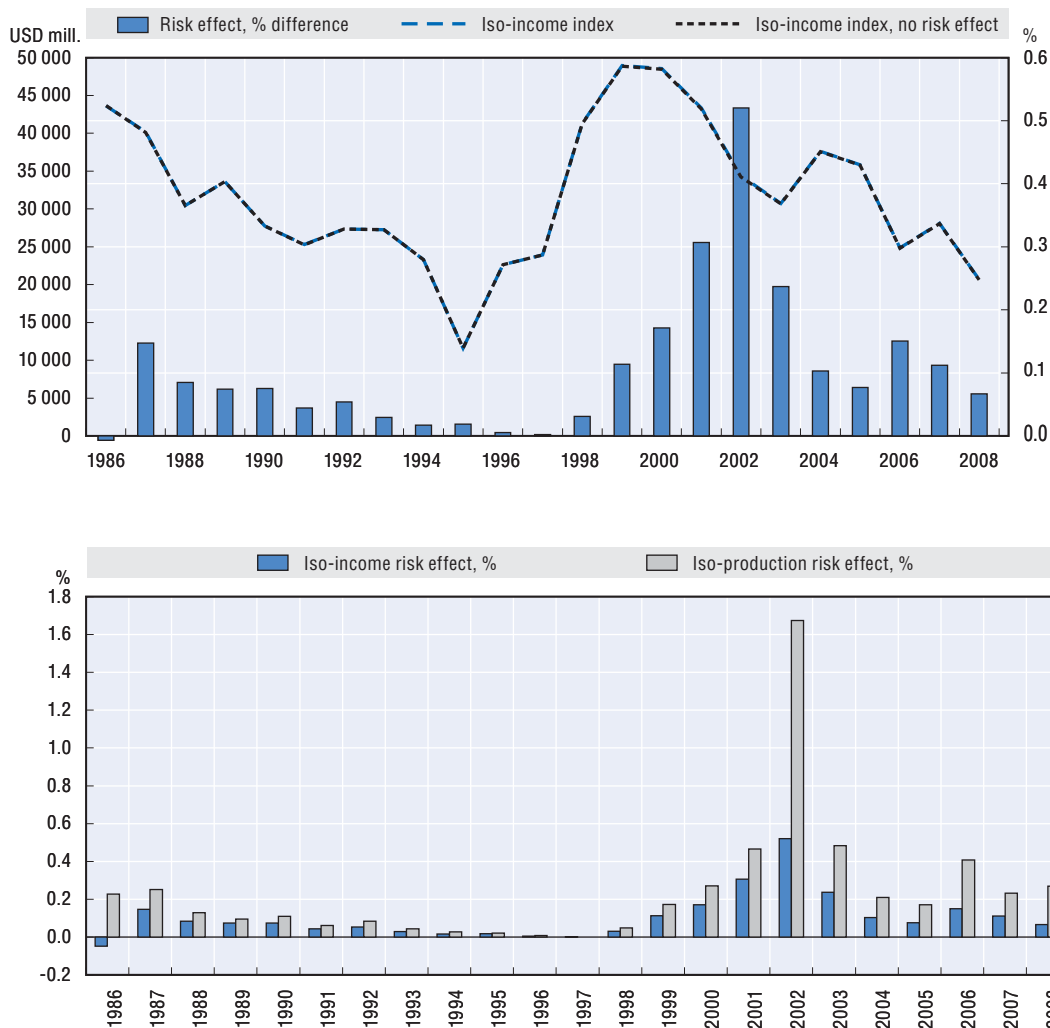
Source: OECD, Policy Evaluation Model.

The iso-production index shows that the distortiveness of support in the United States increased into the mid-1990s and declined steadily thereafter. The increasing importance of Category E payments (which do not require production) is driving this movement towards lower overall production distortion. However, this trend is small compared with

the decline in the overall level of support, which has resulted from higher prices reducing both MPS and those budgetary payments contingent on prices. The model treats the risk-reducing effects of the loan rate and Counter-cyclical Payments (CCP) as increasing the incentive price for the producer, which contributes to marginally higher values of the index in years where prices are low and these policies have the maximum impact. 2002 is a particular example of this effect, though the effect remains modest, at around 5% of the total impact (Figure 2.14, lower pane).

The set of policies in the earlier study period, from 1986 to the early 1990s, were nearly as transfer efficient as those in later years, even though, as the iso-production index shows, they were slightly more distorting. The deficiency payments made on the basis of land were very transfer efficient, as they directed payments to farmer-owned inputs (land) in a way that made land more attractive to producers than purchased inputs. The relative expansion in land use shifted the input mix towards farm-owned inputs (which deliver welfare to the producer) and away from purchased inputs.

Figure 2.14. Risk effects of programmes and Iso-income index, 1986-2008



Source: OECD, Policy Evaluation Model.

The iso-export index generally tracks the iso-production index, while remaining below it in value (Figure 2.13, Panel B). Overall, the difference between the iso-production and iso-export indices has to do with the impact of policies on consumption, as exports are essentially the excess of production over consumption. It is expected that the iso-export index will be lower in absolute value than the iso-production index as MPS has a strong impact on consumer behaviour relative to other policies, and so will have a larger impact on exports than production. The downward trend in the later part of the period is more pronounced in the iso-export index, although the difference is not dramatic.

Overall, the results indicate measured progress in improving the transfer efficiency and reducing the market distortions provoked by agricultural policy, after 1995. Over the entire time period the improvement has been modest. Part of the explanation for this is the already-high level of transfer efficiency, which limits the potential for further gains. The iso-income index, which was 140% in 1986-88, averaged 151% of the PSE in 2007-09, indicating that support is already 50% more efficient at transferring income to producers than market price support. Relatively more progress has been made on reducing the production-distorting effects of policies, especially with respect to exports. The average value of the iso-export index as a percentage of the PSE was 52% in 1986-88, but by 2006-08 this was reduced to 35%, a decline of 14 percentage points to 65% of the 1986-88 value. There remains room for improvement in the area of reducing production distortions; in particular by reducing MPS, which continues to form a large share of the PSE.

Risk effects

Several US policies are designed to have a counter-cyclical effect related to commodity prices. The OECD's PEM takes this into account for the two most significant policies: the set of marketing loan policies taken together, will be termed the "loan rate", and the counter-cyclical payments introduced in the 2002 Farm Bill.³ These policies, by altering the risk profile of farm production, offer additional benefits to risk-averse farmers. This effect is modelled using a price premium, as discussed in OECD (2002) and Hennessey (1998).⁴ More detail on the application of this approach in PEM can be found in Annex D.

The iso-income index, including the risk effects of the loan rate and counter-cyclical payment, exceeds the index excluding risk effects by an amount that varies but is typically less than 0.5% of the value of the index (Figure 2.14, upper pane). The risk effects of these programmes as estimated in the model depend heavily on the assumption of the farmers' degree of risk aversion. Here it was assumed that farmers have a risk premium of 1%, indicating a small degree of risk aversion.⁵ The effect of the addition of the CCP can be seen in the higher impact of risk reduction after 2002. Commodity prices were low in 2002, and the greatest impact of risk-reduction occurred in that year, which had a 1.7% higher iso-production index relative to the situation where risk impacts are not included in the model: the iso-income index for 2002 was 0.5% higher.

Notes

1. PNPC is the ratio between the average price received by producers (at the farmgate), including payments per tonne of current output and the border price (at the farmgate).
2. For example, some studies find that capitalising government payments has increased farmland values by 15 to 25% in recent years and that government payments have increased crop production between 1% and 6% over time (USDA, 2001; Oltmer and Florax, 2001; OECD, 2008b).

3. Analysis of the impacts of US agricultural support policies on the risks faced by farmers – and therefore on production, income and trade – may vary under alternative assumptions.
4. Briefly stated, the model presumes a risk-averse utility function of the mean-variance type, where policies may affect the variance of revenue through their negative co-variance with prices. This, in turn, impacts the risk premium demanded by producers to accept uncertain prices. Specifically, reducing the net variability of prices is equivalent to a higher price according to a risk-aversion parameter.
5. Consider a bet determined on the tossing of a coin, where one wins X when the toss is heads, and loses X when the toss is tails. The risk premium is the amount an individual would pay to avoid having to participate in the coin toss, expressed as a percentage of X .

Chapter 3

Crop Sector Policies

As with previous Farm Acts, commodity programmes form a central part of the 2008 Farm Act. The three core price and income supports are the Direct Payments (DP), Counter-cyclical Payments and Marketing Assistance Loans programmes. This chapter looks in detail at these support policies and their impact on certain sectors. It focuses, in particular, on support for sugar.

3.1. Support policies for “programme” crops under the 2008 Farm Act

As with previous Farm Acts, commodity programmes form a central part of the 2008 Farm Act. Direct Payments (DP), Counter-cyclical Payments and Marketing Assistance Loan are the three core price and income support programmes, as was the case under the 2002 Farm Act (see Annex A). As required under the previous legislation, participants who receive commodity payments must continue to respect the requirements of conservation compliance.

Direct payments

Following the adoption of the 2002 Farm Act, the Direct Payments programme replaced Production Flexibility Contract (PFC) payments, which were scheduled to remain in place until the 2007 crop year (see Annex A). Direct payments are fixed and do not vary with current crop production or price. They provide annual payments to producers based on a farm’s historical plantings, historical yields and a national payment rate. Payment rates vary by crop. The 2002 Farm Act set fixed payment rates on a per-unit basis for 2002-07 and producers were given the option of updating their area bases.

Under the 2008 Farm Act, direct payment rates per eligible crop (*i.e.* wheat, maize, barley, grain sorghum, oats, upland cotton, rice, soybeans, other oilseeds and peanuts) are to be made on 85% of the base area in the 2008 and 2012 crop years (as under the 2002 Farm Act). However, for the crop years 2009-11, payments will be made on only 83.3% of the base area. The 85% ratio is restored for the 2012 crop year (Table 3.1). The reduction to 83.3% does not affect the CCP, which will continue to be provided for 85% of the base area. Provision of advanced Direct Payments is eliminated in the 2012 crop year and thereafter.

Counter-cyclical payments

Counter-cyclical payments (CCP) compensate for the difference between a crop’s target price less the direct payment rate and the effective market price. When effective market prices exceed the target price, no payment is made. Like DPs, CCPs are based on area and yield bases, but their payment rate varies inversely with current market prices. As with DPs, the farmer is not obligated to produce any of the covered commodities in order to receive the payment. CCPs are proportional to a farm’s base area and “countercyclical programme payment yield” and do not depend on current production.

The CCP programme is continued under the 2008 Farm Act, but target prices were adjusted and some additional commodities were included (Table 3.1). Support levels for countercyclical payments are adjusted, with many crops receiving increases, and support for cotton being reduced slightly. Beginning with crop year 2009, CCP payments are available for pulse crops, namely dried peas, lentils, and both small and large chickpeas.

The 2008 Farm Act maintains target prices at previous levels for 2008 and 2009, with the exception of upland cotton, whose target price is reduced (1.6%) (Table 3.1). Existing target prices are maintained for maize and rice over 2010-12. However, target prices are

Table 3.1. **Payment rates for crops under the 2002 and 2008 Farm Acts**

(USD/t)	Marketing loan rates				Direct payment rates		Counter-cyclical payments target price			
	2002 Farm Act	2008 Farm Act			2002 Farm Act	2008 Farm Act	2002 Farm Act	2008 Farm Act		
	2004-2007	2008	2009	2010-2012	2002-2007	2008-2012	2004-2007	2008	2009	2010-2012
Wheat	101.0	101.0	101.0	108.0	19.1	19.1	144.0	144.0	144.0	153.2
Maize	76.8	76.8	76.8	76.8	11.0	11.0	103.5	103.5	103.5	103.5
Grain sorghum	76.8	76.8	76.8	76.8	13.8	13.8	101.2	101.2	101.2	103.5
Barley	85.0	85.0	85.0	89.6	11.0	11.0	102.9	102.9	102.9	120.8
Oats	91.6	91.6	91.6	95.8	1.7	1.7	99.2	99.2	99.2	123.3
Upland cotton	1 146.4	1 146.4	1 146.4	1 146.4	147.0	147.0	1 596.1	1 570.9	1 570.9	1 570.9
Rice	143.3	n.a.	n.a.	n.a.	51.8	n.a.	231.5	n.a.	n.a.	n.a.
<i>Long grain rice</i>	<i>n.a.</i>	143.3	143.3	143.3	<i>n.a.</i>	<i>51.8</i>	<i>n.a.</i>	231.5	231.5	231.5
<i>Medium grain rice</i>	<i>n.a.</i>	143.3	143.3	143.3	<i>n.a.</i>	<i>51.8</i>	<i>n.a.</i>	231.5	231.5	231.5
Soybeans	183.7	183.7	183.7	183.7	16.2	16.2	213.1	213.1	213.1	220.5
Other oilseeds	205.0	205.0	205.0	222.5	17.6	17.6	222.7	222.7	222.7	279.6
Sugar cane	396.8	396.8	396.8	407.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sugar beet	504.9	504.9	504.9	460.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Peanuts	391.4	391.4	391.4	391.4	39.7	36.0	545.8	545.8	545.8	545.8
Dried peas	137.2	137.2	119.1	119.1	n.a.	n.a.	n.a.	n.a.	183.5	183.5
Lentils	258.4	258.4	248.7	248.7	n.a.	n.a.	n.a.	n.a.	282.5	282.5
Small chickpeas	163.8	163.8	163.8	163.8	n.a.	n.a.	n.a.	n.a.	228.4	228.4
Large chickpeas	n.a.	n.a.	248.7	248.7	n.a.	n.a.	n.a.	n.a.	282.5	282.5

n.a.: not applicable.

Note: Crop year periods vary between different commodities.

Source: OECD Secretariat calculations based on ERS, USDA, www.ers.usda.gov/Briefing/FarmPolicy/data.htm.

increased, over the same period, for the following crops: wheat (6.4%); barley (17.4%); oats (24.3%); grain sorghum (2.3%); and soybeans (3.4%). Base acreage and payment yield for direct and counter-cyclical payments remain the same as under the 2002 Farm Act.

Marketing Assistance Loan Program

Under the Marketing Assistance Loan (ML) Program, producers of specified crops can receive a loan from the government, using crop production as loan collateral. The primary aim of the programme is to provide interim financing to producers to meet cash flow needs at harvest time, while at the same time allowing them to store production for sale at a later date, when prices may be higher. A producer may realise a “marketing loan gain” if the market price falls below the loan rate plus interest, resulting in a repayment rate that is less than the value of the principal, plus interest.

As an alternative to taking out a loan, producers may choose to accept a cash payment – a “loan deficiency payment” – at any time after harvest when the repayment rate for the commodity produced is less than the loan rate. The farmer taking the loan deficiency payment remains free to sell the crop on the open market.

Marketing assistance loans have a nine-month maturity and accrue interest, but if the loan repayment rate is less than the principal, plus accrued interest, the interest need not be repaid (USDA/FAS, 2007a). The loans are non-recourse, in that the collateral can be forfeited at the end of the term without penalty, even if the market price of the commodity at repayment is less than the loan rate. Interest is also forgiven on loan forfeitures.

Unlike the CCP, marketing assistance loan benefits are paid on current production of the specific programme commodity. Moreover, whereas, under the CCP, loan rates are set

at national level, under the ML they vary according to county (except for peanuts). Commodities eligible for marketing assistance loans and loan deficiency payments include all of the commodities eligible for DP and CCP, plus extra-long staple (ELS) cotton, wool, mohair and honey.¹

Marketing loan gains and loan deficiency payments are calculated as being the difference between the statutory loan rate and the county price – as determined by the Commodity Credit Corporation (CCC) – (for wheat, feed grains and oilseeds), or the CCC-determined national price (peanuts), or an adjusted world price (for rice and upland cotton).² Payments to farmers under the ML Program averaged USD 6 billion over the 1999-2002 period, but have since declined to under USD 500 million as market prices have increased.

The 2008 Farm Act continues the non-recourse marketing loan programme under the same framework as the previous Act, but modifies coverage, levels of payment and payment limits (Table 3.1).³ Coverage of eligible crops is extended to include large chickpeas (starting in 2009) and a distinction is made between long- and medium-grain rice (previously described collectively as “rice”) – each category now has its own national loan rate.

The loan rate has increased for eight out of twenty commodities (wheat, barley, oats, minor oilseeds, graded wool, honey, cane sugar and beet sugar); decreased for two (dried peas and lentils), and has become applicable to one additional commodity (large chickpeas). Repayment rates may be modified in the event of severe disruption to marketing, transportation or related infrastructure.

Marketing loans are authorised for ELS cotton for crop years 2008-12, but the loans must be repaid at the established loan rate plus interest. The 2008 Farm Act requires the Secretary of Agriculture to revise the ML Program for upland cotton in order to reflect more accurately the commodity’s market value, it eliminates warehouse location differentials and it no longer allows modifications in loan premium and discount schedules. Cotton storage payments are continued, but at reduced rates (down by 10% from rates provided in 2006 for 2008-11 and by 20% for 2012).

The 2008 Farm Act re-authorised the provision of commodity certificates only for the 2007-09 crop years. Certificates were a loan repayment option. They were issued by the CCC and could be purchased at the posted county price for wheat, feed grains and oilseeds, or at the effective adjusted world price for rice or upland cotton, for the quantity of commodity under loan. The producers then exchanged them for the collateral, and thus repaid the loans. Certificates were used mainly during the mid-1980s in lieu of cash to compensate programme beneficiaries and to reduce the large, costly and price-depressing commodity surpluses held by the CCC.

The Average Crop Revenue Election Program

The 2008 Farm Act created a new, optional, revenue-based, counter-cyclical programme, the Average Crop Revenue Election (ACRE) programme. Unlike traditional farm programmes, the ACRE programme provides farmers with protection against revenue loss for each crop, regardless of the cause (price decline, yield loss, or some combination of the two).

The programme, which is based on state and farm revenue shortfalls, is available to farmers as from the beginning of the 2009 crop year, as an alternative to receipt of

payments under the CCP, plus a reduction of 20% in DP and a 30% reduction in the loan rate for each commodity. Enrolled farmers receive payments when revenue from programme crops (including peanuts) falls below levels determined from moving averages of past yields and market prices. More specifically, in order to qualify for an ACRE payment, two triggers must be met:

- the actual state revenue for the crop must be less than the amount of the state revenue guarantee; and
- an individual's actual revenue from the crop must be less than the farm's benchmark revenue.

The second trigger ensures that farms will not receive payments should the state as a whole (but not the individual farm) sustain a loss in revenue for the crop. Benchmark yields at the state and farm levels are calculated from averages for the previous five years, with the highest and the lowest excluded, while national average market prices are calculated from the previous two years. If both triggers are met, a producer will receive an ACRE payment calculated as the difference between the state's actual revenue and the ACRE guarantee per acre, multiplied by a percentage (83.3% or 85%, depending on the crop year) of the farm's planted acreage, but multiplied by the ratio of the individual farm's yield history to the state's yield history.

The state programme guarantee is set at 90% of the moving average yield multiplied by the moving average price. The ACRE state revenue guarantee for a given crop over the period 2010-12 cannot change by more than 10% from the previous crop year. ACRE payments are calculated on planted area, but the total number of eligible acres for all crops on a given farm cannot exceed the farm's total base area (historical plantings as determined under the Direct and Counter-cyclical Program [DCP]) for the farm. If the area planted is greater than the base, the farmer elects which planted acres to enrol in ACRE. In this respect, the ACRE programme is a closer match with current plantings than both the DP and CCP programmes, which use historical base acres for calculating payments.

In addition, as a condition for the farm's enrolment in ACRE, all CCP payments are given up, the *direct payments* it receives are based on 80% of the legislated direct payment rate and *marketing loan rates* are based on 70% of the legislated national marketing loan rate. The programme applies to all DCP crops on the farm, and payments for each crop are calculated separately. A farmer who operates more than one farm administrative unit is permitted to enrol (or not enrol) each one separately in ACRE. Importantly, once a farm is enrolled, all the crops on the farm come under the programme and must remain so for the duration of the 2008 Act. Enrolment can begin in any of the years from 2009-12.

Another key feature of ACRE is that, by using a recent average of farm prices and yields for calculating the programme guarantees, the programme provides a moving income support level, rather than one that is fixed over time, as occurred under traditional programmes. As a result, the guarantee level for a given year depends on the prices and yields in the years immediately preceding it. Also, to prevent a rapid increase or decrease, the programme guarantee cannot change more than 10% from year to year.

The Upland Cotton Economic Adjustment Assistance Program

The 2008 Farm Bill introduces a new provision, the Upland Cotton Economic Assistance Program, to provide adjustment assistance to US users of upland cotton (cotton millers), whether it has been domestically produced or imported. From 1 August 2008 to

31 July 2012, economic adjustment assistance equal to USD 88 per tonne will be provided to domestic users of upland cotton for all documented use during the previous month, regardless of the cotton's place of origin. The payment rate will be reduced to USD 66 per tonne on 1 August 2012. Support can be used only for acquisition, construction, installation, modernisation, development, conversion, or expansion of land, plant, buildings, equipment, facilities, or machinery.

Payment limits

Two types of payment limits exist for farm commodity programmes: one sets the maximum amount of farm programme payments that one person can receive annually; the other sets the maximum amount of income that an individual can earn, while still remaining eligible for programme benefits.

The 2008 Farm Act makes several changes to payment limits, some by tightening the limits and others by relaxing them. Limits are tightened by a) reducing the Adjusted Gross Income (AGI) limit, b) eliminating the "three-entity rule", which allowed individuals to double their payments by having multiple-ownership interests and c) requiring "direct attribution" of payments to a living person instead of to a corporation general partnership, etc.

Regarding the maximum amount of payments permitted, the 2008 Farm Act sets the ceiling for DP at USD 40 000 and for CCP payments at USD 65 000. ACRE payments do not have a separate payment limit: instead, the limit for CCP is adjusted to account for the 20% reduction in DP under ACRE. Specifically, for ACRE revenue payments, the limit is the sum of the CCP limit (i.e. USD 65 000) plus the 20% reduction amount in DP; for DP, the limit is the difference between the DP limit of USD 40 000 per person minus the 20% reduction in DP.⁴ The total amount of payments must be attributed to one specific person. Payment limits on marketing loan benefits and loan deficiency payments are abolished.

Under the 2002 Farm Act an exception to the AGI limit was made in cases where a certain proportion of income has been earned from farming sources: this exception is now revoked, and a distinction is made between adjusted gross non-farm income and adjusted gross farm income. If a three-year average of non-farm adjusted gross income exceeds USD 500 000, then no programme benefits are allowed (DP, CCP or marketing loan assistance). Higher-income producers, with an adjusted gross farm income of more than USD 750 000 (averaged over 3 years), are not allowed DP, but continue to receive CCP and marketing loan assistance benefits.

Planting flexibility for fruits and vegetables for processing

As described above, under the DP and CCP, farmers may plant crops other than the programme crop and still be entitled to receive direct payments – this is known as planting flexibility. Recipients of these payments are, however, prohibited from planting fruits, vegetables and wild rice (excluding mung beans, lentils and dried peas) on programme crop base acres, unless the farm/farmer had a history of planting these commodities on programme crop base acres, although payments were reduced acre-for-acre on such plantings. Double cropping of fruit, vegetables and wild rice was permitted without loss of payments if region had a history of such double cropping.

The 2008 Farm Act retains the overall provision on planting restrictions for fruits, vegetables and wild rice, excluding mung beans and pulse crops (dried peas, lentils and small and large chickpeas) on base area. Beginning in 2009, the 2008 Farm Act creates a

pilot planting flexibility programme for fruits and vegetables for processing in seven mid-western states. Farmers in these states are allowed to plant base area to cucumbers, green peas, lima beans, pumpkins, snap beans, sweet maize and tomatoes grown for processing. Their base acres are temporarily reduced for the year concerned (resulting in lower direct and counter-cyclical payments), but restored for the following crop year. Participation is limited to producers with processing contracts, and the amount of acreage eligible for the programme is limited for each state.

Insurance and natural disaster payments

The federal government provides subsidised insurance coverage against losses caused by natural disasters, price fluctuations and revenue shortfalls for crops. Livestock losses, in general, have not been eligible for federal crop insurance, except under several pilot programmes offered in certain geographic areas by USDA's Risk Management Agency (RMA).⁵ However, livestock losses due to drought or other natural disasters have been eligible for *ad hoc* emergency assistance, mainly to help livestock producers to defray the cost of purchasing off-farm feed.

Under the Federal Crop Insurance Program, producers may select between yield or revenue insurance. Insured producers receive a payment when actual yield or revenue falls below an expected level. In recent years, an increasing proportion of risk protection has been provided by revenue insurance, which protects against shortfalls in both yields and prices.

Producers participate in the Federal Crop Insurance Program on a voluntary basis. Crop insurance is delivered to producers through private insurance companies, which are partially reimbursed for their delivery expenses and receive underwriting gains in years of favourable loss experience. The government costs associated with the Federal Crop Insurance Program include: premium subsidies to producers; indemnity (in excess of *premium*); underwriting gains paid to private companies; reimbursements to private companies for delivery and other administrative expenses.

Coverage levels range from catastrophic risk coverage (50% of yield, indemnified at 55% of expected price for the 1999 and subsequent crop years), for which the producer pays none of the premium, to additional or "buy-up" coverage, which provides a higher level of cover (up to 75%, or in some cases 85%, of expected yield or revenue), for which the producer pays a portion of the premium. The Federal Crop Insurance Corporation (FCIC) pays the balance of the premium.

The agricultural commodities eligible for insurance are predominantly crops (as opposed to livestock). According to the USDA, in 2008 the Federal Crop Insurance Program provided coverage to over 100 crops, covering more than three-quarters of planted acreage in the country (286 million acres). Although the list of covered commodities has grown in recent years, 80% of total policy premiums (and federal subsidies) are accounted for by just four commodities – maize, soybeans, wheat and cotton.⁶

The total cost to the federal government of the crop insurance programme averaged USD 3.7 billion per year between 2004 and 2008. In 2008, around 60% of the policies sold were revenue products. Of the USD 4.4 billion of actual total government costs in 2008, nearly 84% (USD 3.7 billion) was for producer premium subsidies and payments to the private insurance companies to deliver the programme and the remaining

(USD 732 million) was for net indemnities to producers (gross indemnities minus producer paid *premia*) (USDA, FY 2010 *Budget Summary and Annual Performance*).

The 2008 Farm Act formalises the *ad hoc* measures used to provide disaster assistance by establishing an Agricultural Disaster Relief Trust Fund to finance agricultural disaster assistance to be available on an ongoing basis over the FY2008-FY2011 period through five new programmes. The Congressional Budget Office estimated the total cost of the Trust Fund to be around USD 3.8 billion over the four years and is funded from 3.08% of the duties received under the Harmonised Tariff Schedule.

The Supplemental Revenue Assurance Program (SURE), which is the largest of the five programmes funded by the Trust Fund, is designed to supplement the protection producers can purchase from private crop companies. It provides assistance to eligible crop producers on farms in primary and contiguous “disaster counties”, as designated by the Secretary of Agriculture, or for farms in other counties on which weather-related losses exceeded 50% of the normal revenue for all crops for the year concerned. Additionally, at least one crop on the farm must suffer a production loss (yield or quality) of 10% or more for the farm to qualify to receive a payment.

Unlike previous natural disaster assistance programmes, SURE encompasses the entire farm and all the crops produced on it in determining a target level of revenue. It provides payments at 60% of the difference between a target level of revenue and the actual total farm revenue for the entire farm. The target level of revenue is based on the amount of crop insurance coverage selected by the farmer: 115% of the insurance protection purchased, or 120% of the Non-insured Assistance Program coverage signed up for on the farm, but it may not exceed 90% of the farm’s expected revenue.

Total farm revenue includes the actual value of crop production; insurance indemnities; any other disaster assistance; 15% of the Direct Payments for the farm; all loan deficiency payments and marketing assistance Loan Benefits; and all Counter-cyclical and ACRE payments. In addition, SURE participation requires insurance for all crops – with an exception made for 2008, when producers had the opportunity to obtain a waiver through a buy-in provision.

The other four additional disaster programmes authorised under the 2008 Farm Act aim to provide assistance to livestock, forage, and orchard and nursery tree producers until FY2011: i) the Livestock Indemnity Payments Program, which compensates ranchers at a rate of 75% of market value for livestock mortality caused by a disaster; ii) the Livestock Forage Disaster Program, to assist ranchers who graze livestock on drought-affected pasture or grazing land; iii) the Tree Assistance Program, which entitles orchard and nursery growers to receive a payment to cover 70% of the cost of replanting trees or nursery stock following a disaster (up to USD 100 000 per year per producer); and iv) the Emergency Assistance for Livestock, Honey Bees and Farm Raised Fish Program, which provides up to USD 50 million to provide assistance for a number of disaster losses not covered under other disaster programmes.

The first three programmes are similar in application and benefit levels to previous *ad hoc* disaster programmes. Except for the Livestock Indemnity Program, these programmes require prior insurance from either crop insurance or the non-insured crop disaster assistance programme. Arrangements apply from 2008 to 2012, but farmers who had not taken out crop insurance for 2008 (when the new Farm Act came into force) had the option to buy into the programme for 2008 by paying an administrative fee.

Other commodity provisions

To address the issue that is often raised of farm programmes making payments to non-farmers, or making payments for land that is not in production, two provisions were created. First, DP, CCP and ACRE payments to farms with fewer than four hectares are now prohibited, unless the farm is owned by a socially disadvantaged or limited-resource farmer or rancher.⁷ Second, the base area is eliminated on land that has been sub-divided into multiple residential units or other non-farming uses. Prior Farm Acts had eliminated base acreage only for land developed for non-agricultural commercial or industrial use.

3.2. Sugar support policies

Policy background

The United States is a large net sugar importer. Support and protection for the US sugar sector is substantial. In fact, in percentage terms, sugar is the sector that receives the highest level of support in the United States, with SCT of 28% over 2006-08 (Figure 2.6). Whereas support to programme crops (discussed earlier) is primarily financed through budget outlays, support for sugar is provided primarily by maintaining domestic market prices at levels that are well above world market prices. In other words, the high level of support received by the US sugar industry is funded directly by sugar users, who pay domestic market prices far in excess of world market prices. OECD calculations show that, for 2006-08, the price paid by US sugar users was, on average, as much as 65% higher than the world price.

The origin of the current sugar support programme can be traced back to the legislation in the Agricultural and Food Act of 1981. The sugar support programme has since been re-authorised, and some modifications have been made in successive Farm Acts. Recent Farm Acts have stipulated that the programme should operate to the maximum extent at no cost to the government by avoiding forfeiture of sugar to the government's stock management agency (the CCC).

Key elements of the sugar support programme include:

- domestic price support through the loan rate;
- supply control to limit the amount of sugar marketed by processors through “marketing allotments” ;
- trade restrictions on imports of sugar through tariff-rate quotas (TRQs); and
- the sugar-for-ethanol programme, created under the 2008 Farm Act, whereby sugar intended for food-use, but deemed to be in surplus, is diverted to ethanol production.

Domestic price support

A key objective of the support policy for sugar is to maintain internal US prices above the price at which processors would have the incentive to forfeit sugar under loan to the CCC. Under the 2008 Farm Act, price support loans are extended to sugar processors who meet certain requirements concerning the transmission of benefits from the programme to producers of sugar cane and beet. Through the CCC the government provides loans to processors of domestically grown sugar crops to enable them to hold stocks. Raw cane sugar and refined beet sugar are pledged as collateral. The loans are “non-recourse”, meaning that millers or processors have the option of forfeiting sugar to the CCC, should market prices be insufficient to enable them to repay the loan.

Loan rates for raw cane sugar have not changed since 1985; and for refined beet sugar, not since 1992. The loan rates for sugar cane are to be raised progressively, from USD 397 per tonne in FY 2008, to USD 413 per tonne by FY 2011. For refined beet sugar, the 2008 loan rate remained at its previous level of USD 505 per tonne. From FY2009 to FY2012, the rate was set at 128.5% of the rate for raw cane sugar, bringing it up to USD 531 per tonne in FY2011 and FY2012.

Supply control

Sugar sold in the United States for human consumption by domestic sugar beet and sugar cane processors is subject to mandatory limits – so-called “marketing allotments” – as a way to guarantee the sugar loan programme operates at no cost to the federal government.

In the 2008 Farm Act, marketing allotments are designed to secure a minimum of 85% of domestic consumption for the domestic sugar sector. During the course of the marketing year, USDA is required to adjust allotment quantities to avoid the forfeiture of sugar under certain circumstances.

Overall allotment quantity allocations are divided between refined beet sugar (54.35% of the overall quantity) and raw cane sugar (45.65%), although the allocations can be adjusted during the year to compensate for short supplies of either beet or cane sugar. Beet sugar processors are assigned allotments based on their sugar production in crop years 1998-2000. The 2008 Farm Act sets out allocation conditions for new entrants and for the sale of factories between processors. It also states that sugar forfeited to the CCC counts against marketing allotments made in the year in which the loan to the processors was made. This makes it impossible to forfeit sugar that is in excess of a processor’s allotment at the end of the marketing year.

Tariff rate quotas

At the outset, it should be noted that the trade policies that constitute a major feature of US sugar policy are not included in the Farm Act because tariffs are set under legislation that implements international trade agreements. US commitments under international trade agreements affect the level and allocation of TRQs. Under the WTO Uruguay Round Agreement on Agriculture, the United States should maintain access to at least 1.139 million metric tonnes (raw value) a year, comprising 1.117 million metric tonnes of raw sugar and 22 000 metric tonnes of refined sugar, using TRQs.

Tariff rate quotas permit imports up to the stipulated levels to enter at duty rates that are below the rates that would otherwise apply. Tariffs on over-quota imports of sugar are high, in order to maintain high internal support prices without the need for excessive government stockholding. The in-quota tariff for sugar is equal to USD 13.8 per tonne. The over-quota tariff is USD 338.7 per tonne for raw sugar and USD 357.4 per tonne for refined sugar. In addition to the over-quota tariffs, there are safeguard duties based on the value or quantity of the imported sugar. Currently, these duties are based on value. As of January 2008, sugar imports from Mexico are duty-free under NAFTA and are not subject to quota restrictions.⁸

The TRQ for raw cane sugar is allocated to about 40 countries; the TRQ for refined and specialty sugar is allocated to Canada, with an additional portion made available to all countries on a first-come, first-served basis (WTO, 2009). For FY2010, TRQs on imports of

raw sugar are established at the minimum amount to which the United States is committed under the WTO Uruguay Round Agreement on Agriculture (i.e. 1.117 million metric tonnes). For refined and specialty sugar, the TRQ was set at 90 039 metric tonnes (99 251 short tons raw value). This amount includes the WTO minimum amount of 22 000 metric tonnes, of which 1 656 metric tonnes are reserved for specialty sugar, as well as an additional 68 039 metric tonnes for specialty sugar to accommodate a rapidly expanding organic food sector.

The United States also operates the Refined Sugar and Sugar-Containing Products Re-Export Programs to allow US refiners and food manufacturers to be more competitive in the global markets for refined sugar and sugar-containing products.

Sugar-for-ethanol programme

This new programme, called the “Feedstock Flexibility Program”, aims to address the potential for a US sugar surplus (and the resulting loan forfeitures) caused by unrestricted imports from Mexico, under NAFTA, and from other countries, under other free trade agreements, by diverting sugar from food use to ethanol production.

More specifically, USDA is now required to purchase US-produced sugar in quantities roughly equal to the amount of excess imports, in order to avoid forfeitures of sugar under loan to the CCC. The sugar purchased must then be sold to bio-energy producers for processing into ethanol. Purchases of sugar from processors would be made through competitive bids, at prices not lower than support levels under the sugar programme. USDA’s CCC will provide open-ended funding for this programme, in order to ensure the no-cost requirement of the sugar programme.

Notes

1. Sugar processors are eligible to receive non-recourse loans, but are not eligible for marketing loan benefits.
2. The CCC is a federal corporation operated by USDA and manages most financial transactions for federal commodity programmes.
3. While national-level loan prices are set by the Farm Act, USDA adjusts the national average loan rate to local (usually county) loan rates to reflect spatial difference in markets and transportation.
4. This same amount is added to the USD 65 000 limit for CCP/ACRE payments. The total limit (USD 40 000 plus USD 65 000 = USD 105 000) can be effectively doubled to a combined USD 210 000 for a sole proprietor’s farm should he/she have a spouse.
5. For example, RMA enables some producers to purchase income insurance protection against losses of pasture, rangeland and forage.
6. Over 90% of the cotton-producing area is covered by federal crop insurance.
7. This provision would also result in reducing the cost of the programme.
8. The USITC (2007) study estimates that the removal of barriers on imports of raw and refined sugar would expand imports of these two products by 281% and 553%, and increase national welfare by USD 811 million.

Chapter 4

Livestock Sector Policies

In the United States, livestock and the production of livestock products account for about half of total farm cash receipts and for almost one-fifth of total agricultural exports. This chapter examines livestock sector support policies, focusing on the dairy industry.

4.1. Policy background

Livestock and the production of livestock products account for about half of total farm cash receipts and for almost one-fifth of total agricultural exports (Annex Tables E.1 and E.13). The United States is a world leader in the production, consumption and export of meat and poultry products. Consolidation and vertical integration are the key features that characterise the rapid changes that have taken place in the structure and business organisation of the livestock sector over the last three decades (see Section 1.2).

With the exception of milk, wool, mohair and honey, few federal farm policies grant direct support to livestock producers.¹ For example, livestock producers are not eligible for commodity price and income support programmes (except on products they also may produce – such as milk and wool). Nor, in most cases, do they qualify for federal crop insurance, although there is some limited participation by cattle, dairy and pig producers in livestock revenue insurance programmes. They have benefited from *ad hoc* assistance to recover losses caused by natural disasters such as droughts and hurricanes and, on occasion, from assistance for the destruction of animals for disease control purposes.²

Nonetheless, the indirect impacts of agricultural policies on the livestock sector are substantial. A variety of federal farm programmes, regulations and policies affect livestock production indirectly because of their wide-ranging effects in the areas of feed grain prices, bio-fuel development, land use, environmental concerns, risk management, market structure and international trade.

For example, incentives that divert maize from feed uses into ethanol production can significantly increase feed prices and, consequently, production costs. Likewise, compliance with environmental and food safety regulations has an important bearing on the sector. As livestock farming increasingly concentrates into larger, more production-intensive units, concerns arise about the effects on the environment, including degradation of surface water, groundwater, soil and air. Operations that emit large quantities of air pollutants may be subject to regulation under the Clean Air Act.

The livestock-related provisions of the Farm Acts typically pertained to contracting and other business relationships between producers and meat packers; farm animal health and welfare regulation; and the marketing and safety of meat and poultry (Johnson and Becker, 2009). The 2008 Farm Act also includes provisions that: cover state-inspected meat and poultry; bring catfish under mandatory USDA inspection; modify the mandatory country-of-origin labelling (COOL) law to ease compliance requirements affecting meats and other covered commodities; and it creates a new disaster assistance trust fund for livestock producers affected by weather disasters.

Food safety and marketing issues related to livestock products are discussed in Chapter 10, *Food safety, marketing and other policies*. Disaster assistance programmes for livestock producers are discussed in Chapter 3, in the sub-section on *Insurance and natural disaster payments*. The following section focuses on support policies for the dairy sector.

4.2. Dairy support policies

Policy background

Dairy products account for around 27% of the value of production and 4% of agricultural export earnings. Technological change, economies of scale and increased productivity have led to a large concentration of production: 5% of all dairy farms (those with more than 500 cows) supply 60% of all the milk produced in the United States. Advances in transportation and storage technologies have greatly reduced the marketing problems associated with milk perishability. Moreover, the increased size and concentration of farmers' co-operatives for marketing their milk has lessened the imbalance in market power between farmers and dairy product manufacturers.³

Changes in consumer demand for dairy products have spurred changes in product mix, structure and organisation of the sector. Consumers' purchases of dairy products have changed from primarily local markets for perishable fluid milk toward more storable and easily transported manufactured dairy products which are increasingly traded in global markets. Additionally, consumer demand for dairy products is growing more slowly than milk production capacity, thereby challenging the relevance of one of the original goals of the dairy support programme – to ensure an adequate supply of fluid milk.⁴

As measured by the PSE, the dairy sector currently receives more support in absolute terms, than any other sector in the United States, and receives the second-largest share of gross farm receipts (%SCT for milk) (after sugar). In 2007-09, support specific to dairy producers accounted for 14% of the total PSE. Almost all of the specific support to dairy comes from market price support (market price support to the dairy sector accounts for over 60% of total market price support across all US commodities).

Dairy policies and programmes have been modified over time, but the underlying general objectives remain unchanged: to ensure the orderly marketing of fresh, wholesome milk to meet consumer demand at reasonable prices and to provide adequate returns to milk producers (Manchester and Blayney, 2001). More specifically, dairy policy in the United States has historically been aimed at addressing three main issues: 1) volatile or low producer prices; 2) the perishability of milk resulting in seasonal imbalances of supply and demand; and 3) the perceived weak bargaining power of milk producers *vis-à-vis* the buyers.

This policy response has resulted in the development of a complex array of programmes, both at federal and state level. The main elements of dairy policy comprise a system of geographically-based price discrimination and pooling schemes (federal and state milk marketing orders); a counter-cyclical producer payment programme (the Milk Income Loss Contract Program); a price support programme implemented by government purchase of dairy products (the Dairy Produce Price support Program); a tariff-rate quota for most dairy products to restrict imports (import barriers); and a small export subsidy programme (the Dairy Export Incentive Program) for a few manufactured dairy products in certain years (particularly the mid-1990s).

Federal and state governments also have a tradition of credit, food safety, environmental and land-use zoning regulations or incentives that have a bearing on the dairy industry, and government programmes designed to provide domestic and international food aid have an additional effect.

Federal Milk Marketing Orders

The primary aim of Federal Milk Marketing Orders (FMMOs) is to promote the orderly marketing of raw fluid-grade milk between producer and processor.⁵ FMMOs define the price relationship among of fluid and manufactured dairy products within specific geographic areas of the country. The farm price of approximately two-thirds of farm milk is regulated under federal milk marketing orders. In addition, in lieu of participation in the FMMO system, a few states operate their own independently administered marketing orders (*e.g.* California).

Although the specificities of FMMOs have been modified since their inception in the late 1930s (under the Agricultural Marketing Agreement Act of 1937), their two principal elements – price discrimination and revenue pooling – have remained largely unchanged. Their main roles continue to be to: i) regulate the price of raw fluid-grade (Grade A) milk; ii) establish minimum prices that dairy handlers (processors) must pay to dairy producers for the milk they purchase depending on its end use (*i.e.* the type of product produced); and iii) distribute pool payments back to producers or their representatives (usually co-operatives).

A system of classified prices currently based on four classes of milk establishes minimum prices for the end products. The price of milk used for fluid consumption (Class I) can vary significantly across marketing orders and attracts the highest minimum price.⁶ On the other hand, the minimum prices for milk used in manufactured dairy products (Classes II, III and IV) are the same across marketing orders nationwide and are calculated monthly by the government.⁷ The stated objective of the orders is to ensure that adequate supplies of fresh milk are available in densely populated consumption areas that are also areas of low milk production.

Fluid milk prices (Class I) are determined by adding to a monthly base price a location differential – this varies from region to region according to local supply and demand conditions and is based on price incentives necessary to draw milk from surplus regions to deficit regions.

The payments of regulated handlers in each marketing order area are pooled, and producers delivering milk to the same regional marketing order area are paid a minimum uniform average (or “blended”) price based on the utilisation (shares) of various classes of milk.⁸

Through the practice of revenue pooling and discriminatory pricing, federal milk marketing orders may raise the average product price of milk and induce increased milk production. This is because the demand for fluid milk (Class I) is less elastic – *i.e.* a rise in price would lead to a proportionately smaller decline in consumption than the demand for manufactured dairy products (Classes II, III and IV) – and the established minimum prices are higher for the fluid milk market. Moreover, revenue pooling effectively subsidises the production of milk for manufacturing uses, resulting in a lower price for consumers of cheese, butter and milk powder, and lower prices to producers for Class II, III and IV milk.

Unlike the Dairy Product Price Support and the Milk Income Loss Contract programmes discussed below, FMMOs are permanently authorised (Johnson, 2008; Chite and Shields, 2009). Thus, the elements of the 2008 Farm Act relating to FMMOs focus on processes under the system's regulations – not on major programme changes. The 1996 Farm Act called for several changes in milk marketing orders, including consolidation of the then-existing 31 orders (by 2009, the number had been reduced to ten).

The 2008 Farm Act also authorises a dairy forward pricing programme to be administered in a similar manner to a previous temporary pilot programme. Like the

original pilot programme, the forward pricing programme allows dairy farmers and co-operatives to enter voluntarily into forward contracts with milk processors. The programme applies only to milk purchased for manufactured products (Classes II, III and IV), and therefore does not include milk purchased for fluid consumption (Class I). The provision allows new contracts to be entered into until FY2012. Any payments made by milk processors under the contract are deemed to satisfy the minimum price requirements of federal milk marketing orders.

The Milk Income Loss Contract Program

In contrast to crop farmers, dairy farmers have not traditionally been recipients of direct government payments. However, the dairy sector was one of the main beneficiaries of the *ad hoc* emergency assistance provided over FY1999-2000, receiving a total of USD 1 billion. Under the 2002 Farm Act these *ad hoc* payments were institutionalised with the creation of a new counter-cyclical national dairy market loss payment programme, the Milk Income Loss Contract (MILC).

Like US crop programmes, the MILC provides direct payments to dairy producers when prices decline below a specified level, but – unlike countercyclical programmes for crops which are paid on a percentage of historical production – MILC payments are based on current production up to a specified limit. All dairy producers are eligible. MILC payments are made on quantities up to a given amount of milk marketed per farm, for months when the fluid milk price in the Boston marketing order falls below a benchmark level up to a given annual amount of milk.⁹

Under the 2002 Farm Act, dairy producers were eligible to receive MILC payments on up to 1.1 thousand tonnes of milk per dairy farm per year when the monthly Boston price for Class I milk fell below a benchmark price of USD 373.5 per tonne.¹⁰ The payment rate was set at 34% of the difference between the Class I price in Boston and the established benchmark price.

The 2008 Farm Act extends the MILC programme through to the end of FY2012, but makes significant changes to the MILC payment structure in the following ways. Although the same benchmark price is maintained, both the production payment limit per farm and the rate of payment are increased for the period from 1 October 2008 to 31 August 2012. Over that period, the production limit per farm is set at 1.4 thousand tonnes per year and the payment rate at 45%. After 31 August 2012, the production limit per farm reverts to 1.1 thousand tonnes per year and the payment rate reverts to 34%.

In addition, because of the rapidly rising cost of feed, the 2008 Farm Act included a provision to adjust the benchmark price upwards, should feed prices rise above specified levels (i.e. the USD 373.5 per tonne target price in any month is adjusted upwards when feed prices rise above a certain threshold).¹¹

MILC payment levels have fluctuated over time, reflecting the volumes marketed in months when the reference price (i.e. Class I milk at Boston) has been below the benchmark price and the difference between the benchmark and reference prices. In every year since its inception (with the exception of FY2003), payments made under the scheme have been small, relative to the overall value of milk production. However, when market prices remained below the benchmark level for a significant period in 2003, payments consequently contributed appreciably to producers' returns. Following nearly two years of inactivity from March 2007 through to January 2009, MILC payments were again made in February 2009 and continued through to November 2009.

The Dairy Price Support Program

The Dairy Price Support Program (DPSP) was first established under the Agricultural Act of 1949 with the stated objectives of: ensuring an adequate supply of milk; preserving a level of farm income adequate to maintain productive capacity sufficient to meet future needs; and the fostering of price stability.

Price support for dairy is provided through government offers to purchase butter, non-fat dried milk and Cheddar cheese from dairy processors whenever the prices of these commodities fall below a specified level. The prices offered to processors for government purchase of supported products support the price of milk used in manufacturing and, ultimately, the prices paid to producers for farm milk, although prices offered for supported products are no longer set to maintain farm milk prices at a specific level. The DPSP, which serves as a price floor for processors, also underpins minimum milk prices under the FMMO.¹²

The market price support programme benefits dairy farmers by increasing the demand from processors for milk for use in the manufacture of supported dairy products (*i.e.* butter, non-fat dried milk and Cheddar cheese).¹³ However, market price support not only imposes costs to consumers and taxpayers, but, with its emphasis on certain products, may discourage processors from producing those niche products for which there is growing demand.

Since 1949, the programme has been amended, usually in the context of multi-year, omnibus Farm Acts. Under the 1996 Farm Act, the dairy price support programme was scheduled to end in 1999, but the scope of the programme was extended in subsequent legislation and the programme was renewed under the 2002 Farm Act. Although the 2002 Farm Act removed the permanent authority given by the 1949 Farm Act, it did renew the programme, with a 5½-year extension through to the end of 2007, with the government purchase price for milk set statutorily at USD 218 per tonne of milk. This was the same level as that applied under the terms of 1996 Farm Act.

The 2008 Farm Act extends the Dairy Price Support Program for five years through to 2012, but modifies the programme by directly supporting the prices of manufactured dairy products (*i.e.* butter, Cheddar cheese and non-fat dried milk) at mandated levels, rather than the price of milk. The programme has been renamed the Dairy Product Price Support Program (DPPSP). In the legislation, the minimum purchase prices were set at: block cheese, USD 2 491 per tonne; barrel cheese, USD 2 425 per tonne; butter, USD 2 315 per tonne; and non-fat dried milk, USD 1 764 per tonne, but the Secretary of Agriculture is permitted to adjust those prices to keep government stocks below set levels, as well as increase the purchase prices above the specified minimum levels. Government must purchase all supported products offered to it for sale at announced minimum prices.

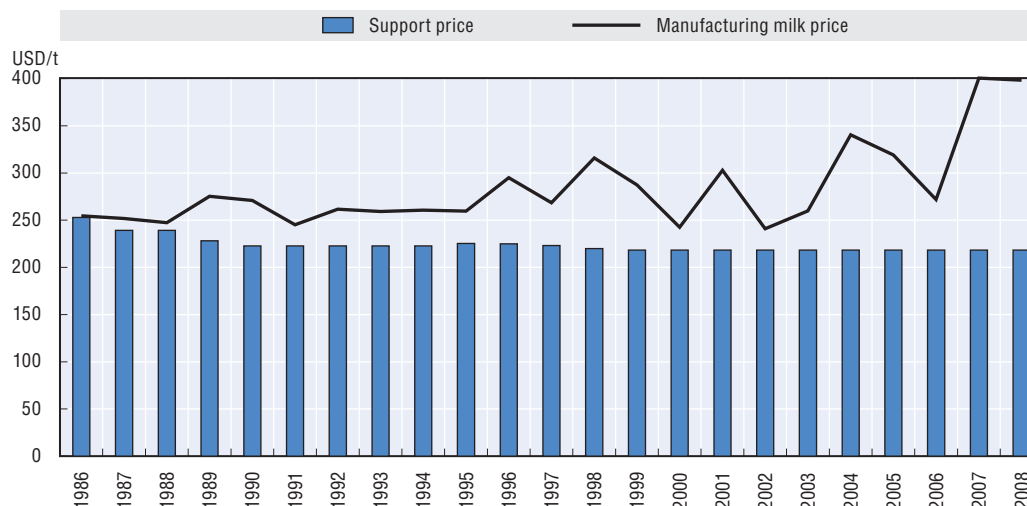
Each of the mandated product prices listed in the 2008 Farm Act are the same as those used under previous legislation by USDA to purchase surplus manufactured dairy products in order to achieve the support price of USD 218 per tonne of milk, as stipulated in the 2002 Farm Act. However, the legislation does not require that this price relationship be maintained. During 2009, for example, purchase prices for two of the supported products (butter and Cheddar cheese) were temporarily increased and not calculated to generate the former all-milk support price, and stock-level triggers could also lead to product purchase prices different from those required to maintain the former milk support price.

Government purchases of surplus dairy products have been relatively small since the mid-1980s, as market prices have remained above the support price. As shown in Figure 4.1, the US domestic price of manufacturing-grade milk (the average price paid for

milk that can be used only in butter, powder and cheese) has been consistently above the support price since 1987.

However, in late 2008 and early 2009, after several years of relative inactivity, the price support programme resumed purchases, following a decline in milk product prices. It is estimated that 50 000 tonnes of non-fat dried milk were removed in 2008, and 75 000 tonnes in 2009, along with small amounts of cheese and butter.

Figure 4.1. **US annual support price and average annual manufacturing grade milk price, 1986-2008**



Source: OECD calculations based on Economic Research Service, USDA.

Import measures

In general, the Dairy Price Support Program has played a relatively minor role in keeping the domestic US price for dairy products above the world price. The most important features of US dairy policy that keep prices artificially high are import measures which, since the implementation of the URAA, are no longer part of farm legislation.

By insulating the domestic dairy sector from import competition, import barriers make possible the key domestic elements of the dairy programme – milk market order pricing rules and the price support programme. Domestic price supports would be impossible if imports were unrestrained, because maintaining the price floor would be made prohibitively expensive by cheaper imports.

US tariffs on dairy products are very high, compared to the average agricultural tariffs in the United States, with an average m.f.n. applied tariff in 2007 of 21.4% (4.8% for total agriculture) (Table 5.1). In addition, out of the twenty-four mega-tariffs (more than 100%), seven are applied to dairy products (Gibson *et al.*, 2001).

Imports of dairy products are generally limited by a series of tariff rate quotas, which establish a two-tier system of tariffs: a certain threshold amount of imports is allowed to enter duty-free or at a reduced tariff rate (called the “in-quota rate”), whereas imports above that quota enter at a higher, often prohibitive, rate (called the “out-of-quota rate”). Most out-of-quota tariffs are specific tariffs (i.e. specified as a certain dollar amount per unit). In addition, some dairy products are subject to “special safeguards,” whereby

temporary additional duties may be applied to the out-of-quota (i.e. higher) tariff rates to prevent low prices or import surges from “injuring” a domestic industry.¹⁴

For those products subject to TRQs, imports accounted for 6% in 2007 or less of domestic consumption, but for other products, including some cheeses, imports were not restricted. Although quantity of access has expanded with the URAA, the second-tier tariffs applied to over-quota imports, particularly for dried cream, butter oil and some high milk-fat cheeses, remain very high (Annex Table E.20).

In addition to producer-paid assessments on domestically-produced milk, the 2008 Farm Act also contains a provision to implement a 2002 Farm Act-mandated assessment on imported dairy products. These assessments support a national programme, first authorised under the 1983 Farm Act – for generic dairy product promotion, research and education on nutrition. The 2008 Farm Act implements the 2002 mandate, but reduces the import assessment for imported dairy products from USD 3.3 per tonne to USD 1.7.

Dairy Export Incentive Program

First authorised under the 1985 Farm Act, the Dairy Export Incentive Program (DEIP) provides cash bonuses that allow exporters of selected dairy products to buy at US prices and sell abroad at prevailing (lower) international prices.

Payments since the programme’s inception have totalled USD 1.1 billion, with the most recent expenditures made in FY2004, until re-activation in 2009. The programme was active throughout the 1990s, peaking in 1993 with USD 162 million in bonuses. In more recent years world dairy prices have increased to such an extent that spending on the DEIP was negligible in 2004, and over the 2005-09 period was zero (Table 4.1). But, because of global market conditions, including declining international dairy prices and the re-institution of dairy export subsidies by the European Union, the DEIP was re-activated again in May 2009 and carried forward to 2010. An amount of USD 19 million of outlays were awarded under the programme during FY2009. In terms of volumes, the amounts by product were as follows: 37 228 metric tonnes of non-fat dry milk; 12 731 metric tonnes of butter/butterfat; and 927 metric tonnes of cheeses.

Table 4.1. Expenditure under the Dairy Export Incentive Program

Fiscal year	USD million	Fiscal year	USD million
1986	0	1997	121
1987	0	1998	110
1988	8	1999	145
1989	0	2000	77
1990	9	2001	8
1991	39	2002	55
1992	76	2003	32
1993	162	2004	3
1994	118	2005-08	0
1995	140	2009	19
1996	20	2010	10

Source: USDA.

Commodities eligible under the DEIP are milk powder, butter fat, Cheddar, Mozzarella, Gouda, cream cheese and processed American cheeses. Subsidised exports are important for non-fat dried milk, but they are relatively small for butter and cheese. DEIP quantities

and expenditures are subject to annual limitations under the URAA. These limits are 68 201 metric tonnes of non-fat dried milk, 21 097 metric tonnes of butterfat, and 3 030 metric tonnes of various cheeses. Total expenditures under WTO commitments are capped at USD 117 million per year. While the volume of subsidised exports was below the URAA limits, they were approaching those limits for butter and cheese. The 2008 Farm Act emphasises use of DEIP to its maximum, subject to US trade obligations.

Notes

1. Wool, mohair and honey are supported through the Marketing Assistance Loan Program.
2. Some cattle, dairy and pig producers in a limited number of states do participate in livestock revenue insurance programmes.
3. In 2002, farmer-owned dairy co-operatives handled 86% of non-fat dried milk, 71% of the butter and 40% of the cheese. Moreover, the dairy marketing co-operatives' share of all milk delivered to plants and dealers increased from 76% in 1987, to 86% in 2002 (USDA/RBS, 2005).
4. Over the 1980-2003 period, for example, consumption of all dairy products increased by 1.4% per year, while milk yields per cow increased by 2.1% per year (Blayney and Normile, 2004).
5. Marketing orders are also used for selected fruits and vegetables, although they are organised and operate differently from the FMMO system.
6. The classes of milk established by federal orders are: Class I: milk used for fluid consumption; Class II: milk used in manufactured dairy products (such as yogurt, ice cream, and sour cream); Class III: milk used to produce cheese; and Class IV: milk used to produce butter and dried milk products.
7. It should be noted that the prices actually received by producers may be higher than the minimum price for milk.
8. Total receipts in each marketing order area are calculated by multiplying the class prices by the amount of milk used in each class. Total receipts are then divided by the amount of milk sold to handlers.
9. The design of MILC is actually modelled on the earlier Northeast Dairy Compact (see Blayney and Normile, 2004).
10. The amount of eligible production is roughly equivalent to the total annual production of an average-sized farm in the eastern United States (160-cow operation).
11. The feed price threshold is calculated as follows. In any month during which the average feed cost exceeds USD 162 per tonne, the target price (USD 373.5 per tonne) will be increased by 45% of the difference between the monthly feed cost and USD 162 per tonne. To reduce budget exposure, the threshold feed cost will rise to USD 209 per tonne after 31 August 2012.
12. For a detailed discussion on how FMMO pricing works and on the linkages with the Milk Price Support Program, see Manchester and Blayney (2001) and Blayney and Normille (2004).
13. Conceptually, the extent to which dairy market price support results in higher prices for dairy farmers depends on the following factors: the extent to which the support prices are binding; the supply of milk; substitution between milk and other manufacturing inputs; and the extent of market power among processors (Balagtas, 2007).
14. The USITC (2007) study estimates that the removal of barriers on imports of dairy products would increase US welfare by USD 573 million, while the associated increase in imports of these products would range between 88% and 380%.

Chapter 5

International Trade Policies

Agricultural exports account for more than 20% of the volume of agricultural production in the US and for 10% of total US merchandise exports, on average. US agriculture does enjoy a trade surplus, with the value of exports exceeding imports, but the surplus has shrunk over time and, although exports have increased, imports have increased faster. This chapter looks at the United States' international trade policies for agriculture, including its export support programmes, import protection measures and international food aid.

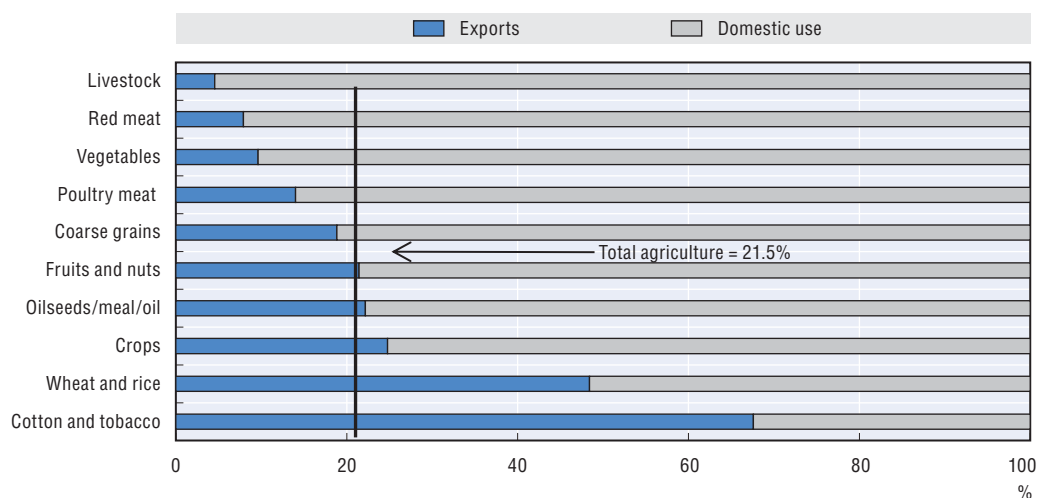
5.1. Policy background

As pointed out in Chapter 1, trade continues to be of critical importance to the long-term performance of the agro-food sector, with agricultural exports accounting for more than 20% of the volume (18% of the value) of US agricultural production (Figure 5.1; Annex Table E.10).

US agriculture enjoys a trade surplus, with the value of exports exceeding imports (Figure 5.2; Table E.11). The level of the surplus has changed over time, and imports of agricultural products have risen. The agricultural trade surplus narrowed between 1996 and 2006. While agricultural exports continued to rise for all years, except between 1997-99, imports increased nearly twice as fast.

Exports account for almost half of wheat production, more than one-third of soybeans, and a fifth of maize. The share of exports of specialty crops such as almonds is 70%, while for other specialty crops such as walnuts or grapefruit, the export share is as high as 40%. Export share of livestock products is lower than for crops, as most meat and dairy products are consumed domestically.

Figure 5.1. **Agricultural output exported, 2002-06**
%

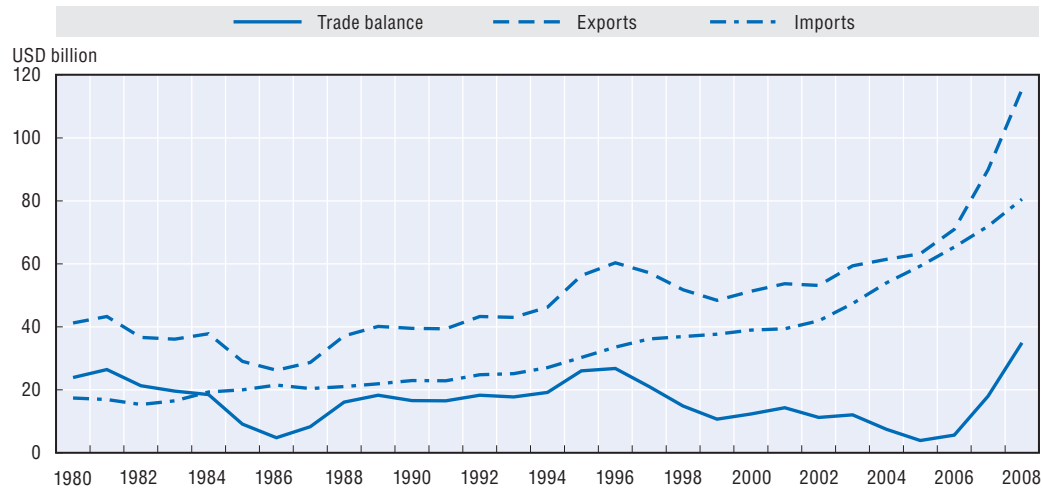


Source: OECD calculations using data from ERS, USDA and Foreign Agricultural Trade of the United States (FATUS).

Steadily expanding foreign demand – brought about by income gains, reduction in trade protection and changes in global market structures – has helped US agricultural exports to steadily increase over time, from USD 29 billion in 1985, to USD 115 billion in 2008 (Figure 5.2 and Annex Tables E.13, E.14 and E.15). Over the 1985-2008 period, agricultural exports increased at an annual average rate of 6.7% and represented an average 10% of total US merchandise exports in 2008 (USD 115 billion). In particular,

agricultural exports grew dramatically in the mid-2000s: 10% in 2006; 20% in 2007; and 41% in 2008. This growth is attributed primarily to rising incomes in emerging markets. As a result, the share of US exports destined for emerging markets climbed from 30% during the early 1990s to 43% in 2006. Overall, US exports are up, from USD 51 billion in 2000, to USD 115 billion in 2008.

Figure 5.2. **Agricultural exports, imports and trade balance, 1980-08**



Source: OECD calculations using data from ERS, USDA; FATUS.

All categories of agricultural exports have grown, particularly exports of horticultural products. Exports of pork and poultry meat also have shown rapid growth. Beef products were among the fastest-growing components of US agricultural exports until most foreign markets banned imports of US beef following the 2003 discovery in the United States of a cow with bovine spongiform encephalopathy (BSE, or “mad-cow disease”).

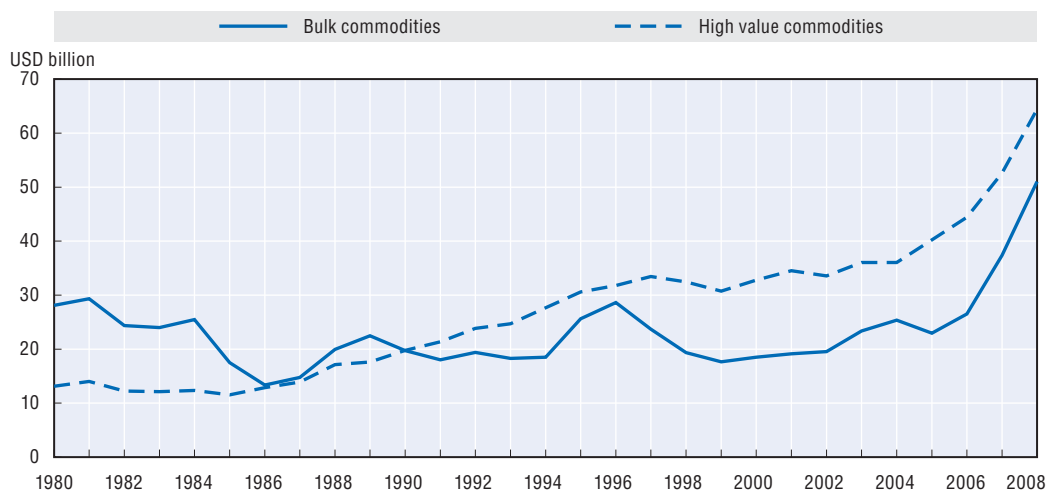
Overall, growth of agricultural exports has tended to fluctuate, while growth of agricultural imports has been comparatively steady. For example, following a very large USD 27 billion agricultural trade surplus in 1996, US export values temporarily declined, while import growth continued unabated. In 2006, the agricultural trade surplus dropped below USD 5 billion, but rising US exports and signs of a levelling off in import demand now stand in marked contrast to previous trends. In 2008, US agricultural exports reached their fifth consecutive year of record shipments, and US import growth – while still strong – was at its slowest pace since 2003.

The commodity composition of US agricultural exports and imports varies considerably. Exports are dominated by grains and feeds, soybeans and red meats and their products. In 2007, grains and feeds accounted for 31% of agricultural exports, animals and animal products: 19%, and oilseeds and products: 17% (Annex Table E.13). Conversely, the main agricultural imports are vegetables: 11%; fruits: 10%; and grains and feeds: 9%.

Historically, because of a cost advantage due to favourable land resources and capital-to-labour ratios, bulk commodities – wheat, rice, coarse grains, oilseeds, cotton and tobacco – were the main US agricultural exports. However, since 1991, exports of high-value products – meats, poultry, live animals, oilseed meals, vegetable oils, fruits, vegetables and beverages – outpaced exports of bulk commodities, which tended to

fluctuate more widely (Figure 5.3). The share of high-value products in US agricultural exports rose from 40% in 1985, to 56% in 2008. Growth of US exports to Canada, Mexico, Central and South America and to Asian markets has been an important factor in the increase in exports of high-value products since 1990.

Figure 5.3. **Value of US agricultural exports of bulk and high-value commodities, 1980-2008**



Notes: Bulk commodities are: wheat, rice, coarse grains, oilseeds, cotton and tobacco.

High-value products are: meats, poultry, live animals, meal, oils, fruits, vegetables and beverages.

Source: OECD calculations using data from ERS, USDA; FATUS.

As the commodity composition of US agricultural exports changed, so did the country composition. Although the top ten destinations for US agricultural exports have varied little since the mid-1980s, the EU, which was the largest market in previous decades, has declined in importance as Canada, Mexico, the rest of the Americas and Asia, have risen (Annex Table E.16). In particular, by 2002, Canada had replaced Japan as the leading single-country export destination for US agricultural exports. However, unlike the situation in other high-income markets, trade between the United States and Canada has been driven largely by market integration, such as NAFTA, rather than by income- and population-related changes. By 2006, the combined share of US exports to the EU and Japan had fallen to 22% – down from 50% three decades earlier. Nevertheless, Japan remains the main destination for wheat and maize exports, and China is the most important destination for soybeans and cotton (Annex Table E.17).

Concerning imports, horticultural products (fruits, vegetables, nuts, wine, malt beverages and nursery products) constitute, by far, the largest US agricultural import, accounting for nearly half of all such imports since 2002. Agricultural imports have grown more steadily than agricultural exports over the past two decades, increasing from about USD 20 billion in 1985 to USD 80 billion in 2008. Many of these imports come from two leading suppliers, Canada and Mexico (Annex Table E.19). While imports from the European Union are slowing, imports from Canada, Mexico and China have been rising steadily.

The 2008-09 world economic crisis has had major impacts on US agriculture (Shane et al., 2009). Declining incomes around the world as a result of the evolving global recession, combined with the short-term appreciation of the dollar, have resulted in

significant declines in US agricultural exports and in sharply lower agricultural prices, farm income, and employment, compared with the figures for 2007-08.

US agricultural trade is influenced by a number of factors, especially global income and population growth (Gehlar *et al.*, 2007). Other important factors are changes in tastes and preferences in foreign markets; US and foreign supply and prices; and foreign import barriers and exchange rates. US domestic farm policies that affect price and supply and trade agreements with other countries, also influence the level of US agricultural exports.

While many of these factors are beyond the scope of congressional action, Farm Acts have typically included programmes that guarantee the private financing of US agricultural exports, subsidise agricultural exports, promote US farm products in overseas markets or respond to foreign trade barriers. Several programmes exist which aim to promote agricultural exports and to provide food aid. These programmes include direct export subsidies, export market development, export credit guarantees and foreign food aid. Of these, only export subsidies are subject to reduction commitments agreed to in the URAA.

Since the 1970s, Farm Acts or other legislation have contained trade provisions that authorise export promotion. These trade provisions have either amended existing programmes or added new programmes promoting commercial exports of US agricultural products.

5.2. Export support programmes

Export subsidy programmes

Export subsidies *have historically been* provided through two programmes, the Dairy Export Incentive Program (discussed earlier) and the Export Enhancement Program. The EEP, which was created in 1985 and virtually unused after 1995, was repealed under the 2008 Farm Act. Under these programmes, exporters are awarded cash payments or commodity certificates redeemable for government-owned commodities, enabling an exporter to sell commodities covered by the programmes to specified countries at prices below those on the US market.

The commodities eligible under the EEP were wheat, wheat flour, rice, frozen poultry, barley, barley malt, eggs and vegetable oil. Under the DEIP, the eligible commodities are milk powder, butterfat and various cheeses. The United States scheduled export subsidy reduction commitments under the URAA for 13 product groups. The final bound ceiling since 2000-01 on export subsidy outlays for these commodities is USD 594 million annually.

The EEP, which mainly subsidised exports of wheat and wheat flour, was primarily used over the mid-1980s to the early 1990s period, while since the mid-1990s it has been little used. The last year of significant EEP subsidies was 1995 (USD 339 million) and there was no EEP spending under the 2002 Farm Act; from FY1996 to FY2006, a total of only USD 17 million of EEP bonuses were awarded. The 2008 Farm Act terminated the EEP.

DEIP spending also declined after 2002, averaging USD 18 million per year under the 2002 Farm Act, and no DEIP subsidies were provided over the 2005-08 period. The 2008 Farm Act extends legislative authority for DEIP through to 2012. The DEIP was activated again in June 2009 and carried over in FY2010.

Both programmes have been controversial. For example, several studies of the use of EEP found that: 1) wheat exports would have declined if the EEP were eliminated,

suggesting that the EEP increased wheat exports; and 2) subsidising wheat exports under the EEP resulted in displacing exports of un-subsidised grains – in addition to which both programmes were only moderately effective in meeting their goals of countering export subsidies or the unfair trade practices of other countries (see, for example, Anania, Bohman and Carter, 1992; GAO, 1990; Paarlberg, 1990).

Export market development programmes

The main export market development programmes include the Market Access Program (MAP); the Foreign Market Development Program (FMDP); the Emerging Markets Program (EMP); and Technical Assistance for Specialty Crops (TASC).

The MAP (originally created in 1978 as the Market Promotion Program) promotes primarily value-added products. The types of activities undertaken through MAP are advertising and other consumer promotions, market research, technical assistance, and trade servicing. Non-profit industry organisations and private firms are eligible to participate in MAP promotions on a cost-share basis.

The 2008 Farm Act extends MAP through to FY2012, makes organic produce eligible for the programme, and maintains funding at the FY2007 level – USD 200 million – for each of the next five years (FY2008-FY2012).

The FMDP, which was created in 1955, resembles MAP in most major respects, but mainly promotes generic or bulk commodities. The 2008 Farm Act extends FMDP through to FY2012 without change to the funding authorisation (i.e. USD 34.5 million annually).

The EMP provides funding for technical assistance activities aimed at promoting exports of US agricultural commodities and products to countries with market-oriented agricultural sectors. Eligible countries must have *per capita* incomes of less than USD 10 065 in 2005-06 and a population greater than 1 million. Under the 2002 Farm Act, funding for the EMP was set at USD 10 million annually. The 2008 Farm Act re-authorises the EMP through to FY2012 without change.

The TASC, created under the 2002 Farm Act, aims to assist US speciality crop exports by providing funds for projects that address sanitary, phytosanitary and technical barriers that prohibit or threaten US speciality crop exporters. The 2002 Farm Act defines “specialty crops” as all cultivated plants, and the products thereof, produced in the United States, except wheat, feed grains, oilseeds, cotton, rice, peanuts, sugar and tobacco. The types of activities covered include seminars and workshops, study tours, field surveys, pest and disease research and pre-clearance programmes.

The 2002 Farm Act authorises USD 2 million of funds each fiscal year through to the end of FY2007 for the TASC programme. The 2008 Farm Act extends TASC through to FY2012 and increases funding to USD 4 million in FY2008; USD 7 million in FY2009; USD 8 million in FY2010; and USD 9 million in FY2011 and FY2012.

Export market development programmes are not considered to be trade-distorting under the URAA and are therefore not subject to internationally agreed spending disciplines. Nevertheless, unless there are market failures that warrant government involvement in helping agricultural producers and agribusinesses to market their products overseas, it is questionable whether public spending for marketing programmes could enhance the international competitiveness of US commodity exports. These programmes usually fund activities that the private sector could finance itself and, as such, they could crowd out the development of market-oriented private sector initiatives.

Export credits, insurance and guarantees

Export credit guarantee programmes are designed to help foreign importers facing foreign exchange constraints and needing credit to purchase US commodities. Their aim is to facilitate exports to buyers in countries where official credit guarantees will help to maintain or increase US export sales. These programmes do not provide finance, but rather guarantee payments due from foreign banks for commercial financing of the sale of US agricultural exports: if a foreign buyer defaults on a loan, the government assumes the debt.

Four export credit guarantee programmes were re-authorised under the 2002 Farm Act. The GSM-102 programme underwrote commercial financing of US agricultural exports by guaranteeing re-payment of private, short-term credit (up to three years), extended to eligible countries that purchase US farm products. The GSM-103 programme, established by the Food Security Act of 1985, guaranteed longer-term (3-10 years) financing. The Supplier Credit Guarantee Program (SCGP), established by the 1996 Farm Act, guaranteed very short-term (up to one year) financing of exports. The Facilities Financing Guarantee Program (FFGP) guaranteed financing of goods and services exported from the United States to improve or establish agriculture-related facilities in emerging markets. GSM-102, GSM-103, and FFGP worked through foreign banks, while the SCGP worked directly through exporters.

The Facility Guarantee Program (FGP), established by the 1996 Farm Act, also operated under the 2002 Farm Act. It guaranteed financing of goods and services exported from the United States to improve or establish agriculture-related facilities in emerging markets that will improve the handling, marketing, storage, or distribution of imported US agricultural commodities and products.

Export credit guarantee programmes have financed an average of USD 3.3 billion per year of US agricultural exports since 1999 – mainly of grains, oilseeds and products, and cotton. The 2002 Farm Act authorised USD 5.5 billion-worth of agricultural exports annually through to the end of FY2007 for such guarantees, plus an additional USD 1 billion, to be made available to emerging countries. Between FY2005-07 the annual average value of exports covered by officially supported export credit guarantees amounted to USD 1.8 billion, of which around 90% was accounted for by the GSM-102 programme.

Export credit guarantee programmes became an issue in WTO dispute settlement as part of the dispute raised by Brazil against certain aspects of the US cotton programme. In 2005, the WTO dispute panel (in the cotton case) ruled that three US export credit guarantee programmes (GSM-102, GSM-103 and SCGP) were prohibited subsidies because the financial benefits returned to the government by these programmes did not cover their long-run operating costs. This ruling by the dispute settlement panel applied not only to cotton, but also to other commodities (WTO, 2008b).

The panel recommended that the United States take steps to remove the adverse effects of these subsidies or to withdraw them entirely. In response to this, the operation of the GSM-103 programme was suspended in 2006. The SCGP was also suspended in FY2006, largely because of a high rate of defaulted obligations and evidence of fraud. The 2008 Farm Act repeals authority for the SCGP, the GSM-103 intermediate credit guarantee, and the statutory cap on the fee charged of 1% of the guaranteed dollar value of the transaction for the GSM-102 programme.* In addition, the credit subsidy for the programme is capped at

* The WTO cited the 1% cap on loan origination fees as a subsidy element in the operation of the export credit guarantee programmes.

USD 40 million annually. The amount of GSM-102 credit that the government must make available each year is set at not less than USD 5.5 billion. The actual level of guarantees depends on market conditions and the demand for financing by eligible countries.

The 2008 Farm Act extends authority for the FFGP to FY2012. It also provides that the Secretary of Agriculture may waive requirements that US goods be used in the construction of a facility under this programme, if such goods are not available or if their use is not practicable. The new law also permits the Secretary to provide a guarantee for this programme for the term of the depreciation schedule for the facility, not to exceed 20 years.

5.3. Import protection measures

With the exception of a few commodities, import protection does not play an important role in US farm policy. The United States has one of the lowest average tariffs on agricultural products of all WTO members, with average bound tariffs on agricultural goods of 12%. Exceptions to these low tariffs include products such as dairy, sweeteners and tobacco. The United States has only 24 agricultural “mega tariffs” (tariffs in excess of 100%) and a relatively small number of TRQs, which apply primarily to imports of peanuts, tobacco, beef, dairy, sugar, cotton and some related products.

In 2007, the average m.f.n. applied tariff for agriculture was 8.7% (including the *ad valorem* equivalents of non-*ad valorem* rates) (Table 5.1). This is slightly more than twice the protection afforded to the non-agricultural sector. Around 195 tariff lines are subject to tariff quotas. Tariffs and TRQs provide price support for commodities by limiting imports of lower-priced products. The simple average out-of-quota m.f.n. tariff in 2007 was around 42%; the in-quota average was 9.1%. Close to 91% of out-of-quota tariffs are non-*ad valorem*, compared with almost 28% of in-quota tariffs.

Some tariff quotas are generally allocated to specific countries. This is the case for most products subject to tariff quotas, including beef, certain dairy products, peanuts and peanut butter, chocolate crumb and tobacco (Annex Table E.20). Apart from the tariff quotas specified in its WTO schedule of commitments, the United States has allocated additional tariff quotas to its preferential trading partners under free-trade agreements.

Access to tariff quotas is on a first-come, first-served basis, except for dairy products and sugar. Access for dairy is granted to “historical” importers, importers designated by the government of an exporting country, and on the basis of a lottery. One or more methods may be used, depending on the particular good. A licensing system is used to administer access. Any importer, including manufacturers of like products, can apply for a licence.

Access to the tariff quota for raw sugar is granted to exporting countries, not importers. It is administered through certificates of quota eligibility. The Department of Agriculture issues these certificates based on allocations specified by the United States Trade Representative (USTR). In-quota imports of raw sugar must be accompanied by a certificate of quota eligibility, validated by the certifying authority in the exporting country. Certificates are issued free of charge.

The United States has reserved the right to apply additional tariffs on over-quota imports of products subject to tariff quotas, either if their import prices drop below a trigger price (price-based safeguards), or if quantities exceed a given threshold (volume-based safeguards), in accordance with the special safeguard provisions of the WTO Agreement on Agriculture. The United States invokes price-based safeguards automatically on a shipment-by-shipment basis. In March 2009, the United States notified the WTO that

Table 5.1. **Applied m.f.n. tariffs, 2007**

Description	MFN			
	No. of lines	Average ¹ (%)	Range (%)	Coefficient of variation (CV)
Total	10 253	4.8	0-350	2.5
HS 01-24	1 648	8.7	0-350	3.0
HS 25-97	8 605	4.1	0-67.3	1.4
By WTO category				
<i>WTO Agriculture</i>	<i>1 595</i>	<i>8.9</i>	<i>0-350</i>	<i>3.0</i>
Animals and products thereof	139	4.2	0-100	2.4
Dairy products	166	21.4	0-177.2	1.1
Coffee and tea, cocoa, sugar, etc.	315	9.7	0-90.7	1.4
Cut flowers, plants	57	1.7	0-6.8	1.2
Fruit and vegetables	439	6.3	0-131.8	1.9
Grains	21	1.6	0-11.2	1.6
Oil seeds, fats and oils and their products	95	6.3	0-163.8	3.4
Beverages and spirits	100	4.8	0-51.8	1.8
Tobacco	47	56.0	0-350	2.2
Other agricultural products n.e.s.	216	2.0	0-67.3	2.8
By stage of processing				
First stage of processing	959	3.7	0-350	6.5
Semi-processed products	3 418	4.2	0-83.8	1.1
Fully-processed products	5 876	5.3	0-350	2.2

1. Averages do not include HS lines and duty rates for in-quota tariffs.

Source: WTO (2008a).

it did not apply volume-based safeguards between 2003 and 2008. However, price-based safeguards were applied during that period on bovine meat, dairy products, peanuts, sugar, and food preparations.

Cotton import protection programmes

Special import quotas (Step 3). The United States maintains a tariff rate quota on imported upland cotton of 86 545 metric tonnes. The duty is nominal – below the quota quantity – and ranges from zero to USD 110.3 per tonne. Above the quota quantity trigger, the duty increases to a prohibitively high USD 314 per tonne. When US mills have insufficient supplies, due to periods of short domestic supply or strong world demand, the so-called (Step 3) “special import quotas” allow for increased imports exempt from the high duty.

In particular, a “special import quota” is authorised when, for a consecutive four-week period, the weekly average of the lowest US cotton price quotation (i.e. Far Eastern) exceeds the prevailing world market price (i.e. the average of the lowest five Far Eastern price quotations). Another trigger for opening a Step 3 quota is a decline in the US stocks-to-use ratio to below 16%. The size of the quota is equal to one week’s domestic mill consumption. Importers have 90 days to make the purchases and 180 days to bring the cotton into the country. Quota periods can overlap. Total Step 3 imports in any crop year are limited to five weeks of domestic mill use. A step 3 “special import quota” cannot be established if a limited global quota for upland cotton is in effect, which operates differently and is triggered when other price conditions are met (see below).

Annual US imports of cotton are usually much less than the 86 545 metric tonnes tariff-rate quota. The USDA estimates that cotton imports will total about 3 000 metric

tonnes (15 000 bales) in the 2008/09 marketing year and zero metric tonnes in the 2009/10 marketing year.

Limited global import quota. A “limited global import quota” for upland cotton can be triggered under certain conditions, but cannot exist if the special import quota is in effect. In particular, a “limited global import quota” equal to 21 days of domestic mill consumption is allowed (at below tariff rate duty levels), when the average monthly spot price of base-quality upland cotton exceeds 130% of the average spot market price over the preceding 36 months. Limited global import quotas cannot overlap with one another. Nor can a limited global quota be established if a Step 3 “special import quota” is in effect.

The 2008 Farm Act establishes special cotton import provisions, creating an import quota equal to one week’s mill usage when the average US price internationally exceeds the world market price for four consecutive weeks. Imports obtained under this quota must be bought within three months and arrive in the country with six months. A limitation of ten weeks’ of mill use in one marketing year is imposed on the quota.

5.4. International food aid

International food aid is one of the main tools used by the United States to address food insecurity concerns in developing countries. The United States is the world’s largest international food aid donor, accounting for about 55% of total global food aid over the last decade. The US contribution in 2007 to the World Food Programme (WFP) was USD 1.176 billion or about 44% of total donor contributions to WFP. In contrast to other donors, a feature of US international food aid policies is that all food aid is legally required to be supplied in-kind (*i.e.* in the form of commodity donations), although some efforts are made towards a more flexible approach (*e.g.* a pilot programme under the 2008 Farm Act and the Farmer-to-Farmer Program). Box 5.1 provides a succinct description of the issues surrounding the effectiveness of US international food aid programmes.

The United States provides US commodities as international food aid through eight programmes that address specific objectives: Titles I, II and III of the Agricultural Trade Development and Assistance Act of 1954, known collectively as P.L. 480; The Food for Progress Program (FPP); the Farmer-to-Farmer Program; the McGovern-Dole International Food for Education and Child Nutrition Program (FFE); Section 416(b) of the Agricultural Act of 1949; and the Bill Emerson Humanitarian Trust (BEHT) (Table 5.2).

International food aid programmes can be traced back to 1954, when the US’s major food aid programme, P.L. 480, was enacted. Successive Farm Acts have either amended existing programmes or added new commodity food aid programmes as humanitarian or development assistance to mainly low-income foreign countries. The last major overhaul of food aid was in the 1991 Farm Bill.

The 2002 Farm Bill re-authorized P.L. 480 and other food aid programmes: it made a number of small changes affecting programme objectives, authorising appropriation levels and implementing rules such as the extent of monetisation (sale of a percentage of food aid to generate cash) (USDA/ERS, 2008; Johnson, 2008). In particular, the monetisation provision – first included in the 1985 Farm Act – allowed implementing agencies (private voluntary organisations and co-operatives) to sell not less than 15% of the total of all commodities distributed annually under non-emergency programmes. It also established a minimum donation level of 2.5 million metric tonnes.

Box 5.1. Issues in the US international food aid debate

Issues surrounding the effectiveness of US food aid in addressing food insecurity problems in developing countries comprise the following: first, as US food aid is provided in-kind, concern has been expressed that such assistance undermines local agricultural markets in recipient countries by causing disincentives, dependency and displacement of commercial imports from other commercial sources (local, regional or international). Thus, food aid is alleged to act as an implicit export subsidy with the potential to jeopardise international trade agreements. However, while earlier evidence suggested a short-term disincentive effect, the long-term effect has been less clear, and more recent studies have found the long-term effects to be quite small and only temporary (FAO, 2006).

Second, monetisation is a management-intensive and inefficient way to convert food aid backing into cash to fund food security programmes. It is estimated that that almost 70% of P.L. 480 Title II development food aid, and 40% of Food for Progress Program and Section 416(b) food aid commodities to private voluntary organisations and co-operatives is monetised (Barrett and Maxwell, 2005). In contrast, very little monetisation was found with P.L. 480 Title II emergency food aid.

Third, there are onerous implementation restrictions. For example, only agricultural commodities produced in the US can be procured and up to 75% of the volume of food aid is required to be shipped on US-registered vessels (cargo preference). Studies have found that procurement of food in local and regional markets, rather than in the US is generally more cost-effective and timely than in-kind food aid (GAO, 2009). It is also estimated that increasing transportation costs contributed to as much as a 52% decline in the average volume of food aid delivered from 2001 to 2006 (GAO, 2009).

Fourth, the counter-cyclical variability of food aid – that is, less food aid is available when world prices (and thus import costs) are high – is another criticism often raised (Abbot, 2007). And finally, the effectiveness of US international food programmes may be hampered by the fact that they serve a range of objectives – including humanitarian goals, economic assistance, foreign policy and international trade – and are administered by multiple agencies, which raises issues of co-ordination. For example, GAO (2007a) reports that programmes designed to mitigate the factors contributing to food insecurity – such as low agricultural productivity, limited rural development and poor health – have been fragmented and unco-ordinated across the US government.

The 2008 Farm Act extends and amends the major US foreign aid programmes through to 2012. It removes the market development objective of P.L. 480, establishes mandated funding (“safe box”) for development programmes under Title II and reforms the Bill Emerson Humanitarian Trust. It also introduces monitoring and evaluation measures to increase the efficiency and effective use of non-emergency food aid. In addition, it introduces a pilot programme that provides for local and regional procurement.

Public Law 480 (P.L. 480)

In Public Law 480, assistance, provided under the authority of the Agricultural Trade Development and Assistance Act of 1954, is a primary means by which the United States provides overseas food assistance. P.L. 480 Title I provides for sales of US agricultural commodities to developing and transition country governments and private entities through long-term concessional financing agreements; P.L. 480 Title II – the largest US food aid programme – provides for donations of US commodities for humanitarian relief and

development projects overseas; and P.L. 480 Title III provides government-to-government grants to support long-term economic development in the least- developed countries. In recent years, P.L. 480 assistance has been provided through two programme authorities (Titles I and II).

The 2008 Farm Act changes the title of the underlying P.L. 480 legislation from the Agricultural Trade Development and Assistance Act, to the Food for Peace Act. It also removes export market development as an objective of the programmes under the statute P.L. 480 Title II.

The 2008 Farm Act amends the purposes of the statute P.L. 480 Title II programme to clarify that food deficits to be addressed include those resulting from man-made and natural disasters. The 2008 Farm Act increases the amounts of P.L. 480 funds that can be allocated to various food aid programme activities.

The Act authorises USD 2.5 billion to be appropriated annually for P.L. 480 Title II, which is USD 500 million more annually than the corresponding funding under the 2002 Farm Act. It increases the amount available for the administrative and distribution expenses of the organisations implementing food aid projects from between 5% to 10%, to between 7.5% and 13% of the funds available for Title III.

The 2008 Farm Act also provides USD 4.5 million for FY2009-12 to improve food aid quality issues. The limit on funding available for transporting commodities overseas to help expedite delivery is increased from its 2002 Farm Act level of USD 2 million, to USD 10 million each fiscal year.

Table 5.2. **International food aid funding under the 2002 Farm Act, FY2002-09**

Programme	Average FY2002-06 (USD mill.)	FY2007 (USD mill.)	FY2008 (USD mill.)	FY2009 (USD mill.)
Total food aid	2 234	1 937	1 947	1 676
P.L. 480 Title I	136	17	0	0
P.L. 480 Title II	1 550	1 665	1 561	1 226
P.L. 480 Title III	0	0	0	0
Farmer-to-Farmer	10	10	10	10
McGovern-Dole	97	98	99	100
Section 416(b)	157	0	0	0
Food for Progress	131	147	277	340
Emerson Trust	153	0	0	0

Source: USDA, *Annual Budget Summaries*, various issues.

For monitoring and evaluation of Title II non-emergency programmes, the 2008 Farm Act provides up to USD 22 million annually, not more than USD 8 million of which may be used for USAID's Famine Early Warning System (FEWS).

The 2008 Farm Act provides for a minimum funding level (termed a "safe box") beginning at USD 375 million in FY2009 and reaching USD 450 million in FY2012. This was in response to the concern expressed that, in recent years, Title II funds have been allocated to emergency aid rather than to non-emergency (development) projects. The safe box designation can only be waived if three criteria are satisfied: 1) the President has determined that an extraordinary food emergency exists; 2) resources available from the Bill Emerson Humanitarian Trust have been exhausted; and 3) the President has submitted

a request to Congress for additional appropriations equal to the reduction in safe box and Emerson Trust levels.

The 2008 Farm Act maintains the monetisation of food aid provision, but it authorises USD 60 million to carry out a pilot programme for local or regional purchase of agricultural commodities for food aid programmes for FY2009-12. Under current law, the United States can use P.L. 480 funds only to purchase US commodities. The Act makes some changes to the P.L. 480 Title I, which has not received an appropriation since 2006, in order to reflect the food security aspect of US food aid, rather than market development.

Food for Progress Program

The Food for Progress Program (FPP) provides US commodities to countries committed to market-oriented agriculture. The 2002 Farm Act required that a minimum of 400 000 metric tonnes be provided under the FPP programme. However, not more than USD 40 million of government funds may be used to finance transportation of the commodities. This amount effectively caps the volume of commodities that can be shipped under the programme. The 2008 Farm Act extends the programme without change through to 2012.

The Bill Emerson Humanitarian Trust

The Bill Emerson Humanitarian Trust (the successor to the Food Security Commodity Reserve under the 1996 Farm Act), is a reserve of commodities and cash that can be used primarily to meet unanticipated emergency food aid needs, or to meet food aid commitments when US domestic supplies are short. The Trust can hold up to 4 million metric tonnes of grains (wheat, rice, maize or sorghum), in any combination, but the only commodity ever to be held has been wheat.

The 2008 Farm Act re-authorises the BEHT through to 2012. It removes the cap of 4 million metric tonnes that can be held in the trust. Funds from the trust may also be invested in low-risk, short-term securities.

The Food for Education Program

The Food for Education Program (FFE, officially the McGovern-Dole International Food for Education and School Feeding and Child Nutrition Program), authorised under the 2002 Farm Act, provides commodities, funds and technical assistance mainly for school lunch programmes in poor countries.

The 2008 Farm Act re-authorises the programme through to 2012. It maintains funding on a discretionary basis without an increase, but it authorises USD 84 million in mandatory payments for the programme in FY2009.

The Farmer-to-Farmer Program

The Farmer-to-Farmer Program (FFP) is a voluntary technical assistance programme that aims to improve global food production and marketing by transmitting the technical skills of US farmers to farmers in participating countries. The FFP does not use commodities, but is allocated 0.5% of the funds to P.L. 480 funds.

The 2008 Farm Act re-authorises the FFP. It provides an annual floor level of funding for the programme of USD 10 million and extends it through to 2012. It also increases the

authorisation of annual appropriations for specific regions (sub-Saharan Africa and the Caribbean Basin) from USD 10 million to USD 15 million.

Section 416(b)

One other important international food aid programme comes under Section 416(b) of the Agricultural Act of 1949, it is not authorised in subsequent Farm Acts, as it was permanently authorised in the original 1949 Act. Section 416(b) provides donations of surplus US agricultural commodities, acquired by the CCC through its farm price support operations, to developing and friendly countries. Such commodities can be used for emergency and non-emergency assistance. The amount of food aid made available by Section 416(b) has always been highly variable because it is entirely dependent on the presence of surplus commodities in CCC inventories (Table 5.2).

Chapter 6

Agri-environmental Policies

Agriculture is the largest user of land and water resources in the US and the impact of farming on the environment has been well documented. This chapter discusses US agricultural-environmental policies, examining the array of policy instruments used and the objectives addressed. It looks at the evolution of US conservation programmes before the 2008 Farm Act, as well as at conservation provisions in the 2008 Farm Act.

6.1. Policy background

Agriculture is the largest user of land and water resources in the US, with soil erosion; water pollution; competition for water resources between irrigators and other users; conservation of wildlife habitats and species and air quality being the major environmental issues associated with farming (OECD, 2008a). As much as 60% of total soil erosion and 6% of total national GHG emissions originate from agriculture. Soil carbon sequestration and bio-energy production are increasing, although bio-energy provides only 3% of total energy consumption, less than 1% of transportation fuel (mainly from maize-based ethanol), and 5% of chemical product output. Federal targets aim to increase these shares to 4% for energy and fuel, and to 12% for chemicals by 2010, which could have a significant impact on crop production patterns, prices and international commodity markets.

US agricultural-environmental policies, which have been part of farm policy since the 1930s, encompass an array of policy instruments which rely heavily on financial incentives and technical assistance to agricultural producers who, in exchange, volunteer to adopt practices designed to improve their environmental performance.¹ In the main, these policies have traditionally addressed soil and water conservation and the pollution problems associated with crop and livestock production. However, increasing attention is now being given to wetlands restoration, wildlife habitats, farmland protection and a wide range of other objectives.

Conservation programmes can be broadly grouped into the following categories (see Box 6.1):²

- *Land retirement programmes*: these programmes provide payments to farmers for removing environmentally sensitive land from crop production for a specific period of time, agreed under contract (at least 10 years or, in some cases, permanently).
- *Working-land conservation programmes*: which provide technical and financial assistance to farmers who install or maintain conservation practices on land in production.
- *Agricultural land preservation programmes*: aim to retain land in agricultural production by purchasing the farmer's right to convert land to other uses, such as development.
- *Technical assistance*: on-going technical assistance is provided to agricultural producers seeking to improve the environmental performance of their farms.
- *Conservation compliance*: requires recipients of federal farm programme payments, such as commodity loans and direct and counter-cyclical payments, to conserve and protect wetlands and soils on highly erodible land.

Box 6.1. Major USDA conservation programmes

Land retirement programmes

- The CRP, which is the federal government's largest land retirement programme for private land, offers annual rental payments and cost-sharing assistance to establish various approved conservation practices (e.g. planting a cover crop on the land to reduce erosion). Contracts run for 10 to 15 years. Economic use of the land is limited during the contract period, but landowners retain the right to return land to crop production at the end of the contract. Applicants must meet certain eligibility criteria, bid to enrol land and contracts are awarded using an Environmental Benefits Index.
- The *Wetlands Reserve Program (WRP)* provides cost-sharing and/or long-term or permanent easements for restoration of wetlands on agricultural land. Landowners retain rights of ownership and rights to recreational uses, such as hunting and fishing.

Working lands conservation programmes

- The *Environmental Quality Incentives Program (EQIP)* provides technical assistance and cost-sharing or incentive payments to assist livestock and crop producers who agree to adopt a wide range of environmentally benign production practices or best-management practices on working lands. At least 60% of the programme's funding is targeted at livestock producers.
- The *Wildlife Habitat Incentives Program (WHIP)* provides a system of cost-sharing to landowners and producers with the aim of developing and improving wildlife habitat.
- The *Conservation Stewardship Program (a new CSP)*, first implemented in 2009, replaced the Conservation Security Program (CSP). Rather than the three-tier payment system of the CSP, payments for new CSP contracts are based on meeting or exceeding a stewardship threshold. Payments are based on the actual costs of installing conservation measures, income forgone by producer and the value of the expected environmental benefits.

Agricultural land preservation programmes

- The *Farmland Protection Program (FPP)* (formerly the Farm and Ranch Lands Protection Program) provides funds to state, tribal, or local governments and private organisations to purchase development rights on agricultural land in urban fringe areas and keep farmland in agricultural use.
- The *Grassland Reserve Program (GRP)* is designed to improve and conserve native-grass grazing lands through long-term rental agreements (10, 15 and 20 years) and permanent or 30-year easements. For rental agreements, annual payments are up to 75% of grazing value. Permanent easements are to be purchased at fair-market value, less grazing value, while 30-year easements are to be purchased at 30% of the value of a permanent easement. Cost-sharing is provided for up to 50% of approved restoration and maintenance costs, depending on the type of grassland. GRP enrolment is limited to 0.8 million ha of grassland.

6.2. Evolution of US conservation programmes before the 2008 Farm Act

Historically, the bulk of funding for conservation schemes focused largely on management measures to control soil erosion. The current era of conservation programmes was set in motion with the introduction of the 1985 Farm Act, with succeeding Farm Acts expanding the scope and funding for conservation programmes. The 1985 Farm Act established the Conservation Reserve Program, which provided payments to

producers who withdraw environmentally sensitive cropland from production for 10 to 15 years, and introduced the concept of conservation compliance.

The primary stated goal of the CRP in its early years was to reduce soil erosion on highly erodible cropland. With enactment of the 1990 Farm Act, eligibility for CRP was broadened beyond highly erodible land to include other types of more environmentally sensitive land. USDA also began ranking bids based on the environmental benefits they offered (using an environmental benefit index, or EBI) and set maximum allowable rental rates based on a soil-specific estimate of the rent earned on comparable local cropland. Following passage of the 1996 Farm Act, wildlife habitat was added to the EBI and producers have had the option of enrolling environmentally desirable land devoted to specific conservation practices with high environmental benefits at any time through a continuous sign-up. In contrast to the general sign-up, under which the contract selection process is through competitive auctioning, the continuous sign-up is non-competitive and landowners can enrol at any time.

Although, over time, it has come to seek to address an evolving set of conservation objectives, it has failed to address two issues of environmental protection in agriculture: i) many environmental impacts of agricultural production, such as water quantity and quality and wildlife habitat have not been taken into consideration; and ii) land retirement programmes provided no means of achieving conservation objectives on land actively engaged in agricultural production (Sullivan *et al.*, 2004). Consequently, these unaddressed environmental policy objectives have led policy makers to search for new policy tools (Batie and Schweikhardt, 2007).

The 1990 Farm Bill created a federal programme to restore and place conservation easements on wetlands – the Wetlands Reserve Program. The 1990 Farm Bill also authorised the Water Quality Incentives Program that signalled the emergence of water quality as a primary environmental objective of conservation programmes.

Because of CRP's narrow focus, the Federal Agriculture Improvement and Reform Act of 1996 consolidated and extended major environmental programmes. In particular, it established the Environmental Quality Incentives Program, which addresses a wider range of environmental concerns on agricultural lands in production.³ EQIP considered environmental quality and agricultural production to be compatible goals, and provided assistance to help producers meet new environmental standards (Stubbs, 2009). The programme provided cost-share and (optionally) incentive payments for producers to initiate and maintain conservation activities on working lands, with a specific focus on mitigating water pollution.

Initially, 50% of EQIP funds were directed to solving resource problems on livestock operations, but waste management structures were ineligible for funding, and EQIP payment limits were so low that they failed to attract the participation of most large operations. The 1996 Farm Act also introduced the Wildlife Habitat Incentives Program, to encourage land uses providing wildlife habitat, and the Farmland Protection Program, to purchase farmland development rights.

The 2002 Farm Act re-authorised nearly all agri-environmental programmes under the 1996 FAIR Act, mandated a sharp increase in funding for conservation programmes and widened the scope of issues addressed by these programmes.⁴ The importance of working lands conservation has gained prominence over cropland retirement, with the largest share of new spending being directed to programmes for conservation on working lands

and livestock-related issues, although funding for land retirement remains the largest category of conservation funding.

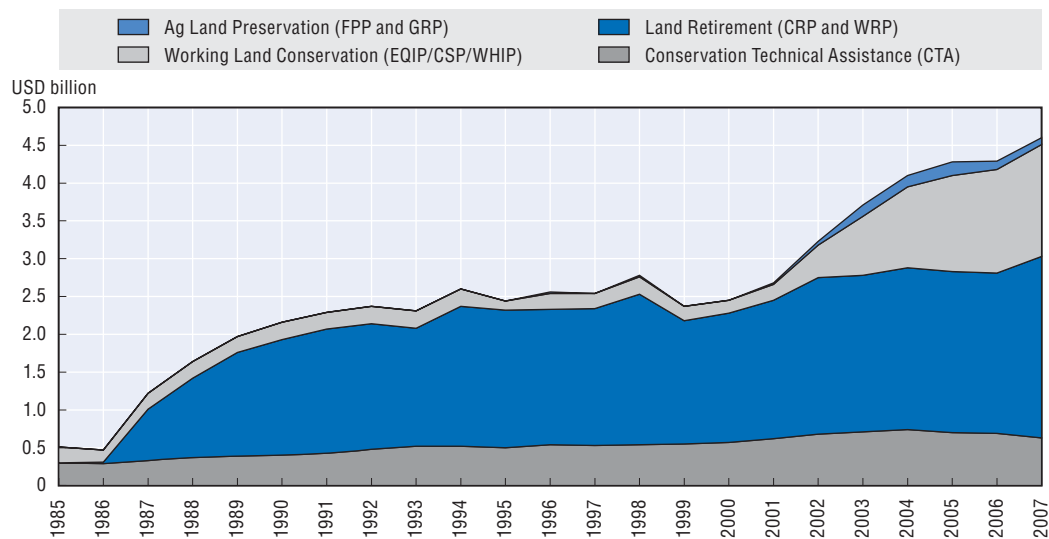
Increased funding enabled EQIP to enhance its response to livestock resource concerns and pursued broader conservation priorities of reducing non-point source water pollution, air quality impairments and erosion, as well as wildlife habitat deterioration. Terms of eligibility were broadened, 60% of funding was directed to livestock resource concerns and a new payment limit of USD 450 000 was established.

The 2002 Farm Act also created the Conservation Security Program to reward producers achieving and maintaining above-benchmark standards (“reference level”) of conservation management. This programme offered both cost-share and incentive payments to reach, maintain, or improve land stewardship by participation in one of three contract performance tiers.

With respect to land retirement programmes, the 2002 Farm Act assigned greater emphasis to wetland restoration, largely through a major expansion of the Wetland Reserve Program. Evaluation of CRP contracts began to consider soil erosion, water quality protection and wildlife habitat. The CRP acreage cap was increased and other farm-land retirement programmes, such as the CRP Farmed Wetlands pilot programme, the Conservation Reserve Enhancement Program and the Wetlands Reserve Program were continued and expanded.

As shown in Figure 6.1, total funding for conservation programmes has risen sharply over time, particularly under the 2002 Farm Act, mainly due to expansion of programmes on working lands. Major conservation programme expenditures have increased by 79%, from USD 2.6 billion in FY1996 to USD 4.6 billion in FY2007.

Figure 6.1. **Trends in conservation expenditures by major programme categories, 1985-2007**



Source: ERS analysis of OBPA budget summary data (1985-2007).

Overall, land retirement has dominated federal agricultural conservation spending since 1985 and continues to be the largest single component of agricultural conservation spending. Roughly 50% of all USDA conservation spending since 1985 has been dedicated to land retirement.

The evolution of conservation policy and programmes has shifted outlays among land retirement, working lands, agricultural land preservation, and conservation technical assistance programmes. While between 1986 and 2001 funding for working land programmes accounted for about 9% of conservation-related financial and technical assistance to farmers, these programmes accounted for 25% of funding between 2002 and 2006. The corresponding shares of land retirement programmes were 69% and 54%. Funding for working lands increased from an average of approximately USD 200 million per year during FY1996-01 to nearly USD 1.5 billion in FY2007.

Funding for farmland preservation programmes has become a significant and growing part of conservation spending. However, technical assistance has not kept pace with increased conservation programme funding, and has fallen steadily in absolute terms since FY2004.

Technical assistance is primarily funded through annual appropriations under the Conservation Technical Assistance Program. Technical assistance is also funded by the CRP and other conservation programmes. As such, Figure 6.1 underestimates, to some extent, the actual expenditures on technical assistance.

6.3. Conservation provisions in the 2008 Farm Act

The 2008 Farm Act re-authorises almost all the existing conservation programmes by increasing spending on them by 11% (USD 2.7 billion) (Table 6.1). It also modifies several programmes and creates a number of new ones. The trend of expanding programmes to fund working land conservation and environmental practices continues, and support for wetland restoration and farmland preservation is also increased.

Table 6.1. **Funding for major conservation programmes under the 2002 and 2008 Farm Acts**

	2002-07	2008-12	Change %
	USD million		
Land retirement programmes	12 725	13 030	2
Conservation Reserve Program	11 165	10 934	-2
Wetland Reserve Program	636	2 096	230
Working land programmes	6 344	11 727	85
Environmental Quality Incentives Program	4 919	7 325	49
Conservation Security Program ¹	882	3 792	330
Wildlife Habitat Incentive Program	213	425	100
Agricultural land preservation programmes	729	1 050	44
Farm and Ranch Lands Protection Program	499	743	49
Grassland Reserve Program	254	240	-6
Conservation Technical Assistance	4 143	3 150	-24
Total (major conservation programmes)	23 941	26 641	11

1. Replaced by the Conservation Stewardship Program in the 2008 Farm Act.

Source: Office of Budget and Policy Analysis Budget Summary data (2002-07) and Congressional Budget Office (2008-12).

The new Farm Act also includes the Endangered Species Recovery Act, which will provide tax deductions for private individuals and landowners who volunteer to conserve habitat for threatened and endangered species on their lands.

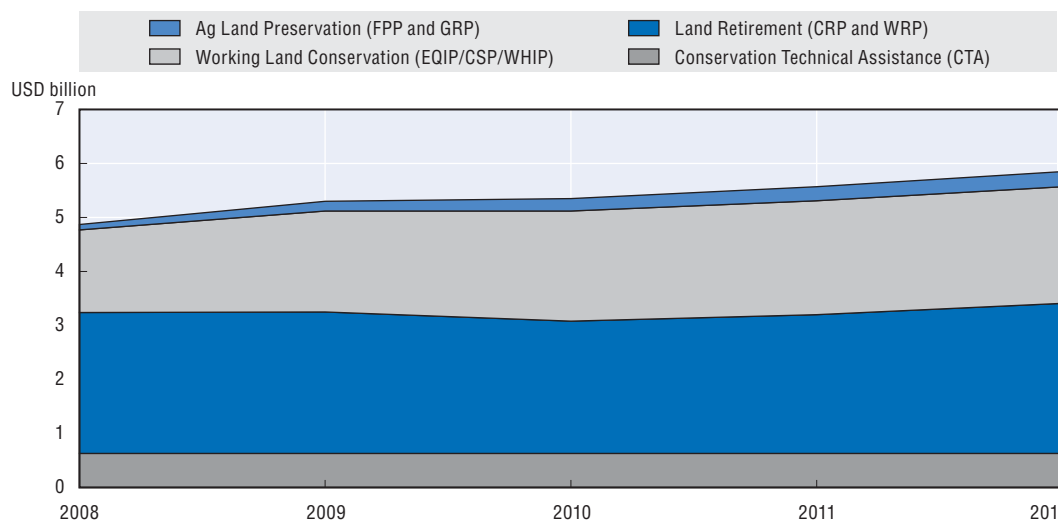
Changes to existing programmes address eligibility requirements, programme definitions, enrolment and payment limits, contract terms, evaluation and ranking criteria, and other administrative issues. In general, the conservation title includes certain changes that expand eligibility and the delivery of technical assistance under most programmes to broaden their scope to cover, for example, forested and managed lands, pollinator habitat and protection, and identified natural resource areas.

Producer coverage across most programmes is also widened to include beginning, limited resource, and socially disadvantaged producers; speciality crop producers; and producers transitioning to organic production. The Act also creates new conservation programmes to address emerging issues and priority resource areas, and new sub-programmes under existing programmes.

Land retirement programmes continue to play a major – but diminishing – role

Reserve programmes, including the CRP and the WRP, were both re-authorised up until 2012. Land retirement programme expenses are forecast to total USD 13.03 billion over FY2008-12 and average 2% higher than FY2002-07 expenses (Table 6.1), but to fall throughout the period as a percentage of total conservation programme expenditures (Figure 6.2).

Figure 6.2. **Trends in conservation expenditures by major programme categories, 2008-12**



Source: ERS analysis of CBO scores (2008-12).

The 2008 Farm Act caps CRP enrolment at 12.9 million ha, down from its previous cap of 15.7 million ha, as from 1 October 2009. It also modifies the pilot programme that allows for wetland and buffer acreage to enrol in CRP, subject to state acreage and maximum size limitations. Current CRP contracts can be amended to allow land uses such as biofuel production, wind turbines and grazing under certain conditions. New provisions will permit the transfer of lands under CRP contract to beginning, socially disadvantaged or other special-status farmers, with the existing owner receiving a bonus of up to two years of rental payments.

The 2008 Farm Act makes certain programme changes, including allowing for USDA to address state, regional, and national conservation initiatives; expanding the programme to cover beginning and socially disadvantaged farmers/ranchers; allowing for certain types of managed grazing and installation of wind turbines on enrolled lands (but at reduced rates); requiring that programme participants manage lands according to a conservation plan; requiring USDA to survey annually the per-acre estimates of county cash rents paid to CRP contract holders; clarifying the status of alfalfa grown as part of a rotation practice; and establishing cost-sharing rates for certain types of conservation structures.

The 2008 Farm Act increases the enrolment limit for the WRP by nearly one-third, to 1.2 million ha, and expands eligible lands to include certain types of private and tribal wetlands, croplands, and grasslands, as well as lands that meet the habitat needs of specific wildlife species.⁵

Working lands programmes receive most funding emphasis

As shown in Figures 6.2 and 6.3, funding for working lands programmes is forecast to total USD 11.7 billion over FY2008-12; it averages 85% higher than FY2002-07 expenses and is 44% of total conservation expenses in FY2008-12. EQIP and the CSP – the two largest USDA working lands programmes – are authorised to receive additional budget authority.

EQIP funding authorisation increased by 49% (USD 2.4 billion) over FY2008-12, as compared to the FY2002-07 period (Table 6.1). The 2008 Farm Act made some changes to EQIP relating to the level of funding; eligibility requirements; overall payment limitations; payment terms for producers who are just starting up, have limited resource and are socially disadvantaged; offer ranking procedures; and the ground and surface water conservation fund.

In particular, new EQIP priorities highlighted in the 2008 Farm Act include modification of EQIP's Conservation Innovation Grants Program to cover air quality concerns associated with agriculture (including greenhouse gas emissions); a new Agricultural Water Enhancement Program, replacing the Ground and Surface Water Conservation Program, to address water quality and water conservation needs on agricultural lands; and payments for conservation practices to organic production or transition.

EQIP payments are based on incurred costs (up to 75% cost-share) and forgone income (up to 100%) associated with practice adoption/maintenance, except that socially disadvantaged, limited resource, and beginning producers will receive cost-share payments that are 25% above those of other producers (up to a maximum of 90%). The 2008 Farm Act retains the option of the 2002 Farm Act not to use competitive bidding for the selection of contracts, as was the case in the 1996 Farm Act.

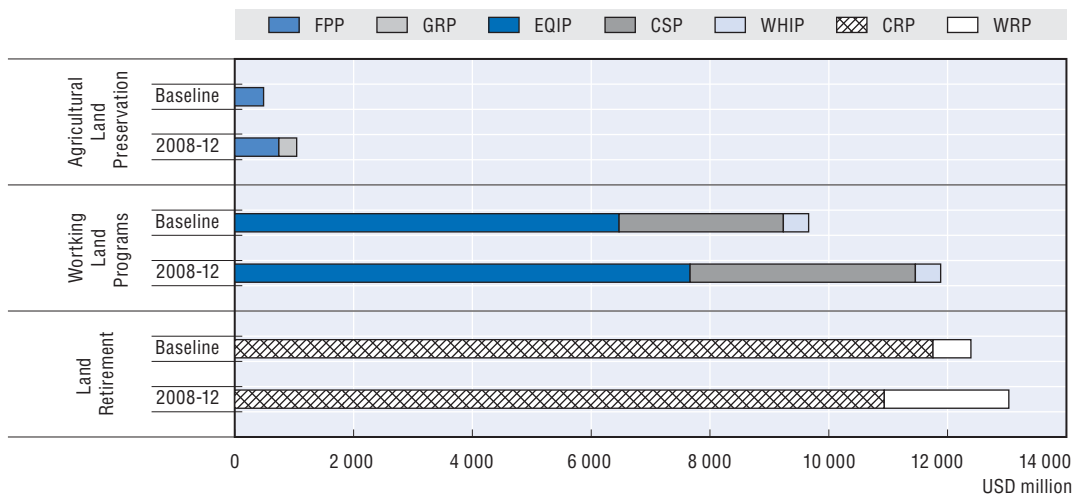
The 2008 Farm Act sets aside 5% of EQIP spending for beginning and socially disadvantaged farmers and lowers the payment limit to USD 300 000 (down from USD 450 000) in any six-year period per entity, except in cases of special environmental significance (including projects involving methane digesters) as determined by USDA. The requirement that 60% of funds be made available for cost-sharing to livestock producers, including incentive payments for producers who develop a comprehensive nutrient management plan, is retained.

The 2008 Farm Act replaces the Conservation Security Program with a new and re-named Conservation Stewardship Program (a new CSP). It receives total budget authority of USD 3.8 billion over FY2008-12: FY2012 forecast expenditures are 199% of FY2007 expenses.

The new CSP, which began in 2009, will continue to encourage conservation practices on working lands, but only producers with a high level of environmental stewardship and who agree to take additional action can participate. In particular, the “three-tier” payment approach of the 2002 Farm Act is replaced by payment to compensate producers for installing and adopting conservation practices. The amount of payment will be based on environmental benefits and costs of applying the conservation practices on land already in production.

Enrolment in the new CSP is targeted to cover nearly 5.2 million new hectares per year at an average cost of implementation of USD 44.5 per hectare, with individual producer payments limited to USD 200 000 per entity in any five-year period. The types of eligible lands are expanded to include priority resource concerns, as identified by states; certain private agricultural and forested lands; and also some non-industrial private forest lands (limited to not more than 10% of total annual hectares under the programme).

Figure 6.3. **Comparison of 2002 and 2008 Farm Acts, by major conversation programmes, FY2008-12**



Source: ERS analysis of OBPA budget summary data (1985-2007) and CBO scores (2008-12).

Programme payments may not be used for the design, construction, or maintenance of animal waste storage or treatment facilities or associated waste transport or transfer devices which are covered by EQIP. Technical assistance will also be provided to specialty crop and organic producers, along with pilot testing of producers who engage in innovative new technologies. Supplemental payments may be made available to producers undertaking certain types of crop rotations.

Among other programmes, the 2008 Farm Act re-authorises WHIP at current funding levels, but limits programme eligibility to focus on lands for the development of wildlife habitat. The limit on cost-share payments is raised to 25% of costs incurred on private agricultural land, non-industrial private forest land and tribal lands. It also allows USDA to prioritise projects that address issues raised by state, regional, and national conservation initiatives.

The 2008 Farm Act also authorises increased funding for several programmes, including the Grassroots Source Water Protection Program and the Small Watershed Rehabilitation Program; and it provides additional mandatory funding for the Agricultural Management Assistance Program and includes Hawaii as an eligible state under that programme.

Agricultural land preservation programmes expanded

Forecast expenses for land preservation programmes total USD 1.05 billion over FY2008-12, averaging more than triple the actual FY2007 expenses for purchase of development rights. For the Farmland Protection Program, the 2008 Farm Act authorised funding of USD 743 million over FY2008-12, an increase of nearly 50% on what was actually spent over 2002-07. The 2008 Farm Act makes several technical changes to the programme, covering its administrative requirements, appraisal methodology, and terms and conditions, among other issues.

The objectives of the programme were also expanded to include protecting agricultural use and related conservation values and increasing the opportunities for partnership with government and non-government organisations. Eligibility was extended to include forest land and other land that contributes to the economic viability of the agricultural operation, or that serves as a buffer from development.

For the *Grassland Reserve Program*, the 2008 Farm Act raised the enrolment limit, from 0.5 million ha to 1.3 million ha during FY2008-12, with 40% of funds for rental contracts (10-, 15- and 20-year duration) and 60% for permanent easements. Also the definition of eligible lands is expanded to include those with historical or archaeological importance and up to 10% of enrolment may come from expiring CRP contracts.

Other provisions

Most conservation programmes have programme-specific payment limits, and across-the-board income limitation prohibits conservation payments to persons with average adjusted gross non-farm income greater than USD 1 million (unless at least two-thirds of adjusted gross income is farm income).

Conservation compliance provisions, introduced in the 1985 Farm Act, are retained. Co-operative conservation projects at the community, ecosystem or watershed scale will receive 6% of all conservation programme funds. USDA is to develop technical guidelines for measuring and reporting environmental services provided by farm, ranch, and forest lands, with priority directed to emerging carbon markets.

Notes

1. Agricultural conservation spending accounted for about 16% (USD 5.4 billion) of all federal environmental expenditure in FY2007.
2. In addition, there are regulatory programmes that affect agriculture, but which generally originate outside the House and Senate Agriculture Committees in Congress and are primarily concerned with non-agricultural industries (i.e. the Clean Water Act, Endangered Species Act, Clean Air Act and Federal Insecticide, Fungicide and Rodenticide Act). For a discussion of regulatory programmes in agri-environmental policy, see Claassen *et al.* (2001).
3. EQIP consolidates the Agricultural Conservation Program, the Colorado Salinity Program, and the Great Plains Conservation Program.

4. Nevertheless, funding for major programmes, such as EQIP and CSP, have been reduced below the levels authorised under the 2002 Farm Act in order to meet overall budget goals.
5. The 2008 Farm Act makes certain programme changes, including changing the payment schedule for easements; specifying criteria for ranking programme applications; requiring that USDA conduct an annual survey starting with FY2008 of the Prairie Pothole Region in the northern Great Plains area; and requiring USDA to submit to Congress a report on long-term conservation easements under the programme.

Chapter 7

Rural Development Policies

In the United States, about 50 million people live in rural areas, which cover 75% of the total land area. These areas are extremely diverse in geography, population density, economic and social assets. They have lagged behind urban areas and have higher poverty rates, lower incomes and lower rates of employment growth. This chapter focuses on rural development programmes in the United States, including the specific provisions of the 2008 Farm Act.

7.1. Policy background

In the United States, about 50 million people live in rural areas, which cover 75% of the total land area. These areas are extremely diverse in geography, population density, economic and social assets. They have lagged behind urban areas on key indicators of economic well-being, having higher poverty rates, lower incomes and lower rates of employment growth. Nonetheless, since 1990 the rural-urban gap for some of these indicators has diminished and some rural areas have experienced higher growth rates (Cowan, 2001; USDA, 2006c).

In the US, as in many OECD countries, agriculture is no longer a dominant segment of the rural economy, which has become highly diverse. Less than 4% of the rural population currently live on a farm and only 3% of the rural workforce is directly employed in farm production. Moreover, nearly 90% of total farm household income comes from off-farm sources, and only one in five rural counties relies on farming for significant employment or earnings. Nevertheless, while the dominance of agriculture in the rural economy has declined sharply over time, and almost three-quarters of rural land remains agricultural.

The service sector, as with the US domestic economy as a whole, is the principal source of employment opportunities in the rural economy, while manufacturing accounts for about 12% of employment. The largest growth in rural population and employment has generally occurred in areas that have capitalised either on natural resources for recreation and retirement, or on their proximity to urban areas. In contrast, those rural areas that rely on traditional sources of income, such as farming, or which lack urbanisation or are remote from large cities have experienced a decline in population.

7.2. Rural development programmes

Rural development programmes provide grants, direct loans, loan guarantees and technical assistance to rural residents, businesses, and private and public sector entities. Their key objectives are: i) to expand economic opportunities for residents in rural areas by using USDA's financial resources to leverage private sector resources and create opportunities for growth; and ii) to improve the quality of life, including housing, community facilities and rural infrastructure (USDA, 2006c). Key performance measures include the number of jobs created or saved, the number of home ownership opportunities provided and the number of rural residents served by USDA-financed facilities. In FY2008, rural development accounted for 14% (USD 18.97 billion) of USDA expenditures and loans, of which around 90% was in infrastructure, including water, electricity, telecommunications and housing.

Only a very few of the many rural development programmes operated by USDA are directly relevant to agriculture and could be considered as part of agricultural policy. Most USDA rural development programmes are targeted to geographical areas, as they have eligibility requirements defined by recipient location, or the location of services provided by recipients. In addition, many programmes either restrict eligibility to lower-income

individuals, or give preference to low-income areas when awarding grants or loans. Funding is provided directly to local or regional entities, such as individual businesses, governments, non-profit organisations, tribes or regional organisations. Moreover, there are several federal-state partnerships that provide development assistance to rural (and urban) areas within single- and multi-state regions (examples of which are the Appalachian Regional Commission, the Delta Regional Authority and the Denali Commission in Alaska).

Under the 2002 Farm Act, the aims of USDA rural development programmes could be grouped into three main categories (USDA, 2006c):

- *Economic development*: to bring new business and employment to rural areas and introduce new opportunities for income enhancement.
- *Infrastructure development*: to counter the deficiencies caused by rural poverty, or to raise the level of community amenities.
- *Special needs programmes*: to provide individuals and communities with insufficient income access to some level of basic services such as housing, sanitation or health care.

In contrast to the European Union, agri-environmental programmes in the United States are not considered to be part of rural development programmes, although they may help ensure the long-term economic viability of rural areas by protecting and enhancing environmental amenities and by encouraging sustainable farming practices which reduce environmental degradation of surrounding rural communities.

Table 7.1 displays the main rural development programmes administered by USDA, by type of support for FY2008. Around 54% of USDA rural development programme funds are directed towards rural utilities and around 38% are devoted to basic services and housing. Over half of USDA rural development programme funds (57%) were expended in the form of direct loans; around 35% were dedicated to loan guarantees; and only about 8% was disbursed in the form of grants.

Over time, there has been substantial growth in programmes that guarantee loans made by private lenders, particularly for home-ownership purposes. Financing for businesses has also been made available primarily through guaranteed loans and, to an increasing extent, in conjunction with leveraged financing from other sources. The direct loan programmes for electric and telecommunication facilities have expanded, although these programmes operate at virtually no cost to government.

Two programmes specifically targeted to agricultural business are the Value Added Agricultural Product Market Development and the Renewable Energy Program, which provide guaranteed loans and grants for value-added agricultural and farm-based renewable energy projects (USD 19 million and USD 202 million in FY2008, respectively).

Economic development¹

Overcoming perceived market failure in rural financial markets is a long-standing federal concern and was accorded a significant share of rural development funds under the 2002 Farm Act. Economic development programmes, which are operated by the Rural Business-Cooperative Service (RBS), serve both non-farm businesses and producer co-operatives. These programmes generally fall into two categories: those that focus on enhancing entrepreneurship through direct assistance, training, information

Table 7.1. **USDA's rural development programmes, 2008**

USD million

	Direct loans	Guaranteed loans	Grants	Total
Economic development	33	1 232	106	1 371
Business and Industry Guaranteed Loans		993		993
Rural Economic Development	33		10	43
Rural Energy for America Program		205	16	221
Value-added Agr. Product Market Development			19	19
EZ/EC			8	8
Other		34	53	87
Infrastructure	8 604	575	536	9 715
Electric Programs	6 599	500		7 099
Water and Waste Disposal Programs	1 022	75	469	1 566
Telecommunication Programs	685			685
Broadband Programs	298		13	311
Distance Learning and Telemedicine Programs			35	35
High Energy Costs Grants			19	19
Special needs	1 569	4 526	622	6 717
Single Family Housing	1 121	4 191		5 312
Multi Family Housing	70	129		199
Community Facility Programs	295	206	44	545
Farm Labour Housing Program	28		10	38
Rental Assistance Program ¹			479	479
Other	55		89	144
Total	10 206	6 333	1 264	17 803

1. The programme provides direct payments to individuals and therefore, technically speaking, is not a grant programme.

Source: USDA (2009), FY2010 Budget Summary and Annual Performance.

dissemination and enterprise development; and those that enhance capital formation in rural communities.

The number of jobs created and saved under the programmes aimed at expanding economic opportunities in rural areas – which is the performance indicator for assessing the impact of these programmes – was estimated at 34 715 in FY2009 (72 373 in FY2008).

Business

The primary purpose of these programmes is to create and maintain employment in rural communities and to improve their economic climate generally. Financial assistance is provided to support economic and community development projects, new businesses and/or the expansion of existing businesses.

It is estimated that in FY2009, over USD 738 million was made available for the business and community development in the form of grants, direct loans and loan guarantees. These business programmes created over 72 000 jobs in FY2008 (over 34 000 in FY2009) and “impacted” over 12 000 businesses.

The largest of these programmes, in terms of level of assistance, is the Business and Industry (B&I) Guarantee Loan Program, which provides guarantees up to 90% to commercial lenders. The primary purpose of the B&I programme is to create and maintain employment and improve the economic climate in rural communities. It is targeted on the needs of rural residents and of communities suffering from out-migration, persistent

poverty, long-term population decline and job deterioration, natural disasters, and fundamental structural changes in their economic base.

Under this programme, during the FY2002-05 period, over 2 200 loans were guaranteed, and almost 23 000 jobs were created and 68 000 jobs were saved. Alternatively, the cost of each job created or saved amounted to USD 1 500 (USDA, 2006c). In FY2009, the B&I programme represented about 80% (USD 700 million) of the funds allocated to business programmes. This level of support is expected to save or create 25 836 jobs.

A recent study by Johnson (2009) provides an empirical evaluation of the effectiveness of the B&I programme in increasing employment, using standard econometric techniques based on a sample of 1 369 loans. The study found a robust association between loan reception and increased employment growth: a county that receives a loan of USD 1 000 *per capita* experiences a 3-6% increase in employment-per-capita-growth over the two years following the granting of the loan, but also experiences a 3-5% decrease in earnings-per-worker growth, which leaves the effect on total county earnings unclear. The cost to the federal government per job created is estimated at USD 1 827. The study concludes that the B&I loan programme subsidises loans associated with increased employment growth, although the jobs created pay less than average wage.

Co-operatives and producer enterprises

Co-operative programmes, through the provision of loans and grants, support co-operatives with technical assistance, development assistance, research and education. The Cooperative Development Program does not provide funding to co-operatives, but assistance may be made available to universities to conduct research on market structures and farmer organisations.

The Value Added Producer Grant Programme (VAPG), which came into force with the 2002 Farm Act, provides grants for the marketing of value-added products and farm-based renewable energy. Its ultimate goal is to enhance the economic well-being of rural areas. The programme does not allow the grants to be used for on-farm or business purposes, such as acquiring or repairing equipment. Under the 2002 Farm Act, this programme was authorised for six years with an annual allocation of USD 40 million. In FY2006, there were 185 beneficiaries, who received a total of USD 21.2 million.

The US Office of Management and Budget (OMB) Program Assessment Rating Tool (PART) assessment undertaken in 2006 found the programme to be both well-designed and managed (US Government, 2006a). The overall assessment rating, however, was only “adequate” and some performance indicators lack data. In terms of improvement, the assessment suggested actions in various areas, including continuous re-assessment of existing performance indicators, evaluation of potential new indicators and increased targeting towards emerging markets.

Energy

A new and expanding area for USDA to administer is that of alternative energy and energy conservation. The 2002 Farm Act authorised loans, loan guarantees and grants for farmers, ranchers and small rural businesses to produce alternative energy or makes changes to their operations so as to conserve energy. Most of the funding for the FY2008 went to loan guarantees (over USD 205 million) (Table 7.1). Moreover, USDA has a range of

other loan, research, and procurement programmes that support alternative energy and bio-products.

According to a USDA report on rural development programmes, in FY2006 the Renewable Energy Loan Program provided USD 24.2 million to 17 businesses and is estimated to have generated or saves 170 jobs (USDA, 2006d).

Infrastructure development

Electricity

Loans and loan guarantees are available through several long-standing programmes to supply, expand and modernise vital components of the electric infrastructure of rural areas. More recently, financing assistance is offered for solar, wind, hydropower, biomass and geothermal energy generation. In FY2009, electricity programmes are estimated to have provided more than USD 4 billion and to have benefited around 6 million people. In FY2008, the actual number of beneficiaries exceeded the target by 14% (968 000).

The OMB FY2005 PART review for the Rural Utilities Service (RUS) Electric Loans Program raised a concern that, except for the Hardship loans, RUS electric loans are not provided in such a way that would focus support on the areas of greatest need.² In addition, under this programme, loan funds were allocated to non-rural areas.

Telecommunications and rural broadband

A new programme to provide rural areas with broadband internet access was established under the 2002 Farm Act. The programme was designed to fund the cost of constructing, improving, and acquiring facilities and equipment for broadband service in certain rural communities. Direct loans are made for the life of the facilities financed. Loans are made at a 4% rate of interest to rural communities where broadband service currently does not exist. The educational and health care needs of rural America are also supported by loans and grants under the distance learning and telemedicine programmes. Equipment, land, facilities and other needs are supported by an array of funding activities.

The broadband programme has come under some criticism. In 2005, the USDA Office of the Inspector General (OIG) found that during its first four years, the programme's focus had shifted away from those rural communities that would have been unable to access broadband technologies in the absence of government assistance. In total, OIG questioned over half of the funds reviewed. The OMB FY2007 PART review for the programme points out that, while the programme has a clear objective, it is flawed in that although there are still rural areas that do not have broadband, the programme is under-utilised by borrowers.

Customers served by new or improved broadband facilities totalled 755 342 in FY2008, almost twice the target of 394 931. In FY2009, around USD 690 million were provided for telecommunications loans. The 2009 budget also includes USD 20 million in grants for the distance learning and telemedicine programmes, and USD 298 million in loans for broadband and internet services. It is estimated that around 0.3 million people benefited under the telecommunication and broadband programmes in FY2009.

Water and waste disposal

Loans and grants are provided to rural communities for the construction, replacement, or upgrading of water treatment and waste disposal facilities. In addition, technical assistance to local and regional governments is also provided. Eligibility is

limited to communities with population of 10 000 or less and with low median household income levels that are unable to obtain credit elsewhere. Grants are limited to a maximum of 75% of project costs.

In FY2008, over 4 million customers (almost 3 million more than the target of 1.4 million) were served by new or improved water and wastewater disposal systems funded by the programmes. In FY2009, these programmes are estimated to have provided USD 1.1 billion in loans; USD 75 million in guaranteed loans; and USD 397 million in grants for water and waste disposal projects, for a total of USD 1.6 billion.

The OMB PART assessment for the RUS water and wastewater disposal loan programme undertaken in 2005 found that the programme is successful in targeting assistance for water and wastewater infrastructure to poor rural areas, and that, overall, resources are used effectively.³ It also noted that RUS has established a priority ranking system in its regulations to target financial and technical resources to the neediest communities. Water and wastewater projects designated as priorities for financial assistance are those that: i) serve sparsely populated communities; ii) address health risks; and iii) serve communities with median household income less than the poverty level or the State non-metropolitan median. However, the federal underwriting of the investments has been called into question on efficiency and equity grounds (Renkow, 2007).

Special needs

Housing

The housing programmes help finance new or improved housing for low- to moderate-income families and individuals.⁴ Grants, direct loans and loan guarantees in several programmes are used by individuals to build, purchase or repair their homes and remove health or safety hazards. In others, rental subsidies are paid directly to renters who meet certain qualifications.

The Single Family Housing Direct and Guaranteed Loan Programs help rural families who would otherwise not be able to buy their own homes. Funds in other programmes can be used to build multi-family rental housing; purchase and develop building sites with associated roads, streets and utilities; and for the rehabilitation of multi-family dwellings.

The rental assistance – provided as part of its Multi-family Housing Program – makes up the difference between the 30% of income that low-income tenants contribute towards their rent and a “basic” rent that reflects the operating costs of the project, including the project’s debt servicing requirements. About 60% of the units in USDA’s multi-family housing portfolio receive rental assistance payments.

In FY2009, expenditure of USD 6.7 billion is estimated for grants, direct loans and guaranteed loans for rural housing and related purposes. Of this amount, three-quarters (USD 4.8 billion in guaranteed loans) are for the Single Family Housing Direct and Guaranteed Loan Program, which is estimated to have provided around 43 000 homeownership opportunities, which is more than the target of 42 362.

The average annual income for families receiving direct loans is approximately USD 22 200, while the average for guaranteed loans is approximately USD 40 627. Families obtaining repair loans had average incomes of USD 11 330, while elderly households receiving repair grants earned only USD 10 240.

Community facilities

USDA provides a series of grants, loans, and loan guarantees to finance the development of facilities essential to a modern standard of living in rural communities. A wide range of public facilities and equipment can be financed by these programmes including hospitals, fire trucks, police cars, child-care centres, food banks, schools, medical clinics, nursing homes, community centres, town halls, jails, and street improvements. The programmes leverage federal funds with private capital to invest in rural infrastructure, technology, and human-resource development.

Under the Community Facility Program funding is provided for a wide range of essential community facilities in rural areas. Priority is given to health care facilities. In FY2009, the community facilities programmes are estimated to have provided USD 512 million for essential community facilities for public use (USD 302 million in direct loans and USD 210 million in loan guarantees). In FY2009, it is estimated that the target of 6% of rural population to be served by new or improved health-care community facilities and 1.5% for public-safety facilities was exceeded.

The OMB FY2005 PART review for the RHS community facilities programme noted that the programme had clearly stated population and income requirements targeting low-income rural communities which, by definition, have severely limited resources to meet the needs of their residents. Priority is given to communities with populations of 5 000 or less and priority points are also given to communities where the median household income of the service area is less than the poverty line for a family of four, or less than 80% of the state-wide non-metropolitan median household income.

7.3. Rural development provisions under the 2008 Farm Act

Overall, the 2008 Farm Act addressed similar issues as those considered by the 2002 Farm Act. It expanded broadband access in rural areas, authorised a new micro-entrepreneurial assistance programme and a new rural collaborative investment programme, and authorised three new regional economic development commissions.

In response to the increasing concerns being raised as to whether rural development funding is in fact being targeted to the neediest rural communities (because of the way in which the concept of rurality is defined) the 2008 Farm Act also modified the 2002 definition of the term “rural” to include “urbanised areas rural in character” as determined by the Under Secretary for Rural Development. The Act further directed the Secretary of Agriculture to produce a report within two years on the various definitions of the term “rural” used by USDA in designing rural development programmes. The report will also assess the impacts these various definitions have on the delivery of rural development programmes, with the objective of better targeting assistance to where it is most needed.

Other amendments made include the following:

- *Business and Industry Guarantee Loan Program*: higher priority is accorded to loans and loan guarantees for locally or regionally produced agricultural food products (i.e. those products that are transported less than 400 miles between their place of production and point of sale), reserving 5% of funding annually for this purpose. Priority is given to projects benefitting under-served communities.
- *Farm Labor Housing Program*: broadens eligibility to include projects for low-income individuals who receive a substantial portion of their earnings from processing agricultural or aquacultural commodities.

- *Energy efficiency and renewable energy programmes*: clarifies that loans can be made for energy-efficiency purposes and redefines eligible renewable energy sources as energy conversion systems fuelled from solar, wind, hydropower, biomass or geothermal sources.
- *Small business programmes*: authorises the Rural Micro-entrepreneur Assistance Program to offer loans and grants to economically disadvantaged micro-entrepreneurs (i.e. those who could compete in the private sector but who experience difficulties due to a lack of credit opportunities and limited equity capital options).
- *Regional development*: i) The Rural Strategic Investment Program, which was never funded, is replaced with authorisation of a similar programme, the Rural Collaborative Business Investment Program (which has also not received any funding to date (March 2010)); ii) Authorises three new regional economic development commissions: 1) the Northern Border Regional Commission, 2) the Southeast Crescent Regional Commission, and 3) the Southwest Border Regional Commission. As of March 2010, only the Northern Border Regional Commission has received any funding.

In addition to these provisions, the 2008 Farm Act also includes other rural development-related provisions to create/re-authorise/and/or amend a wide variety of loan and grant programmes to provide further assistance in four key areas: 1) broadband and telecommunications; 2) rural utilities infrastructure; 3) business and community development; and 4) regional development.

Unlike the 2002 Farm Act, the rural development provisions of the 2008 Farm Act contain only three programmes with mandatory funding: Value-Added Product Grants (USD 15 million); the Microenterprise Assistance Program (USD 15 million); and one-time funding for pending water and waste water projects (USD 20 million). In addition, several programmes previously authorised to receive mandatory funding under the 2002 Farm Act were re-authorised with discretionary funding (e.g. the Rural Fire Fighters and Emergency Medical Personnel Program).

Notes

1. The text concerning evaluation of the various programmes draws primarily on the USDA's FY2008 *Performance and Accountability Report* and the Office of Management and Budget's (OMB) Program Assessment Rating Tool (PART) reviews.
2. See www.whitehouse.gov/omb/expectmore/summary/10000456.2004.html.
3. See www.whitehouse.gov/omb/expectmore/summary/10000458.2005.html.
4. Out of the 2 000-plus non-metro counties, 302 are defined as housing stressed, according to ERS's county typology.

Chapter 8

Renewable Energy Policies

Interest in renewable energy has developed rapidly in the United States, largely due to a strong rise in domestic and international petroleum prices and a dramatic acceleration in the production of domestic biofuels. Many policy makers view agriculture-based biofuels as both a catalyst for rural economic development and a response to growing dependence in the US on imported energy. This chapter examines biofuels policies in the United States, including the specific provisions of the 2008 Farm Act.

8.1. Policy background

US biofuel production is dominated by ethanol, 98% of which is produced from maize; biodiesel comes primarily from soybean oil (around 60%). Ethanol production has been expanding rapidly in recent years, rising from about 3 billion gallons in 2003, to over 10 billion gallons in 2009. Biodiesel production is at a much smaller level, but has also shown growth. About a third of US maize production is devoted to ethanol production and the increase in maize used for US ethanol production exceeds the increase in maize produced for other uses over the past three years. In 2009-10, 112 million tonnes of US maize was used for ethanol production, which constitutes 34% of the total crop in that year.

Interest in renewable energy has developed rapidly, due in large part to a strong rise in domestic and international petroleum prices and a dramatic acceleration in the production of domestic biofuels (primarily maize-based ethanol). Many policy makers view agriculture-based biofuels as both a catalyst for rural economic development and a response to growing dependence in the US on imported energy.

Ethanol and biodiesel receive significant federal support in the form of tax incentives, loans and grants, and regulatory programmes. However, renewable energy production has been considered primarily a concern of energy, tax and environmental policy, rather than agricultural policy. As a result, most of the federal programmes that support renewable energy production in general, and agriculture-based energy production in particular, are outside the purview of the Farm Acts.

For example, the primary supply-side incentives for biofuels and wind-energy production are production tax credits, which are the domain of the Internal Revenue Service. The primary demand-side federal biofuel policy intervention is a national Renewable Fuels Standard (RFS), which is administered by the Environmental Protection Agency (EPA). The RFS requires the blending of biofuels in the nation's fuel supply and has its origins in the Energy Policy Act of 2005 – it was expanded more recently in the Energy Independence and Security Act (EISA) (Sissine, 2008). Similarly, the federal tax credits available to biofuels blenders were initially contained in the 2004 American Jobs Creation Act, but have since been incorporated into the Farm Act.

More specifically, major federal incentives before the enactment of the 2008 Farm Act included:

- A biofuel production excise tax credit of USD 0.51 per gallon of ethanol, USD 1 for every gallon of agri-biodiesel (*i.e.* virgin vegetable oil and animal fat), and USD 0.50 for every gallon of non-agri-biodiesel (*i.e.* recycled oils, such as yellow grease). The production tax credits were extended through to 2010 for ethanol and through to 2008 for biodiesel under the 2004 American Jobs Creation Act. The tax credit for biodiesel expired at the end of 2009 and has not yet been re-instated.

- A 2.5% *ad valorem* tariff on un-denatured (1.9% on denatured) ethanol (for any use) and a most-favoured-nation (mfn) duty of USD 0.54 per gallon of ethanol (for fuel-use) apply to US imports from most countries. Ethanol imports from Caribbean Basin Initiative countries entered duty-free, if the ethanol was produced from at least 50% agricultural feedstock grown in a Caribbean Basin Economic Recovery Act country (CBERA); if the ethanol was produced with less than 50% CBERA feedstock, it was restricted to 7% of the US domestic ethanol market.
- A wind-energy production tax credit that provides a USD 0.018 credit for each kilowatt-hour of electricity produced by approved turbines built by the end of 2007 for a 10-year period.
- An RFS under the 2007 EISA that mandates using 36 billion gallons of renewable fuels by 2022 (an almost five-fold increase over pre-legislation levels).¹ Beginning in 2015, 21 billion gallons are to be from cellulosic materials and feed stocks other than maize starch (*i.e.* advanced biofuels). Ethanol from maize is capped, rising to a maximum of 15 billion gallons, beginning in 2015.²
- The RFS also mandates maximum lifecycle GHG emissions from each type of biofuels contributing to the mandate. Lifecycle GHG emissions of qualifying renewable fuel must be less than the lifecycle GHG emissions of the 2005 baseline average gasoline or diesel fuel that it replaces. Provisions in EISA allow many existing ethanol refineries to be “grandfathered” under the mandate and these are exempt from GHG emissions restrictions.³
- A small producer income-tax credit of 10¢ per gallon for the first 15 million gallons of production for ethanol producers whose total output does not exceed 60 million gallons per year, through 31 December 2010.
- A small producer-income tax credit of 10¢ per gallon for the first 15 million gallons of production for biodiesel producers whose total output does not exceed 60 million gallons per year, through 31 December 2010.
- USDA’s Bioenergy Program, which provides incentive payments on year-to-year production increases of renewable energy during the FY2001-06 period.

Federal support for the development of agriculture-based renewable energy production systems is also provided in the form of loans, grants and loan guarantees; research, development and demonstration assistance; educational program assistance; and procurement preferences. Also, several states already have their own incentives, regulations, and programmes in support of renewable fuel research, production, and consumption that supplement (or exceed) federal incentives.

The RFS mandate, administered by the US Environmental Protection Agency, sets a minimum on the quantity of biofuel used in the United States. The mandate is enforced by a credit trading scheme tying together biofuel producers with refiners, exporters and blenders of oil-based gasoline (EPA, 2010). Biofuel producers and importers generate Renewable Identification Numbers (RINs) with each gallon of biofuel they produce. Fuel refiners, importers or blenders can choose to use less biofuel than the stipulated amount, and buy credits from others who use in excess of the required amount. For example, if the blend exceeds the RFS, blenders can sell their excess RINs to other obligated parties who can then blend biofuels at a rate below the RFS.

The previous RFS, implemented under the 2005 Energy Policy Act, was never binding due to a combination of factors, including high oil prices, biofuel tax credits and abundant biofuel supplies. However, the RFS under EISA could, in future, become binding due to the more ambitious targets being mandated – particularly if petroleum prices remain low. Binding mandates mean more consumption of biofuel in the US than would otherwise occur, leading to higher domestic production or imports. The outcome depends on how ably different biofuels meet the requirements of different mandates – as well as on how other uncertainties about the policies are resolved.⁴

If, for example, domestic ethanol production capacity is unable to meet the RFS mandate, then sources such as domestic sorghum-starch ethanol, or domestic sugar-beet ethanol or increased imports of Brazilian sugar-cane ethanol could be used to fill the mandate (Yacobucci and Capehart, 2009). Moreover, the EPA has the authority to waive the total volume of renewable fuel mandated by the RFS, as well as the specific requirements for cellulosic biofuel and biomass-based diesel fuel, should domestic supply be inadequate to meet the mandate, or were the implementation of the requirements deemed to have severe economic or environmental effects.

US policy to expand the production of agriculture-based renewable energy – especially biofuels and wind power – has significant implications for agriculture and resource use. The production of maize-based ethanol, and consequently production of maize has expanded dramatically over the past several years. The effect on agricultural commodity markets has been national, but commodity production adjustments and resulting environmental consequences, vary across regions (Malcolm, Aillery and Weinberg, 2009). Changes in the crop sector have also affected the cost of feed for livestock producers.

Most notably, the escalating demand for maize as a component of feed in ethanol production contributed to sharp increases in driven grain and oilseed prices since 2006. Record high commodity prices in 2007 and mid-2008, combined with high energy costs, have resulted in sharp increases in livestock feed costs, export prices and moderate growth in US retail food price inflation. As commodity price inflation accelerated both in the US and globally, the “food versus fuel” debate has come to the fore on the policy agenda.

There is recognition that a number of different factors contributed to increased commodity prices in 2007 and 2008, but little consensus on the exact role played by increased biofuel production. Reviewing several different studies and economic models, Collins (2008) concluded that implied changes in the price of maize due to its use in ethanol might range from 25% to 60%. The US Congressional Budget Office estimates that the increase use of ethanol accounted for about 10% to 15% of the rise in retail food prices between April 2007 and April 2008. The rise in food prices attributable to increased production of ethanol will, in turn, lead to higher spending for US domestic food assistance programmes by an estimated USD 600 million to USD 900 million in FY2009 (CBO, 2009).⁵

The AGLINK-COSIMO analysis of the impacts of the EISA biofuel consumption mandates on biofuels and crop markets (shown in Annex C) suggests that biofuel policies could, indirectly, provide price support to the feedstocks that are used to produce biofuels. An ERS study found that meeting EISA targets for ethanol production is estimated to expand US cropped acreage by nearly 5 million acres by 2015, an increase of 1.6% over what would otherwise be expected (Malcolm, Aillery and Weinberg, 2009). Much of the growth comes from maize acreage, which increases by 3.5% over baseline projections, with traditional maize-growing regions would likely witness the largest increases. Water quality

and soil carbon will also be affected, in some cases by greater percentages than suggested by changes in the amount of cropped land. The FAPRI 2010 projections for agricultural and biofuel markets suggest that the effects of changes in biofuel policies (i.e. expirations of biodiesel blender tax, ethanol import tariff, blender tax credit cellulosic ethanol producer credit) can vary substantially depending on whether mandates are binding or not (FAPRI, 2010).

8.2. Major provisions under the 2008 Farm Act

The 2002 Farm Act was the first omnibus Farm Act to explicitly include an energy title. Renewable energy policy under the 2008 Farm Act builds on 2002 Farm Act programmes as well as on the goals of EISA.⁶ The 2008 Farm Act significantly expands existing programmes to promote biofuels. Like the previous Farm Act, it contains a distinct energy title that covers a wide range of energy and agricultural topics with extensive attention to biofuels, including maize-starch-based ethanol, cellulosic ethanol, and biodiesel; it also includes research, tax and trade provisions relating to renewable energy (Capehart, 2009).

The 2008 Act also authorises USD 1.1 billion in mandatory funding for FY2008 through to FY2012, compared with USD 800 million in the 2002 Farm Act (FY2002-07), with most of the increase mandated for the Biorefinery Assistance Program, which aims at promoting the development of advanced biofuel refining capacity.

Biofuels-related provisions

Key biofuels-related provisions in the enacted 2008 Farm Act include:

- Emphasis on cellulosic ethanol production through new tax credits for blenders and promotion of the production of cellulosic feedstocks, feedstocks infrastructure and refinery development.
- Grants and loan guarantees for biofuels (especially cellulosic) research, development, deployment, and production.
- Studies of the market and environmental impacts of increased biofuel use; expansion of biofuel feedstock availability; expansion of the existing bio-based marketing programme to encourage federal procurement of bio-based products.
- Support for rural energy efficiency and self-sufficiency.
- Re-authorisation of biofuels research programmes within the USDA, the Department of Energy and the Environmental Protection Agency.
- An educational programme to promote the use and understanding of biodiesel.
- Reduction of the blenders' tax credit for ethanol.
- Continuation and expansion of the federal bio-products certification programme.
- Environmental safeguards through greenhouse gas emission requirements on new biofuel production.
- Extension of the import duty on ethanol.
- A temporary cellulosic biofuels production tax credit of up to USD 1.01 per gallon through 31 December 2012.
- The Biomass Crop Assistance Program which supports the development and marketing of renewable agricultural or forest-based biomass.

Tax credits and tariffs

The 2008 Farm Act extends and modifies tax credits and special import duties on ethanol. In keeping with the promotion of cellulosic ethanol, a blenders' credit of USD 1.01 per gallon applies to ethanol produced from qualifying cellulosic feedstocks. This tax credit is intended to spur investment in cellulosic ethanol production. The ethanol blender's tax credit (also known as the Volumetric Ethanol Excise Tax Credit) of USD 0.51 per gallon (which applies to all ethanol blended, including imports) was reduced to USD 0.45 per gallon by a 2008 Farm Act provision requiring the reduction starting in the first calendar year following the year in which 7.5 billion gallons of ethanol is produced. The reduction became effective on 1 January 2009.

The import duty for ethanol benefits the US ethanol industry by protecting US ethanol from lower-cost imports, but denies US fuel users access to lower cost imported ethanol. The duty also more than offset the value of the blenders' tax credit for which imported ethanol is also eligible. The duty of USD 0.54 per gallon that was set to expire at the end of 2008 is now extended to the end of 2010.

Economic impact-assessment reports

In response to concerns raised on the impact of increased ethanol production on agricultural and rural economies, the 2008 Farm Act includes provisions requiring a series of reports to assess how ethanol production may be impacting the farm economy, the environment and consumer food prices.⁷ For example, the Biomass Crop Assistance Program requires an assessment of the economic impacts of expanded cellulosic biomass production on local economies and infrastructures. Likewise, the Biomass Research and Development Program requires an assessment of the economic impacts on rural economies of bio-refinery expansion and conversion by USDA.

Notes

1. The Energy Policy Act of 2005 required, starting in 2006, the use of 4 billion gallons of renewable fuels, increasing to 7.5 billion in 2012.
2. The EISA amendments to the RFS specifically mandate the use of cellulosic biofuel (16 billion by 2022) and biomass-based diesel fuel (1 billion gallons annually by 2012).
3. Cellulosic-based fuels must achieve at least a 60% lifecycle GHG reduction; maize starch-based fuel (produced by newer plants) 20% GHG emissions reduction; and advanced-based biodiesel 50% GHG emissions reduction.
4. The theoretical study by De Gorter and Just (2007) shows that implementation of biofuel mandates in conjunction with tax credits could have different effects, depending on whether the mandate is binding or not. When there is no binding mandate, the tax credit significantly affects the level of production of ethanol, its price, and the price and production of maize.
5. Includes the SNAP and selected Child Nutrition programmes, such as the National School Lunch Program, the School Breakfast Program, and other, smaller, programmes.
6. Until the new regulations under EISA are final, Section 80.1160 through 80.1163 of the Clean Air Act discuss the violations and penalties and under the Renewable Fuel Program as it is currently implemented (see <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=%2Findex.tpl>).
7. Among these are the Comprehensive Study of Biofuels (to be conducted by the USDA, the Environmental Protection Agency and the Department of Energy and the National Academy of Sciences).

Chapter 9

Domestic Food Assistance Policies

US food and agricultural policy has long sought to ensure that the population has access to sufficient, healthy and nutritious food. It encompasses an array of food assistance and nutrition programmes that aim to assist the needy, encourage healthier and more nutritious diets, and – through direct purchasing of agricultural commodities – support the agricultural sector. This chapter reviews US domestic food provision policies, including the specific provisions of the 2008 Farm Act.

9.1. Policy background

Food and agricultural policy has long sought to ensure that US population has access to sufficient, healthy and nutritious food. This policy encompasses an array of food assistance and nutrition programmes that have the following broad goals: i) provide assistance to the needy to help alleviate short-term food insecurity; ii) encourage healthier and more nutritious diets through investments in human capital; and iii) by direct purchasing of agricultural commodities to support the agricultural sector.

The USDA oversees about twenty food and nutrition assistance programmes, spending some USD 61 billion in 2008, or 64% of USDA outlays.* About one in five Americans participates in at least one of USDA's food and nutrition assistance programmes at some point during the year. About three-quarters of food insecure households participate in food assistance programmes. These programmes vary by size, type of benefit provided and by target population. Virtually all are administered by states, schools, or local grantees under federally prescribed rules.

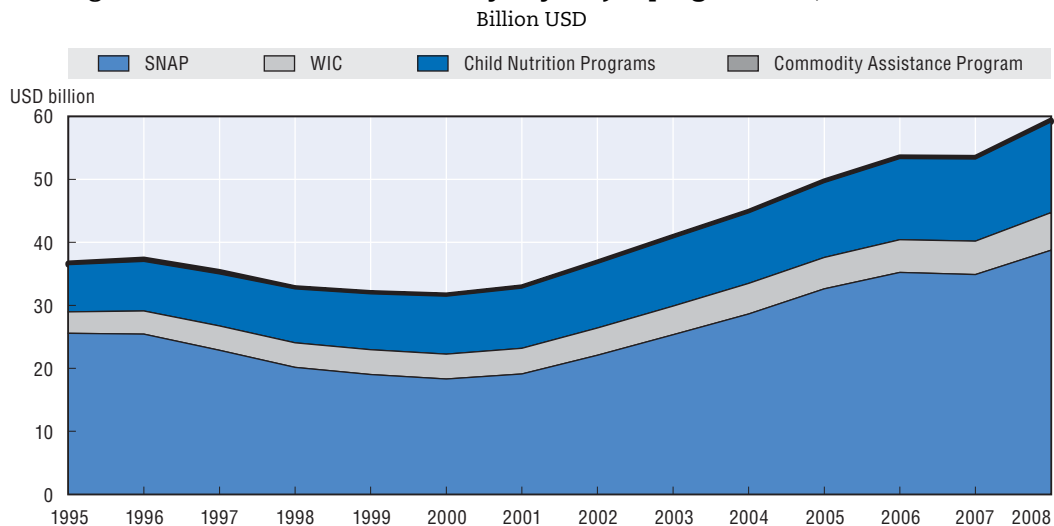
The core programmes include: the Supplemental Nutrition Assistance Program (formerly Food Stamps); Child Nutrition programmes; the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); and the commodity distribution programmes.

As shown in Figure 9.1, USDA domestic food and nutrition assistance programmes increased constantly since 2001, and in 2008 their expenditures exceeded the previous historical record amount (11% more than in the previous fiscal year – the largest percentage increase in 16 years). The three largest food assistance programmes (the SNAP, the Child Nutrition programmes and the WIC) accounts for about 95% of USDA's expenditures for food assistance, and their share of overall nutrition programme spending has increased steadily over time. Each of these major programmes expanded during fiscal 2008. Fifty-five per cent of food-insecure households in 2008 received assistance from one or more of the three largest federal food and nutrition assistance programmes (Nord, Andrews and Carlson, 2009).

Federal nutrition programme policies are governed by a variety of separate laws. For example, Child nutrition programmes and the WIC come under three major federal laws: the National School Lunch Act (originally enacted in 1946); the Child Nutrition Act (originally enacted in 1966); and Section 32 of the 1935 Agricultural Adjustment Act. Section 32 authority provides both funding for cash child nutrition subsidies and the acquisition of food commodities for distribution to child nutrition programmes. The former case entails annual transfers of permanent appropriations to the child nutrition account, whilst in the later case funds are used to buy and distribute commodities. An extensive number of studies have been conducted to assess the impact of specific food and nutrition assistance programmes (Box 9.1).

* The Farm Bill covers eight of these programme areas, accounting for about 65% of federal spending on domestic nutrition aid.

Figure 9.1. Food assistance outlays by major programmes, FY1995-2008



Source: OECD, PSE/CSE Database 2009.

Box 9.1. Domestic food aid impacts: Some empirical evidence

An extensive number of studies has been conducted to assess the impact of specific food and nutrition assistance programmes, particularly the SNAP. Evidence suggests that some programmes reduce the likelihood of food insecurity, although the 2008 spike in the prevalence of very low food security indicates that they do not fully protect in extreme situations. A 2009 ERS study reports that, in 2008, 15% of US households (17 million households) were “food insecure” and that the prevalence of “very low food security” was 6% (6.7 million households). These numbers were the highest observed since 1995, when nationally representative food security surveys were initiated (Nord, Andrews and Carlson, 2009). Of this 6%, 34% of households that received SNAP benefits had very low food security.

A 2010 ERS study found that between 1990 and 2004, participation in the Food Stamp Program among children in the poorest households declined, whilst for those in households with higher incomes it increased (Todd, Newman and Ver Ploeg, 2010). However, the net result of these changes is that average total inflation-adjusted household benefits from all programmes examined declined. The decline was largest among children in the poorest households.

In general, it has proven difficult to demonstrate empirically a positive effect between SNAP participation and a decrease in food insecurity, or even to estimate its extent. In fact, food insecurity has been found to be more prevalent in households enrolled in SNAP than in other low-income households (Fox *et al.*, 2004; Nord and Golla, 2009). The hypothesised reason for this seeming anomaly is that food-needy households are more likely to enrol in SNAP, and that the initial difference in food security between SNAP participants and non-participants is greater than the ameliorative effect of the programme. Studies have found that, while food stamps stabilise the economy, reduce income volatility and stabilise food consumption, the programme’s effect on intake and dietary quality is less certain (Fox *et al.*, 2004).

Similarly, available evidence about the NSLP suggests that the programme achieves only modest improvements in the dietary status of its intended beneficiaries. Moreover, there is no evidence to suggest that USDA commodity foods are nutritionally distinct from commercial equivalents (Peterson, 2009). Studies concerning the impacts on nutrition and health of the WIC programme tend to be out of date and research on WIC’s impact on some participants, such as women, is scarce.

The Supplemental Nutrition Assistance Program

The Supplemental Nutrition Assistance Program (formerly the Food Stamp Program), is the foundation of USDA's food assistance programmes and it accounts for the lion's share of all domestic food assistance (Figure 9.1), serving over 28 million households monthly in 2008, with an average monthly benefit of USD 102 per person.

The programme provides monthly benefits for eligible low-income households to purchase approved food items at authorized food stores. Eligibility is based on available household income and assets (subject to certain work and immigration status requirements). Its purpose and structure has evolved over time. Originally, it was viewed as a way of providing an outlet for surplus agricultural production, with beneficial side-effect of supporting poor families. Increasingly, the programme is seen as the government's main policy instrument to address the rising concern over food security situation of low-income Americans and it is becoming an integral part of the overall "safety net" for the needy. This programme now ranks as the fourth-largest national programme aiding low-income households.

Unlike other food and nutrition assistance programmes that are targeted toward special population groups, eligibility for food stamps is primarily based on a household's financial status. Monthly gross income must be below 130% of the inflation-indexed federal poverty income guideline for the household's size (*e.g.* USD 2 389 per month for a four-person household), and liquid assets must be under USD 2 000 (USD 3 000 for those households with elderly/disabled members). However, some households can be "categorically eligible" if they participate in another income-tested programme, such as the cash welfare programme. And certain categories are disqualified irrespective of their financial need (*e.g.* illegal immigrants or legal immigrants if they have not been in the US for five years).

Benefits vary by income, household expenses (such as shelter costs) and household size, but generally not by state or region. They are delivered through electronic benefit transfer (EBT) cards, which are used like debit cards. Benefits can be used for virtually any food purchase; they cannot be used for alcohol, tobacco, hot prepared food, or dietary supplements. Food choice has been a recurring theme in food stamp policy debates.

The level of spending varies with the level of participation, which is closely linked to economic conditions, eligibility rules and the level of benefits. Programme costs are shared between the states administering the programme, under generally uniform federal rules. The federal government pays the full cost of benefits and about half the cost of administration, operating work/training programmes for recipients, and outreach and nutrition education efforts, with the remaining amount paid by states.

Since the 2002 Farm Act, participation has increased substantially, from some 19 million persons per month in FY2002, to 34 million in FY2009, and the average monthly benefit level has jumped from USD 80 per person in 2002 to USD 128 in FY2009. Costs have grown from USD 20.6 billion in FY2002, to more than an estimated USD 50 billion for FY2009.

Finally, the SNAP has a "quality control" system that measures the degree to which eligibility and benefit decisions are erroneously made. The national quality control statistics show historically low error rates (*e.g.* 5% of benefits were over-issued in FY2008). States with persistently high error rates can be subjected to financial sanctions; those with very low rates can receive bonus payments.

Child Nutrition Programmes

The basic objectives of these programmes are to improve children's nutrition and school performance, and increase low-income children's access to nutrition meals. The main programmes are: National School Lunch Program (NSLP), School Breakfast Program, Summer Food Service Program, Special Milk Program, Fresh Fruit and Vegetable Program, and Child and Adult Care Food Program.

While children from all income levels are eligible to receive some assistance from these programmes, most of the funding supports meals served to low-income children for free or at a greatly reduced price. Child nutrition programmes are treated as entitlements, that is, federal funding and purchased commodities are "guaranteed" to all eligible participants.

The NSLP is USDA's second largest food and nutrition assistance programme in terms of expenditures (USD 9.8 billion in FY2009). The NSLP is primarily funded through cash reimbursements to school systems, which use these funds to purchase food following nutritional guidelines. USDA also makes commodities available to school systems through the Commodity Purchases Program, funded through Section 32 of the 1935 supplement to the Agricultural Adjustment Act of 1933. Section 32 authorises use of 30% of annual customs duties to support the agricultural sector, to be used primarily for perishable commodities. A varying, but usually small, share of USDA commodity purchases is made as emergency surplus removals ("bonus" commodities) to stabilise market conditions.

Children from families with incomes at or below 130% of the federal poverty guidelines are eligible for free meals, and those from families between 130% and 185% of the poverty guidelines are eligible for reduced-price meals. Children from families with incomes over 185% of the poverty guidelines pay full price, although their meals are still subsidised to a small extent.

The programme operates in over 101 000 public and non-profit private schools and residential child-care institutions. All meals served under the program receive federal subsidies, and free or reduced-price lunches are available to low-income students. In 2009, the programme provided lunches to an average of 31.3 million children each school day. Over half of the lunches served in 2009 were provided free of charge or at reduced prices. The proportion of students in NSLP schools who participate in the programme has increased in recent years, reaching 62% in 2008.

The Special Supplemental Nutrition Program for Women, Infants, and Children

The Special Supplemental Nutrition Program for Women, Infants, and Children provides assistance to low-income pregnant and postpartum women, infants and children up to the age of five, found to be at nutritional risk. Programme participants receive supplemental food, as well as nutrition, education and referrals to health care and other social services. The supplemental foods are usually provided to participants through vouchers for retail purchase of specific foods approved by the programme.

WIC is the third-largest food assistance programme, serving over 8 million participants per month, including almost half of all infants and a quarter of all children under the age of five in the United States. The programme is not an entitlement, but with federal expenditures of USD 6.2 billion in FY2008 – or almost 10% of total federal government expenditures for food and nutrition assistance – and 15% more than in

FY2007, the programme was the fastest-growing food assistance programme during FY2008.

The Commodity Assistance Program

The Commodity Assistance Program distributes commodities through several programmes, such as the Emergency Food Assistance Programme (TEFAP) and the Senior Farmers' Market Nutrition (SFMN) programme. Under the TEFAP, the federal government provides food commodities to states along with grants for administrative and distribution costs. This assistance is often provided in conjunction with food bank and homeless shelter projects. Eligibility decisions for TEFAP – as to both recipients and participating emergency food providers – are made by states. TEFAP includes components of both discretionary and mandatory assistance (USD 140 million is available to be used to purchase commodities).

The 2002 Farm Act also provided statutory authority and mandatory funding for the SFMN programme, under which low-income seniors receive vouchers that they may redeem at farmers' markets and roadside stands for fresh fruit and vegetables, in a similar way for the WIC programme recipients. In addition, it required that a minimum of USD 50 million a year be spent on fresh fruit and vegetables to be acquired for school meal programmes through the Department of Defense's "Fresh Program" ("DoD Fresh" programme).

In response to growing concerns over childhood obesity and the types of foods offered through school meal programmes, the 2002 Farm Act addressed, for the first time, the availability of fresh fruit and vegetables in schools. A pilot project was established under which a small number of schools in a limited number of states and Indian reservations received funding to offer free fresh fruit and vegetables to students. The project was subsequently expanded, granted mandatory annual funding and made permanent. In FY2006, about 400 schools in 14 states and three Indian reservations received support for this project, with funding of USD 15 million.

9.2. Domestic Food Assistance Provisions in the 2008 Farm Act

The 2008 Farm Act boosts funding on domestic food assistance by an estimated USD 3.2 billion over five years (FY2008-FY2012) and USD 10.2 billion over ten years (FY2008-FY2017), accounting for more than two-thirds of all spending on programmes and activities covered by the Act (Johnson, 2008). The most significant provisions address the administration of, eligibility for, and benefits under the SNAP, increasing funding for the TEFAP and for a programme that makes fresh fruits and vegetables available free of charge in schools.

Supplemental Nutrition Assistance Program

The major revisions include:

- re-naming the Food Stamp Program as the Supplemental Nutrition Assistance Programme, as from FY2009;
- increasing benefits for most households by raising and then indexing the minimum amount of household monthly income that is disregarded by calculating benefits (and income eligibility);

- raising minimum benefits by calculating them as 8% of the indexed maximum monthly benefit for single-person household;
- removing existing caps concerning all income spent on dependent care when calculating benefits; and
- loosening eligibility rules relating to assets by; i) annual indexing of the limits; and ii) exclusion of retirement and education savings accounts.

Under the 2008 Farm Act, spending on food stamps is estimated to increase by a total USD 2.3 billion over five years and USD 7.82 billion over ten years (73% and 77%, respectively, of the total increase in domestic food assistance spending).

Other provisions include: continued inflation-indexed funding for nutrition assistance grants (in lieu of food stamps) to Puerto Rico and American Samoa; extension the authority to operate a Food Distribution Program on Indian reservations; simplification some administrative processes (e.g. reporting requirements); widening of the availability of “transitional” benefits for those leaving public assistance programmes; giving the federal government a great deal more flexibility in imposing penalties on retail food stores that violate food stamp rules; adding disqualification penalties for those selling food bought with food stamp benefits or using benefits to obtain cash from container deposits; and requiring greater federal scrutiny and oversight of state efforts to “privatise” and expand reliance on automated systems in their administration of food stamps.

As noted in Box 2.1, a major increase in SNAP benefits is mandated under the 2009 American Recovery and Reinvestment Act. As a result, in April 2009 SNAP maximum per household benefits increased by 13.6%. The increase in benefits, in tandem with tight economic conditions, has led to more Americans participating in SNAP and as of May 2009, the number of participants in SNAP reached a historically high level of 34.4 million – more than 11% of total population.

The Emergency Food Assistance Program

The second-largest increase mandated under the 2008 Farm Act is for the TEFAP. Additional outlays of USD 526 million over FY2008-12 and USD 1.26 billion over FY2008-17 (17% and 12%, respectively, of total domestic food assistance spending) are mandated. Mandatory funding of food purchases for the programme is increased to levels well above the 2002 Farm Act requirement to acquire USD 140 million a year. Required commodity buys are expanded by: i) an immediate infusion of USD 50 million in FY2008 and ii) raising annual mandatory purchases to USD 250 million in FY2009 (indexed annually for food price inflation in later years).

Fresh Fruits and Vegetables Program

The 2008 Farm Act mandates a sharp increase in mandatory funding for the Fresh Fruit and Vegetable Program in schools. Mandatory outlays are boosted by USD 356 million over FY2008-12, representing some 10% of total new spending out of total domestic food assistance spending.

The 2008 Farm Act provides that, in addition to the minimum (USD 200 million-a-year) acquisition of fruits, vegetables and nuts for use in domestic food assistance programmes required under the 2002 Farm Act, the government will purchase additional fruits, vegetables and nuts for use in these programmes. The requirement for a USD 50-million-a-

year purchase of fresh fruits and vegetables for schools under the “DoD Fresh” programme is retained.

Other provisions

In addition to the changes in major programmes noted above, the 2008 Farm Act: includes limited authority for schools in school meal programmes to use geographic preference for locally grown and raised agricultural products when procuring food; increases mandatory funding for the SFMN programme (from USD 15 million per year, to USD 20.6 million per year); continues and expands support for community food projects; provides funds for an initiative to use the SNAP to promote health and nutrition; and authorises (and, in some cases, finances) several projects related to food distribution efforts, school gardens, “hunger-free community” initiatives, provision of whole-grain products to schools, and an urban food enterprise centre.

Chapter 10

Food Safety, Marketing and Other Policies

This chapter provides a brief overview of food and safety, marketing, and labelling policies in US agriculture, and examines how these areas are covered in the 2008 Farm Act.

10.1. Food safety

Food safety concerns in the US are periodically addressed by omnibus farm bills. USDA's Food Safety and Inspection Service (FSIS) has overall responsibility for inspecting the safety and labelling of most meat, poultry, and processed egg products, under, respectively, the Federal Meat Inspection Act (FMIA) and the Poultry Products Inspection Act (PPIA). The Food and Drug Administration (FDA), within the US Department of Health and Human Services (HHS), is responsible for ensuring the safety of virtually all other foods for human consumption, including seafood, and that of drugs and feed ingredients intended for animals.

Under the FMIA, USDA conducts mandatory and continuous inspection of most red meats and of the livestock from which they are derived. The PPIA sets similar requirements for poultry and poultry meats. Under the Federal Food Drug and Cosmetic Act, the safety of virtually all other foods, including fish and shellfish, is regulated by the FDA under an entirely different system.

US meat and poultry slaughter facilities and processing plants have operated for many decades under one of two parallel inspection systems: the federal meat and poultry inspection system, which is administered by the FSIS; and the state-inspection system, comprised of 27 separate, state-administered inspection programmes. Although these state-inspection programmes are to be equal in importance to the FSIS programme, a long-standing federal law has prohibited inter-state shipment of meat and poultry products that have been inspected by state, rather than by federal, authorities.

The 2008 Farm Act amends both the FMIA and PPIA to permit inter-state shipment of state-inspected products under certain conditions. Meat and poultry establishments are required to: i) notify USDA if potentially adulterated or mis-branded products are traded; and ii) prepare and maintain recall plans and any reassessments of their process control plans and to have them available for USDA inspectors to review.

The federal-state co-operative inspection programme is supplemented by a new voluntary programme, under which – in states that choose to participate – a federally employed co-ordinator would supervise state employees in plants that want to ship across state lines. Eligible plants would be limited to those with 25 or less employees – but plants with between 25 and 35 employees could apply for coverage within the first three years of enactment.

States would receive reimbursement of at least 60% of their costs (compared with 50% under the existing federal-state programme, which could also continue in existence). Products inspected under the new programme would carry the federal mark of inspection. Other provisions prohibit federally inspected establishments from participation, establish a new technical assistance division to assist the states and require periodic audits by USDA.

The 2008 Farm Act also subjects catfish products to mandatory inspection in line with other major meat and poultry species; it also establishes a voluntary, fee-based grading programme for catfish and permits producers of other forms of farm-raised seafood to apply for such grading.

10.2. Marketing

Livestock sector

Competition and marketing

To address perceived competition problems in the livestock sector, the 2008 Farm Act changes the Agricultural Fair Practices Act to alter the definitions of associations and handlers. In addition, it amends the Packers and Stockyards Act (P&SA), which governs market competition in the meat-packing sectors. The 2008 Farm Act requires an annual report, detailing investigations into possible violations of the P&SA.

The 2008 Farm Act also allows poultry or swine farmers to cancel growing or production contracts within three days after signing (where a later cancellation date is not specified in the contract). It stipulates that contracts must conspicuously state the freedom of the contractor to require a producer to make an additional large capital investment.

Livestock Mandatory Price Reporting Program

The Livestock Mandatory Price Reporting (LMPR) Act first came into law in 1999 to address some livestock producers' concerns related to low livestock price and increasing industry concentration (with an increase in the number of animals being sold under private marketing arrangements, with prices not publicly disclosed or reported). The LMPR contains a variety of reporting requirements concerning livestock and meat prices and related market information which packers, processors and importers are required to report and there are penalties for failure to do so. The original authority had elapsed several times and continued on a voluntary basis until 30 September 2006.

The 2008 Farm Act contains provisions intended to improve electronic reporting and publishing under the LMPR Program administered by USDA's Agricultural Marketing Service (AMS), and to study the effects of requiring pork-processing plants to report information on the wholesale pork price.

Animal welfare

Farm animals are not covered by the Animal Welfare Act (AWA), which requires minimum care standards for most types of warm-blooded animals bred for commercial sale, used in research, transported commercially, or exhibited to the public. The Animal Care Division of USDA's Animal and Plant Health Inspection Service (APHIS) has primary responsibility for enforcing the AWA and several other animal welfare statutes, including the Horse Protection Act. In accordance with the previous Farm Acts, the animal welfare provisions under the 2008 Farm Act have generally been limited to AWA amendments (thus affecting non-farm animals only).

The 2008 Farm Act also increases maximum fines for AWA violations from USD 2 500 to USD 10 000 per violation, and directs USDA to review "any independent evaluations by a nationally recognised panel of experts" on the use of certain sources used by researchers to obtain dogs and cats, and to report on any recommendations as they apply to USDA.

Horticulture and organic agriculture

The 2008 Farm Act re-authorises the programme that makes available to states block grants for the support of marketing, research and promotion to enhance the competitiveness of their horticultural (specialty) crops. Around USD 466 million over ten years in mandatory funds will be provided for this purpose.

Other key marketing provisions of the 2008 Farm Act include: i) support to organic agriculture through re-authorisation of the programme of cost-share assistance to producers for organic certification, with a one-time transfer of USD 22 million in mandatory funds; ii) expansion of the Farmers' Market Promotion Program to increase direct farmer-to-consumer marketing opportunities, providing USD 33 million in mandatory funding; and provisions to encourage the consumption of fresh fruits and vegetables (see the section on the *Fresh Fruits and Vegetables Program* in Chapter 9). The 2008 Farm Act also contains provisions to address pest and disease management issues.

10.3. Country of origin labelling

In the United States, country-of-origin labelling (COOL) is mandated for most imported products under the 1930 Tariff Act. However, several agricultural products, including meat and unprocessed fruits, nuts and vegetables, are exempted.

The Farm Security and Rural Investment Act of 2002 (2002 Farm Act) amended the Agricultural Marketing Act of 1946 which created new mandatory COOL requirements for muscle cuts of beef, lamb, and pork; ground beef, ground lamb and ground pork; wild and farm-raised fish and shellfish; perishable agricultural commodities (i.e. fresh and frozen fruits and vegetables) and peanuts sold at certain US retail outlets (USDA/AMS, 2003).¹ Poultry and poultry products, delicatessen food items, processed foods, restaurants, food services and small retailers (those with less than USD 230 000 of annual sales) remained exempted.

A voluntary COOL was instituted in 2002, to be followed by mandatory COOL in 2004, at the retail level for certain agricultural commodities, with penalties for non-compliance of up to USD 10 000. Although COOL was implemented for fish and shellfish in April 2005, it was delayed for all other commodities until September 2008, when the Interim Final Rule for all other commodities came into effect. The Final Rule came into effect on 16 March 2009.

The *Food, Conservation, and Energy Act of 2008* or "2008 Farm Bill" altered some of the provisions in the 2002 Farm Bill, including removing some of the details in the labelling requirements;² expanding the list of covered commodities to include chicken, goat meat, ginseng, pecans and macadamia nuts; reducing the record-keeping requirements; and reducing the penalties for non-compliance to USD 1 000.

The objective of COOL under the 2002 and 2008 Farm Acts is to provide consumers with information regarding the country of origin of the covered commodities.³ Canada and Mexico are challenging the United States' mandatory COOL in the WTO as they are of the view that it is having negative effects on their exports of livestock to the United States. They are of the view that the COOL requirements violate the obligations of the United States under the WTO Agreement, including the Agreement on Technical Barriers to Trade and the General Agreement on Tariffs and Trade 1994.

Notes

1. Under the 2002 legislation and regulations, for meat to qualify for a “Product of United States” label, it had to be exclusively produced in the United States (*i.e.* born, raised and slaughtered). For meat derived from animals of foreign origin (*i.e.* born and/or raised outside of the United States), but slaughtered in the United States, the label had to indicate the country for each step in the production process (*e.g.* “Born in Country X, Raised and Slaughtered in the United States”). For meat from animals born, raised and slaughtered outside the United States, the label had to indicate the relevant country of origin (*e.g.* “Product of Country X”). For products prepared from raw material sources having different origins (*e.g.* ground meat), the label had to indicate all the countries of origin alphabetically.
2. Under the 2008 legislation and regulations, for meat to qualify as a “Product of United States” label, it has to be exclusively produced in the US (*i.e.* born, raised and slaughtered). For meat derived from animals of foreign origin (*i.e.* born and/or raised outside of the United States) but slaughtered in the United States, the label has to indicate the countries of origin (*e.g.* “Product of United States and Country X”, “Product of Country X and United States”). For ground meat products, the label is to list all of the reasonably possible countries of origin (*i.e.* raw material from countries that have been in the processor’s inventory for at least 60 days).
3. World Trade Organization, Notification to the Committee on Technical Barriers to Trade, G/TBT/N/USA/281/Add.3, 22 January 2009.

Chapter 11

Future Directions for Agricultural Policies

The United States' agricultural policies discussed in this chapter are evaluated against the principles and operational criteria of transparency, targeting, tailoring, flexibility and equity, agreed by OECD Agricultural Ministers in 1998 for use in evaluating agricultural reform efforts in OECD countries. This chapter identifies some issues and emerging challenges for US policy and provides policy recommendations.

The United States' agricultural policies discussed in this chapter are evaluated against the principles and operational criteria of transparency, targeting, tailoring, flexibility and equity, which were agreed by OECD Agricultural Ministers in 1998 for the evaluation of reform efforts across the OECD area. These evaluation criteria were designed to promote an economically healthy sector that contributes to a wider economy, respects natural resources, and uses inputs effectively without recourse to production- and trade-distorting support. The chapter identifies some issues and emerging challenges for policy and concludes by providing some key policy recommendations.

First of all, it should be noted that it is too early to undertake a comprehensive evaluation of the implications of the 2008 Farm Act commodity provisions. Knowledge of certain key elements concerning implementation of the various programmes is still incomplete, and, in addition, more time is required for the effects of some policies to be fully known. Some preliminary observations follow.

11.1. Assessment of policy reform progress since 1985

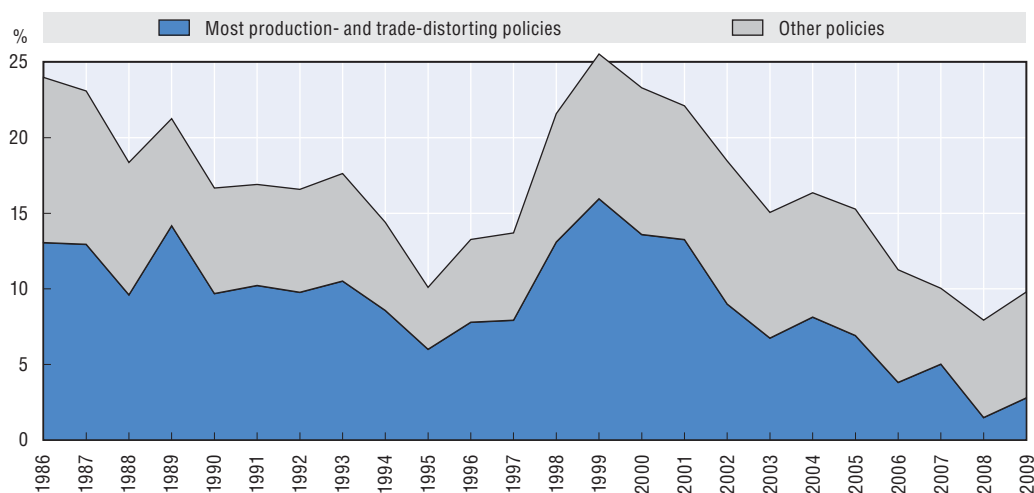
Commodity support policies

Levels of support have been halved, and significant decreases in production and trade distortions have been achieved...

The direction of agricultural policy reforms (discussed in Chapter 2) is generally in line with the aforementioned OECD principles for agricultural reform. Progress since 1986-88 towards less production- and trade-distorting policies is assessed in terms of how much support is provided (level of support) and how it is delivered (composition of support). As shown in Figure 11.1, both the level of producer support (% PSE) and the share of the most production- and trade-distorting forms of support (i.e. payments based on output and payments based on variable input use with no constraints attached) have decreased over time.

With the introduction of payments not requiring production of commodities, under the 1996 Farm Act, there has been a reduction, over time, in reliance on the most severely distorting forms of support and also on their commodity specificity. This trend was accelerated after 2001, when there was a significant shift away from payments based on the current area of single commodities towards counter-cyclical and direct payments based on past area with no requirement to produce. Less than one-third of total producer support is today granted in the form of the most production- and trade-distorting policies.

Overall, policy reforms since 1986-88 have improved market orientation, and levels of producer support and border protection (as measured by the producer Nominal Protection Coefficient [NPC]) have substantially decreased. US producer support (as a percentage of farm receipts), is now the third-lowest in the OECD area (10% over 2007-09), and less than half the OECD average. The gap between domestic and world producer prices has also narrowed significantly, reaching 2% in 2007-09, as compared to 13% in 1986-88. Moreover, the PEM model analysis suggests that – taken as a package – the efficiency of agricultural policies in transferring income to farmers is high and has improved over time.

Figure 11.1. **Evolution of producer support: Most distorting and other components**

Source: OECD, PSE/CSE Database, 2010.

... although these improvements have occurred primarily since 2001...

As compared to the 1986-88 average, reduction in support levels has occurred in every year, except 1999 and 2000). But reduction in the relative importance of the most production- and trade- distorting policies, as compared to 1986-88 average, has only been achieved since 2001. However, the sharp decline over the 2002-09 period of the most production- and trade-distorting policies has primarily been due to higher world commodity prices, rather than to any changes in policy settings, as several support policy measures are inversely related to changes in market prices. There therefore exists a probability that the trend of declining support will be reversed, should market prices fall.

... and the milk and sugar sectors continue to receive high production-linked support...

There have been no really substantive changes in policy for the sugar and dairy sectors since 1985, and these sectors remain the most highly protected in the US. The policy regime in both sectors is very complex, but, because the two systems do not operate in the same way, they do not experience the same degree of insulation from markets signals. Support for sugar, which is provided through a combination of limitations on imports, price support loans and tariff quotas, is higher than dairy in relative terms. In 2007-09, for example, the Single Commodity Transfer (% SCT) for sugar was just over 27%, while for dairy it was 13%. Production and trade distortions, as measured by the producer NPC, are also higher in the sugar sector than in the dairy sector (e.g. in 2007-09 producer prices were 38% higher than world prices for sugar, as compared to 17% for milk).

The dairy sector operates under one of the most complicated and market-distorting programmes in US agricultural policy, and receives more support in absolute terms than any other sector (e.g. USD 4 145 million in 2007-09). Using a complex system of price supports, dairy income support payments, federal and state marketing orders, high import tariff quotas – and, to a lesser extent, export subsidies – policies insulate US dairy producers from market signals and contribute to distortions in world dairy markets. Export subsidies were used in 2009 and 2010, for the first time since 2004.

Key components of the dairy support system, such as the market price support programme and federal marketing orders, have their roots in the 1930s and 1940s.

Although these programmes have been modified over the years, such amendments have been modest and have failed to keep pace with: the significant changes occurring in the structure of the sector; shifts in consumer patterns; and technological developments (Balagtas, 2007; James, 2006; Blayney and Normile, 2004). This situation raises the question as to the extent to which the stated objectives of these policies remain valid.

The combination of a plethora of measures and the complexity of their nature has resulted in some measures overlapping and others conflicting. The market price support and the Milk Income Loss Contract Payment programmes can have several negative impacts on dairy producers, leading to perverse effects. For example, whereas the MILC (by increasing producer returns through production-linked payments) encourages increased production, which causes downward pressure on the price of milk and dairy products, the aim of the Dairy Producer Price Support Program (DPPSP) and of import protection measures is to maintain them. By keeping prices artificially high, guaranteeing income support and impeding import competition, the US dairy support system encourages over-production, which could put further strain on the price-support system and the amount of stocks of dairy products that the government must offer to buy to maintain it.

The economic consequences of US dairy policies have been the subject of extensive study (see, for example, Balagtas, 2007, for a review of the literature). In general, the available empirical evidence seems to suggest that: i) the impacts of dairy programmes on the level and variability of producer prices and returns are modest, as the main impact on price levels and variability is through border measures and; ii) the costs to consumers and taxpayers exceed the benefits to dairy farmers. For example, a report by USDA shows that the combined effect of the various dairy programmes on the farm milk price is almost imperceptible: federal dairy programmes raise the average milk price by about 1% and raise producer revenue (returns plus government payments) by 3% over five years (Blayney and Normile, 2004).

The same study found that, on average, without the MILC programme, the other dairy programmes raised the all-milk price by 4% (compared to 1% with MILC), over five years. Given the production limit per farm, MILC payments are more likely to induce increased production on smaller farms – which, in turn, lowers milk prices – while for larger dairy farms they could actually reduce incomes because the annual production of larger farms is well in excess of the production payment limit, and any production above that level does not qualify for federal payments (Balagtas, 2007).

The effects of dairy programmes on farms vary geographically, as separate fluid milk markets exist in different areas. The delineations of geographical fluid milk and marketing areas imply that the benefits and costs of federal milk marketing orders vary across regions. Studies suggest that the system of federal milk marketing orders actually penalises the dairy producers in low-cost regions and imposes higher costs on consumers according to how far away they live from certain milk-producing areas (Balagtas, Smith and Sumner, 2007; Cox and Chavas, 2001). By restricting competition across regions, the FMMO system could also lead to perverse consequences for dairy manufacturers. A potentially more efficient way of marketing dairy products would be a market-based system depending solely on contractual arrangements negotiated directly between product manufacturers and sellers of milk.

... and the 2008 Farm Act does not address reforms in the most price-supported sectors – dairy and sugar...

For the sugar sector, under the 2008 Farm Act, loan rates are increased, for the first time since 1985; and imports, with the exemption of emergency situations, are usually set

at levels no higher than the minimum requirements under international trade agreements.¹ Furthermore, the sugar-for-ethanol programme might prove to be very expensive to operate, while the sugar support programme is required to operate at no cost to the government.

The availability of ethanol as a new market for sugar in the United States provides a means for securing the stipulated minimum 85% share of the domestic market for domestic producers. Effectively, US producers would be guaranteed a share of the domestic sugar market – regardless of imports – because of the possibility to divert sugar from food-use to ethanol production. Overall, the changes mandated under the 2008 Farm Act entrench a support system that contributes to the distortions on the world sugar markets, insulates US sugar producers from world market signals and imposes a burden on domestic sugar consumers (users).

For the dairy sector, in contrast to counter-cyclical payments for crops, payments made under the MILC programme are linked to current production. This type of support is one of the most production- and trade-distorting: it is relatively inefficient as a means of increasing farm household income; and, depending on the farm practices adopted, it could be one of the least environmentally friendly because of it encourages additional production. The provision to increase payment rates in the 2008 Farm Act will result in higher support, through MILC, at times when the payments are triggered. Overall, the changes in the MILC programme are estimated to increase the budgetary cost of the programme by USD 395 million over the five-year authorisation period (FY2008-12) (Chite and Shields, 2009).

The provision under the 2008 Farm Act to adjust the MILC benchmark support price upwards, should feed prices rise above specified levels, has the effect of triggering MILC payments at higher market prices for milk and increasing levels of potential MILC payments. According to some preliminary results from ERS, while changes in the price support programme are not expected to have significant effects on the level of support, changes to the MILC programme are forecast to increase payment levels (ERS, 2009). The purchase prices for butter, Cheddar cheese and non-fat dried milk could provide a lower level of support than the milk support level under the previous Farm Act because of changes in the estimated costs used to calculate milk prices from dairy product prices. MILC payments, under certain assumptions, would be USD 108.00 per operation under the 2002 Farm Act, and USD 134.33 per operation under the 2008 Farm Act.

The authorisation of a forward pricing programme for dairy in the 2008 Farm Act is a positive step, as it is a more effective risk-management tool than MILC payments for managing the volatility of farm milk prices and producer incomes. Moreover, the elimination of the provision that required dairy processors to pay a price lower than the federal milk marketing order minimum price, when the forward contract price was lower than the monthly milk marketing order minimum price, may act as an incentive to processors to enter into forward contracts.

... and retains support programmes for crops...

As with the 2002 Farm Act, marketing loan benefits, direct payments and counter-cyclical payments constitute the core price- and income-support programmes under the 2008 Farm Act. These programmes differ in their specific eligibility criteria and, especially, in how closely they are tied to market prices and production of the programme crop.

Marketing assistance loans payments are based on current production, and are one of the most production- and trade-distorting forms of support. Direct Payments (DP), although unrelated to current production or prices, could have effects on wealth and investment that could influence production decisions.

The CCP payments, whilst not being related to current production and not requiring the farmer to produce any commodities (in the same way as the DP) are, however, linked to current market prices. Because of this link to market prices, CCP payments can influence production choices as they can lower price-related revenue risk to producers by reducing the variability of revenues for programme crops, depending on expected market prices and farmers' level of risk aversion. Distortions associated with CCP, however, are smaller than those of fully "coupled" payments, such as marketing assistance loans (OECD, 2003).

For producers with historical base acres who continue to produce their historical programme crops on those acres, DP and CCP payments may be perceived as guaranteeing revenues that are at least equivalent to the target price, for 85% of base acres, adjusted for lower programme yields (or 83.3% of base acres, when changes to direct payments, under the 2008 Farm Act, are taken into account). This perception significantly reduces the income risk they face. In addition, with the exception of the last few years, target prices for several farm programme crops are set at very high levels, relative to historical market prices. Nevertheless, the OECD-FAO 2010 Outlook projects that the CCP programme will not be triggered, as projected prices are substantially higher than target prices (OECD-FAO, 2010).

... and introduces a new revenue-based income support programme under which payments can be triggered even when commodity prices are high by historical standards...

The Average Crop Revenue Election programme (ACRE) – which is new, optional, commodity-specific, based on planted acres, linked to updated prices and yields, revenue-based, income-support programme – may be considered to be the main innovation of the 2008 Farm Act. ACRE requires a revenue loss both at the level of state and individual farm. Thus, an individual farmer's loss will not be compensated if only the state trigger is met – the payment being based on the level of state loss, not that of the individual farm. A farmer may therefore choose to purchase crop insurance to protect against losses specific to the farm. In contrast, for a producer with crop revenues that follow the fluctuations of state crop revenues, the ACRE programme may be sufficient to manage the operation's revenue risks. In general, if, for a large number of farmers nationwide, only the farm-level trigger is met, the effectiveness of the programme, in terms of whether ACRE payments reach those farmers who experience revenue losses, may be called into question.

Simulation analysis based on the OECD-FAO's AGLINK-COSIMO model suggests that the ACRE programme will provide some payments to wheat and sorghum producers in the short-term because of the decrease in current projected prices and a relatively high historic revenue guarantee brought about by a combination of the high 2008 wheat and sorghum prices. Thereafter, the analysis projects no further payments under ACRE, but this should not be surprising, given that analysis assumes "normality" in markets, with no adverse supply or demand shocks. The ACRE programme, however, provides support for covered commodities in the event that current state revenue falls below the state ACRE guarantee, and current farm revenue falls below the historical farm-benchmark revenue – and such a situation is only likely to arise as a result of adverse events, such as severe drought (Box 11.1).

Box 11.1. AGLINK-COSIMO ACRE analysis

Although the 2008 Farm Act made changes to some marketing loan rates and countercyclical target prices, the projected prices in the OECD-FAO 2010 Outlook are substantially higher than these target prices and, consequently, these programmes are not projected to provide payments to US producers (OECD-FAO, 2010).

To contemplate what potential the ACRE programme has in providing support to eligible US crop producers it is proposed to introduce a supply “shock” by replicating drought conditions. The 1988 US drought was used to create a supply-side shock to commodity markets to see how ACRE would respond. Firstly, an estimate was made of the percentage difference in observed 1988 yields, compared to trend yields for the major crop commodities represented in the AGLINK-COSIMO model for cereals and oilseed (i.e. maize, wheat, sorghum, barley, oats, soybeans and rice). Table 11.1, below, shows these percentage changes. These were then introduced as percentage reductions in yields for 2013. The drought shock was introduced in 2013 – and not before – because this was the first year in which no ACRE payments were being paid by any commodity in the baseline. Note that rice and sorghum yields actually increased above trend yields. A key assumption in the baseline is that the ACRE participation rate would be 10% for all eligible crops, except rice, which is assumed to have a participation rate of zero (this assumption is maintained in the scenario).

Table 11.1. Impacts of imposing drought in 2013 on yields, prices and ACRE payments

	Yield % change	Price % change		ACRE (USD mill.)	
	2013	2013	2014	2014	2015
Maize	-24	42	-9	276.4	15.6
Wheat	-7	18	1	-	-
Sorghum	5	38	-8	23.3	11.8
Barley	-29	21	-5	2.6	-
Soybeans	-18	29	-7	95.7	1.6
Oats	-29	36	-8	2.1	0.8
Rice	3	2	2	-	-
Total				400.1	29.8

The reduction in yields, for most commodities, directly causes prices to increase in 2013: this has two effects on the ACRE revenue calculations. Firstly, the increase in prices raises the revenue calculations for benchmark farm and actual state revenue, but the reduced yields have the effect of only a slight reduction on the benchmark farm revenue because of the Olympic rule applied to yields in the calculation. Secondly, the increased prices of 2013 then cause an increase in production in 2014, which lowers prices compared to the baseline. It is in 2014 that ACRE starts to deliver payments for maize, barley, sorghum, oats and soybeans because in 2014 the programme guarantee is higher, as a result of the previous year’s high prices, and the current actual state revenue is lower than current lower prices. In 2014, total payments are USD 400 million, but payments predominantly go to corn and soybeans at USD 276 million and USD 96 million, respectively. In 2015, ACRE continues to give payments to corn, sorghum, soybeans, and oats, totalling USD 30 million.

It should be noted that the analysis of the ACRE programme with the AGLINK-COSIMO model is subject to limitations, and caution should be exercised in interpreting the results. In particular, the ACRE programme is based on state and farm-level revenue. Given the fact that AGLINK-COSIMO is a national-level model, all specificities of the ACRE programme are not fully represented.

Box 11.1. AGLINK-COSIMO ACRE analysis (cont.)

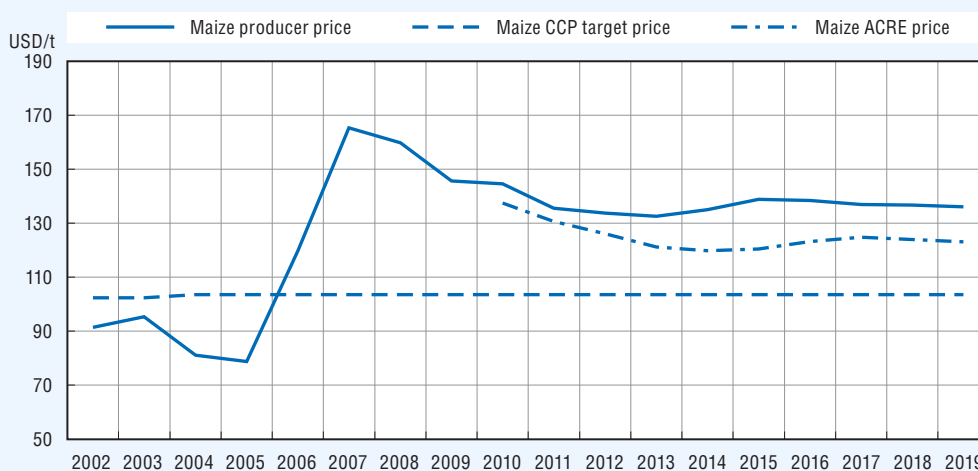
Obviously, the level of ACRE participation would affect the absolute level of payments, and FAPRI's 2010 US baseline was projecting ACRE participation to be in the 20% range for maize, soybeans, wheat, sorghum and barley, which would double the payment levels indicated above (FAPRI, 2010). However, to put the ACRE payments into perspective, the following table breaks out the ACRE revenue calculations and payments by hectare for 2014. It can be seen from Table 11.2 that the ACRE programme has the potential to provide producers with a significant level of support per eligible hectare should an adverse event, such as a drought, occur.

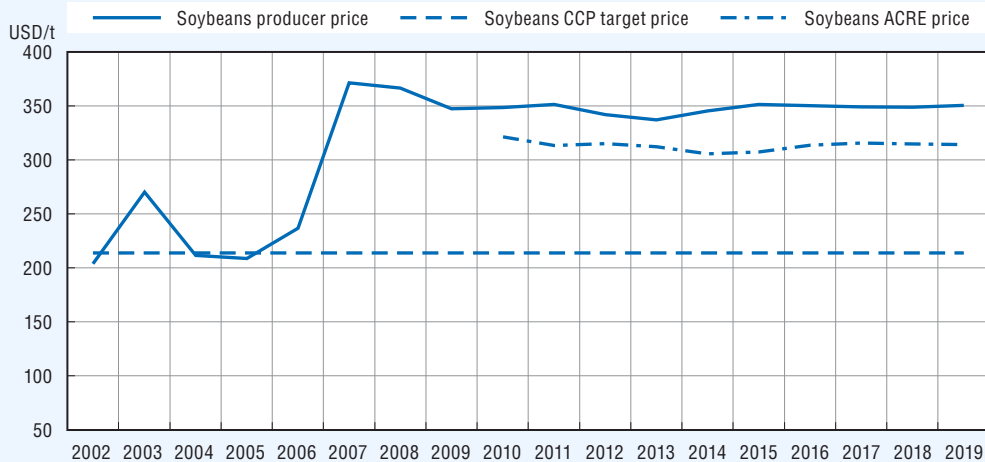
Table 11.2. ACRE payments

2014	Programme guarantee	Actual state revenue	Enrolled acres	Payment
	USD/ha	USD/ha	(000 ha)	USD/ha
Maize	1 424.31	1 322.46	2 713.26	101.85
Wheat	461.25	481.34	2 157.13	0.00
Sorghum	489.89	429.36	385.53	60.53
Barley	670.09	660.26	2.64	9.83
Soybeans	1 036.44	975.27	1 563.68	61.17
Oats	367.35	343.95	90.64	23.40
Rice	1 267.86	1 491.35	0.00	0.00

Considering that ACRE is an alternative to CCP, one should compare the price levels that the ACRE programme would offer in relation to traditional target prices under the CCP programme. Looking at the charts below, it can be seen that the ACRE price (*i.e.* 90% of the previous 2-year average producer price) for both corn and soybeans is significantly higher than target prices offered under the CCP. Obviously, the ACRE programme offers a higher degree of price protection, and additionally yield protection, than the CCP programme. However, in accepting this higher degree of revenue protection a producer must accept 20% less in direct payments and a 30% reduction in the marketing loan rate and, to date, producer participation has been limited (Young and Woolverton, 2009).

Figure 11.2. ACRE maize and soybean prices



Box 11.1. **AGLINK-COSIMO ACRE analysis** (cont.)Figure 11.2. **ACRE maize and soybean prices** (cont.)

... and its interactions with the existing mix of commodity programmes may further complicate decisions for producers

A farmer's expectation of prices over subsequent years is a key factor in deciding whether to enrol in ACRE (Cooper, 2009). As producers must enrol the entire farm, they make a simultaneous decision for all programme crops on their farms regarding the comparative value of ACRE *versus* CCP and the full value of DP and loan rates. That is, in deciding whether to participate in ACRE, producers need to consider the trade-off between reduced benefits under traditional programmes and the expected increase in revenue risk protection provided by the programme. Analysis of the trade-off requires expectations about the following year's prices and the variability of the historical state crop yield, as well as the variability of individual farm yield. Farmers also need to consider the expected price trends for the life of the programme (2009-12 crops) because once a farm has been enrolled in the ACRE programme, it cannot be withdrawn.

If market prices remain above levels that trigger CCP payments, a farmer may choose to surrender CCP payments. In the case of DP, a farmer may be inclined to select ACRE for its revenue protection benefits, if the forgone amount of the direct payment is not too large. In contrast, if prices are expected to remain sufficiently high for ACRE payments not to be triggered, farmers may choose to stay with traditional programmes, under which they would not forfeit any direct payments.

The reduction in DP will be greatest for crops with relatively high per-acreage payments (such as rice and cotton) rather than those with lower payment rates (such as maize, wheat and soybeans) (Table 3.1). For a farmer to select ACRE, the expected per-acre benefits under the programme must be at least as high as the amount of direct payments the producer will forgo.

Some studies indicate that the ACRE programme is likely to appeal to a farmer whose current plantings and historical base differ substantially from each other, because CCP

payments (derived from historical base) may not match well with the revenue risk from current plantings (Zulauf, Dicks and Vitale, 2008). The programme is also likely to be popular in states with relatively high yield variation and for crops with prices well above their loan rates.² In principle, ACRE could also be popular in states where yields tend to be highly correlated with national average yields.

Besides the interactions with market assistance loans, DP and CCP programmes, ACRE also interrelates, to a limited extent, with crop insurance and the new SURE programme. The SURE programme has been created to compensate eligible producers for a portion of crop losses that do not qualify for an indemnity payment under the crop insurance programme. Because losses under the programme will be measured in terms of a shortfall in whole-farm revenue, payments made under ACRE (and other commodity programmes) will be included in the payment calculation for SURE. The complexity of this system and interaction with other programmes may be a key reason for the small ACRE sign-up.

Equity considerations

Commodity support payments exacerbate inequities among farm households...

Equity considerations have long been cited as one of the principal justifications of US agricultural policies (Gardner, 1992; 2002; 2007). The “farm problem” has been identified with the persistence of low incomes and high poverty rates among farmers and, since their inception in the 1930s, price and income support programmes have been devised to raise both the level of farm income and to close the gap between farm and non-farm incomes. The distribution of agricultural support payments is a perennial subject in every Farm Bill debate.

Concurrent with farm programmes over the years was a dramatic shift in the structure and organisation of farms. Today a limited number of farm households depend solely on farming for the major part of their income, and those farm households which are the most heavily dependent on farming have income levels well above the average for non-farm households.

On average, over the 2000-10 period, farm households earned 20% more than the average US household, and the average household income of commercial-scale farms – which receive the largest share of commodity payments – was more than three times that of the average US household. Moreover, the median net worth of farm households was greater than the average. Only 4% of farm households had both low-income and low-net wealth, and such households received only a very small share of payments (1% in 2007).

The largest proportion of commodity support payments is accrued by farmers who are relatively wealthy, compared to most US households, or by owners of resources used in farming (landowners) because most of these payments are linked to land or production. Nearly 20% of those farms eligible for commodity support receive about 80% of the payments. More than half of the commodity payments (59%) are received by just 9% of farms. Meanwhile, the majority of farms (60%) do not receive payments and produce commodities which do not receive commodity-specific support, such as beef, pigs, poultry and fruit and vegetables. The concentration of payments on a per-farm basis closely reflects the concentration of revenue and assets by farm.

These data suggest that the link between farm support payments and poverty reduction is weak and that commodity programmes are an inadequate way of addressing this concern. Today, with farm households virtually indistinguishable from non-farm

households in terms of income levels and diversity of employment, government policies that influence general economic conditions could have a much more profound impact on farm households than those specifically targeted on agriculture.

... although the 2008 Farm Act makes some modest efforts to address equity concerns

Instead of a comprehensive overhaul of commodity support payments, various limits on payments have been implemented over time. Spurred on by equity considerations, the 2008 Farm Act made changes in the payment limits for farm commodity programmes and in the size of farms eligible for support. However, these limits are unlikely to affect a large number of farmers and may not actually restrict large farms from receiving subsidies. Data that are specific to the 2008 Farm Act limits of USD 500 000 non-farm Adjusted Gross Income (AGI), and USD 750 000 farm AGI are not yet available. However, in the context of the 2002 Farm Act, the USDA has estimated that the Act's AGI cap affected only a few hundred farmers. Moreover, limits could have been avoided, usually legally, by re-organisation of the farms. In such cases, payment limits are an ineffective policy tool that causes dead-weight loss by encouraging rent-seeking behaviour to avoid the payment cap. Changes made under the 2008 Farm Act that attribute payment to individuals should reduce such behaviour (Monke, 2008).

In particular, USDA data suggest that about 1.5% of farm operator households have AGI over USD 200 000 and have received some farm programme payments under the 2002 Farm Act (1.1% of farm sole proprietorships, 2.5% of farm partnerships, and 9.7% of farm households involved in farming through a corporation). About 8.5% of rice farms and 9.3% of cotton farms have AGI over USD 200 000 and receive programme payments, compared with 5.5% for maize farms and only 1.3% for soybean farms. It should be pointed out that the farms potentially affected by the AGI limit are not necessarily the larger farms, or those above the AGI limit because of high farm income: for some farmers, non-farm income may be the largest component of AGI.

From a welfare perspective, there is no reason why farmers should be treated differently from the rest of the population, but, were farm programme payments to target poor farm households or those at severe financial risk, they would need to be re-cast. The use of targeted income support payments based on criteria such as low income and low net wealth farm households would significantly change the distribution of payments and better address the poverty issue. Such an approach might need to be complemented by human capital activities (such as education and managerial training) or policies aimed at increasing off-farm job opportunities.

International trade

A successful outcome of multilateral agricultural negotiations could require further policy reforms

International trade has been an important contributor to the long-term economic prosperity of the US agricultural sector, and the United States played a key role in bringing agriculture fully under the WTO umbrella in the Uruguay Round negotiations. Consistent with its position as the world's single largest agricultural exporting country, the US, over the years, has been an advocate of multilateral trade reform in agriculture, with the primary focus on expanding market access for its products.

A successful conclusion to the Doha Round of multilateral trade negotiations could have significant implications for US agriculture, as the US has a comparative advantage in many agricultural commodities and a reduction in border protection and distortions could open up significant export opportunities. A successful Doha Round Agreement (DDA) could have the effect of significantly lowering the spending limits for certain types of domestic support and eliminating export subsidies, while allowing US agricultural products wider access to foreign markets. But this could require further policy reforms, such as changing production-distorting farm payments to less distorting, decoupled and targeted forms.

The strengthened disciplines on domestic support – for example, in the proposed DDA modalities – would substantially reduce the leeway in the amount of support that can be provided within the limits of WTO commitments, particularly in regard to product-specific support, such as that granted to sugar and cotton (Blandford and Orden, 2008; Zulauf and Orden, 2009). In general, the lower the commodity prices, the larger the adjustments would need to be. However, even if commodity prices remain high enough not to trigger traditional CCP or loan rate payments, large payments under ACRE could exert further pressure on the ability of the US to comply with its WTO commitments.

If the Doha Round results in increased market access, the ability of the United States to support prices for certain commodities through import controls (most notably for dairy and sugar) might be constrained. A Doha Round agreement would further discipline the system of tariff quota imports and the foreseen increase in the price support loan rate for sugar under the 2008 Farm Act, while increasing competition in the US domestic sugar market.

Export subsidies, export credit guarantee programmes and food aid are subject to the current WTO disciplines and, depending on the outcome of the Doha Round negotiations, could be subject to new disciplines. WTO members have agreed to eliminate export subsidies. Elimination of agricultural export subsidies has been a long-standing objective of US trade policy. The 2008 Farm Act repealed legislative authority for the Export Enhancement Program (EEP), which was historically the largest US agricultural export subsidy programme. Should export subsidies be ended, the Dairy Export Incentive Program (DEIP), a much smaller export subsidy programme that was re-authorized under the 2008 Farm Act, would also need to be eliminated.

The United States has already made changes in its export credit guarantee programmes in response to an adverse decision in the WTO cotton case. The intermediate export credit guarantee programme (GSM-103) and the Supplier Credit Guarantee Program have been abolished; risk-based fees have been established; and the 1% cap on origination fees has been lifted. The repeal of the EEP and changes in export credit guarantee programmes have enhanced the market orientation of US exports and are consistent with the Doha Round's objectives of trade reform.

Regional trade agreements have been increased

The United States – particularly since 2002 – is actively involved in regional and bilateral agreements as a complement to its multilateral trade commitments. A free trade area with Israel, created in 1985, was followed by another, with Canada, in 1989, which was subsequently expanded to include Mexico, to become the North American Free Trade Agreement (NAFTA) in 1994. A *preferential trade agreement* between Australia and the United States, modelled on NAFTA, was signed in 2004. In 2006, the Central American Free Trade

Agreement (CAFTA), which includes the United States, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, came into force. All these free trade agreements contain provisions for tariff reductions and increased market access that affect agricultural and food products. However, the agreements restrict trade in a range of products that are considered politically sensitive by one (or both) partners – for the United States these include sugar, dairy products, peanuts and citrus fruit. As of 2008, peanut imports from Mexico under NAFTA have been duty-free and, under CAFTA, US duties on imported peanuts from the region are to be phased out after 15 years.

Environment

Significant progress in addressing major environmental concerns (particularly soil erosion)

Evaluation of the environmental benefits of agri-environmental programmes is a difficult undertaking as many other factors come into play, which go beyond the range of financial and technical assistance, or programme compliance, and which have an effect on the behaviour of farmers and the condition of natural resources. Nevertheless, agri-environmental indicators suggest that, since 1985, significant progress has been made in addressing major environmental concerns and achieving environmental goals, notably the reduction of soil erosion. However, in other areas, and especially with regard to groundwater depletion, the environmental performance of agriculture has deteriorated.

Conservation compliance, conservation programmes and changing production practices have been the major factors in reducing soil erosion and wetland losses from agriculture, and also in wetlands restoration. Soil erosion on cropland and pasture declined by 1.3 billion tonnes (43%) from 1982 to 2003, with approximately half of the benefits of erosion reduction attributable to conservation compliance and the CRP. However, erosion rates also declined on land not under federal programmes and for about a quarter of total cropland additional soil erosion reductions are possible (OECD, 2008a).

Wetland losses from agriculture have steadily declined over time and the objective of “no net loss” of wetland functions and values has been surpassed over the 1997-2003 period. Agriculture has also become a major engine of wetland restoration and more than one million acres of wetlands have been restored through the Wetlands Reserve Program (WRP) since 1991.

Policy efforts to promote environmentally benign agriculture have increased and monitoring and evaluation of agri-environmental programmes is now highly developed

Re-enrolment and extension of Conservation Reserve Program contracts have continued the long-term retirement of environmentally fragile lands, while an increasing focus on programmes for working cropland and grazing land have broadened the scope of agri-environmental payments to address the environmental issues linked to production. Targeting mechanisms used to select farmers and fields for agri-environmental programmes, such as competitive auctioning and the environmental benefit index, which ranks contracts for programme selection, have improved environmental performance, although there is still scope for further developing analytical methods for evaluating policies. Nevertheless, although budgetary support to incorporate conservation practices into farming has increased constantly over time, it continues to be substantially lower than support for production-linked support programmes, which may have the effect of raising environmental stress by increasing production.

The 2008 Farm Act maintains the evolution of the environmental conservation programmes originally initiated under the 2002 Farm Act...

Conservation provisions under the 2008 Farm Act reflect the evolution of the US conservation programme portfolio by shifting the focus away from land retirement and onto the environmental protection of agricultural lands in production (working lands), by increasing funding for the Environmental Quality Incentives Program (EQIP) and the new Conservation Stewardship Program (CSP) (the successor to the Conservation Security Program). It reduces the CRP acreage cap and continues to emphasise wetland restoration and farmland preservation, with expansion of WRP, Farmland Protection Program (FPP) and Grassland Reserve Program (GRP). The 2008 Farm Act also authorises increased funding for virtually all programmes; streamlines some of them; and expands the scope of the environmental issues to be addressed, albeit without dramatic modifications.

... but a number of issues merit further consideration...

Notwithstanding these changes, a number of issues merit further consideration. First, it remains to be seen whether – in the face of rapidly rising federal budget deficits and weak US economic conditions – the authorised spending will actually be used. The incentives to incorporate conservation practices provided by the 2008 Farm Act might prove to be insufficient in the face of high commodity prices. For example, in the context of a rapidly rising market for ethanol driving higher commodity prices, especially for maize, producer interest in land retirement may weaken. Lowering the acreage cap in CRP precluded the possibility of a new general sign-up until 2010. In 2009, 766 000 active CRP contracts covered 14 million ha. Over FY2008-12, contracts are due to expire on an average of 1.5 million ha per year, which raises the question of the environmental impacts of returning this land to production. In addition, the funding increases authorised in the 2008 Farm Act may not be sufficient to meet demand for participation in the programme from farmers with working lands – and particularly in the case of EQIP. Historically, demand for programme participation has exceeded funding levels.³

Second, the increased funding for conservation on working lands and the focus of these programmes on livestock-related issues could encourage conservation practices by some producers who are unlikely to retire land. The analysis suggests that conservation payments, relative to the overall size of the farming operation, tend to be much larger on small, rural residence farms than on large, commercial farms. The distribution of programme participation between rural residence, intermediate, and commercial farms suggests that increasing emphasis on programmes for working lands could alter the distribution of payments across farm types. Smaller operations – those with sales of less than USD 250 000 per year – produce roughly one-third of total US agricultural output. The households operating these farms often receive a large share of their income from land retirement payments and non-farm sources, rather than from crop or livestock production. Larger farms, on the other hand, produce two-thirds of US agricultural output. These farms are generally more commercially oriented, with households that are less dependent on income from non-farm sources, and less likely to participate in land retirement programmes. Thus, if the degree of participation in conservation programmes were to shift towards intermediate and commercial farms, conservation programmes could be more effective in addressing certain environmental problems, such as nutrient runoff, because of the large share of agricultural land and livestock production that these farms control.

Third, implementation and monitoring of conservation practices on land in agricultural production may entail additional challenges. Increased emphasis on programmes addressing working lands could potentially achieve environmental benefits at a lower cost than land retirement programmes, particularly in areas where agriculture is highly productive and provides substantial public benefits. But, as payments for a broad range of conservation practices on working land are available to a wider range of producers, implementation and monitoring of working-land programmes may pose additional challenges. For example, the adoption of recommended management practices, such as crop nutrient management, may be difficult to monitor and costly to enforce: conservation practices may require substantial technical support and some conservation systems may compete with the management of production. Multiple conservation programmes, while keeping the cost of programme administration low, entail many challenges for designing coherent programmes.

Fourth, the overall cost-effectiveness of the conservation policy in addressing environmental issues is difficult to discern. On the one hand, increasing emphasis on working lands, wetlands and performance-based payments (*e.g.* CSP) may enhance the cost effectiveness of conservation policy. On the other hand, the 2008 Farm Act does not restore the option of competitive bidding under EQIP (this was eliminated under the 2002 Farm Act).⁴ Disallowing bidding may pull in the opposite direction by decreasing the cost-effectiveness of the programme: for example, ERS analysis of EQIP contract data revealed that cost-sharing and incentive payments were well below the maximum rates when bidding was allowed from 1996-2002.⁵

Lastly, better enrolment conditions for traditionally under-served farm groups might increase participation in conservation programmes, particularly at the regional level. Given the same selection criteria for all farmer groups, setting aside funds (in EQIP) or hectares (new CSP) for farmers who are starting up and those who are socially disadvantaged may increase participation by those farmers.

ERS analysis suggests that a 5% set-aside of EQIP funds may have little effect on participation (Claassen, 2009). In 2006, payments to beginning farmers accounted for 12% of all EQIP payments, indicating that – even when funds are not set aside – they are most likely be allocated to beginning farmers who are able to participate under EQIP. In contrast, the 5% set-aside funds for beginning farmers in EQIP could have more impact if they were administered at regional level in cases where payments to beginning farmers represent less than 5% of EQIP payments.

... and enhanced coherence of conservation and farm policies is vital

Conflicts may exist between incentives in the farm programmes to increase production, and conservation programmes seeking to reduce the environmental problems, that such increases entail. As conservation programmes now constitute a central element of farm policy, issues of policy coherence are becoming more prominent in the policy agenda.

Such issues might include the following: the extent to which income support or risk management policies should be integrated with working-lands conservation policies, and what policy tools will be needed to achieve multiple policy targets; the coherence of US biofuels-driven energy policy with conservation goals and policy; the extent to which conservation programmes facilitate environmental market mechanisms, such as credit

trading, mitigation banking and green labelling; and the extent to which addressing climate change can create new economic opportunities for agriculture through the provision of ecosystem services. Further, voluntary measures, such as EQIP or CRP, must also be weighed against less voluntary and compulsory actions for improving environmental performance. Considerable additional analysis of both the benefits and costs is needed to inform public policy choices.

The greatest challenge is to simultaneously address multiple environmental issues and encourage the production of environmental goods and services in the most cost-effective way

Against the backdrop of the great diversity of agricultural resources, crops, and farm and forest types, conservation policy needs to balance competing concerns. Voluntary measures must be weighed against compulsory actions for improving the environmental performance of agriculture. The benefits and costs of removing land from crop production must be balanced with improved conservation and environmental performance on land that remains in production. A carefully designed “portfolio” approach – employing co-ordinated land retirement, stewardship incentives, conservation compliance and regulatory assistance, each where most appropriate – would be the most efficient way of enhancing agri-environmental protection. A third dimension will be striking the appropriate balance among the roles of federal, state, and local governments in implementing conservation programmes.

Rural development

While the distinction between rural development-agricultural policies is recognised...

While no overarching framework guides US rural policy at the federal level, adequate housing, employment creation and business retention, human capital concerns, poverty issues, medical care and the development of infrastructure remain focal points of federal rural policy (Roth, Effland and Bowers, 2002).

While rural development has an historical association with agriculture, that connection has been weakening since the mid-20th century and there is now almost no direct linkage between agricultural policy and rural development policy. The Department of Transportation is, today, the major source of funding for development projects in rural areas (Blandford, Boisvert and Davidova, 2008).

Notwithstanding the importance of legislation such as that concerning transportation initiatives, environmental regulations, finance and taxation, medicare and social security, since 1973 various omnibus Farm Acts have been the major legislative vehicle for addressing many rural development issues. In particular, the USDA is the principal federal agency with responsibility for rural development, as designated by the Consolidated Farm and Rural Development Act of 1972. The USDA administers most of the rural development programmes and has the highest average proportion of programme funds directly committed to rural counties (approximately 50%).⁶ But Farm Bill-related rural development programmes support all types of economic activity (on- and off-farm) and only a few are specifically targeted to the farm sector.⁷

... ensuring policy coherence and enhancing the cost-effectiveness of Farm Bill-linked rural development measures remains a challenge

The US rural development model relies to a large extent on the role of private organisations and public-private partnerships in the promotion of rural development.

Nevertheless, it is estimated that there are 1 339 programmes serving rural areas in the United States, with 22 federal agencies offering at least one “key” programme targeted to rural areas (Cowan, 2008 and 2009; FHLBDM, 2005). A key policy question is the extent to which federal programmes are effective in their aim of improving the socio-economic conditions of rural communities. There are four main policy-related issues involved.

First, there is the coherence and potential overlap of rural development programmes, caused by the large number of federal programmes and agencies involved in designing and administering programmes targeting rural areas. The Rural Innovation Initiative proposed for the FY2011 budget begins to address this problem by setting aside funds for the planning and co-ordination of USDA programmes and other sources of assistance for rural communities.

The OMB PART evaluations of the performance of rural development programmes identified several areas, including: the importance of improving information on the economic impacts of specific programmes; strengthening underwriting standards to reduce default rates on business and industry loans; ensuring that the broadband loans are focused only on those areas that would lack adequate service in the absence of programme assistance; maintaining housing rental units and ensuring that rental assistance is not excessive; and ensuring that programmes are not duplicative.

Second, and following on from the above point, is the extent to which newly authorised rural development programmes, in reality, are funded, as some of these programmes have never actually received the funds allocated to them (e.g. the Rural Strategic Investment Program under the 2002 Farm Act).

Finally, while the impacts of most programmes can usually be measured, albeit in a somewhat narrow sectoral perspective, estimates of the wider impacts on the rural economy and population are not generally available. Most USDA rural development programmes are “targeted” in several ways, many with multiple eligibility requirements. A thorough assessment of the economic, environmental and infrastructure conditions in rural areas, coupled with improved programme targeting, would lead to more efficient and equitable use of public funding.

International food aid

Modifications under the 2008 Farm Act are steps towards a more efficient realisation of food security goals

Complementarities between international food aid and farm legislation have weakened over time as agricultural policy reforms since 1985 have led to policies that no longer generate accumulated stocks. In addition, programmes that foster foreign market development, such as PL 480 Title I and Section 416b, have not been in operation in recent years.

Despite tangible achievements, US international food aid programmes have long been the subject of controversy, with criticism and calls for reform due to: multiple objectives; inefficiencies in distribution; lack of timeliness; and the high costs of emergency aid (Abbot, 2007; Barrett, 2007; FAO, 2006; GAO, 2009; Hanrahan, 2008).⁸ The subject of food aid has also become one of several unresolved issues in the current WTO Doha Round of multilateral trade negotiations.

Overall, modifications brought about by the 2008 Farm Act – such as the pilot programme for local and regional procurement, increased emphasis on monitoring,

evaluation and the removal of foreign market development as an objective of international food aid programmes – are steps towards a more efficient realisation of the food security goals of these programmes. Moreover, the complementarity of international food aid and the surplus disposal aspects of commodity policies have been weakened over time as – since 1985 – reforms of commodity policies have evolved in such a way that commodity policies no longer require the accumulation of stocks. In fact, the PL 480 Title I and Title III, and Section 416b aid programmes, which explicitly include market development objectives, have been inactive for several years.

Nevertheless, other contentious issues, such as monetisation, cargo preferences and the proscription of local or regional purchases, are either maintained or only modestly modified or addressed, thereby hampering the cost-effectiveness and timely response of these programmes to emergency food situations.

Domestic food assistance

Agricultural policies play a diminishing role in the design and objectives of domestic food assistance programmes...

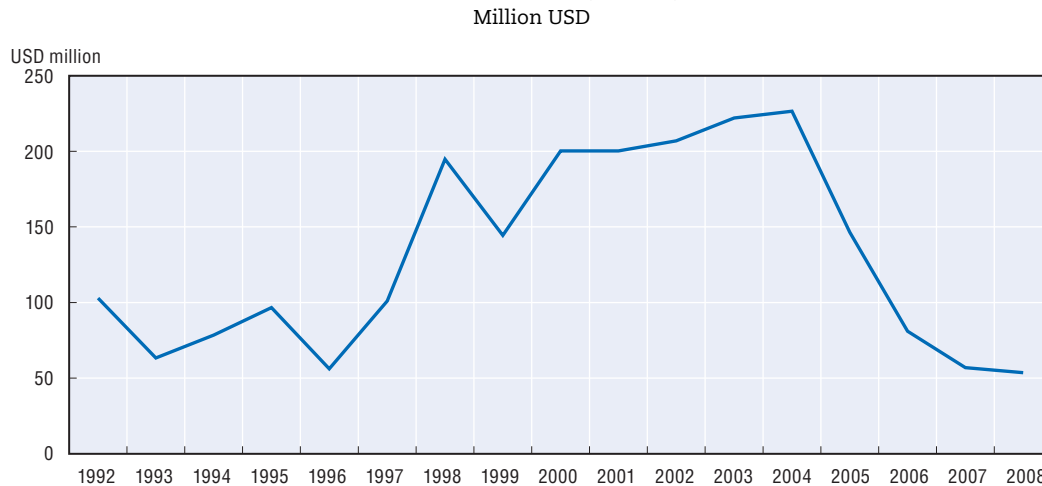
The main goal of the food and nutrition assistance programmes is to increase the access of vulnerable members of the population to adequate food and a nutritious diet. These programmes are intrinsically linked to the economy, and the health of the general economy influences participation in the programmes. For example, two of the largest programmes, the Supplemental Nutrition Assistance Program (SNAP) and the National School Lunch Program (NSLP), are entitlements, implying that their outlays adjust automatically to provide additional resources when need increases. The amendments under the 2008 Farm Act concerning domestic food and nutrition assistance programmes are important to low-income households, elderly people and children.

There are elements in these programmes which benefit agricultural producers. These benefits can be direct, through commodity purchases, or indirect, through increased demand for food. Some critics argue that it is the goal to remove commodity surplus – rather than fulfil food security and nutritional objectives – that often drives the selection and distribution of commodities to these programmes. For example, the 2006 assessment of the Office of Management and Budget concluded that the Commodity Purchases Program (Section 32) had not adequately demonstrated results due to, *inter alia*: unclear purposes; having no basic criteria for surplus commodity purchases; and inadequate performance measures (US Government, 2006b).

The Commodity Purchases Program is funded through Section 32, a provision of the 1935 supplement to the Agricultural Adjustment Act of 1933, which authorises use of 30% of annual customs duties collected to support the agricultural sector by: i) encouraging commodity exports; ii) encouraging domestic consumption through purchasing surplus commodities; and iii) re-establishing farmers' purchasing power. The Secretary of Agriculture has considerable discretion in deciding how to achieve these broad objectives, but the funds are required to be used principally for perishable commodities. The bulk of these funds are used to purchase commodities for distribution through the federal nutritional assistance programmes. A varying, but usually small share of those purchases is made as emergency surplus removals to stabilise market conditions, and is distributed to various domestic food programmes to supplement regular commodity purchases for these programmes.⁹

As shown in Figure 11.3, the “bonus” purchases share of the foods provided to domestic food programmes have varied over time, from USD 56 million in FY1996, to more than USD 226 million in FY2004: the total has declined steadily from FY2004, down to USD 54 million in FY2008. Moreover, some commodities are purchased more frequently than others (Annex Table E.21).

Figure 11.3. **Emergency surplus removal (bonus) purchases, FY1992-2008**



Source: Becker (2009), Table A.1 Section 32 Funding, FY1992-FY2008.

The 2008 Farm Act delineates more explicitly how, under Section 32, annual funds are to be allocated in order to finance the Fresh Fruit and Vegetable Program and sets the maximum amount to be used for purposes other than funding to support school meals programmes.

Although increased food demand is no longer a stated objective of domestic food and nutritional assistance programmes, these programmes have economic ramifications that extend beyond the programme recipients and may indirectly benefit agricultural producers. Additional support for domestic food programmes maintains demand for food at higher levels than would be the case in the absence of this assistance. Several studies have found that SNAP increases participants' marginal propensity to consume food by 17-69% (see Fox *et al.*, 2004, for a review of the literature).¹⁰ In addition, to the extent that domestic food and nutrition programmes increase total food expenditures, they can also affect the country's farm sector by generating additional demand for those food and farm products which are in surplus. It should be noted, however, that food purchases are not generally restricted to the US-produced agricultural commodities.

... but their positive effects on food insecurity and nutrition have been difficult to discern...

The impact of food and nutrition assistance programmes on participants' health and nutrition is very difficult to discern, due to inherent problems with data and methodological difficulties. Participants' food-choice and the degree to which programme goals are achieved are influenced by a complex array of factors, including economic and the well-being of participants. The depth and severity of poverty, food insecurity and income volatility are also important.

As domestic food and nutrition assistance programmes have attained even greater prominence under the 2008 Farm Act, a number of issues needs to be considered concerning their effectiveness in achieving their stated objectives: for example, issues of policy coherence, such as the extent to which food assistance programmes complement or duplicate each other and how they relate to the other assistance programmes that comprise the social safety-net, assume increasing importance.

11.2. Some emerging issues and challenges for policy

Addressing variability and risks in agriculture

Notwithstanding increasing comprehensiveness, ample scope remains for further rationalisation and reform of commodity, disaster and crop insurance programmes

The attainment of risk management policy goals is achieved through the employment of a wide array of policy instruments. Farmers benefit from a combination of income support payments (to offset low prices) and indemnity payments (to offset shortfalls in prices, yields or farm revenues). But the various programmes are designed and implemented independently. For example, commodity support in the form of counter-cyclical payments, loan deficiency payments and marketing assistance loans pays producers when prices fall below specified levels, while traditional disaster assistance provides compensation for shortfalls in yield, but only in an *ad hoc* manner. However, new revenue-based programmes under the 2008 Farm Act could offset shortfalls in prices, yields, or farm revenues.

Crop insurance, through the Federal Crop Insurance Program, is the primary risk-management tool available to farmers, and crop yield and revenue insurance are offered for the majority of programme crops in most producing regions. The programme provides an important safety-net that protects eligible crop producers from a wide range of risks that could result in a shortfall in revenue, whether from reduced yield or low market prices. In addition, the widespread use of crop insurance is intended to lessen and eventually eliminate the need for *ad hoc* disaster payment assistance.

The scope of the Federal Crop Insurance Program has been widened significantly over the past 25 years. Despite increases in subsidies and coverage, issues continue to arise regarding both the programme's effectiveness and the relationship between crop insurance, *ad hoc* disaster assistance and commodity programmes (Glauber, 2004; 2007). The programme entails high costs to the Federal government – premium subsidies paid to producers and administrative and operating costs and underwriting gains paid to private insurance companies and indemnity payments may go to producers who are also receiving disaster assistance. The federal crop insurance programme also has the potential for fraud and abuse and may distort production and inputs (GAO, 2007).¹¹

Moreover, the anticipated goal of crop insurance replacing disaster payments has not been achieved. In virtually every crop year since 1988, *ad hoc* disaster payments have been provided to farmers experiencing significant weather-related crop losses. These have been made available primarily through emergency supplemental appropriations and, until recently, regardless of whether a producer had taken out a crop insurance policy.

Recent efforts to reduce the costs of the Federal Crop Insurance Program have focused on programme delivery costs, particularly in the area of reducing administrative and operating subsidies paid to private insurance companies. Other cost reduction efforts

enacted under the 2008 Farm Act, include an increase in the fee paid by producers for CAT coverage and a reduction in premium subsidy area- based crop and revenue insurance.¹²

While subsidised crop insurance remains the primary form of government assistance, following bad weather, plant diseases and other natural hazards, disaster assistance payments have been provided frequently on an *ad hoc* basis. The Supplemental Agricultural Disaster Assistance (SURE) programme, established under the 2008 Farm Act in an effort to end the *ad hoc* nature of emergency crop disaster assistance to farmers, is linked to crop insurance. In addition, the programme is a whole-farm revenue programme (revenue from all crops for an individual farmer) and not to specific individual crops, as in other disaster programmes. Some have argued that a whole-farm revenue approach to insurance, in which the guarantee would be based on the revenue from the producer's entire operation, would provide a more comprehensive approach to managing whole-farm risk than a crop-by-crop approach, by being better targeted to farmers' risks and it would also imply a lower amount of expected payments (Dismukes and Durst, 2006).

Although eligibility for the SURE programme is linked to crop insurance, it is independent of participation in other programmes. The availability of SURE may affect crop insurance decisions. The SURE programme appears to be more attractive to farms with lower levels of diversification, which are susceptible to significant variations in whole-farm revenue. Obviously, it is too early to gauge SURE's cost-effectiveness and it remains to be seen whether it will actually eliminate *ad hoc* crop disaster payments and how coherent it is with the crop insurance programme – and, in general, how cost-effective this whole-farm approach is in managing farm-level risk.

The ACRE programme, which is an alternative to CCP payments, differs from the other commodity programmes as it addresses different risks. For example, a price-based commodity programme, such as the Marketing Assistance Loan Program and the CCP would provide little or no assistance in a situation where widespread yield losses can boost prices above price programme trigger levels. Conversely, in a situation where high yields – by increasing supply – can reduce crop prices, payments to producers could be triggered even though revenue remains high. In contrast, ACRE revenue payments could occur when state yields are low and the decline in state yields is greater than the increase, if any, in market price. The ACRE programme also differs from other commodity programmes in the way that programme guarantees are established. While other programmes use legislatively fixed target prices and loan rates and set programme yields, ACRE uses moving averages of recent historic market prices and yields. ACRE payments are triggered when marketing year average prices and annual yields fall below historic levels. Thus, ACRE payments could be triggered even when commodity prices are high and in situations when prices increase above the fixed marketing loan or the CCP target price.

In general, price-based commodity programmes increase payments when prices decrease, regardless of whether actual revenues are high or not. Moreover, payments that only target price variability can systematically over- or under-compensate farmers who already have a natural hedge arising from the negative correlation between yield and prices.

By establishing fixed marketing loan and target prices, marketing loan and CCP payments create a fixed floor on the per-unit value of the crop (of the historically produced crop, in the case of CCP). As such, the aim of these programmes may be to assist farmers with managing the systemic risk of low prices extending over a period of years (Zulauf and

Orden, 2009). In contrast, ACRE, by using variable moving averages to calculate revenue guarantee, does not create a floor, but a revenue guarantee that shifts with recent historic market conditions. If, relative to target prices, prices have been high, ACRE, by guaranteeing changes when recent historic prices change, would provide more protection than programmes that are based on legislated targets or rates. ACRE, therefore, is more suitable for assisting farmers with managing the systemic risk of a decline in a crop's revenue over a short period of years.

By incorporating yield risk and recent market prices, ACRE could be seen as an attractive alternative for producers in areas of high yield risk and for crops with market prices well above the trigger levels of traditional commodity programmes. The decision to participate in ACRE, however, is not a simple one. Producers choosing ACRE must give up part of their direct payments and accept a reduction in their commodity loan rates and both triggers (state and farm) must be met to be eligible for ACRE payments. Expectations about future crop prices, yield levels, and price and yield variability are critical elements in the producer's assessment of the relative benefits of the various commodity programmes.

While ACRE provides potential income support for producers, it also provides risk management benefits that can overlap with those of the subsidised crop insurance programme. As many producers obtain revenue-based protection under the crop insurance programme, the triggers of crop revenue insurance and of ACRE may be correlated. Moreover, the interactions of the ACRE programme with the existing mix of commodity programmes could further complicate decisions for producers.

Risk management policies warrant a comprehensive cost-effectiveness evaluation exercise

Providing price and yield compensation separately may not be efficient as it can result in producers being over-compensated relative to some historic price or income level (or *vice versa*). On the other hand, using revenue as the basis for commodity programme payments raises questions about the efficiency of revenue *versus* price programmes in reducing financial risk. Overall, the changes brought about by the 2008 Farm Act, such as the reduction of some of the insurance programme subsidy rates and the creation of SURE and ACRE as an alternative to CCP, are steps towards a more comprehensive approach to managing whole-farm risk.

Questions could be raised, however, concerning the extent to which incentives provided by the 2008 Farm Act have the effect of distorting crop production and trade, as well as their potential environmental implications. Depending on commodity price levels and trends, both older commodity programmes and the new ACRE revenue programme have the potential to provide large payments, and, thus, affecting crop markets. However, while ACRE payments will decline as the programme's guarantee adjusts to lower market prices and revenues, marketing loan and CCP rates remain fixed.

Ample scope remains for further rationalisation and reform of commodity, disaster and crop insurance programmes with regard to enhancing farmer response to market signals, transparency and policy coherence, and reducing the administrative costs and economic distortions associated with these programmes. To this end, the economic efficiency and cost-effectiveness of the wide array of risk management policies warrant rigorous evaluation. Government risk-management policies should complement, rather than crowd-out, market-based approaches to risk management in agriculture.

Management of natural resources

Accommodating new and emerging environmental concerns in a consistent, coherent and efficient way

What distinguishes the 2008 Farm Act from the 2002 Farm Act is the changes pertaining to the CSP and CRP programmes. As such, the overall conservation programme package in the 2008 Farm Act might be considered as largely maintaining the *status quo* as regards most programmes. Therefore, it is unclear as to whether conservation programmes have been targeted adequately to address the most critical environmental problems in a consistent, coherent and efficient way.

The range of environmental issues has expanded in conjunction with changes in the structure of agriculture and in farm management practices, and in tandem with greater public concern about a wider range of concerns, such as nutrient management; pesticide use and run-off; greenhouse gas emissions and carbon sequestration; air quality; and water management and quality.

Further refining environmental priority concerns may result in an increase in both programme efficiency and environmental benefits. Although the CSP will play a key role in improving and maintaining the quality of surface water, and enable the productive use of land, it is energy and air quality that are the areas of concern that receive the least funding and may merit greater attention in future programmes.

Notwithstanding the significant reduction in soil erosion that has been achieved over the past twenty-five years, for about a quarter of cropland additional soil erosion reductions are possible. Soil erosion impairs water quality and habitats, reduces the water storage capacity of reservoirs and reduces future soil productivity. Moreover, environmental concerns – such as poor water quality in the Chesapeake Bay, the Sacramento River delta and the Gulf of Mexico – and broad-based issues – such as global climate change – are less effectively addressed by idling cropland.

The need to develop sources of renewable energy and the potential for reducing greenhouse gas emissions are assuming greater importance. In addition, reducing nutrient runoff from livestock production, addressing conflicts over scarce water supplies, and protecting open spaces are all issues that have gained momentum and need to be further addressed. Conservation policy should adapt to emerging environmental and community needs and incorporate the latest science.

Emerging and continuing issues for agricultural conservation revolve around ecosystem services markets, climate change and bio-energy

The climate change debate and use of ecosystem services markets has brought conservation to the forefront of discussion on the role of agriculture in reducing GHG emissions. Also, the effect of ethanol production on natural resources and changes in land use is an on-going concern in the area of biofuels policy. Other environmental issues for agriculture – such as regulations concerning concentrated animal feeding operations, GHG emissions reporting for livestock producers and wetlands mitigation – could lead to expanded opportunities, but also challenges for many conservation efforts. Production pressures generated by maize-based ethanol have also had an on-going impact on certain conservation programmes.

Climate change

Evaluation of the agricultural sector's role in mitigation and adaptation and identification of appropriate policy responses and market approaches is still in the early stages

Climate change presents both challenges and opportunities for the US agricultural sector in reducing GHG emissions, in carbon sequestration and the need for adaptation. As reported by the Environmental Protection Agency, the agriculture and forestry sectors account for 6-8% of estimated total GHG emissions annually, while carbon sequestration on farms and forested land is estimated to mitigate about 11% of total annual GHG emissions.

Most land management and farm conservation practices can help reduce GHG emissions and/or sequester carbon, through the use of practices such as land retirement, conservation tillage, soil management, and manure and animal feed management. Many of these practices are already encouraged under existing conservation programmes that provide financial and technical assistance to farmers, such as EQIP, CRP, CSP, Conservation Technical assistance (CTA) and Wildlife Habitat Incentives Program (WHIP), among others. Some of these programmes have been expanded to further encourage emission reductions and carbon sequestration. For example, many of the practices encouraged under EQIP and CSP reduce net emissions. Programmes such as CTA, Agricultural Management Assistance (AMA), EQIP, and CSP all maintain that emissions reduction is a national priority for the programme. Under CRP, the Environmental Benefit Index (EBI), which is used to score and rank offers to enrol land in CRP, has been modified in order to place greater emphasis on installing vegetative cover to sequester carbon.

Moreover, under the 2008 Farm Act, steps have already been taken to address some of the challenges associated with measuring carbon emissions arising from forested and agricultural lands and practices. The 2008 Farm Act includes provisions that could expand the scope of existing land-based conservation and other Farm Act programmes by providing incentives to encourage farmers and landowners to sequester carbon and reduce emissions associated with climate change and to participate in markets for carbon storage.

The potential to reduce emissions and sequester carbon on agricultural lands is reportedly much greater than the rate currently achieved. Realising this potential requires a clear understanding of the likely impact of climate change on agriculture and agro-forestry, the role of the sector in mitigation and adaptation, and the subsequent implementation of appropriate policies. The challenge is to develop a methodology for measuring and monitoring the sequestration capacity, GHGs emissions and the mitigation potential of different farm management practices. In terms of policy responses, challenges include identification of the most cost-effective policy and market-based options for mitigation and adaptation, recognising the synergies and trade-offs with other environmental, economic and trade outcomes.

Renewable energy

Development of market-based approaches needs to be further facilitated to achieve environmentally sustainable, renewable energy

While agricultural production accounts for about 1% of GDP, it accounts for some 2% of total energy consumed in the United States, in both direct form, such as diesel fuel, and indirect form, such as fertilisers. The use of agricultural biomass for energy production has

grown rapidly since the 1990s, but still provides about only 3% of total energy consumption. While wood has traditionally been the main source of the biomass energy, ethanol has been the fastest growing renewable energy source over the last 15 years. Improving energy efficiency in ways that maintain the productive capacity of farms, while at the same time benefiting the environment, is a key policy challenge.

Since enactment of the 2002 Farm Act, interest in renewable energy has grown rapidly, due in large part to a sharp rise in domestic and international petroleum prices and a dramatic acceleration in the production of domestic biofuels (primarily maize-based ethanol). Many policy makers view agriculture-based biofuels as both a catalyst for rural economic development and a response to growing dependence on imported energy. Consequently, ethanol and biodiesel, the two most widely used biofuels, receive significant federal support in the form of tax incentives, loans and grants and regulatory programmes.

Nevertheless, it is important that unintended consequences for the environment resulting from the production of biofuels should also be considered when evaluating renewable energy options. As maize production is among the most energy-intensive of the major field crops, a continued expansion of maize-based ethanol production could have significant effects on agricultural production activities and would also be likely to have important regional economic impacts that have yet to be fully considered or understood.

Ethanol production, the profitability of which depends directly on both petroleum and maize prices, accounts for about one-third of US maize production. In the United States, the increase in maize used for ethanol production exceeds the increase in maize produced during the past three years. As petroleum prices rise, so has demand for ethanol as a substitute, which in turn increases both the demand for (and price of maize). Record high commodity prices in 2007 and 2008, combined with high energy costs, have resulted in sharp increases in the cost of livestock feed, export prices, and domestic food price inflation. The emphasis under the 2008 Farm Act and EISA on cellulosic ethanol also reflects increasing concerns about the economic and environmental issues associated with maize-starch-based ethanol. Competition for limited maize supplies between livestock producers, ethanol refiners, exporters and other domestic users is likely to intensify the “food versus fuel” debate in the future.

Bio-energy has become a central focus of the 2008 Farm Act and is likely to be an important agricultural policy issue globally. The agricultural sector has the potential to develop into an important source of bio-energy, and agricultural materials that are currently wasted or not used effectively to develop new products could be used to this end. More research is needed to explore and develop these biological possibilities as well as to improve understanding of the nature of the markets for energy sources.

Although the 2008 Farm Act expands many pre-existing agricultural conservation programmes to encourage producers to adopt energy efficiency measures and to produce renewable energy feedstocks, it does not address the potential environmental consequences that could result from increased biofuels production. Developing existing conservation efforts or creating new ones can serve as a potential counter measure to the increased environmental pressures generated by biofuel production, but the extent to which this is – or could be – done, is not clear.

The existing ethanol and bio-diesel subsidies are not promising responses to either the environmental or energy security objectives that have been used to justify them. As discussed earlier, incentives for increasing the production of renewable fuels need to focus

on research and development of second-generation technologies, rather than tax concessions and import tariffs, which insulate domestic producers from world market signals.

Ecosystem services

A key policy challenge is to ensure coherence between market-based approaches, existing conservation programmes, and regulatory approaches in providing ecosystem services from agriculture

Several existing conservation programmes offer incentives, through financial and technical assistance, to implement conservation practices on agricultural land through which producers may develop environmental credits and benefits to be sold or traded in a market-based system. For example, cropland tillage practices such as reduced/medium-till, no-till, and ridge/strip-till practices sequester carbon that could be sold through a carbon offset programme.

Conservation programmes such as EQIP, AMA, CSP and CTA provide incentives for farmers to install these practices. Programmes such as WRP offer incentives for wetland restoration, the benefits of which could then be used in a wetlands mitigation programme. Other conservation practices, such as riparian buffers, setbacks, wind breaks and buffer strips – all of which are offered under EQIP, CRP, CSP and WHIP – create water quality improvements that could be traded in local water quality credit programmes.

One key policy question is how to overcome various impediments that may prevent the development of ecosystem goods and services markets involving the farm and forestry sectors, such as participation challenges, and issues of measuring and valuing credits, monitoring and enforcement. Another question revolves around the issue of complementarity between market-based approaches and existing conservation programmes and regulatory approaches.

Water

The level of charges for water supplied to agriculture, institutions and existing property rights are crucial for enhancing the efficient management of water resources in agriculture

Agriculture is the major user of water resources, accounting for nearly 80% of all water consumption. The availability of water for agricultural purposes is uneven, and shortages occur in some areas at certain times. Irrigators are the major users of agricultural water use, with much of the remainder used by livestock producers. Irrigation accounts for about 75% of total groundwater withdrawals, and an even higher share in many western and southern states.

Over 1990-92 and 2001-03, the area under irrigation rose by 8%, accounting for 5% of the total agricultural area. The 16% of harvested cropland that is irrigated accounts for nearly half of the value of all crops sold. Nationwide, nearly 100% of all orchard sales and more than 80% of sales of vegetables and potatoes are produced on irrigated cropland. Despite the reduction in the use of surface water by irrigators, the over-exploitation of some rivers, especially in times of drought, has threatened aquatic ecosystems (e.g. the Klamath Basin), which has led to federal restrictions on water supplies to agriculture in this area.

Water pollution from agriculture is widespread, and increased loadings of nutrients and livestock pathogens suggest the risks of water pollution from agriculture could be rising in areas where crop or livestock agriculture is intensifying. There is no shortage of

water resources, but competition for surface and groundwater resources between farmers and other users is becoming acute in drier areas. In some regions, the use of groundwater by irrigators is substantially above recharge rates.

Future policies to address the management of water resources in agriculture will be influenced by many and diverse drivers, including incentives and technical support to improve on-farm water management and technology; climate change; energy costs for pumping water and also voluntary conservation and risk management programmes. Ensuring that charges for water supplied to agriculture at least reflect full supply costs, and strengthening institutions and property rights for water management in agriculture are some of the key challenges in moving towards more efficient management of water resources in agriculture.

Enhancing competitiveness and efficiency

A policy environment conducive to innovation and new technologies is of paramount importance in nurturing international competitiveness and enhancing efficiency.

Technological progress has been a critical source of income growth, wealth creation and international competitiveness. As discussed in Chapter 1, virtually all the growth in agricultural output over time has been derived from growth in agricultural productivity, while the total amount of inputs declined over the 1989-2008 period.

Technological change drives growth in agricultural output and results in the creation of new products and new processes. Appropriate investments in research and development are of paramount importance in sustaining and enhancing agricultural productivity. Yet these investments have tended to be under-funded, in part because of the focus on commodity support programmes. Moreover, such areas (*e.g.* R&D) are unlikely to receive adequate investment from the private sector because they have elements of public goods.

Policies affecting risk management, trade, research, technology, plant and animal diseases and infrastructure will continue to play a major role in influencing the competitiveness of agricultural products on world markets. Cost-effective funding of basic infrastructure that would otherwise not receive adequate private-sector investment would further improve agricultural productivity and competitiveness. It is also of critical importance that research is co-ordinated across various public agencies in areas of shared responsibility, and that the specific direction of research is evaluated in the light of current and emerging issues facing society, such as food safety, bio-security and bio-energy.

11.3. Key policy recommendations

The agricultural sector in the United States receives a relatively low level of support both in terms of its size and in comparison with other OECD countries. In addition, the reform process has been characterised by a significant shift towards less production- and trade-distorting forms of support. Notwithstanding these achievements there is still ample scope for further nurturing the market orientation of the agricultural sector. Some key policy recommendations are offered below in accordance with the 1998 OECD Ministerial principles of agricultural policy reform, which require that policies be:

Transparent: having easily identifiable policy objectives, costs, benefits and beneficiaries.

- *Ensure that government risk-management policies are transparent and complementary, rather than crowding-out, market-based approaches to risk management in agriculture.*

- Evaluate any potential environmental impacts that could inadvertently result from the increased production of biofuels, such as those that are based on maize.
- Restore the option of competitive bidding under EQIP and further strengthen the linking of payments to measurable environmental outcomes.

Targeted: to specific outcomes and, as far as possible, decoupled.

- Replace commodity programmes, such as dairy and sugar support programmes, the Marketing Assistance Loan Program, Counter-cyclical Payments, and Direct Payments, with more decoupled and/or targeted forms of support.
- Ensure that domestic commodity support and international trade policies are fully compatible and mutually reinforcing.
- Ensure that payments under rural development programmes are targeted to the provision of public goods in rural areas and that they have a positive net social benefit.

Tailored: providing transfers no greater than necessary to achieve clearly identified outcomes.

- Consider replacing the current crop-by-crop approach to insurance and price-based counter-cyclical payments with a whole-farm household income-based approach to address risk management.
- Reconsider the current ethanol mandates and tariffs that distort fuel and agricultural markets and drive up food and livestock feed costs, and encourage instead research and development programmes that would enable the market to identify the most cost-efficient alternatives to fossil fuels.
- Eliminate export subsidies and reduce very high out-of-quota tariffs, while working through WTO to pursue liberalisation of global agricultural markets.

Flexible: reflecting the diversity of agricultural situations, able to respond to changing objectives and priorities and applicable to the time period needed in order to achieve the specified goals.

- Further refine conservation policy to accommodate new and emerging environmental concerns, such as water, energy, air and climate change.
- Enhance coherence of conservation and commodity support policies.

Equitable: taking into account the effects of the distribution of support between sectors, farmers and regions.

- Further strengthen payment and eligibility limits to increase overall equity under farm commodity programmes.

Notes

1. The TRQ can be increased in the second half of the fiscal year without reference to an emergency situation.
2. For example, wheat farmers in the western Great Plains, where dry conditions lead to yield variability, may be more interested in ACRE than farmers in the Midwest, where rainfall is more plentiful and yields tend to be less variable. In the south, farmers who plant cotton, peanuts and rice may be less inclined to select ACRE because preliminary analysis shows that traditional programme payments, particularly for cotton and peanuts, are likely to be greater than ACRE payments.
3. In 2007, for example, USD 993 million was attributed in EQIP, but an estimated USD 865 million in offers remained unfunded due to budget constraints (Claassen, 2009).

4. Competitive bidding is a process in which producers submit bids on the conservation practices they are willing to adopt (or the type of cover they are willing to establish on retired land) and on the level of payment they would be willing to accept in exchange for taking these actions. Bids are selected for programme participation based on potential for environmental gain and the level of payment requested by the producer. Thus, producers can improve their bids by offering to install more environmentally beneficial (but more expensive) practices, or by reducing the level of payment they are willing to accept.
5. During that period, the average bid on cost-shared structural practices was 35% of practice cost, compared with the 50-75% rates allowed. For management practices, bids averaged 43% of the maximum rate, which was established by practice and by county (Claassen, 2009).
6. The 1972 Consolidated Farm and Rural Development Act created the Office of the Undersecretary for Rural Development and in 1993 the rural development portfolio was consolidated into four principal agencies responsible for USDA's mission area: the Rural Housing Service, the Rural Business-Cooperative Service, the Rural Utilities Service, and the Office of Community Development.
7. For example, the Farm and Ranch Lands Protection Program explicitly espouses a rural development objective of preserving agrarian character.
8. The government, as part of the evaluation of government programmes, has developed a long-term performance measure that is intended to gauge the effectiveness of USDA international food aid programmes in improving food security in low-income countries. It was found that the so-called "food aid targeting effectiveness ratio" performance indicator had declined from 40-44% in 2004, to 36% in 2009 (see USDA, *FY2009 Budget Summary and Annual Performance Plan*).
9. Section 32 funds are also used to finance the administrative costs associated with the purchase of commodities and developing the specifications used for food procurement throughout the federal government. In recent years, substantial amounts have also been used for special farm disaster relief purposes.
10. Hanson (2009) found that USD 4.6 billion of food purchased with WIC vouchers in FY2008 generated USD 1.3 billion in farm revenues, or USD 331 million net additional farm revenues from WIC.
11. The Government Accountability Office (GAO) has issued several reports on the Federal Crop Insurance Program and made a number of recommendations intended to help reduce the potential for fraud, waste and abuse. It has reported that: some farmers may have abused the programme by allowing crops to fail through neglect or deliberate actions in order to collect insurance; some insurance companies have not exercised due diligence in investigating losses and paying claims; and that insurance companies participating in the programme have been over-compensated (GAO, 2007).
12. Under provisions in the 2008 Farm Act, USDA renegotiated the Standard Reinsurance Agreement (SRA). The SRA, along with various legislative provisions, covers the financial terms – administrative and operating subsidies and underwriting gain and loss sharing – under which private insurance companies sell and service crop insurance.

ANNEX A

Main Elements of the 1985, 1990, 1996 and 2002 Farm Acts

A.1. 1985 Farm Act

In the early 1980s, relatively high US loan rates¹ provided a floor for US and world market prices, which led to mounting grain surpluses in the United States, escalating programme costs, increasing foreign production and trade competition, falling exports, and rising farm financial stress.

By that time, price support policies had limited international marketing opportunities, while increasing global supplies had undercut domestic supply control efforts. Government stocks of programme commodities were steadily increasing, and record agricultural spending, coupled with high federal budget deficits, emphasised the need to reform agricultural support policies.

The farm legislation of 1985 and 1990 maintained the traditional combination of price supports, supply controls, and income support payments, but introduced changes that moved farmers towards greater market orientation by reducing price supports, introducing greater planting flexibility and giving more attention to developing export opportunities for US farm products.

In particular, the 1985 Farm Act reduced price support and slowed the accumulation of government stocks. Crop price support levels, known as “loan rates”, were lowered by 25%, causing world grain prices to fall. Marketing loans, introduced for rice and cotton, specified that farmers repay loans at low, market-based prices rather than forfeit the crop to the government. That meant that for rice and cotton, payments replaced government stock accumulation. Marketing loans were authorised for grains and oilseeds, but these were not applied until after the 1990 Act came into effect.

In order to transfer income to farmers, the 1985 Farm Act provided “deficiency payments” that were made counter-cyclically so as to offset movements in market prices compared to higher legislated “target” prices. They were equal to the difference between a politically determined “target price” and the market price or the loan rate (price support) – whichever was higher. Deficiency payments were no longer based on a farmer’s actual production, but rather on historic output levels (i.e. a fixed-base acreage using a fixed average of past crop yields). However, eligibility required continued production of the specific base-acreage crops, subject to announced annual cropland set-asides. Farmers were required to plant all base acreage subject to Acreage Reduction Programme; 0/5092 and 0/5085-92 provisions.

The 1985 Farm Act also introduced conservation compliance and a new, long-term Conservation Reserve Program (CRP) was authorised. It also included the introduction of export subsidies under the Export Enhancement Program (EEP) and Dairy Export Incentive Program (DEIP) to promote US commodity exports, which entailed a move away from market orientation.

A.2. 1990 Farm legislation

The Food, Agriculture, Conservation, and Trade Act of 1990 continued the policy path established in 1985. The main goals of the 1990 farm legislation were to advance market orientation, reduce government spending on agricultural programmes, help maintain farm income through expanding exports and to protect the environment. 15% flex acres and 10% optional flex acres were introduced.

Budget and policy concerns led to lower payments, lower price supports and more planting flexibility. Marketing loans were re-authorised for wheat and feed grains, and mandated for oilseeds. The Export Enhancement Program and the DEIP were retained.

A.3. 1996 Farm Act

The Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act), written in the shadow of the conclusion of the Uruguay Round negotiations, and with a desire to control farm programmes, as part of the overriding policy concern to reduce the federal budget deficit, accelerated trends towards greater market orientation. The 1996 Farm Act fundamentally changed US agricultural programmes by eliminating supply management and introducing income supports for “contract crops” (wheat, maize, grain sorghum, barley, oats, rice and upland cotton), based on historical acreage and yields of those commodities.

In particular, the 1996 Farm Act initiated four changes in US farm policy compared to the previous legislation. First, it discontinued supply management programmes (acreage reduction programmes) for producers of wheat, maize, grain sorghum, barley, oats, rice, and upland cotton.

Second, it replaced the previous system of deficiency payments, which had been based on the difference between a pre-set target price and the market price, with a system of fixed Production Flexibility Contract (PFC) payments – no longer tied to current prices or current production. PFC payments were based on historical acreage and yields for seven commodities, which were independent of current market prices and farmers’ planting decisions. The PFC’s stated purpose was to support farming certainty and flexibility, while ensuring continued compliance with farm conservation and wetland protection requirements.

Third, as the PFC payments were independent of current production, farmers benefited from almost complete flexibility in making production decisions (or deciding not to produce at all) than previously. Although payments were made on the basis of specific historically produced crops, production was not required or restricted to any commodity: payments were tied to 85% of fixed base area (*i.e.* an average of the historical acres planted or prevented from being planted for covered crops of wheat, feed grains, rice and cotton) and to fixed, historical, payment yields.² Producers were free to allocate their land to any crops on the “contract acres”, except fruits and vegetables, but were required to maintain

their land in “agricultural use”. Hence, producers were to depend more heavily on the market and also bear greater risk from increased price variability.

Fourth, although the Act retained marketing loan provisions, the price guarantees made to crop producers for any amount of output through loan rates were capped at nominal levels well below the market prices prevailing at the time, and the Secretary of Agriculture retained the authority to set rates even lower (based on the Olympic average formula of past market prices). Maximum loan rates are specified in the new law for wheat, maize, upland cotton, soybeans, and minor oilseeds. Allowing repayment of loans at the lower of the loan rate plus accrued interest or market prices, was retained, thus continuing some income protection at relatively low prices for the contract commodities and helping to limit accumulation of government-owned stocks as a result of collateral forfeited through defaulted loans.

Fifth, the legislation makes changes for dairy, sugar and peanuts. Historically, support to producers of these commodities has taken the form of price supports, rather than income supports. The Act foresaw the end of the dairy price support programme, without making explicit provisions for facilitating the adjustment that would be required as a result of this policy reorientation. Authority for sugar marketing allotments was repealed and market price support levels were effectively reduced. Support for peanuts was reduced.

Finally, the FAIR Act created new environmental programmes, especially with a new cost share programme for environmental improvements, the Environmental Quality Improvement Programme (EQIP) (see Chapter 6, *Agri-environmental Policies*).

Notwithstanding the above achievements, the 1996 FAIR Act did not secure permanent reform of farm programmes. A sharp decline in commodity prices in the late 1990s and the emergence of a federal budget surplus triggered policy events that reversed much of the achievements of the 1996 Farm Act. First, market prices fell below the loan rate, resulting in a large rise in marketing loan benefits, including loan deficiency payments. Second, emergency payments were introduced through special legislation to supplement PFC payments at a level approximately equal to 50% of PFC payments in 1998 and 100% of PFC payments in 1999, 2000 and 2001.

A.4. 2002 Farm Act

The Farm Security and Rural Investment Act of 2002 (2002 Farm Act), which was enacted in a market context characterised by low US commodity prices and a federal budget surplus, did not make as much progress on the path of reform as the previous three Farm Acts. Some new policies were introduced to the existing array of agricultural commodity programmes; support rates were increased; and payment rules created larger production incentives, especially compared with what might have been had the United States continued on the policy path established by the 1985 Farm Act.

Annual average net Commodity Credit Corporation (CCC) outlays under the 2002 Farm Act were USD 16.8 billion over FY2002-07, which is equivalent to around one billion dollars more than the annual average for the previous six fiscal years.³ CCC outlays nearly doubled between 2004 and 2006, to USD 20.2 billion, reflecting low commodity prices and higher disaster and emergency assistance. They declined from 2007, as commodity prices sharply increased.

Overall, the 2002 Farm Act reinforced the change in direction that had been initiated in the *ad hoc* legislation from 1998-2001. First, the 2002 Farm Act continues marketing

assistance loans (which are based on current production and prices) and cover loan deficiency payments, marketing loan gains and certificate exchange gains. It increased several loan rates, allowed updating of base acreage and payment yields, allowed soybean acreage to be added to the base, and introduced three more crops into the loan rate scheme. These “loan rates”, which are used to determine the magnitude of marketing loan benefit rates, apply to all production of the programme crop on eligible farms. Therefore, the marketing loan programme provides a clear incentive to increase or maintain production of the programme crop.⁴

Second, it replaced PFC payments with fixed Direct Payments (DP), although the essential characteristics of the payments remained. The main changes were that payment rates were fixed over time (rather than scheduled to decline) and producers were given the option to update area bases. Direct payments provided annual payments to producers based on a farm’s historical plantings, historical yields and a national payment rate. Direct payment rates vary by crop and do not depend on market prices. Payments were available for nine commodities, which are those that were covered by the PFC programme, including upland cotton, plus soybeans and other oilseeds (referred to in the legislation as “covered commodities”).⁵ There are special provisions for peanuts. Because these payments are not related to current market prices or most farm-level production decisions, they do not have a direct effect on a producer’s cropping decisions.

Third, it institutionalised the market loss assistance payments (*ad hoc* emergency payments) into a new “counter-cyclical” scheme, where payments are also based on historical acreage and yields, but are triggered when prices fall below pre-determined levels. Counter-cyclical payments (CCP) are available on historical acreage of covered commodities (wheat, feed grains, rice, upland cotton, oilseeds, and peanuts) whenever the effective price is less than the target price. The target price is set by legislation; the effective price is the amount producers will receive from direct payments and from either market prices or the marketing loan program, depending on whether prices are below the loan rate.

CCP payments depend upon current national average farm prices of covered crops, with their payment rate varying inversely with the price of the covered crop. The programme does not require farmers to plant base land to the programme crop. For some farmers these may be perceived as payments offsetting the low prices of the specific programme crop. The CCP payments formula is somewhat similar to that used for the deficiency payments for programme crops that were in place until the 1996 Farm Act, but payment eligibility and the payments themselves are fundamentally different because producers do not have to plant to receive CCP payments and cannot affect the size of their payment through their production decision.

Fourth, it allowed farmers to update their historical acreage used for DP and CCP payments, and historical yield used for CCP payments. The updating allowed producers to alter base composition and increase payments and may have encouraged expectation of future updates.

Fifth, a farmer is not obligated to grow the covered commodity to receive a DP or CCP payment for that commodity (*e.g.* a farm may plant soybeans on maize base acres and receive the DP or CCP payment for maize). The rationale for this planting flexibility is to allow farmers to respond to market signals when choosing crops. While a wide range of agricultural uses (including leaving the land fallow) is allowed for maintaining eligibility of

DP and CCP payments, producers lose eligibility for these payments if the base area is shifted out of agriculture altogether and may temporarily be ineligible if the base area is used for fruits, tree nuts, vegetables, melons or wild rice.

Sixth, the 2002 Farm Act made fundamental change to the peanut support programme. The long-standing marketing quota and price support programmes were eliminated (“bought out”) and quota owners those with the right to sell the commodity at a regulated support price – were compensated with temporary payments for their loss of quota rights. Peanut quota owners received buyout payments of around USD 1.3 billion. Peanut farmers also became eligible for the same type of commodity support programmes – marketing loans, DP and CCP – available to “programme” commodities.

A buy-out reform was also undertaken in 2004 for tobacco under Equitable Tobacco Reform Act of 2004, although tobacco producers did not become eligible for marketing loans, DP and CCP payments. Tobacco quota owners and active producers received a total of USD 9.6 billion over 10 years, paid from assessments on tobacco product manufacturers and importers. (For more information on the buy-out experience in the peanut and tobacco sectors see Dohlman, Foreman and Da Pra, 2009; Orden, 2003).

Seventh, previous price support programmes for milk and sugar remain in place, while a new deficiency payment programme for dairy products was created in response to low prices in that sector. The government, however, continued to forego annual land set-asides, market price supports, and government stock accumulation. The 2002 Farm Act also re-authorized the CRP and EQIP and instituted new environmental programmes, notably the Conservation Security Programme (CSP) (see Chapter 6, *Agri-environmental Policies*).

Notes

1. The term “loan rate” is derived from the original 1930s farm price support programmes in which the option for farmers to forfeit crops pledged as collateral to the government for loans created a floor under market prices. The forfeiture policy was continued for most supported crops in the 1985 Farm Act, but a rate-setting formula was adopted to keep loan rates below market prices under most circumstances. This formula allowed the Secretary of Agriculture to set future rates based on a five-year “Olympic” moving average of past prices (dropping the highest and lowest years).
2. PFC payments were made on 85% of the base acreage for each commodity multiplied by the corresponding payment rate multiplied by the applicable payment yield, which was the yield established for the 1995 crop.
3. CCC outlays do not include crop insurance payments.
4. ERS results indicate that changes in loan rates under the marketing assistance loan programme of the 2002 Farm Act have a greater influence on production choices than occurred under the 1996 Farm Act (Young and Westcott, 1996; 2000).
5. The term “other oilseed” includes sunflower seed, rapeseed/canola, safflower, flax, mustard and any other oilseed designated by the United States Secretary of Agriculture. A direct payment of USD 36 per tonne is available to peanut producers on eligible base period (1998-2001) peanut production.

ANNEX B

Cotton Support Policies

Cotton is one of the “programme commodities” in the US covered by those policies discussed in Chapter 3 on the crop sector policies. Until recently cotton has not been one of the commodities for which OECD calculated Market Price Support (MPS) and identified single commodity transfers in the Producer Support Estimates (PSE), although all budgetary expenditures to cotton producers and consumers have always been included in the calculations of the US PSE and Consumer Support Estimates (CSE).

However, as of 2009, cotton has been included in the list of US commodities for which MPS is calculated, and the MPS calculations have been made back to 1986. In the new PSE classification and presentation of data, the Single Commodity Transfers (SCT) for cotton are now also calculated. Given these developments and the importance of the United States in the global cotton market, this Annex discusses in some detail policies that apply to US cotton and the evolution of cotton support from 1986-2009.

B.1. Policy background

The United States is a major player in the global cotton market: it is the world’s third-largest cotton producer (after China and India); the sixth-largest consumer; and the world’s leading exporter of raw cotton. In 2009/10, 12% of global cotton production was located in the US, and it accounted for 33% of world cotton trade.

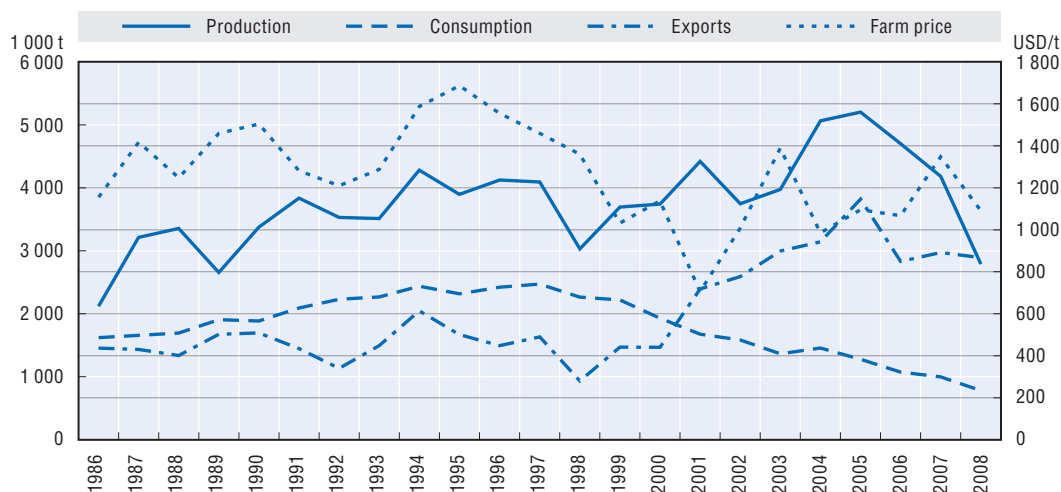
The cotton sector generates more than 200 000 jobs among the various sub-sectors from farm to textile mill, and accounts for more than USD 25 billion in products and services annually.¹ However, in recent years cotton has been losing market precedence and acreage to other competing commodities such as wheat, soybeans and maize.

Dramatic changes in supply and demand have been experienced in the sector over the past decade (Meyer, MacDonald and Kiawu, 2009). While technology has boosted cotton productivity, demand has shifted away from a domestic market sourced mainly with US cotton, to an export-oriented market, where US raw cotton helps supply a growing worldwide consumer demand for cotton products.

Paralleling advances in technology (seed varieties, fertilisers, pesticides and machinery) and production practices (reduced tillage, irrigation, crop rotations and pest management systems) cotton production has trended upwards over time – from 2.1 million tonnes in 1986 to 5.2 million tonnes 2005 (Figure B.1). However, production declined in following seasons, mainly due to a drop in cotton area.

The predominant type of cotton grown in the United States is “American Upland” – accounting for about 98% of the annual US cotton crop – with the remaining 2% commonly named as “American Pima” or extra-long staple (“ELS”). Cotton production in the United States extends across 17 southern States, but is increasingly becoming concentrated (*e.g.* in the Texas Plains; Mississippi, Arkansas, and Louisiana Deltas; central Arizona; and southern Georgia). ELS cotton is produced mainly in California, with small amounts grown in southwest Texas, New Mexico and Arizona.

Figure B.1. **US cotton production, consumption, exports and market prices, 1997-2008**



Source: OECD calculations based on ERS, USDA.

US consumption of domestically-produced cotton fabric and yarn has been declining rapidly since the mid-1990s – from a peak of 2.5 million tonnes in 1997 to 958 000 tonnes in 2008 – as a result of a dramatic rise in competition from imported textile and apparel products, and the re-location of the global textile and clothing industries.²

In contrast, exports have risen over time and have become more important – accounting for about 75% of US cotton demand in 2008 – as restructuring in the US textile industry continues to unfold. As with cotton production, US cotton exports experienced a general upward trend, until 2005 – when they peaked at 3.8 million tonnes – before starting to decline. In 2008, exports remained at similar to the previous two years – estimated at 2.8 million tonnes – and exceeded production as production and stocks fell considerably. The top export destination is China. The US exported approximately 32% of its cotton to China in 2007/08. Other major markets are Turkey, Mexico, Indonesia, Thailand and Vietnam.

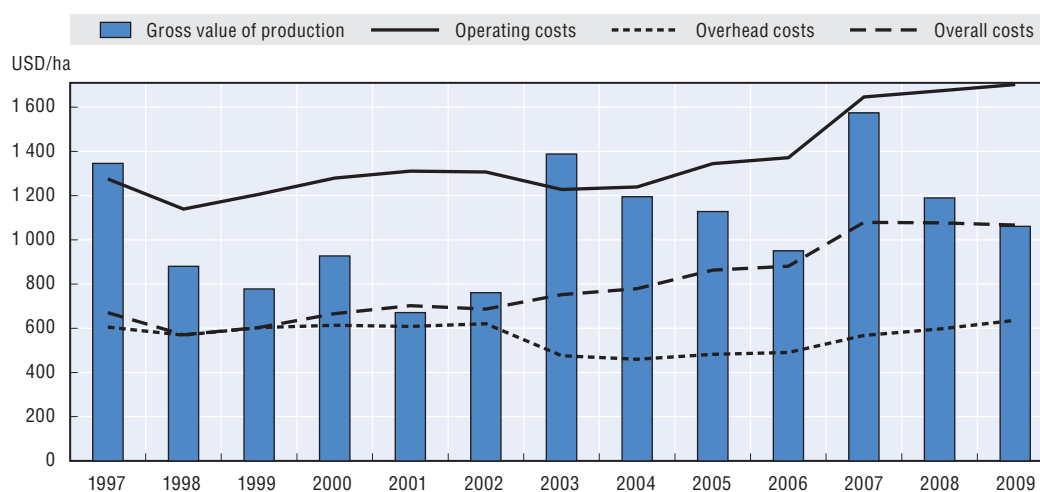
The area planted to upland cotton has averaged about 4.8 million hectares over the past 30 years. However – like production – acreage and yield have fluctuated over time as a result of weather conditions, varying market conditions and changes in government policy. In 2008, area harvested sharply decreased, reaching 3.1 million hectares, which is the lowest since the mid-1980s. The decline in cotton area can be attributed to farmers switching to more competitive commercial crops, such as grains and soybeans. In addition, less than favourable weather conditions in 2008 led to the highest percentage abandonment in a decade and reduced the national average yield below the previous 3-year average. As a

result, production fell significantly to its lowest in nearly 20 years (Meyer, MacDonald and Kiawu, 2009).

Production of cotton is highly input intensive. Although water shortages is not a widespread issue as only 31% of area is irrigated, some areas suffer from water shortages. Yields increased at an annual average rate of 2% over the 1986-2008 period, reaching 985 kilograms per hectare in 2008.

A key issue affecting the US cotton industry is the high cost of production, particularly operating costs. Figure B.2 displays the evolution of cost of cotton production and of farm receipts from 1997-2009. Over this period, operating costs (such as seed, fertiliser, chemicals fuel and repairs) averaged about USD 800 per hectare, while overhead costs (which include depreciation of equipment and building, land ownership and rental costs, tax insurances, general farm overhead, unpaid and hired labour) averaged USD 564 per hectare. While, on average, operating costs were more than covered by the gross value of production, total costs exceeded the gross value of production (excluding government supports). In addition, in 2001 and 2009 the gross value of production was insufficient to cover the operating costs.

Figure B.2. **US costs of cotton production and farm revenues, 1997-2009**



Source: OECD calculations based on ERS, USDA.

According to the 2007 Census of Agriculture, the number of farms harvesting cotton had declined by 80% between 1997 and 2007, while the area per farm had expanded by 27%. Farms growing cotton tend to be larger than those producing other crops, with above-average gross farm incomes and government payments. Cotton farm operators are also more likely to list farming as their occupation and to have completed high school and college, compared with other farm operators.

In 2007, there were 18 591 farms producing cotton. Out of this total, 71% (13 232 farms) were classified as specialised cotton farms (i.e. a minimum of half of the value of their commodity sales were of cotton) and this group produced nearly 98% of that year's total cotton crop. A quarter of these specialised cotton farms are categorised as "small family" farms, and they produced almost 8% of total receipts. Very large farms accounted for 43% of all farms and 65% of receipts. Cotton farms averaged 228 ha per farm, compared with 169 ha for other farms.

Cotton accounts for around 4% of receipts from all crops and 1.5% of receipts from the whole agricultural sector (Table E.1). In 2007, cotton farms generated an average net cash income of USD 159 397 per farm, far more than the average of USD 33 822 for non-cotton farms in the cotton production regions. Around 82% of cotton farms experienced net gains, compared with 47% for non-cotton farms.

Total government payments averaged USD 77 899 per cotton farm in 2007, compared with USD 3 948 per non-cotton farm in cotton-producing States. Direct, countercyclical, and loan deficiency payments comprise most of the payments. In 2007, government payments contributed over 11% of gross cash income on cotton farms, compared with 4% for non-cotton farms (Table E.9).

B.2. Main policies

As pointed out earlier, cotton is one of the “programme commodities” in the US and, as such, most of the policies described in this section apply to all programme commodities in the US, as discussed in Chapter 3, *Crop Sector Policies*. Historically, the cotton sector is one of the most heavily supported sectors in the United States. Successive Farm Acts contained several provisions concerning the cotton sector and numerous programmes exist which transfer resources from consumers and taxpayers to cotton producers. During the period 2002 through 2009, cotton accounted for over 5% of the value of agricultural production in the United States and 19% of the government payments for agriculture.

As cotton is one of the “covered commodities”, the 2008 Farm Act provides cotton producers access to marketing loans and loan deficiency payments, direct payments (DPs), counter-cyclical payments (CCPs), Average Crop Revenue Election (ACRE) payments and import protection programmes discussed in the main body of the report. Moreover, cotton users (millers) benefit from the new Upland Cotton Economic Adjustment Assistance Program and the export assistance and import protection programmes discussed in the main body of the report.

In addition, cotton producers may benefit from crop and revenue insurance available under previous legislation, as well as from new disaster assistance programme. Moreover, cotton producers are affected by conservation (through conservation compliance) and trade measures (such as import quotas, export credit guarantees). Some of these programmes are specific to cotton producers, while other are broader and cover a specified list of commodities in which cotton is also included (“covered commodities”).

Production flexibility contract payments

Cotton was one of the seven commodities which were eligible for historically based Production Flexibility Contract (PFC) payments made under the FAIR Act of 1996. Over the period of the 1996 Farm Act (1996-2002), PFC payments for historical cotton base averaged USD 578.2 million (or 11% of the total PFC payments) (Table B.1).

Market loss payments

Cotton was one of the historical base commodities which were eligible the Market Loss Assistance (MLA) payments which were granted on an *ad hoc* basis to compensate for losses sustained as a result of low commodity prices over FY1999-2001. MLA payments for holders of cotton base acres averaged USD 688.7 million (or 11% of the total MLA payments).

Direct payment, counter-cyclical payments and average crop revenue election (ACRE) programme

Historical production of upland cotton qualifies for DP and CCP programmes, both of which were established under the 2002 Farm Act. Counter-cyclical payments are made to holders of cotton base whenever the target price is greater than the effective price for cotton. The latter is equal to the direct payment plus the higher of the loan rate and the national average farm price.

Since the 2002 Farm Act (FY2003-08), the United States has provided about USD 4 735.9 million per year in DP tied to the historical yield and acreage base of programme commodities (Table B.1). Cotton DP account for about USD 552 million per year, or 12% of the total. Although these payments are distributed to producers who have historically grown cotton, the payments continue even if the land is subsequently used for producing other crops, for livestock grazing, or left idle.

Although paid on the same historical basis, unlike the DP, the CCP for cotton vary inversely with the US national average market price of cotton and thus rise and fall from year to year. The CCP payments for cotton averaged USD 976.7 million per year from 2003-08 (or 44% of the total counter-cyclical payments).

In the 2008 Farm Act, the payment rate for upland cotton DP remained unchanged at USD 147 per tonne, while CCP target prices were reduced from USD 1 596.1 per tonne, under the 2002 Farm Act, to USD 1 570.9 per tonne for crop years 2008-12. Beginning with the 2009 crop year, producers holding DP and CCP base acres for cotton could choose to enrol their crop production in the new ACRE programme (see Chapter 3) and give up rights to CCP payments and accept reductions in DPs and marketing loan rates.

Table B.1. Commodity payments not requiring production, FY1996-2008

	USD million												
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Direct payments (DP)													
Upland cotton								477	622	608	575	454	574
Total commodities								4 151	5 289	5 235	4 962	3 957	4 821
Countercyclical payments (CCP)													
Upland cotton								1 264	217	1 421	1 410	1 281	267
Total commodities								1 743	809	2 772	4 356	3 159	359
Production flexibility payments (PFP)													
Upland cotton	687	605	641	616	572	475	452						
Total commodities	5 141	6 320	5 672	5 476	5 057	4 105	3 968						

Source: OECD calculations based on FSA Budget Division.

Marketing assistance loans and loan deficiency payments

As for other programme crops, the marketing loan program provides US cotton growers short-term financing as well as income support when cotton prices are low. Like producers of other programme crops, cotton growers can receive marketing loan benefits in either of two ways: i) growers can put their cotton production under loan at the loan rate, which can be forfeited to the CCC, rather than the loan being repaid. The loan can also be repaid at the adjusted world price (AWP) (e.g. Far East price), which is related to world prices by a formula specified in the legislation, when the AWP is less than the loan rate. The difference between the loan rate and the AWP is called the marketing loan gain;

ii) growers can receive loan deficiency payments (LDP). That is, instead of putting their cotton under loan, growers can receive a one-time payment on eligible production when the AWP is below the loan rate. The LDP payment rate is calculated as the difference between the loan rate and the AWP.

As for other covered commodities, under the FAIR Act of 1996, marketing assistance loans for upland cotton were provided only for upland cotton harvested on a farm covered by a Production Flexibility Contract (PFC) for any eligible historically produced commodity. The programme was re-authorised under the 2002 FSRI Act, but with changes to certain elements.³ The marketing loan benefits for cotton averaged around USD 1.0 billion per year from 2002-07. Under the 2008 Farm Act, the base quality loan rate for upland cotton is USD 1 146.4 per tonne for the 2008-12 period, a level unchanged from the rate established under the 2002 Farm Act.

User marketing (Step 2) payments

The upland cotton-user marketing certificate or “Step 2” programme was authorised from 1990 until 2006 under successive legislation, including the FAIR Act of 1996 and the FSRI Act of 2002. Its objective was to bridge the gap between higher domestic US and world prices so that US exporters and mills maintain their competitiveness.

Payments were made to eligible domestic end-users of cotton and export shippers of US cotton when i) domestic US prices exceeded North Europe c.i.f. prices by a certain level and ii) the world price was within a certain level of the base loan rate. The domestic Step 2 payments assured that the net cost to domestic cotton users is lower for US cotton than for import alternatives.

Over the 2002-05 period, “Step 2” payments averaged USD 363 million per year, of which USD 253 million went to assist exports. The “Step 2” programme ended in 2006 marketing year as a part of the US response to the WTO upland cotton case which was brought against US programmes by Brazil.⁴

Crop and revenue insurance payments

As discussed in Chapter 3, producers of upland cotton are offered annual crop yield or revenue insurance coverage for losses due to natural disasters and market fluctuations. Over 90% of cotton area covered by federal crop insurance is insured at coverage levels of 70% or less of expected yield or revenue. Crop insurance benefits to cotton producers, which include the difference between payments and premiums paid by farmers, amounted to approximately USD 161 million per year from 2002-08.

B.3. Cotton support estimates, 1986-2009

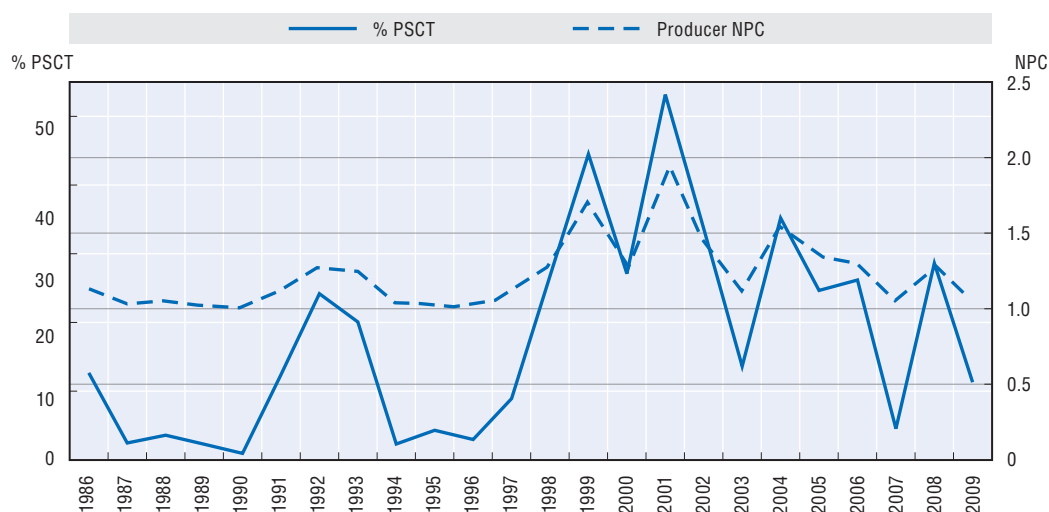
The budgetary support accorded to the cotton producers has always been included in the calculations of the US PSE and CSE, and as of 2009, cotton has also been included in the list of MPS commodities for the US. The MPS element of producer support has also been calculated back to 1986.⁵

Levels of specific support to cotton producers, as measured by the Producer Single Commodity Transfers (PSCT) indicator, have varied widely over time (Figure B.3). Since 1986, the PSCT for cotton peaked twice, once in 1999 and 2001. Both peaks occurred at times when cotton market prices were very low. Support levels subsequently declined sharply in 2003 and from 2004 to 2007.

In 2007-99, on average, USD 686 million, or about 7% of the USD 9 432 million single commodity transfers to agricultural producers, was allocated to producers of cotton. The size of the PSCT for cotton relative to gross farm receipts (% SCT) for cotton (15%) was above the average % PSE of the whole agricultural sector (9%), while producer prices were aligned with world prices (producer NPC of 1.00). As shown in Figure B.4 and Table B.2, PSCT transfers to cotton producers are accorded primarily through payments based on output and on area (crop insurance).

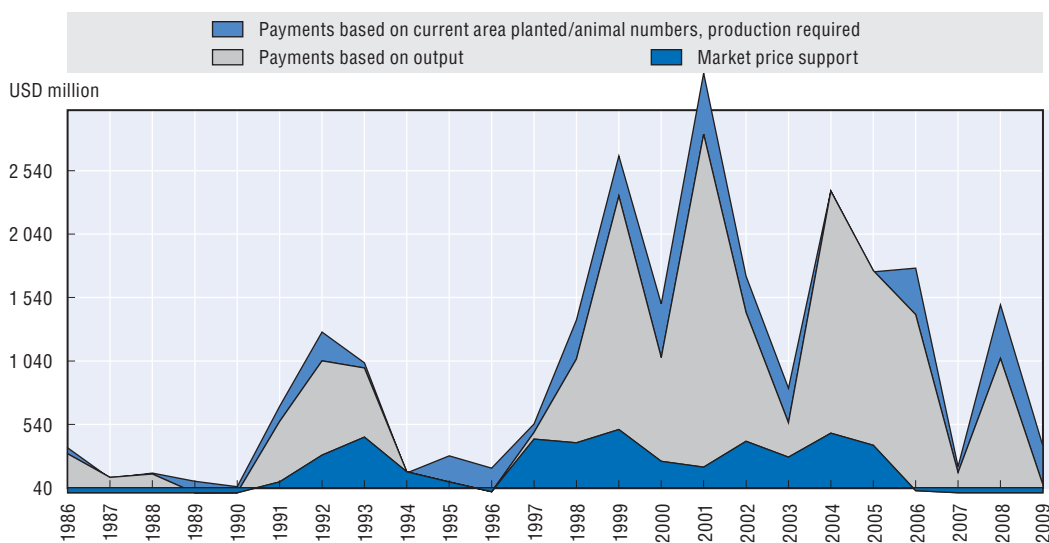
The cost imposed on consumers of programme payments to producers of cotton, as measured by the Consumer SCT, has also varied widely over time (Table B.2). In some years, the Consumer SCT was positive, indicating that spending on programmes such as the ELS programme and the Upland Cotton User Marketing Program (domestic share), more than offset the cost to consumers of market price support.

Figure B.3. **Evolution of support indicators for US cotton, 1986-2009**



Source: OECD, PSE/CSE Database, 2010.

Figure B.4. **Decomposition of US cotton Single Commodity Transfers, 1986-2009**



Source: OECD, PSE/CSE Database, 2010.

Table B.2. **Producer and Consumer Single Commodity Transfers to US cotton producers, 1986-2009**

Million USD

	1986-88	1996-2001	2006-09	2008	2009
Producer Single Commodity Transfers (PSCT)	208	1 593	1 277	1 483	370
<i>Support based on commodity output</i>	<i>192</i>	<i>1 296</i>	<i>1 277</i>	<i>1 483</i>	<i>370</i>
<i>Market price support</i>	0	296	5	0	0
<i>Payments based on output</i>	192	1 000	890	1 059	63
Loan deficiency payments	57	315	84	130	13
Marketing loan gains	136	195	9	0	3
Certificate exchange gains	0	358	626	823	26
Commodity loan interest subsidy	0	29	65	24	22
Storage payments	0	58	107	82	0
Market loss payments	0	45	0	0	0
<i>Payments based on current area planted/animal numbers, production required</i>	<i>16</i>	<i>297</i>	<i>381</i>	<i>423</i>	<i>307</i>
Crop insurance Cotton	16	297	381	423	307
ACRE	0	0	0	0	0
% PSCT	6	27	24	29	11
Producer NPC	1.06	1.39	1.16	1.29	1.02
Consumer Single Commodity Transfers (CSCT)	0	-25	28	30	84
Transfers to producers from consumers	0	176	1	0	0
Transfers to producers from taxpayers	0	119	3	0	0
Transfers to consumers from taxpayers	0	152	29	30	84
Upland cotton user marketing payments: domestic share	0	151	0	0	0
ELS program	0	1	10	30	10
Upland Cotton Economic Adjustment Assistance program	0	0	19	0	75

Note: Transfers to producers from taxpayers is the share of market price support financed by taxpayers (e.g. the export share of Export User Marketing payments).

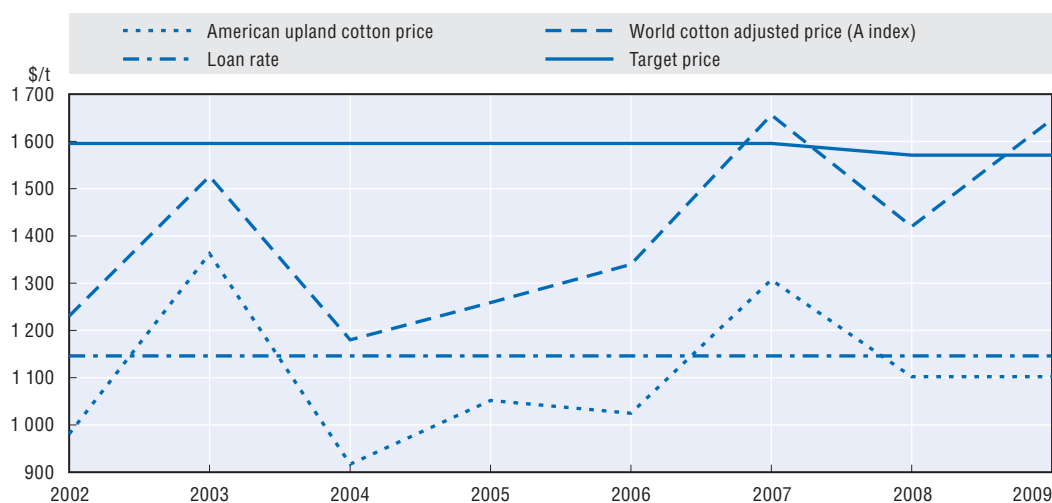
Source: OECD, PSE/CSE Database, 2010.

B.4. Policy issues

Overall, the reduction in target prices, combined with the elimination of Step 2 programme payments, has enhanced the market orientation of the sector. If the Adjusted World Price (AWP) declines below the loan rate then marketing loan payments will increase; but if the AWP remains above the loan rate, but below the CCP trigger price (target price – DP rate), CCP payments based on historical production could be perceived by producers as offsetting losses from lower prices if recipients have continued to produce cotton.

Overall, the small reductions in the target prices authorised under the 2008 Farm Act would suggest that, unless world cotton prices are sustained at levels that are very high historically, payments to holders of cotton base will remain high, making adoption of the new ACRE programme less attractive than retaining the CCP and DP programmes (Figure B.5).

Figure B.5. US cotton prices, 2002-09



Source: OECD calculations based on ERS, USDA.

Notes

1. See ERS/USDA, Cotton briefing: www.ers.usda.gov/Briefing/Cotton.
2. Textile trade reforms, like the termination of the Multifibre Arrangement (MFA) quotas in December 2004, partly account for the shift in cotton mill demand.
3. In particular, loans are provided for upland cotton produced on any farm, the term of a marketing assistance loan for upland cotton is reduced from ten months to nine months, the same length offered for other commodities, and the loan rate for upland cotton is fixed by the Act itself for the 2002 through 2007 crop years.
4. In 2002 Brazil brought a case against the US cotton programmes and a panel was established in March 2003. The most important claims of Brazil were that: Step 2 payments to domestic users constituted a prohibited domestic content subsidy; Step 2 payments to exporters constituted a prohibited export subsidy; export credit guarantees were prohibited export subsidies; and production flexibility contract payments and direct payments, market loss assistance payments and countercyclical payments, marketing loan benefits, the crop insurance subsidies for cotton, Step 2 payments, and export credit guarantees all supported cotton and contributed to serious prejudice of Brazil's interests, mainly by causing world cotton prices to be lower than they would otherwise have been and by causing the US world market share to rise and to be higher than otherwise.
5. The price gap for cotton is calculated based on the same method as used for wheat, barley, rice, pig meat, poultry meat and eggs. The price gap is assumed to be equal to the average unit value of export subsidy for cotton (i.e. total value of export subsidies for the crop year divided by total exports of cotton).

ANNEX C

Impact of the Energy Independence Security Act on Biofuels and Crop Markets: Aglink Analysis

C.1. Background

An argument exists that government biofuel consumption or production mandates create indirect support to the agricultural feedstocks used to produce these biofuels because they elevate demand, thereby increasing not only the feedstock prices, but other commodity prices as well. The Energy Independence Security Act (EISA) of 2007 brought significant increases to the biofuel consumption mandates for the United States. Previously, under the Energy Policy Act (EPAct) of 2005, the aim had been to reach 7.5 billion gallons by 2012.

EISA increased this level to 36 billion gallons by 2022. The ethanol consumption mandates of the United States have led to large increases in the production of maize-based ethanol and have contributed to elevating maize prices to a new, higher price plateau. However, in the United States total ethanol demand is mostly influenced by the following three factors: government consumption mandates, oxygenate demand, and finally demand from consumers or blenders. This consumer market demand is heavily influenced by the relative price ratio of gas versus ethanol and, possibly, a consumer preference to use a fuel that is more “environmentally friendly”. It should be noted that oxygenate and consumer market demand can both contribute to the total government consumption mandate.

To determine what effect the EISA biofuels consumption mandates are having on crop markets, especially maize, it is proposed in this analysis to re-set the levels back to those originally proposed under the EPAct of 2005. This analysis will show the potential impact of the different consumption mandates if the government consumption mandates were determining total ethanol demand. However, before the EPAct and during its enforcement, total US ethanol consumption had surpassed both oxygenate and government mandates by an average of 38%. To reflect that “consumer market demand” could have continued to increase ethanol consumption above EPAct mandates it is proposed to follow an analogous procedure as that used by the Environmental Protection Agency (EPA) in their Final Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis (RIA). More specifically, the difference between EISA and an adjusted consumption of ethanol at 38% higher than the level mandated under EPAct is analysed, hereafter referred to as “EPAct plus”.¹

Although it is unclear whether this higher “consumer market demand” would have been sustained in the future, considering that during the time that EAct was in force a period of escalating oil and gas prices occurred, which caused gasoline blenders to look to secure ethanol supplies to meet oxygenate requirements; there was also speculation at that time that a new biofuels policy (*i.e.* EISA) would require substantially more biofuels consumption. All of these factors probably inflated the “consumer market demand” at that period and it is difficult to determine what the long-term equilibrium consumption level would have been. The story for biodiesel is different because it seems that in almost all years US consumption would have been lower than the blending mandate and therefore, a scenario with increased “consumer demand” for biodiesel is not undertaken.

The AGLINK-COSIMO model, along with OECD-FAO 2010 Outlook, which serves as the baseline, is used to determine the impacts on biofuels and crop markets (OECD-FAO, 2010). Obviously, considering that EISA was signed into law on 19 December 2007, its impacts have already been reflected in both crop and biofuel markets. The OECD-FAO Outlook only provides a projection from 2010 to 2019, so this analysis simply notes the percentage changes in markets as a result of reducing the biofuel consumption mandates to the levels specified by the EPA of 2005 or to the increased consumption levels implied by “EAct plus”. For the most part, this analysis and discussion focus on the difference between government blending mandates of EAct *versus* EISA. The results could potentially indicate the relative price impacts of the two different government blending mandates of EAct 2005 and EISA 2007, but should not be taken to be the absolute impact of EISA on US biofuel and crop markets. The discussion will bring in results from the “EAct plus”, when referring to ethanol consumption levels and crop price impacts, to show relative impacts if consumer market demand for ethanol would have been at a sustained, elevated level above the EAct levels.

EAct was less comprehensive than EISA, in that there was no advanced biofuel mandate and no requirements to reduce greenhouse gas emissions. However, the “RFS case” scenario of EPA made assumptions on the specific amounts of biofuels from feedstock. Although the policy required production of 7.5 billion gallons of biofuels, the EPA had determined in their “RFS case” scenario that biodiesel and cellulosic² ethanol should be attributed higher net energy equivalence, which then reduced the required volume to 6.97 billion gallons.³ The amounts in Tables C.1 and C.2 outline EAct 2005 biofuel consumption assumptions and EISA biofuel consumption mandates. To determine the growth paths for each biofuel, the proportions of each to the total energy equivalent RFS in 2012 were held constant for each year and then extrapolated backwards.

Table C.1. EAct 2005 renewable fuel standard

	2005 RFS timeline (billion gallons)				
	Total RFS volume	Total energy equivalent	Maize	Cellulosic	Biodiesel
2006	4	4	4		
2007	4.7	4.370	4.024	0.157	0.190
2008	5.4	5.021	4.623	0.180	0.218
2009	6.1	5.672	5.222	0.203	0.246
2010	6.8	6.323	5.822	0.227	0.275
2011	7.4	6.881	6.335	0.247	0.299
2012	7.5	6.974	6.421	0.250	0.303

Note: The sum of cellulosic, biodiesel and maize does not equal 7.5 because it is not expressed in net energy equivalence.

Table C.2. **EISA renewable fuel standard**

	EISA RFS timeline (billion gallons)				
	Cellulosic	Biomass-based diesel	Total advanced	Potential maize based	Total RFS
2008	n.a.	n.a.	n.a.	9.0	9.0
2009	n.a.	0.5	0.6	10.5	11.1
2010	0.1	0.65	0.95	12	12.95
2011	0.25	0.8	1.35	12.6	13.95
2012	0.5	1	2	13.2	15.2
2013	1	1	2.75	13.8	16.55
2014	1.75	1	3.75	14.4	18.15
2015	3	1	5.5	15	20.5
2016	4.25	1	7.25	15	22.25
2017	5.5	1	9	15	24
2018	7	1	11	15	26
2019	8.5	1	13	15	28
2020	10.5	1	15	15	30
2021	13.5	1	18	15	33
2022	16	1	21	15	36

Note: Total advanced includes net energy equivalence.

As can be seen in comparing Tables C.1 and C.2, the EAct mandates require significantly lower biofuel quantities compared to the current EISA policy. However, even though EPA assumed in their reference scenario that cellulosic ethanol consumption under EAct would reach 250 million gallons by 2012, it is unclear whether this target would have been met, considering that currently there is very limited cellulosic ethanol production, and the current baseline indicates that this level of consumption will not be realised until 2014. In addition, EAct gave a higher ethanol tax credit of USD 0.51 per gallon, *versus* the current tax credit of USD 0.45 per gallon, and the tax credit was set back to the EAct level for the scenario analysis.

For the scenario analysis, it was assumed that cellulosic production and consumption would equal what was already present in the baseline. EAct required that once the total RFS was achieved, the biofuel consumption percentage would have to be maintained in proportion to total fuel consumption – it is for this reason that biofuel consumption grows past 2012 in the scenario. The following table shows the EAct biofuel consumption assumptions that were used in the analysis. For the “EAct plus” scenario maize-based ethanol consumption levels were increased by 38% above the levels shown below and cellulosic-based ethanol consumption remained unchanged considering the challenges of meeting the EAct base level mandates.

C.2. Biofuel production

For maize ethanol production, the capacity is determined endogenously with the previous year’s capacity used as a starting point and it then grows (given relative returns to maize ethanol production) from 2010 to 2019. For 2010, the previous year’s capacity was the 2009 EAct maize ethanol consumption level. Under this scenario, maize ethanol production in 2010 would have reached only 24.3 million litres, instead of the 45.4 million litres projected in the baseline, which is a decrease of 21.1 million and represents a 46.5% reduction. Figure C.1 shows the reduction in maize-based ethanol production in the scenario compared to the baseline.

Table C.3. **EPAct 2005 renewable fuel standard projection assumptions**

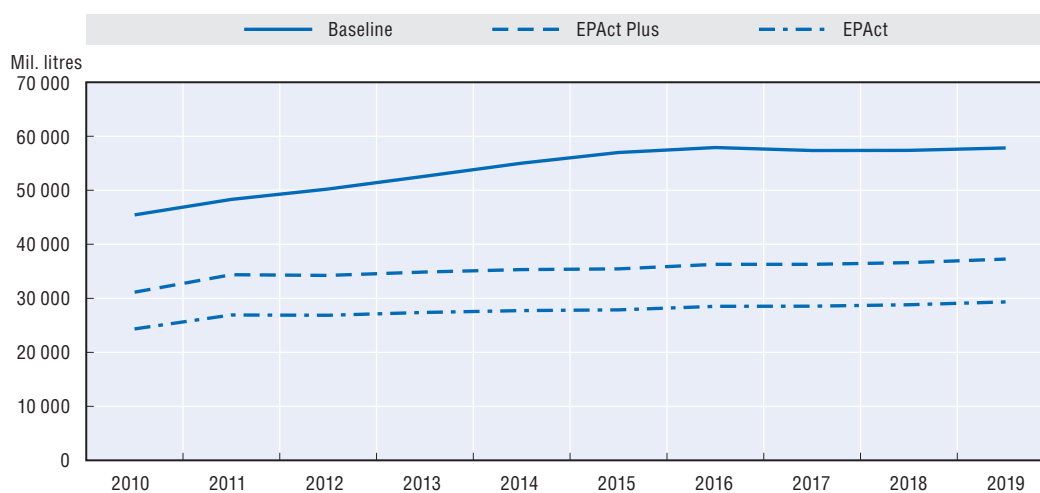
EPA of 2005 RFS		Million litres				
Year	2010	2011	2012	2013	2014	
Maize-based ethanol	22 038	23 982	24 306	24 576	24 840	
Cellulosic ethanol	858	934	946	957	967	
Biodiesel	1 040	1 132	1 147	1 160	1 172	
RFS total volume	25 177	27 164	27 183	27 032	26 979	
RFS total NET NRG	25 743	28 014	28 392	28 707	29 016	
RFS total NET NRG (mill. gallons)	6 800	7 400	7 501	7 584	7 665	

EPA of 2005 RFS		Million litres				
Year	2015	2016	2017	2018	2019	
Maize-based ethanol	25 093	25 337	25 567	25 784	25 990	
Cellulosic ethanol	977	986	995	1 004	1 012	
Biodiesel	1 184	1 196	1 206	1 217	1 226	
RFS total volume	27 254	27 519	27 769	28 005	28 229	
RFS total NET NRG	29 312	29 596	29 865	30 119	30 360	
RFS total NET NRG (mill. gallons)	7 743	7 818	7 890	7 957	8 020	

Note: RFS NET NRG refers to the RFS net energy equivalence.

Overall, the average reduction in maize ethanol production was 48.6% over 2010-19. However, it should be noted that when the Environmental Protection Agency issued the final rule in 2007, it used a projection from the Energy Information Administration which projected that by 2012 maize-based ethanol consumption would surpass its mandate and reach 9.388 billion gallons. For the “EPAct plus” scenario the reduction in maize-based ethanol production was on average 34.5% from 2010 to 2019 and the production difference in 2010 was approximately 14.3 million litres or 31.5%.

Likewise, for biodiesel production the capacity is determined endogenously with the previous year’s capacity used as a starting point and it then grows (given relative returns to biodiesel production) from 2010 to 2019. In 2010, biodiesel production decreases by

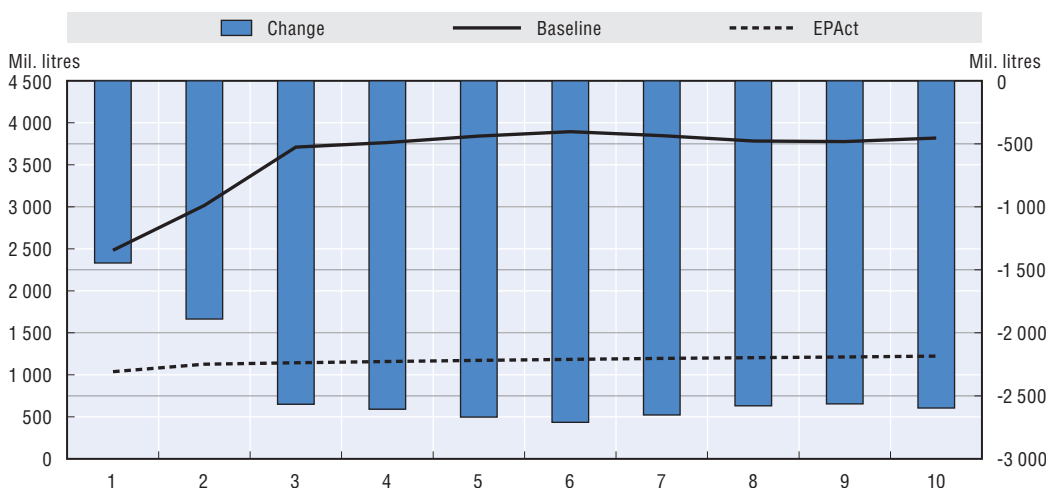
Figure C.1. **Reduction in maize-based ethanol production**

1.4 million litres and by 2019 there is a decrease of 2.6 million litres, which, on average, represents a 67% reduction from 2010-19.

Considering that biodiesel can be produced from either vegetable oil or tallow, in the scenario it was assumed that the proportions of each respective feedstock used in biodiesel production would be equal to the proportions in the baseline and, therefore, their respective percentage decreases are equal to the percentage decrease in biodiesel production.

In 2010, vegetable oil use for biodiesel decreases by 503 000 tonnes and by 2019 the reduction amounts to 744 000 tonnes. Although this represents a significant decrease in vegetable oil use for biodiesel, it is relatively small when compared to total consumption of vegetable oil – 12 645 000 tonnes in 2019. Figure C.2 shows the reduction in biodiesel production in the scenario compared to the baseline.

Figure C.2. **EPAct reduction in biodiesel production**



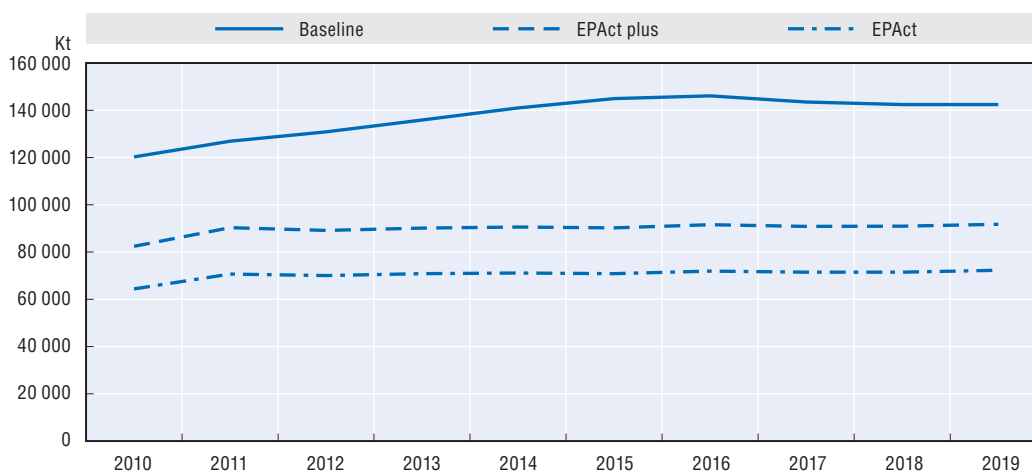
C.3. The maize market

The reduction in maize-based ethanol production directly reduces the use of maize for ethanol and causes a significant decrease in demand for maize. In 2010, this amount translates to a 55.8 million tonne reduction, and by 2019 this amount increases to 66.9 million tonnes (Figure C.3). Obviously, this puts downward pressure on US maize prices and there is a significant decrease in maize prices.

As shown in Figure C.4, the largest decrease is in 2010, with a price decrease of 16% because in the baseline the level of maize ethanol production is significantly larger than the implied EPAct mandate for 2010; as explained above, EISA and high oil prices had already encouraged production well above EPAct levels.

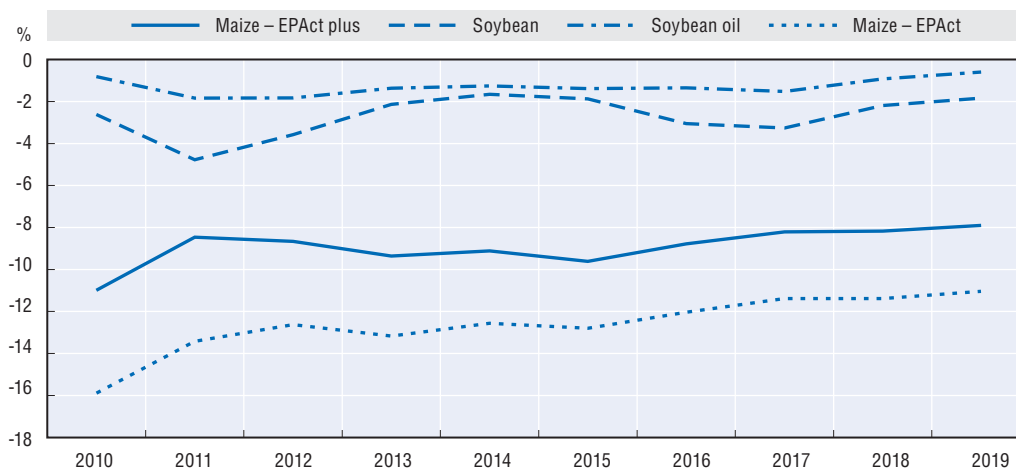
The decrease in maize prices then approaches the -13% range by 2012 and then hovers slightly below this until 2015. In the baseline, maize ethanol production growth levels off in 2015 and only grows at the rate of fuel consumption after 2015. There is a slight dip in maize prices in 2015 because this is where there is the smallest increase in the baseline for maize ethanol consumption. Thereafter, the price decrease is close to -11% as market approach a long-term equilibrium.

Figure C.3. Reduction in ethanol-maize use



Overall, maize prices are on average 13% lower throughout 2010-19 with the EAct biofuel consumption assumptions. One might have expected larger price impacts for maize, but it has to be remembered that with less maize ethanol production, there will be less dried distilled grains available for feed. The average reduction in the production of maize-based dried distilled grains was 21.9 million tonnes, which ultimately lead to an increase in coarse grain feed consumption of 15.2 million tonnes.⁴ The increased demand for coarse grains for feed helps alleviate some of the downward pressure on maize prices. For the “EAct plus” scenario the average reduction in maize prices was -9% compared to the EAct of -13%.

Figure C.4. Percentage reduction in US maize, soybean and soybean oil prices



The decrease in maize prices, along with the decrease in soybean oil prices, resulting from lower biodiesel demand for vegetable oil, both contribute to a decrease in soybean prices. On average, from 2010 to 2019 soybean oil prices are only 1% lower and soybean prices are on average 3% lower. The price effects are more adverse for maize because the share of maize going to ethanol production is higher than the share of soybean oil going to

biodiesel production. Biodiesel production also uses non-crop feedstocks such as tallow. The price impacts for soybeans and soybean oil under “EPAAct plus” were almost exactly the same as EPAAct considering no change at the consumption of biodiesel was required.

The purpose of this scenario was to analyse to what extent new EISA biofuel consumption mandates were affecting biofuel and crop markets, specifically maize. It can be seen that EISA substantially increased the amount of biofuels needed to meet the renewable fuel standard, as in 2012 it went from 7.5 billion gallons (under EPAAct) to 15.2 billion gallons. Although EISA only permits 15 billion gallons of maize ethanol consumption to be eligible for the RFS 2015, represent 73% of the RFS mandate that year. It is not until 2020 that the advanced biofuel consumption mandate equals the 15-billion gallon maximum maize-based ethanol consumption that can be counted toward the overall RFS.

EPAAct would have required substantially less maize-based ethanol production and, consequentially, lower maize use for ethanol, which would have impacted maize prices. Lowering the consumption mandates to the EPA levels results in maize, soybean and soybean oil prices that are on average -13%, -3% and -1%, respectively, lower than those in the baseline under EISA. However, if consumer or blenders’ demand for ethanol were to have been sustained above EPAAct blending levels, as seen prior to EISA, then ethanol consumption would have been higher and the maize price impacts would have been approximately only -9% lower. It is, however, uncertain as to whether consumer market demand would have been sustained in the long-term at those levels above government blending mandates. Overall, this analysis exhibits how biofuel policies can indirectly influence the prices for feedstocks used to produce biofuels by increasing their respective demand.

Notes

1. Total historical US ethanol consumption from 2004 to 2007 was compared to oxygenate and government blending mandates to determine the excess “consumer market demand”, which was found to be on average 38% higher during those four years. EPA’s assessment of the final rule stated a base scenario in 2004 and it projected that by 2012 there would be approximately a 42.5% increase in ethanol consumption above the EPAAct blending mandate, but at that time they probably had a different macro-economic projection without the 2009 financial crisis and subsequent recession.
2. Although the Environmental Protection Agency gave cellulosic ethanol an energy equivalence of 2.5 this was changed under EISA, whereby all denatured ethanol is considered to have an energy equivalence of only 1, regardless of the feedstock used to produce it.
3. This total volume requirement for the “RFS case” scenario was taken from the US EPA (2007).
4. The AGLINK-COSIMO modelling framework assumes that one tonne of DDG replaces 0.94 tonne of coarse grains in ruminant feed ratio and 0.7 tonne of coarse grains in non-ruminant feed ratio.

ANNEX D

The OECD Policy Evaluation Model

The *Policy Evaluation Model* (PEM) is a partial equilibrium model of agricultural production that is designed to connect the data in the PSE database with economic outcomes in terms of production, trade and welfare in a stylised manner. It uses the PSE classification scheme as an organising principle to represent the agricultural policies in selected countries in such a way that the economic distinctions that guide the PSE classification are highlighted. Specifically the model takes into account the initial incidence of a policy, such as whether it is directed at land, input use or output, and whether the policy should affect current resource allocation decisions, primarily driven by whether policies require or not current production as a condition of eligibility.

For the United States, the PEM includes wheat, coarse grains (over 95% of which is corn), oilseeds (essentially soybeans), rice, milk and beef. The model uses the PSE database for the years 1986 to 2008, including those policies where the categorisation is deemed sufficient to allow for a representation of the policy in the model. Some policies are omitted from the model where their role in agricultural production is unclear (category F), or when restrictions on input use make their impact difficult to estimate (most policies where “voluntary” or “mandatory” input constraints are in place). For this reason, the term “Modelled PSE” is used to indicate that portion of the PSE that is represented in PEM.

D.1. Representation of risk effects of policies

For the policy simulations carried out in this study, the PEM was modified to take into account a significant feature of certain agricultural policies in the United States; payments that are made in a counter-cyclical fashion to current prices reduce the risks faced by producers. Risk-reduction is an objective of agricultural policy in many countries and provides benefits to risk-averse producers by making payments when prices are low, thus reducing the net effects of negative price shocks. Such payments can be made either according to current production, as for the loan rate (LR) programmes, or on the basis of historical production, as is the case for the Counter-cyclical Payment (CCP), paid on the basis of base acres according to current prices.

The approach taken is to consider the effect of the two main risk-reducing programmes, LR and CCP, on the profit-maximising decision of a producer of multiple commodities, potentially possessing base acres in each. It is assumed that producers are risk averse with a utility function compatible with constant absolute risk aversion (CARA) preferences, which exclude the complicating factor of wealth effects of risk. Wealth effects have been shown to be small relative to the insurance effect (OECD, 2002). This approach

builds on that used in the OECD study (OECD, 2002), a primary difference being the multi-commodity approach taken here.

Begin by considering the profit function of a representative farm:

$$\tilde{Y} = \sum_{i=1}^n [\tilde{P}_i Q_i - C(Q_i)] + \sum_{i=1}^n LR_i(\tilde{P}_i) Q_i^0 + CCP_i(\tilde{P}_i) Q_i^0 + \gamma \quad (1)$$

where Y is farm income, P_i , Q_i and $C(Q_i)$ are the price, quantity produced and cost of production of commodity i , respectively and the tilde indicates a random variable. The LR payment is defined for each commodity and paid on the basis of current price per unit of current output. The CCP payment is defined for each commodity as a function of the current price of commodity i and paid on the basis of base area of commodity i , Q_i^0 . The additional term γ represents other sources of income. For simplicity it is assumed that the only source of risk is price risk, such that the price of the commodity is a random variable but the quantity produced is not. A utility function with CARA preferences defined by parameter α may be expressed as a mean-variance utility function as follows:

$$\tilde{Y} = \bar{Y} + \frac{1}{2} \alpha V(\tilde{Y}) \quad (2)$$

that is to say, certainty-equivalent income equals expected income minus the variance of income times one half the CARA parameter. The variance of income will be derived by application of the law of sums and products of random variables to the variance of (1), and involves several covariance terms between the different commodity prices, the loan rate and the CCP:

$$\begin{aligned} V(\tilde{Y}) = & \sum_i Q_i^2 V(\tilde{P}_i) + \sum_i Q_i^0{}^2 V(CCP_i(\tilde{P}_i)) + \sum_i Q_i^0{}^2 V(LR_i(\tilde{P}_i)) \\ & + \sum_i \sum_{j \neq i} Q_i Q_j COV(\tilde{P}_i, \tilde{P}_j) + \sum_i \sum_{j \neq i} Q_i Q_j COV(LR_i(\tilde{P}_i), LR_j(\tilde{P}_j)) \\ & + \sum_i \sum_{j \neq i} Q_i^0 Q_j^0 COV(CCP_i(\tilde{P}_i), CCP_j(\tilde{P}_j)) + 2 \sum_i \sum_j Q_i Q_j COV(\tilde{P}_i, LR_j(\tilde{P}_j)) \\ & + 2 \sum_i \sum_j Q_i^0 Q_j COV(CCP_i(\tilde{P}_i), LR_j(\tilde{P}_j)) + 2 \sum_i \sum_j Q_i Q_j^0 COV(\tilde{P}_i, CCP_j(\tilde{P}_j)) \end{aligned} \quad (3)$$

With the variance defined, the first order condition with respect to Q_i is found by taking the derivative of the certainty-equivalent utility function (2) after substituting (3) and cleaning up terms:

$$\begin{aligned} \frac{\partial \tilde{Y}}{\partial Q_i} & = P_i - C'(Q_i) \\ & - \alpha \left[\underbrace{\sum_j \{Q_j [COV(\tilde{P}_i, \tilde{P}_j) + COV(LR_i, LR_j) + COV(\tilde{P}_i, LR_j)] + Q_j^0 [COV(\tilde{P}_i, CCP_j) + COV(CCP_i, LR_j)]\}}_{\phi} \right] \end{aligned} \quad (4)$$

The risk effects can be characterised as an add wedge in the risk-free price = marginal cost condition. The underlined term in (4), ϕ , contains all the relevant variance and covariance terms multiplied by the CARA parameter. Taking a closer look at the components of ϕ indicates that a higher covariance in prices, indicating higher variability of market revenue, reduces optimal quantity produced. The loan rate potentially adds to that variability by adding a revenue stream with its own covariance, $Cov(LR,LR)$, that is counteracted by the negative – by design – covariance of the loan rate with prices, $Cov(P,LR)$. Similarly with the CCP, its negative covariance with prices reduces overall variability, while the covariance term $Cov(CCP,LR)$ is potentially positive. Covariance terms

involving the CCP are multiplied by base area, while other terms are multiplied by the current output of the commodity with respect to which the covariance is taken. The producer responds to lower overall variability with greater production. This is the essence of risk aversion – lower variability is equivalent to a higher price. In general for a risk averse firm under price uncertainty $C'(Q) > E(P)$ and output is less than in the case of certain prices.

Treating the risk effects ϕ as a simple price premium related to price variability provides a straightforward means of including these effects in the PEM. By calculating the variance and covariance terms to determine an explicit value for ϕ , the model can be recalibrated to include this element as part of the initial market equilibrium. In policy simulations, changes in the covariance terms that result from changes in policies will affect the incentive price for producers. Equation (4) yields a premium that may be calculated for each commodity in the model. The zero-profit condition in the model connects quantity supplied and price and is the natural insertion point for ϕ by simply using the incentive price implied by (4):

$$Q * (P - \phi) - \sum_i r_i X_i = 0 \quad (5)$$

The risk premium appears only in the supply side of the model – it does not impact consumer price.

To calculate ϕ an estimate of the value of the CARA parameter α is required. This parameter defines the relative importance of income and variance of income in the utility function, serving to scale the impact of risk according to the degree of risk aversion and the magnitude of income variation. Risk aversion can be quantified by the specification of a risk premium (the amount a risk-averse individual is willing to pay to avoid a fair gamble) or a probability premium (the amount above the actuarially fair amount the probability of winning a gamble must be to make the risk-averse individual indifferent between taking the gamble or not). The CARA parameter is a function of these measures of risk aversion (expressed in percent) and the standard deviation of returns – essentially the magnitude of the risk taken. Babcock, Choi and Feinerman (1993) provide the following relationship between the risk premium θ , the CARA parameter α , and the standard deviation of returns σ :

$$\theta = \frac{\ln \left[\frac{1}{2} (e^{-\alpha\sigma} + e^{\alpha\sigma}) \right]}{\alpha\sigma} \quad (6)$$

This equation has to be solved implicitly for α based on an assumed value of θ ; results for $\theta = 0.01$ are shown in Table D.1. Notice that the CARA parameter increases exponentially with the value of the risk premium – higher risk premiums means the variance of income is relatively more important in (2). The CARA parameter α for the utility function in (2) can be estimated based on the variation of returns to all the commodities in PEM and a chosen value of θ . In order to calculate the CARA parameter for each year the variation in returns for the previous 8 years was used. This required revenue data back to 1979 for early years in the study period.

The second component of ϕ that needs to be calculated is the set of covariances identified in (4). The covariances of prices are calculated on the basis of the prior eight years observations, while covariances between the LR, CCP, and prices are calculated using the observed distribution of prices and the specified loan rates and target prices for each commodity. That is, using the observed mean and the calculated standard deviation of

prices (based on last 8 years observations) for each year, and assuming a normal distribution, a series of 3 000 prices were drawn, and the implied LR and CCP payments calculated.¹ The covariances between these payments and prices are then calculated using these 3 000 synthetic observations.

Table D.1. **CARA parameters for 1% risk premium ($\theta = 0.01$), 1986-2008**

	CARA Parameter α	Standard Deviation of Revenue σ
1986	0.00000378	5 287.0
1987	0.00000380	5 270.1
1988	0.00000434	4 605.7
1989	0.00000413	4 838.7
1990	0.00000367	5 449.8
1991	0.00000364	5 489.2
1992	0.00000309	6 475.1
1993	0.00000319	6 275.2
1994	0.00000356	5 622.8
1995	0.00000335	5 971.1
1996	0.00000287	6 959.1
1997	0.00000278	7 190.2
1998	0.00000290	6 908.1
1999	0.00000347	5 765.3
2000	0.00000371	5 384.3
2001	0.00000584	3 422.1
2002	0.00000599	3 339.0
2003	0.00000323	6 200.3
2004	0.00000231	8 642.4
2005	0.00000203	9 851.6
2006	0.00000178	11 237.1
2007	0.00000078	25 533.1
2008	0.00000066	30 476.4

Source: OECD, PSE Database, own calculations.

Observed prices and payment rates are not used in this calculation as for many commodities and years, no CCP payments have been made, so a calculation based on observed values would yield a covariance of zero, indicating the programme has no impact on producers. This does not correspond with the fact that the payment has a risk-reducing effect that provides a value to producers. Consider farmers with base in wheat; while they have never received a CCP payment on the basis of wheat price, they would not be indifferent to the elimination of the CCP. The insurance effect of the programme remains valuable to them. The model therefore relies on expected values for the programme, rather than observed values that are contingent on the particular price draws observed by history.

Milk and beef do not receive CCP or LR payments, so the covariance of these programmes with respect to these commodities is zero. These covariances and the estimate of α , combined with information on base acres and production are sufficient to calculate ϕ and calibrate the model using (5). Values for ϕ can be negative when there exists a natural hedge between commodity prices that have negative covariances (Table D.3). This is true for milk and beef for some years in the study period, as livestock prices can move in the opposite direction from crop prices. The prices of the crops in PEM tend to move

Table D.2. Covariance matrices, 2008

Cov(Pi,Pj)	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef	Cov(LRi,LRj)	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef
Wheat	3 133	1 875	3 771	4 749	2 393	12 389	Wheat	0.8	0.6	1.1	2.5	0	0
Coarse grains	1 875	1 199	2 348	2 782	1 279	7 137	Coarse grains	0.6	1.4	2.5	2.3	0	0
Oilseeds	3 771	2 348	5 296	5 899	2 734	17 834	Oilseeds	1.1	2.5	19.5	15.2	0	0
Rice	4 749	2 782	5 899	8 322	3 589	25 567	Rice	2.5	2.3	15.2	73.9	0	0
Milk	2 393	1 279	2 734	3 589	3 310	12 388	Milk	0	0	0	0	0	0
Beef	12 389	7 137	17 834	25 567	12 388	112 193	Beef	0	0	0	0	0	0
Cov(Pi,LRj)	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef	Cov(LRj,CCPi)	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef
Wheat	-11.1	-14	-69.9	-180.4	0	0	Wheat	2.1	1.1	0.8	2.8	0	0
Coarse grains	-6.6	-10	-45.9	-104.0	0	0	Coarse grains	2.4	1.7	1.2	3.4	0	0
Oilseeds	-12.6	-18	-107.3	-223.9	0	0	Oilseeds	9.5	7.5	8.3	18.2	0	0
Rice	-15.7	-19	-107.7	-330.3	0	0	Rice	22.0	11.3	11.8	57.5	0	0
Milk	-8.1	-8	-45.3	-131.5	0	0	Milk	0	0	0	0	0	0
Beef	-35.2	-43	-335.9	-1 040.5	0	0	Beef	0	0	0	0	0	0
Cov(Pi,CCPi)	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef	Cov(CCPi,CCPi)	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef
Wheat	-102.5	-72.3	-62.5	-333.1	0	0	Wheat	16.7	9.2	6.4	26.7	0	0
Coarse grains	-61.7	-47.7	-40.1	-195.4	0	0	Coarse grains	9.2	8.0	5.1	16.8	0	0
Oilseeds	-121.7	-92.2	-92.1	-412.0	0	0	Oilseeds	6.4	5.1	7.3	14.6	0	0
Rice	-152.8	-104.8	-96.5	-578.3	0	0	Rice	26.7	16.8	14.6	103.7	0	0
Milk	-77.6	-46.8	-41.9	-254.6	0	0	Milk	0	0	0	0	0	0
Beef	-384.0	-256.7	-287.8	-1 767.1	0	0	Beef	0	0	0	0	0	0

Source: OECD, PSE/CSE Database, own calculations.

strongly together. The major component of ϕ comes from the covariance of prices – the covariances introduced by the loan rate and CCP are relatively small and make up a correspondingly small part of ϕ .

As the model is recalibrated to include ϕ , simulations related to the risk effects of programmes can be made by changing exogenously the values of the covariance terms shown in Table D.2. Setting the policy-related covariances to zero for example will eliminate any risk reducing effects of these policies, increasing the variance of returns as expressed by ϕ and thus lowering the incentive price for the producer. The loan rate and CCP programmes have two components in the model. In addition to the risk effect, there is also a direct effect when a payment is made that generates a budgetary transfer to producers. A policy simulation that reduces or eliminates these programmes would shift both of these elements. For example, the risk effects shown in Figure 2.14, Chapter 2, are calculated by comparing a “with risk effect” scenario where the budgetary transfer and all covariances related to the loan rate and CCP programme are set to zero with a “no risk effect” scenario where only the budgetary payment is eliminated.

Table D.3. **Price premium ϕ as used in PEM**
USD/tonne; % of price

	Wheat	Coarse grains	Oilseeds	Rice	Milk	Beef
1986	34.33 32.1%	176.49 246.0%	57.96 32.1%	10.12 6.2%	12.49 4.5%	87.83 4.6%
1987	33.25 31.9%	149.56 177.6%	58.68 27.1%	9.29 4.7%	18.63 6.7%	62.99 2.8%
1988	22.23 15.6%	71.39 66.9%	38.34 14.1%	4.87 3.0%	13.57 5.0%	42.44 1.7%
1989	32.80 23.5%	132.39 139.7%	54.82 26.2%	5.67 3.1%	16.39 5.5%	57.04 2.2%
1990	35.22 35.8%	127.47 140.1%	49.74 23.5%	4.65 2.6%	16.70 5.5%	66.90 2.3%
1991	17.42 15.7%	75.64 81.1%	25.91 12.6%	3.83 2.1%	7.94 2.9%	96.04 3.3%
1992	20.43 17.1%	86.91 106.4%	26.82 13.1%	3.54 2.1%	6.67 2.3%	95.33 3.5%
1993	19.97 16.6%	58.14 59.4%	19.95 8.5%	3.52 1.7%	5.95 2.1%	77.44 2.7%
1994	9.83 7.7%	37.84 42.4%	11.33 5.6%	0.41 0.2%	1.12 0.4%	25.20 1.0%
1995	9.93 5.9%	33.63 26.3%	11.84 4.8%	1.71 0.8%	-2.18 -0.8%	-10.10 -0.4%
1996	17.03 10.8%	52.38 49.3%	20.48 7.6%	3.09 1.4%	6.11 1.9%	-18.70 -0.8%
1997	19.94 16.0%	52.25 54.3%	26.12 11.0%	3.41 1.6%	7.06 2.4%	-19.32 -0.8%
1998	27.99 26.7%	77.77 94.2%	38.85 19.6%	2.91 1.5%	-6.70 -2.0%	-4.36 -0.2%
1999	34.76 32.6%	109.98 133.7%	50.47 24.1%	5.87 3.3%	-16.58 -5.2%	2.62 0.1%
2000	45.12 40.9%	148.26 175.9%	70.02 32.7%	7.30 3.7%	-7.20 -2.6%	-1.22 0.0%
2001	64.51 61.0%	220.73 266.0%	108.74 52.6%	11.71 6.8%	-9.96 -2.9%	-27.82 -1.0%
2002	40.97 31.2%	142.47 154.7%	99.12 48.7%	8.93 5.2%	-4.08 -1.5%	-26.42 -1.0%
2003	23.23 18.4%	61.03 63.4%	66.57 24.7%	3.38 1.4%	-5.46 -1.8%	37.65 1.2%
2004	12.19 9.6%	30.71 33.7%	53.77 25.1%	2.35 1.3%	0.08 0.0%	57.31 1.8%
2005	11.25 8.9%	15.76 16.7%	44.05 21.1%	2.81 1.6%	8.01 2.4%	69.10 2.1%
2006	15.62 10.0%	47.92 39.9%	47.45 20.0%	5.14 2.3%	3.84 1.3%	73.16 2.3%
2007	43.22 18.1%	177.48 107.2%	82.90 22.3%	8.84 3.1%	63.42 15.0%	59.26 1.7%
2008	65.94 26.4%	190.67 123.8%	99.66 29.1%	13.51 3.7%	71.22 17.6%	55.39 1.6%

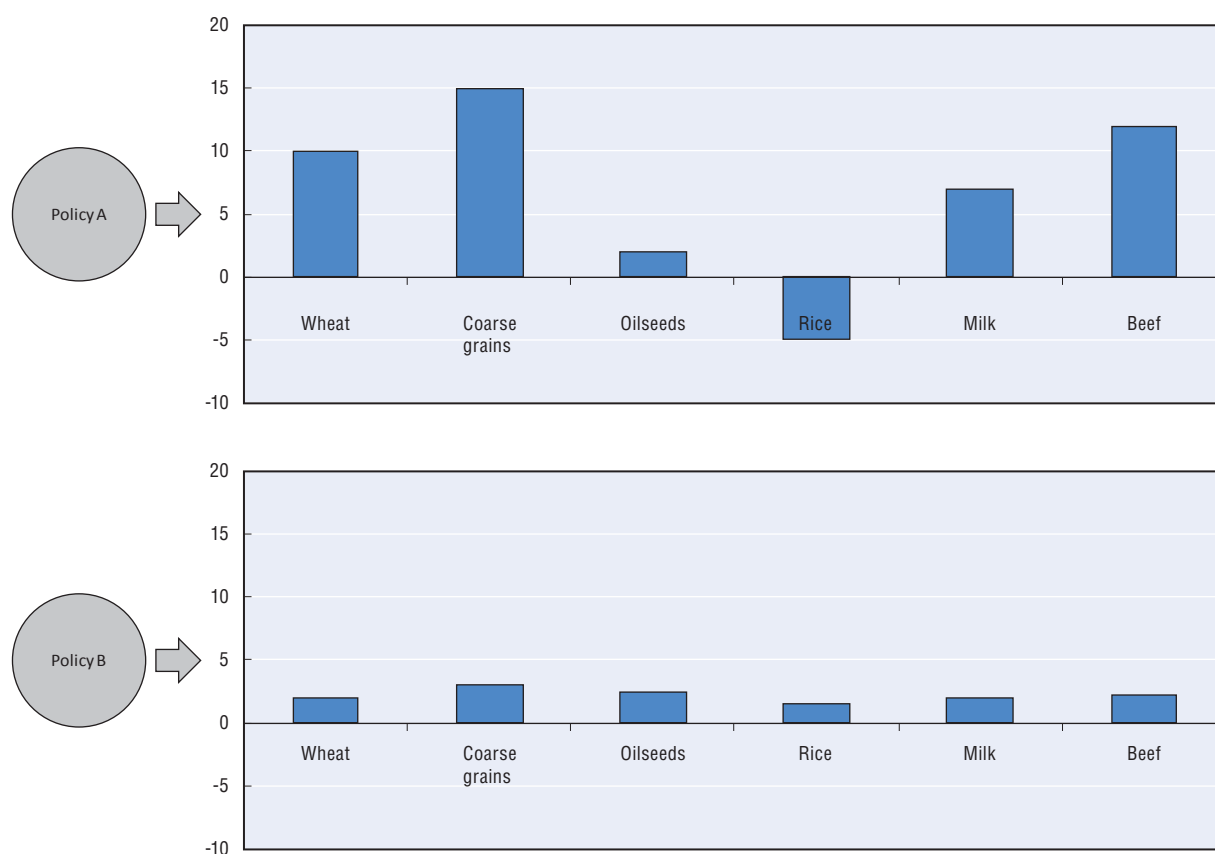
Source: OECD, PSE/CSE Database, own calculations.

D.2. Calculation of indices of support

Support indices used in the report, termed iso-production, iso-trade, or iso-income, are measures of the impact of the entire policy set on those outcomes. These are calculated by finding the level of MPS support that generates the same impact on the outcome of interest as does the existing policy set. This level of MPS serves as an index measuring the impact of the policy set on this outcome.

Consider two policies, A and B, which have different impacts on production as estimated by the model (Figure D.1). The different impacts will have to do with the level of support provided by each policy and how they are implemented. For example, Policy A may be deficiency payments offered to different commodities at different rates. Policy B may be a broad payment to all farms, perhaps not requiring production. How do we compare the effects of these two policies? Policy A has a generally larger impact, but not always, and in some cases may have a negative impact. Policy B has a generally smaller but more consistent impact.

Figure D.1. **Hypothetical impacts of two policies**



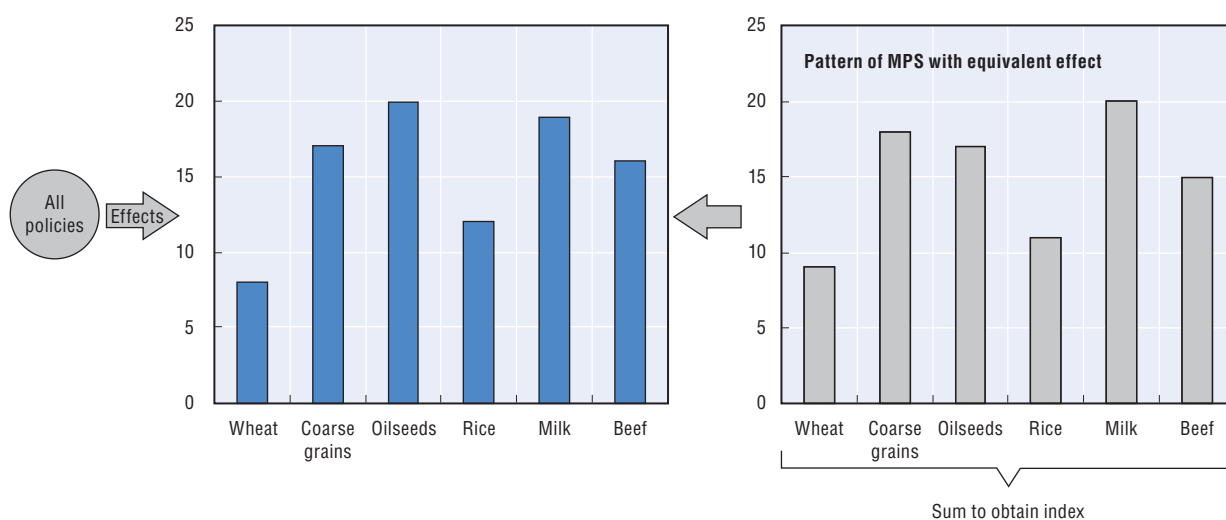
Formal comparison requires a way to describe the patterns of impact shown in Figure D.1 in a way that is consistent for all years and all countries. This may be done by choosing another policy to become a basis for comparison, and apply it such that it reproduces the same pattern of impact as for Policy A. Specifically, the amount of MPS is found that, when applied to wheat will have the same production impact on wheat as does

Policy A, the amount of MPS for coarse grains, and so on. This yields a quantity of MPS for each commodity such that, if they were applied in the model, would result in the same pattern of production changes as was the case for Policy A. Importantly, this does not change how Policy A is represented in the model nor its effect – it is simply a means to characterise the result of the policy. If this process is repeated for Policy B, then the amount of MPS required to reproduce its impact *versus* that for Policy A becomes a way of comparing the two policies.

Now imagine that Policy A, instead of being a single policy, represents the entire policy set in the country, and the impacts shown in Figure D.1 show the net impact of all the policies operating together. The exact same procedure may be done, finding the level of MPS for each commodity such that the same overall result is obtained. Simply summing up the amount of MPS for each commodity yields a total level of MPS that serves as a measure of the impact of the policy set (Figure D.2).

The key analytical questions motivating this analysis and guiding the setup of simulation experiments is “*how have policies changed over time?*” and “*what has been the effect of these changes?*”. This approach of finding a level of MPS that represents in some way the impact of the policy set is a way to answer these questions. However, in order to answer these questions, one must first identify what is the “policy effect” that is being measured. The example above discussed the production impact, but one could choose as well trade, welfare or other possible impacts. In each case, the pattern and size of impact will be different, and therefore so will the level of MPS that reproduces it. There is no level of MPS that can replicate all impacts at the same time, so this process must be repeated for each policy indicator of interest. Here, three indicators are produced, one based on net trade, one on production and one on farm income, called respectively: *Iso-trade*, *Iso-production* and *Iso-farm income*.

Figure D.2. **Hypothetical policy set**



How is the value of this index calculated in practice? As a first step, either the volume of production, value of trade, or farm income from policy is held fixed in the model. In the second step, the rates of market support for each commodity are required to adjust in order to hold constant whatever was chosen in the first step. That is, if one were to “take away”

a little support of one kind in the model, the model will “add back” enough MPS to hold constant whatever was chosen in the first step. The third step is to impose a policy ‘shock’ on the model eliminating the entire policy set. Now, as all support is removed in this shock, the MPS in the model will adjust to hold fixed the policy outcome of interest. How much MPS must change serves as the measure of the effect of the policy set, the iso-index.² While the result is precisely an index of effect, it can also be interpreted as a “composition adjusted” PSE, as shall be seen below.

When expressed as a percentage of the level of the PSE, the index can be interpreted as measuring the production-neutrality of the PSE, or its efficiency in transferring income. Taking the case of transfer efficiency for example, if the index indicates that it requires 200% of the level of the PSE in MPS to maintain the same level of farm income, this means that the current policy set is twice as effective as MPS in transferring income to producers. A smaller number indicates lower transfer efficiency. A value of 100% would mean that the current policy set and MPS alone are equally efficient at transferring income. Equally for production distortion, if the index is 50% of the PSE, this means the current policy set is only half as distorting as MPS.

Notes

1. The standard deviation of prices was calculated using the previous eight years’ data, but the mean price was calculated using the past three years’ data, under the assumption that farmers do not use prices in the far past to form expectations.
2. In the case of production and trade, the pattern of production and trade for each commodity must be the same before and after the policy shock. Farm income in the model accrues from returns to several different inputs that are owned by the household. In order to hold constant farm income, equations representing the change in producer surplus for all these elements are introduced, and their total for each commodity is held constant. Thus the distribution of overall farm income by commodity is maintained, but the distribution of the various *sources* of income may change.

ANNEX E

Tables

Table E.1. **Agricultural value added and other economic indicators, 1985-2009**

USD billion

Item	1985	1990	2000	2007	2008	2009	Average 1985-1990	Average 1995-2000	Average 2002-09
Value of agricultural sector production	153.4	188.5	220.4	326.5	364.9	322.7	163.7	219.4	289.2
Value of crop production	73.7	83.2	94.8	150.9	182.5	164.2	72.6	102.3	132.9
Food grains	8.9	7.5	6.5	13.4	20.7	14.5	7.3	9.0	11.2
Feed crops	22.3	18.7	20.5	42.3	62.0	49.7	17.3	23.6	35.5
Cotton	3.7	5.5	2.9	6.5	5.7	3.3	4.4	5.6	5.3
Oil crops	12.4	12.3	13.5	24.6	31.2	31.7	12.0	16.0	21.9
Fruits and tree nuts	6.9	9.4	12.4	18.5	18.9	17.4	8.3	12.0	16.4
Vegetables	8.6	11.3	15.5	19.3	20.4	21.0	10.0	14.9	18.3
All other crops	11.1	15.6	21.0	25.3	24.2	26.0	12.8	19.8	23.9
Value of livestock production	69.0	90.0	99.1	138.5	139.7	117.4	77.9	94.1	120.5
Meat animals	38.7	51.1	53.0	65.1	64.7	57.2	44.4	46.8	60.3
Cattle and calves	29.8	39.4	40.8	49.7	49.5	50.2	34.2	40.8	47.3
Dairy products	18.1	20.2	20.6	35.5	34.8	23.9	18.4	21.9	26.7
Poultry and eggs	11.3	15.3	21.9	33.1	36.8	32.6	13.2	21.9	29.0
Revenues from services and forestry	10.7	15.3	26.5	37.1	42.6	41.1	13.0	26.5	40.3
Purchased inputs	73.5	92.2	121.8	183.4	201.4	186.0	80.8	116.5	157.4
Farm origin	29.3	39.5	47.9	73.4	79.5	76.7	34.5	44.9	63.4
Feed purchased	16.9	20.4	24.5	41.9	46.9	43.4	18.9	24.9	34.2
Seed purchased	3.1	4.5	7.5	12.6	15.1	17.2	3.8	6.7	11.8
Manufactured inputs	20.2	22.0	28.7	46.3	55.0	44.2	19.7	28.0	38.4
Fertilisers and lime	7.5	8.2	10.0	17.7	22.5	16.3	7.5	10.4	14.2
Pesticides	4.3	5.4	8.5	10.5	11.7	12.1	4.6	8.6	9.7
Petroleum fuel and oils	6.4	5.8	7.2	13.8	16.2	11.1	5.3	6.0	10.5
Electricity	1.9	2.6	3.0	4.3	4.5	4.7	2.2	3.0	3.9
Other purchased inputs	24.1	30.7	45.2	63.7	66.9	65.0	26.6	43.6	55.6
Contract labor	1.5	1.6	2.7	4.4	4.7	4.8	1.3	2.4	3.6
Gross value added	82.8	99.3	114.4	144.1	164.4	137.4	89.3	109.0	137.4
Net value added	63.3	81.2	94.3	117.0	135.7	108.4	71.3	89.5	112.2
Net farm income	28.5	46.3	50.6	70.9	87.1	57.0	38.3	49.2	67.3
<i>Other statistics of general interest</i>									
Cash receipts for all crops	73.9	80.2	92.4	149.9	183.1	163.6	72.0	100.9	132.5
Cash receipts for all livestock and products	70.1	89.1	99.6	138.6	141.1	118.4	78.3	94.4	120.6
Cash receipts for all commodities	144.0	169.3	192.0	288.5	324.2	282.1	150.4	195.3	253.0
Gross farm income	161.1	197.8	243.6	338.4	377.1	335.2	175.5	232.6	304.1
Production expenses	132.6	151.5	193.1	267.5	290	278.1	137.2	183.4	234.3
Farm equity	603.8	709.5	1 039.3	1 841.2	1 766.6	1 704.9	640.0	916.8	1 571.4
Farm debt-asset ratio	22.2	15.6	13.6	10.4	11.9	12.3	18.3	14.7	11.5

Note: Data are on a calendar year basis. The value of production for sector total includes revenues from services and forestry.
Source: OECD calculations based on ERS, USDA, "United States and State Farm Income Data".

Table E.2. **Leading exporters and importers of agricultural products**

Exporters	Shares (%)				Importers	Shares (%)			
	1980	1990	2000	2008		1980	1990	2000	2008
European Union 27			41.8	42.2	European Union 27			42.4	45.3
Extra-EU27 exports			10.1	9.5	Extra-EU27 imports			13.2	12.2
United States	17.0	14.3	12.9	10.4	United States	8.7	9.0	11.5	8.2
Canada	5.0	5.4	6.3	4.0	Japan	9.6	11.5	10.4	5.7
Brazil	3.4	2.4	2.8	4.6	China	2.1	1.8	3.3	6.1
China	1.5	2.4	3.0	3.2	Canada	1.8	2.0	2.5	2.2

Source: WTO, *International Trade Statistics* 2009, Table II.15.

Table E.3. **Agricultural Gross Domestic Product and employment, 1985-2008**

	GDP (USD billion) ¹	Total farm employment ('000s)	Self-employed and unpaid farm family workers ('000s)	Hired farm-workers ('000s)	Share in total GDP (%)	Share in total employment (%)
1985	77	2 760	1 753	1 007	1.8	2.8
1986	74	2 693	1 740	953	1.7	2.7
1987	80	2 681	1 717	964	1.7	2.6
1988	80	2 727	1 725	1 002	1.6	2.6
1989	93	2 637	1 709	928	1.7	2.4
1990	97	2 568	1 649	919	1.7	2.3
1991	89	2 591	1 682	909	1.5	2.4
1992	100	2 505	1 640	865	1.6	2.3
1993	93	2 367	1 510	857	1.4	2.1
1994	106	2 613	1 774	839	1.5	2.3
1995	93	2 597	1 730	867	1.3	2.2
1996	114	2 433	1 602	831	1.5	2.0
1997	111	2 432	1 557	875	1.3	2.0
1998	102	2 284	1 405	879	1.2	1.8
1999	94	2 239	1 326	913	1.0	1.7
2000	98	2 142	1 249	893	1.0	1.6
2001	98	2 081	1 211	870	1.0	1.6
2002	95	2 113	1 243	870	0.9	1.6
2003	114	2 067	1 181	886	0.8	1.6
2004	142	2 013	1 188	825	1.0	1.5
2005	129	1 988	1 208	780	0.8	1.5
2006	125	1 900	1 148	752	0.7	1.4
2007	161	1 829	1 082	747	0.7	1.3
2008		1 982	1 268	714		

1. Includes forestry, fishing and hunting.

Source: OECD calculations based on ERS, USDA; US Bureau of Labor Statistics.

Table E.4. **Characteristics of farm and farm operators, 2007**

Item	Rural residence farms			Intermediate farms		Commercial farms		Non-family farms	All farms
	Limited resource	Retirement	Residential/lifestyle	Farming occupation/lower sales	Farming occupation/higher sales	Large family	Very large family		
Number of farms (1 000s)	309	456	802	259	100	87	101	91	2 205
Share of farms (%)	14	21	36	12	5	4	5	4	100
Land in farms (million acres)	42	90	121	87	104	123	211	143	922
Average size (acres)	137	196	151	337	1 040	1 420	2 085	1 572	418
Total value of production (USD bill.)	3	7	11	6	17	31	157	66	297
Average per farm (1 000s USD)	9	17	14	27	176	373	1 577	732	138
Share of value of production (%)	1	2	4	2	6	10	53	22	100
Distribution of farms by size (1 000s)									
less 10 000	237	302	579	117	0	0	0	37	1 272
10 000-49 999	60	115	162	84	0	0	0	16	438
50 000-99 999	12	23	35	53	0	0	0	7	129
100 000-249 999	1	15	25	5	94	0	0	9	149
250 000-499 999	0	0	1	0	6	82	0	7	96
500 000-or more	0	0	0	0	0	5	101	15	121
Farms by specialisation									
Cattle and calves	99	162	264	108	54	42	45	24	798
Grains and oilseeds	33	58	106	65	68	63	65	23	480
Fruits and nuts	12	27	35	14	5	4	6	10	113
Sheeps and goats	23	20	51	16	4	2	2	3	121
Poultry and eggs	23	20	55	18	5	6	19	5	149
Dairy	5	4	7	8	18	13	12	3	70
Nursery, greenhouse	7	7	14	8	4	3	4	6	51
Principal operator characteristics									
Farming as primary occupation (%)	50	57	0	100	100	90	91	57	45
Place of residence (%)	78	77	75	80	85	84	79	55	77
Land owned (million acres)	36	91	104	65	59	64	102	127	646

Source: OECD calculations based on ARMS, ERS, USDA.

Table E.5. **Changes in the size distribution of farms and production, 1982-2007**

Farm sales class	1982	2007	1982	2007
			Shares (%)	
Distribution of farms ('000s)				
Less USD 1 000	254	689	11.3	31.2
USD 1 000-9 999	700	630	31.2	28.6
USD 10 000-49 999	602	403	26.9	18.3
USD 50 000- 99 999	253	125	11.3	5.7
USD 100 000-249 000	283	148	12.6	6.7
USD 250 000-499 999	98	93	4.4	4.2
USD 500 000-999 999	35	61	1.5	2.8
USD 1 000 000 or more	16	56	0.7	2.5
All farms	2 241	2 205	100.0	100.0
Distribution of value of production (2007 USD million)				
Less USD 1 000	86	84	0.0	0.0
USD 1 000-9 999	3 282	2 621	1.7	0.9
USD 10 000-49 999	14 640	9 441	7.7	3.2
USD 50 000- 99 999	18 256	8 961	9.7	3.0
USD 100 000-249 000	44 326	24 213	23.4	8.1
USD 250 000-499 999	33 431	33 410	17.7	11.2
USD 500 000-999 999	23 308	42 691	12.3	14.4
USD 1 000 000 or more	51 822	175 800	27.4	59.1
All farms	189 151	297 220	100.0	100.0

Source: *The Census of Agriculture, 2007*, as adjusted by ERS/USDA for changes in agricultural prices using the Producer Price Index for farm products.

Table E.6. **Income of farm operator households, by farm type and size class, 2004-08**

Item	Year					Average 2004-08
	2004	2005	2006	2007	2008	
Number of family farms						
Number of family farms ('000s)						
All farms	2 061	2 034	2 022	2 143	2 130	2 078
Rural residence farms						
Retirement	419	455	403	404	410	418
Residential/lifestyle	860	874	895	990	927	909
Intermediate						
Farming occupation/lower-sales	490	416	440	435	473	451
Farming occupation/higher-sales	134	134	126	111	110	123
Commercial						
Large	86	84	86	94	94	89
Very large	72	71	72	110	116	88
Less than USD 10 000	1 183	1 169	1 174	1 267	1 268	1 212
USD 10 000 to USD 249 999	720	710	690	673	652	689
Farm income						
Dollars per farm household ('000s)						
All farms	13	13	8	10	9	11
Rural residence farms						
Retirement	2	1	0	-3	-3	-1
Residential/lifestyle	-1	-3	-6	-7	-8	-5
Intermediate						
Farming occupation/lower-sales	2	0	-1	-6	-6	-2
Farming occupation/higher-sales	33	36	24	25	23	28
Commercial						
Large	77	81	42	64	58	64
Very large	223	251	203	217	196	218
Less than USD 10 000	-3	-4	-6	-8	-8	-6
USD 10 000 to USD 249 999	12	11	6	3	2	7
Off-farm income						
Dollars per farm household ('000s)						
All farms	67	67	73	77	70	71
Rural residence farms						
Retirement	50	53	57	57	57	55
Residential/lifestyle	95	90	91	108	94	96
Intermediate						
Farming occupation/lower-sales	49	53	63	50	50	53
Farming occupation/higher-sales	36	36	42	47	43	41
Commercial						
Large	45	36	60	47	41	46
Very large	47	48	60	43	54	51
Less than USD 10 000	72	74	77	81	73	75
USD 10 000 to USD 249 999	63	62	68	80	71	69
Total income						
Dollars per farm household ('000s)						
All farms	81	80	80	88	79	82
Rural residence farms						
Retirement	52	54	57	54	54	54
Residential/lifestyle	94	87	84	101	86	90
Intermediate						
Farming occupation/lower-sales	51	53	62	44	44	51
Farming occupation/higher-sales	69	72	67	73	66	69
Commercial						
Large	122	117	102	111	99	110
Very large	270	299	264	261	250	269
Less than USD 10 000	70	70	71	73	65	70
USD 10 000 to USD 249 999	75	73	73	83	72	75

Source: OECD calculations based on ARMS, ERS, USDA.

Table E.7. **Share of value of production by commodity and sales class size of farms, 1989, 2002 and 2007**

%

Commodity and year	Farm size by sales (USD)			
	10 000-99 999	100 000-249 000	250 000-499 999	500 000 or more
Grains and oilseeds				
1989	27.9	35.7	22.0	10.9
2002	17.2	28.7	26.6	24.4
2007	7.4	14.3	21.4	56.6
Cotton				
1989	6.3	18.9	25.1	40.7
2002	7.6	8.1	24.5	55.5
2007	2.4	7.6	15.2	74.8
Cattle				
1989	25.7	14.6	10.6	36.8
2002	22.2	18.0	15.3	27.2
2007	10.8	8.1	8.4	70.5
Pigs				
1989	23.7	32.4	24.6	14.0
2002	2.8	7.7	12.0	64.2
2007	0.9	2.1	5.2	80.0
Dairy				
1989	24.1	32.7	14.7	25.7
2002	6.0	22.0	15.0	54.0
2007	1.8	8.9	11.5	67.1
Poultry				
1989	2.8	8.5	42.6	40.2
2002	2.0	10.4	13.3	67.7
2007	0.2	1.0	4.5	94.2

Sources: OECD calculations based on ARMS, ERS, USDA; *The Census of Agriculture, 2007*.

Table E.8. **Farm output, input and productivity indexes, 1985-2008**

	Farm output			Selected indexes of input use				Productivity indicators	
	Total	Livestock and products	Crops	Total farm input	Capital input	Labour input	Intermediate input	Farm output per unit of total factor input	Farm output per unit of labour input
1985	87	85	88	103	119	105	93	84	83
1986	84	86	83	101	115	106	91	83	79
1987	85	87	83	101	112	108	92	84	78
1988	81	88	73	100	109	110	92	81	73
1989	86	88	84	99	107	106	91	87	81
1990	90	90	89	99	106	99	96	91	91
1991	90	92	89	100	105	100	97	91	91
1992	96	95	97	97	104	97	94	98	98
1993	91	96	88	99	103	93	98	93	98
1994	102	101	104	102	102	107	101	99	95
1995	97	102	92	105	101	108	105	92	89
1996	100	100	100	100	100	100	100	100	100
1997	105	103	105	103	100	99	105	102	106
1998	105	104	104	104	99	94	110	101	111
1999	107	108	105	105	99	93	113	102	115
2000	107	107	107	101	98	84	109	107	128
2001	108	107	106	100	98	84	108	108	128
2002	106	109	102	99	98	85	106	106	124
2003	108	110	106	98	97	82	105	110	131
2004	113	108	116	96	97	79	103	117	142
2005	111	110	112	97	98	79	106	114	141
2006	112	113	111	97	98	74	107	116	152
2007	114	113	115	102	97	76	116	112	151
2008	113	113	113	95	97	73	104	119	154

Note: 1996 = 100.

Source: OECD calculations based on data from ERS, USDA.

Table E.9. **Distribution of government payments by selected criteria, 2007**

Item	Percent of all farms	Percent of farms receiving payments	Percent of all payments	Percent of gross cash income
Farms receiving payments	40.3	100.0	100.0	5.2
Farm type				
Rural residence farms	31.0	49.0	20.0	12.8
Intermediate farms	50.6	32.0	21.3	7.1
Commercial farms	73.7	18.0	58.7	4.0
Farm sales class (USD)				
Less 10 000	23.5	33.3	6.9	20.7
10 000-49 999	50.2	24.1	11.6	15.1
50 000-99 999	67.1	11.3	9.0	9.1
100 000-249 999	76.7	15.2	15.4	5.9
250 000-499 999	80.2	8.9	19.4	5.9
500 000-or more	75.3	4.3	15.4	5.1
Payment class (USD)				
Less than 25 000	38.2	91.5	44.2	4.2
25 000-49 999	100.0	4.8	16.7	4.4
50 000-74 999	100.0	2.0	11.9	7.6
75 000-99 999	100.0	0.7	6.2	6.6
100 000-149 999	100.0	0.6	6.8	8.8
150 000-or more	100.0	0.5	14.1	9.5
Income size classification (USD)				
No income or negative	46.0	8.1	14.6	6.7
Positive but less than 25 000	34.0	16.0	9.3	7.8
25 000-49 999	39.7	23.1	13.8	8.6
50 000-99 999	39.2	27.0	17.2	5.9
100 000-149 999	41.4	11.5	12.0	5.5
150 000-199 999	45.7	4.0	4.7	4.8
200 000 or more	50.1	7.6	23.1	3.7
Non-family farm	58.7	2.7	5.4	2.9
Farm type				
Cash grains	96.1	9.7	13.6	5.5
Cotton	99.0	0.8	6.7	11.4
High value crops	8.7	1.3	1.6	1.4
Dairy	79.5	6.3	4.8	1.4
Operator occupation				
Farm or ranch work	53.2	55.0	80.5	4.6
Work other than farming	30.1	34.9	14.2	8.9
Currently not in workforce	35.1	10.1	5.3	19.0

Source: OECD calculations based on the 2007 ARMS, ERS, USDA.

Table E.10. **Share of US agricultural commodity output exported, 1990-2007**
%

Commodity group	1990-94	1995-99	2000-04	2000	2004	2005	2006	2007
Total agriculture	25.7	24.9	24.5	24.6	24.0	22.5	24.1	25.2
Livestock ¹	5.5	6.1	6.1	6.1	5.3	5.5	5.8	7.2
Red meat	4.1	7.1	8.0	8.1	5.8	7.4	8.7	9.4
Poultry meat	7.4	15.5	14.9	15.5	13.7	14.4	14.3	15.7
Dairy products	3.5	1.4	1.3	1.3	1.3	1.3	1.3	2.6
Crops ²	30.4	29.1	28.8	28.8	28.3	26.2	28.3	29.6
Grains, food and feed	30.2	27.3	25.9	26.7	25.7	21.8	25.0	25.6
Oilseeds and products ³	24.8	26.7	27.4	27.4	24.5	26.2	23.8	27.9
Fruits and nuts	16.4	17.7	18.4	17.0	18.9	20.2	21.6	21
Vegetables	4.9	5.6	5.8	5.6	5.5	6.3	6.5	6.1
Other field crops ⁴	24.9	22.6	25.5	19.0	32.4	32.6	37.0	29

1. Includes eggs, animal fat and inedible animal products; excludes live animals, hides and skins.

2. Includes wine, beer and essential oils; excludes nursery products.

3. Includes flaxseed, maize oil, linseed meal and oil, and olive oil.

4. Includes cotton, sugar, tobacco and seeds.

Source: OECD calculations based on ERS, USDA; USDA's commodity yearbooks; *Foreign Agricultural Trade of the US*, www.ers.usda.gov/data/fatus and *Production, Supply, and Distribution Database*, www.fas.usda.gov/psd/.

Table E.11. **Agricultural exports, imports and trade balance, 1980-2008**

	Trade balance	Exports	Imports	Share in total exports	Share in total imports
	USD billion			%	
1985	9.1	29.0	20.0	13	6
1986	4.8	26.2	21.5	13	6
1987	8.3	28.7	20.4	12	5
1988	16.1	37.1	21.0	12	5
1989	18.3	40.1	21.9	12	5
1990	16.6	39.5	22.9	11	5
1991	16.5	39.4	22.9	10	5
1992	18.3	43.2	24.8	10	5
1993	17.7	43.0	25.1	10	4
1994	19.2	46.2	27.0	10	4
1995	26.0	56.3	30.3	10	4
1996	26.8	60.3	33.5	10	4
1997	21.0	57.2	36.1	9	4
1998	14.9	51.8	36.9	8	4
1999	10.7	48.4	37.7	8	4
2000	12.3	51.3	39.0	7	3
2001	14.3	53.7	39.4	8	3
2002	11.2	53.1	41.9	8	4
2003	12.0	59.4	47.4	9	4
2004	7.4	61.4	54.0	8	4
2005	3.9	63.2	59.3	8	4
2006	5.6	70.9	65.3	8	4
2007	18.0	89.9	71.9	9	4
2008	36.0	115.3	79.3	10	4

Source: OECD calculations based on data from ERS, USDA.

Table E.12. **US and world production and exports of selected commodities, 1995-2008**

Commodity	United States				World				Shares			
	1995	2000	2005	2008	1995	2000	2005	2008	1995	2000	2005	2008
	Metric tonnes million								%			
Production¹												
Wheat	59	61	57	68	538	581	620	682	11	10	9	10
Maize for grain	188	252	282	307	517	590	698	786	36	43	40	39
Soybeans	59	75	83	81	125	176	221	219	47	43	38	37
Rice, milled	5.6	5.9	7.1	6.5	371	398	418	441	2	1	2	2
Cotton ²	19.7	17.0	23.3	19.2	85.9	87.7	121.4	120.6	23	19	19	16
Exports⁴												
Wheat ⁵	33.8	28.0	27.4	26.5	99.2	104.0	113.9	130.6	34	27	24	20
Maize	52.8	48.3	56.1	44.0	64.7	76.4	82.6	76.1	82	63	68	58
Soybeans	23.1	27.1	25.6	32.9	31.9	53.9	63.8	74.1	72	50	40	45
Rice, milled basis	3.0	2.8	3.9	3.4	20.8	22.8	29.2	29.4	14	12	13	12
Cotton ³	9.4	6.8	14.4	13.7	28.4	27.1	35.0	38.4	33	25	41	36

1. Production years vary by commodity. In most cases, includes harvests from 1 July of the year shown through 30 June of the following year.
2. For production and trade years ending in year shown.
3. Million bales of 480 lb. net weight.
4. Trade years may vary by commodity. Wheat, maize and soybean data are for trade year beginning in year shown. Rice data are for calendar year.
5. Includes wheat flour on a grain equivalent.

Source: OECD calculations based on data from the Foreign Agricultural Service, USDA, www.fas.usda.gov/commodities.asp.

Table E.13. **Value of US agricultural exports by principal commodities, 1990-2008**

Commodity	Value (USD million)							Shares (%)			
	1990	1995	2000	2005	2006	2007	2008	1990	2000	2005	2008
Total agricultural exports	39 495	56 206	51 265	63 182	70 948	89 990	115 278	100.0	100.0	100.0	100.0
Animals and animal products ¹	6 636	10 863	11 600	12 226	13 497	17 188	21 831	16.8	22.6	19.4	18.9
Meat and meat products	2 558	4 519	5 276	4 299	5 185	6 122	8 783	6.5	10.3	6.8	7.6
Beef and veal	1 580	2 646	2 986	930	1 512	2 005	2 665	4.0	5.8	1.5	2.3
Poultry and poultry products	910	2 345	2 235	3 138	2 932	4 092	5 053	2.3	4.4	5.0	4.4
Dairy products	353	795	1 018	1 685	1 887	3 035	4 032	0.9	2.0	2.7	3.5
Grains and feeds ¹	14 386	18 632	13 620	16 364	19 142	27 896	36 952	36.4	26.6	25.9	32.0
Wheat and products	4 035	5 740	3 578	4 520	4 359	8 616	11 604	10.2	7.0	7.2	10.1
Maize	6 037	7 292	4 469	4 789	6 992	9 763	13 454	15.3	8.7	7.6	11.7
Fruits and preparations	2 007	2 660	2 743	3 468	3 760	4 155	4 841	5.1	5.4	5.5	4.2
Nuts and preparations	978	1 411	1 322	2 992	3 153	3 387	3 781	2.5	2.6	4.7	3.3
Vegetables and preparations ²	1 836	2 693	3 112	3 571	3 913	4 307	5 130	4.6	6.1	5.7	4.4
Oilseeds and products ¹	5 725	8 942	8 584	10 229	11 307	15 601	23 712	14.5	16.7	16.7	20.5
Soybeans	3 550	5 398	5 258	6 274	6 936	9 992	15 469	9.0	10.3	9.9	13.4
Vegetable oils and waxes	832	1 851	1 259	1 656	1 832	2 503	3 892	2.1	2.5	2.6	3.4
Tobacco, unmanufactured	1 441	1 397	1 204	990	1 141	1 208	1 238	3.6	2.3	1.6	1.1
Cotton, excluding linters	2 783	3 678	1 873	3 921	4 502	4 578	4 829	7.0	3.7	6.2	4.2
Other	3 702	5 929	7 207	9 421	10 533	11 671	13 125	9.4	14.1	14.9	11.4
Bulk commodities	19 739	25 624	15 272	18 642	22 392	29 143	39 766	50.0	45.6	29.8	29.5
High value commodities	19 755	30 582	35 993	44 539	48 556	60 849	75 511	50.0	54.4	70.2	70.5

1. Includes commodities not shown separately.
2. Includes pulses.

Source: OECD calculations based on data from ERS, USDA; FATUS, www.ers.usda.gov/data/fatus/ and USDA/FAS, US Trade Internet System, www.fas.usda.gov/ustrade.

Table E.14. **Agricultural trade indexes, 1985-2006**

%

	Import value	Import unit value	Import quantity	Export value	Export unit value	Export quantity
1985	55	111	49	60	79	75
1986	58	121	48	54	79	68
1987	56	116	48	60	72	83
1988	56	111	51	78	84	92
1989	59	105	56	85	89	96
1990	62	106	58	86	98	87
1991	62	103	60	83	96	86
1992	66	101	65	90	98	92
1993	67	96	69	89	98	90
1994	71	92	77	97	114	85
1995	79	103	76	118	109	107
1996	88	104	84	125	125	100
1997	95	103	92	116	124	93
1998	96	101	95	105	115	91
1999	98	100	97	95	96	98
2000	100	101	99	102	101	100
2001	101	98	102	102	101	100
2002	100	94	106	99	101	98
2003	119	110	108	112	113	98
2004	133	116	115	115	115	100
2005	135	114	118	116	118	98
2006	150	115	130	127	120	106

Note: 1999-2001 = 100.

Source: OECD calculations based on data from FAOSTAT.

Table E.15. US volume of agricultural exports and imports by principal commodities, 1990-2008

Commodity	1990	1995	2000	2005	2006	2007	2008
	Exports (metric tonnes)						
Fruit juices and wine ¹	7 703	10 688	14 356	13 982	14 438	14 470	14 977
Beef, pork, lamb, and poultry meats ²	1 451	3 723	4 935	4 343	4 617	5 103	6 574
Wheat, unmilled	27 384	32 317	27 568	27 040	23 208	32 991	30 066
Wheat products	863	1 142	844	313	281	448	389
Rice, paddy, milled	2 534	3 275	3 241	4 388	3 779	3 477	3 937
Feed grains	61 066	66 795	54 946	50 865	62 555	63 215	59 861
Feed grain products	1 430	2 018	2 062	3 442	4 153	4 002	1 478
Feeds and fodders ³	10 974	13 338	13 065	11 422	11 372	11 823	15 833
Fresh fruits and nuts	2 648	3 323	3 450	3 675	3 569	3 553	4 040
Fruit products	390	462	471	394	419	460	540
Vegetables, fresh	1 297	1 708	2 029	2 077	1 982	1 938	2 022
Vegetables, frozen and canned	529	892	1 112	1 086	1 150	1 261	1 603
Oilcake and meal	5 079	6 404	6 462	6 905	7 943	8 272	8 445
Oilseeds	15 820	23 596	28 017	26 462	29 373	31 077	35 097
Vegetable oils	1 226	2 532	2 043	1 937	2 222	2 539	2 900
Tobacco, unmanufactured	223	209	180	154	180	187	169
Cotton, excluding linters	1 696	2 039	1 485	3 405	3 507	3 258	3 011
Imports (metric tonnes)							
Fruit juices ¹	33 116	21 922	31 154	41 488	39 002	49 710	47 387
Wine	2 510	2 781	4 584	7 262	7 950	8 615	8 488
Malt beverages	10 382	13 251	23 464	29 947	34 356	34 749	33 667
Coffee, including products	1 214	989	1 370	1 307	1 359	1 393	1 393
Rubber and allied gums, crude	840	1 044	1 232	1 169	1 012	1 028	1 053
Beef, pork, lamb, and poultry meats ²	1 169	1 050	1 579	1 778	1 608	1 610	1 394
Grains ⁴	2 071	4 553	4 622	3 726	4 718	5 576	6 435
Biscuits, pasta, and noodles	300	489	711	1 001	1 033	1 084	1 038
Feeds and fodders ³	959	1 247	1 224	963	1 022	1 236	1 299
Fruits, nuts, and preparations ⁵	5 401	6 530	8 354	9 570	9 897	10 706	10 546
Vegetables, fresh or frozen	1 898	2 777	3 763	5 183	5 404	5 965	6 125
Tobacco, unmanufactured	173	190	216	233	249	243	220
Oilseeds and oilnuts	509	713	1 056	818	1 091	1 276	1 555
Vegetable oils and waxes	1 204	1 509	1 846	2 386	2 897	3 117	3 708
Oilcake and meal	316	805	1 254	1 541	1 663	1 716	1 964

1. Hectolitres.

2. Includes variety meats.

3. Excluding oil meal.

4. Includes wheat, maize, oats, barley, and rice.

5. Includes bananas and plantains.

Source: OECD calculations based on data from ERS, USDA and FATUS.

Table E.16. **Top 13 US agricultural export destinations**

Country	Value (USD million)							Shares (%)						
	1990	2000	2002	2005	2006	2007	2008	1990	2000	2002	2005	2006	2007	2008
Total	39 495	51 265	53 143	63 182	70 949	89 990	115 439	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Canada	4 214	7 643	8 662	10 618	11 951	14 062	16 240	10.7	14.9	16.3	16.8	16.8	15.6	14.1
Mexico	2 560	6 410	7 238	9 429	10 881	12 692	16 027	6.5	12.5	13.6	14.9	15.3	14.1	13.9
Japan	8 142	9 292	8 384	7 931	8 390	10 159	13 265	20.6	18.1	15.8	12.6	11.8	11.3	11.5
China	818	1 716	2 068	5 233	6 711	8 314	12 165	2.1	3.3	3.9	8.3	9.5	9.2	10.5
European Union 27	7 474	6 515	6 398	7 052	7 408	8 754	10 095	18.9	12.7	12.0	11.2	10.4	9.7	8.7
Korea	2 650	2 546	2 673	2 233	2 851	3 528	5 568	6.7	5.0	5.0	3.5	4.0	3.9	4.8
Chinese Taipei	1 663	1 996	1 966	2 301	2 477	3 097	3 419	4.2	3.9	3.7	3.6	3.5	3.4	3.0
Indonesia	301	668	810	958	1 102	1 542	2 230	0.8	1.3	1.5	1.5	1.6	1.7	1.9
Egypt	687	1 050	863	819	1 022	1 801	2 050	1.7	2.0	1.6	1.3	1.4	2.0	1.8
Russian Federation	n.a.	580	552	972	820	1 329	1 838	n.a.	1.1	1.0	1.5	1.2	1.5	1.6
Philippines	381	901	776	798	888	1 112	1 734	1.0	1.8	1.5	1.3	1.3	1.2	1.5
Hong Kong (China)	702	1 264	1 091	872	977	1 168	1 714	1.8	2.5	2.1	1.4	1.4	1.3	1.5
Turkey	226	658	675	1 062	1 030	1 496	1 704	0.6	1.3	1.3	1.7	1.5	1.7	1.5

Source: OECD calculations based on data from the Foreign Agricultural Service, USDA.

Table E.17. **Top 10 US export markets for selected commodities, 2008**

Maize		Wheat		Soybeans		Poultry meat	
(metric tonnes '000s)							
Total	53 879	Total¹	30 066	Total	33 894	Total	3 564
Japan	15 181	Japan	3 676	China	16 516	Russia	836
Mexico	9 153	Mexico	2 804	Mexico	3 552	Mexico	484
Korea	7 950	Nigeria	2 607	Japan	2 815	China	376
Chinese Taipei	3 245	Egypt	2 161	Chinese Taipei	1 886	Ukraine	179
Canada	2 644	Iraq	2 018	Germany	1 750	Canada	165
Colombia	2 567	Philippines	1 775	Indonesia	1 323	Cuba	146
Egypt	2 438	Iran	1 645	Egypt	772	Angola	106
Venezuela	1 142	Korea	1 321	Spain	657	Lithuania	90
Dominican Republic	1 042	Colombia	954	Netherlands	601	Hong Kong (China)	69
Israel	812	Indonesia	927	Turkey	497	Turkey	68
Rest of world	7 705	Rest of world	10 177	Rest of world	3 525	Rest of world	1 046

1. Un-milled.

Source: OECD calculations based on data from the Foreign Agricultural Service, USDA, www.fas.usda.gov/ustrade/USTExFatus.asp.

Table E.18. **US agricultural imports by selected commodities, 1990-2008**

Commodity	Values (USD million)					Shares (%)				
	1990	2000	2005	2007	2008	1990	2000	2005	2007	2008
Cattle, live	978	1 152	1 039	1 878	1 761	4.3	3.0	1.8	2.6	2.2
Beef and veal	1 872	2 399	3 651	3 285	3 057	8.2	6.2	6.2	4.6	3.8
Pork	938	997	1 281	1 162	1 060	4.1	2.6	2.2	1.6	1.3
Dairy products	891	1 671	2 686	2 883	3 138	3.9	4.3	4.5	4.0	3.9
Grains and feeds	1 188	3 075	4 527	6 422	8 260	5.2	7.9	7.6	8.9	10.3
Fruits and preparations	2 167	3 846	5 842	7 439	7 896	9.5	9.9	9.9	10.3	9.8
Vegetables and preparations ¹	1 979	3 958	6 410	7 713	8 314	8.6	10.2	10.8	10.7	10.3
Sugar and related products	1 213	1 555	2 494	2 592	2 967	5.3	4.0	4.2	3.6	3.7
Wine	917	2 207	3 762	4 638	4 635	4.0	5.7	6.3	6.4	5.8
Malt beverages	923	2 179	3 096	3 625	3 668	4.0	5.6	5.2	5.0	4.6
Oilseeds and products	952	1 847	2 998	4 329	6 767	4.2	4.7	5.1	6.0	8.4
Coffee and products	1 915	2 700	2 976	3 768	4 412	8.4	6.9	5.0	5.2	5.5
Cocoa and products	1 072	1 404	2 751	2 662	3 299	4.7	3.6	4.6	3.7	4.1
Rubber, crude natural	707	842	1 552	2 119	2 857	3.1	2.2	2.6	2.9	3.6
Total²	22 918	38 974	59 291	71 913	80 465	100	100	100	100	100

1. Includes pulses.

2. Includes other commodities not shown separately.

Source: OECD calculations based on data from ERS, USDA and FATUS.

Table E.19. **US agricultural imports by selected countries of origin**

Country	Value (USD million)							Distribution (%)					
	1990	1995	2000	2005	2006	2007	2008	1990	2000	2005	2006	2007	2008
Total	22 918	30 255	38 974	59 317	65 326	71 937	80 465	100.0	100.0	100.0	100.0	100.0	100.0
Canada	3 171	5 629	8 661	12 270	13 432	15 245	18 009	13.8	22.2	20.7	20.6	21.2	22.4
European Union 27	5 016	6 183	8 303	13 413	14 465	15 287	15 505	21.9	21.3	22.6	22.1	21.3	19.3
Mexico	2 614	3 835	5 077	8 331	9 391	10 169	10 900	11.4	13.0	14.0	14.4	14.1	13.5
China ¹	273	492	812	1 872	2 265	2 918	3 454	1.2	2.1	3.2	3.5	4.1	4.3
Brazil	1 563	1 154	1 144	1 975	2 231	2 644	2 616	6.8	2.9	3.3	3.4	3.7	3.3
Australia	1 174	850	1 592	2 421	2 487	2 632	2 424	5.1	4.1	4.1	3.8	3.7	3.0
Indonesia	683	1 421	998	1 702	2 042	2 081	2 816	3.0	2.6	2.9	3.1	2.9	3.5
Chile	481	547	1 026	1 521	1 777	1 841	2 049	2.1	2.6	2.6	2.7	2.6	2.5
New Zealand	855	759	1 132	1 712	1 669	1 734	1 828	3.7	2.9	2.9	2.6	2.4	2.3
Colombia	790	1 135	1 123	1 437	1 480	1 540	1 769	3.4	2.9	2.4	2.3	2.1	2.2
Thailand	470	902	779	1 094	1 330	1 507	1 917	2.0	2.0	1.8	2.0	2.1	2.4
India	285	444	826	923	1 042	1 164	1 603	1.2	2.1	1.6	1.6	1.6	2.0
Malaysia	308	427	353	666	829	1 139	1 867	1.3	0.9	1.1	1.3	1.6	2.3
Argentina	389	494	672	831	992	1 084	1 257	1.7	1.7	1.4	1.5	1.5	1.6
Guatemala	497	641	710	920	924	1 067	1 313	2.2	1.8	1.6	1.4	1.5	1.6

1. Includes Chinese Taipei.

Source: OECD calculations based on data from ERS, USDA and FATUS.

Table E.20. **Products covered by tariff quotas, 2007**

Products	Average tariff rate 2007 (%)		Bound import quota	Partners with reserved access (% of WTO quota)
	In-quota	Out-of-quota		
Beef, fresh, chilled or frozen (t)	4.5	26.4	696 621	Canada and Mexico (no limit), Australia (57.6), New Zealand (32.5), Japan (0.03), others (9.9)
Cream ('000 litres)	3.5	6.5	6 695	New Zealand (87.3)
Evaporated/condensed milk (t)	2.9	22.4	6 857	EU (21.8), Canada (17.0), Australia (1.5)
Non-fat dried milk (t)	3.7	26.9	5 261	Global, no country allocation
Dried whole milk (t)	3.7	31.7	3 321	Global, no country allocation
Dried cream (kg)	9	109.9	99 500	Global, no country allocation
Dried whey/buttermilk (t)	6.7	42.9	296	Global, no country allocation
Butter (t)	4.4	19.1	6 977	Global, no country allocation
Butter oil/substitutes (t)	8	67	6 080	Global, no country allocation
Dairy mixtures (t)	12.8	29.5	4 105	Australia (27.7), EU (4.2)
Blue cheese (t)	14.4	34.4	2 911	EU (96.1), Chile (2.3), Czech Republic (1.5), Argentina (0.07)
Cheddar cheese (t)	12	20.4	13 256	New Zealand (56.8), Australia (25.4), EU (8.5), Canada (6.4), others (2.8)
American-type cheese (t)	14.3	49.7	3 523	New Zealand (57.0) Australia (28.5), EU (9.6), others (4.8)
Edam and Gouda cheese (t)	12.1	33.9	6 816	EU (81.2), Costa Rica (10.2), Argentina (2.9), Uruguay (2.8), others (3.0)
Italian-type cheese (t)	13.9	48	13 481	Argentina (51.2), EU (33.5), Uruguay (7.1), Romania (3.5), Hungary (2.8), Poland (1.8), others (0.1)
Swiss/Emmenthal cheese (t)	6.4	33.6	34 475	EU (62.6), Norway (20.3), Switzerland (10.6), Australia (1.5), Czech Rep.(1.0), Hungary (1.0), others (3.0)
Gruyère processed cheese (t)	9.3	30.4	7 855	EU (74.1), Switzerland (16.0), others (1.0)
Other cheese NSPF (t)	10	41.5	48 628	EU (56.7), New Zealand (25.2), Switzerland (3.6), Australia (3.3), Poland (2.7), Canada (2.5), Israel (1.5), others (4.3)
Low-fat cheese (t)	10	22.7	5 475	EU (74.2), New Zealand (17.5), Australia (4.4), Poland (3.1), Israel (0.9)
Peanuts (t)	9.1	139.8	52 906	Argentina (84.0), others (16.0)
Chocolate crumb (t)	4.5	13.6	26 168	EU (32.1), Australia (8.3)
Low-fat chocolate crumb (t)	5.9	14	2 123	Ireland (80.1), United Kingdom (19.9)
Infant formula containing oligo saccharides (t)	17.5	33.2	100	Global, no country allocation
Green, ripe olives (t)	7	1.6	730	Global, no country allocation
Place-packed-stuffed olives (t)	1.1	1.2	2 700	Global, no country allocation
Green olives, other (t)	2	2.4	550	Global, no country allocation
Green, whole olives (t)	2.4	1.7	4 400	Global, no country allocation
Mandarin oranges (Satsuma) (t)	0	0.3	40 000	Global, no country allocation
Peanut butter and paste (t)	0	131.8	20 000	Canada (73.1), Argentina (15.4), others (9.3)
Ice cream ('000 litres)	20	36.5	5 668	EU (20.0), New Zealand (11.4), Jamaica (0.7)
Animal feed containing milk (t)	7.5	26.9	7 400	EU (75.1), New Zealand (24.1), Australia (0.8)
Raw cane sugar ('000 t)	3.1	59.9	1 117	Mexico (2.1), others (95.3)
Other cane or beet sugars or syrups ('000 t)	3.3	45.4	22	Canada (29.4), Mexico (8.6), others (62.1)
Other mixtures over 10% sugar (t)	9.2	20.6	64 709	Canada (91.6), others (8.4)
Sweetened cocoa powder (t)	6.7	13.5	2 313	Global, no country allocation
Mixes and doughs (t)	10	29.5	5 398	Global, no country allocation
Mixed condiments and seasonings (t)	7.5	14.1	689	Global, no country allocation
Tobacco (t)	17.7	350	150 700	Brazil (53.3), Malawi (8.0), Zimbabwe (8.0), Argentina (7.1), EU (6.6), Guatemala (6.6), others (10.5)
Short staple cotton (t)	0	13.7	20 207	Global, no country allocation
Harsh or rough cotton (t)	2.7	1.6	1 400	Global, no country allocation
Medium staple cotton (t)	1.4	6.8	11 500	Global, no country allocation
Long staple cotton (t)	0.7	14.9	40 100	Global, no country allocation
Cotton waste (t)	0	0.7	3 335	EU (26.3), Japan (5.7), Canada (4.0), India and Pakistan (1.2), China (0.3)
Cotton, processed but not spun (kg)	5	67.3	2 500	Global, no country allocation

Source: WTO (2008a).

Table E.21. **Section 32 bonus purchases for selected commodities, FY1995-FY2008**

Million USD

	Value purchased	No. of years purchased
Salmon	111.7	11
Apricots	72.6	11
Peaches	164.4	10
Cherries	120.3	10
Walnuts	65.9	8
Beef	125.8	7
Potatoes	102.8	7
Apples	96.4	7
Pears	50.6	7
Lamb	28.7	7
Pork, ham	178.8	6
Raisins	88.7	5
Cranberries	73.8	5
Tomatoes	26.7	5
Oranges	69.5	4
Turkey	66.4	4
Strawberries	14.6	4
Egg products	10.0	1
Maize	5.1	1
Cheese	5.0	1

Source: Becker (2009), Table 2, Section 32 Contingency Fund (Bonus) Purchases, by Commodity FY1995-FY2008.

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Evaluation of Agricultural Policy Reforms in the United States

The United States is one of the most important agricultural producers in the world. It has a very large domestic market and is the world's largest exporter of agricultural products. Indeed, the share of US agricultural production exported is more than double that of any other US industry, and the trade surplus in agricultural products acts as an important stimulus to the US economy. Thus, US agricultural policies exert a strong influence on world agricultural markets.

The United States maintains an array of agricultural policies with goals that range from the traditional objectives of stabilising agricultural production and supporting farm income, to those that have more recently increased in importance, such as assuring adequate nutrition, securing food safety, encouraging environmental protection and facilitating rural development.

This study analyses and evaluates US agricultural policies, focusing on the Food, Conservation, and Energy Act of 2008, in the context of developments in agricultural policy that have taken place in the United States since 1985. It looks closely at five US Farm Acts: the Food Security Act of 1985; the Food, Agriculture, Conservation, and Trade Act of 1990; the Federal Agriculture Improvement and Reform Act of 1996; the Farm Security and Rural Investment Act of 2002 (2002 Farm Act); and the Food, Conservation, and Energy Act of 2008. This study also discusses several emerging issues and challenges for US agricultural policies, and offers key policy recommendations.

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