

Chapter 3.

Main developments in agricultural policies 1990-2006

Introduction — the policy framework

Since the beginning of the 1990s, Mexico has undertaken an important shift towards market-oriented policies. In particular, there were four major changes in agricultural policies: (1) steps towards commodity market liberalisation, (2) introduction of a new payment tied to historical entitlement to support income, (3) steps toward deregulation of inputs markets, with greater support for introducing and using technical improvements, and (4) reform to the land tenure system. Many agricultural policies, before and after the start of the reform period, are to spur economic development in rural areas and to limit migration on the one hand, and to increase productivity of individuals and of the sector on the other.

The objectives of agro-food policy in Mexico are derived from the National Plan of Development elaborated by each federal administration early in its six-year mandate. In the *Programa Nacional de Modernización para el Campo* (National Programme of Countryside Modernisation) 1990-1994, the emphasis was on “increasing the well-being of the rural population and the efficiency of resource use, as well as improving the agricultural trade balance, particularly through greater market orientation, less regulation and improved targeting of policy.” In the period 1995-2000, the National Farming and Rural Development Programme defined the objectives of farming policy as: “To increase producers’ incomes, to increase agricultural production faster than population growth, to balance agricultural trade, to obtain self-sufficiency in basic foods, to reduce regional differences in productivity, employment and income, and to contribute to the reduction of rural poverty, the conservation of natural resources, and better use of the land.”

Finally, and most importantly in the context of this analysis, the *Programa Sectorial de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* (Sectoral Programme of Agriculture, Livestock, Rural Development, Fishing and Food) 2001-2006 established the following general objectives.

- To align current productivity development programmes with marketing opportunities and the needs of domestic and export markets.
- To ensure cohesion between incentives to increase agricultural production on the one hand, and the sustainability of resources and the environment on the other.
- To promote public policies that create a level playing field for competition with other NAFTA members.

- To improve efforts to fight poverty with a view to eliminating and not just reducing it.
- To adjust and modify existing programmes to ensure that the stated objectives are met.

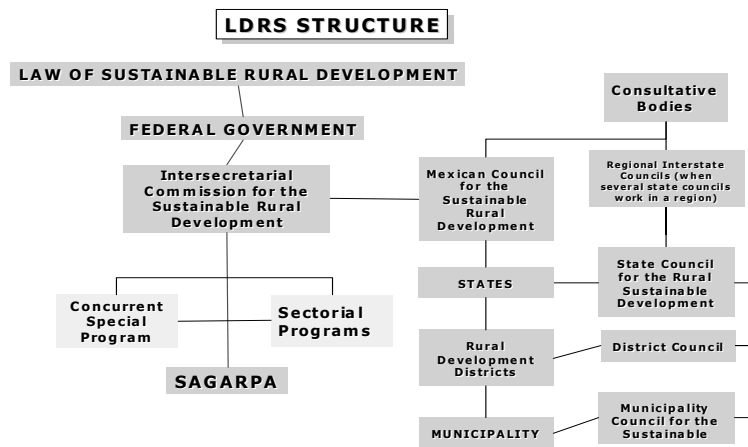
The *Ley de Desarrollo Rural Sustentable* (LDRS, Law of Sustainable Rural Development) was promulgated in December 2001 and the detailed regulations needed to implement it were published in October 2004. This is an important framework law that seeks to create a unifying and harmonising framework within which policies oriented towards productive development, improving social welfare, and preserving the environment are brought together. This law has several stated objectives:

- To ensure that rural areas are able to fulfil their role of providing sufficient and safe food.
- To ensure that rural areas offer a certain quality of life to all their inhabitants while also acknowledging the need for welfare programmes to meet the needs of the most vulnerable groups. It also establishes the importance of supporting all kinds of productive activities that generate employment and income in rural areas.
- To ensure the long-term preservation of natural resources by promoting their rational use in primary production activities.

An administrative structure has been put in place for the implementation of the LDRS (Figure 3.1). One main feature is the establishment of consultative bodies (*Consejos Mexicanos para el Desarrollo Rural Sustentable*, Mexican Councils for Sustainable Rural Development) at every level of government. These are designed to ensure the participation of all agents in rural society in the establishment of priorities for public policies. As shown, the *Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación* (SAGARPA, Secretariat for Agriculture, Livestock, Rural Development, Fisheries and Food) is one of several sectoral agencies whose activities comes under the umbrella of the LDRS. The LDRS also establishes Product System Committees at national, state and local levels. These Product System Committees are a mechanism for planning, communication and coordination between the different economic agents involved in the productive chains. The Product System Committees also come under the umbrella of the Mexican Councils for Sustainable Rural Development.

The overarching purpose of the LDRS is to coordinate the actions of the different agencies in rural areas and, by doing so, to avoid duplication of effort, to eliminate possible contradictions, and to create synergies between the private and public sectors. To achieve this, the Intersecretarial Commission for Sustainable Rural Development developed the *Programa Especial Concurrente para el Desarrollo Rural Sustentable* (PEC, Special Concurrent Programme for Rural Sustainable Development). (Annex Table II.B1 shows the evolution of PEC expenditure in real terms since 2000 and the shares of the main policy categories.) In 2005, the PEC budget was MXN 144 billion, 47% higher in real terms than in 2000 and there is a noticeable increase in the importance of programmes counted as rural development under PEC (up by 82% in real terms over the period and now accounting for 28% of all rural expenditures). SAGARPA, in 2005, accounted for about one-third of the total expenditures of the PEC programme.

Figure 3.1. Administrative structure for the implementation of the Law on Sustainable Rural Development



Another important institutional change that has affected agricultural and rural policies in recent years has been decentralisation. The role of the Federal government is diminished. This change has manifested itself most clearly in the following areas:

- The decentralisation of operational structures: programmes are now administered by agencies located in the areas where the activities occur and decisions are, in general, taken at the local level.
- A number of powers stemming from the Administrative Law of the Federal Public Administration that were previously under SAGARPA have been delegated to the states and municipalities, and, where legally possible, to producer organisations.
- A percentage of budget resources have been transferred from SAGARPA to state governments which now directly manage certain programmes.
- Where possible, municipalities also receive sums that were previously allocated to SAGARPA. This initiative began in 2004 and relates specifically to those programmes that target rural development.

The following sections give a brief description of the evolution of the main policies and programmes in place in Mexico, highlighting the most important changes that have taken place during the period studied. A section on international trade policy is followed by an account of the main domestic market interventions, followed by a section on income support programmes. Input subsidies, measures relating to water and natural resources, and the wide range of policies in place to improve sectoral productivity complete this chapter.

International trade policy

During the 1980s, Mexico started a process to transform the economy from being trade-protected and inward looking towards market openness. One of the first steps towards opening borders to trade was taken by joining the General Agreement on Tariffs and Trade (GATT) in 1986. As a consequence, trade barriers were reduced on a multilateral basis. During the 1986-1990 period policy was oriented to diminish inflation

rate; in this context, several import permits of agricultural products were replaced by a maximum tariff of 20%. Among these commodities were: beef meat, pork meat, dairy products (cheese, butter and yogurt), sorghum, oilseeds, vegetable oils and tropical products. However, the agricultural sector remained heavily protected up until the late 1980s, with tariff and non-tariff barriers limiting integration with world markets. Import licenses still covered 38% of agricultural products, which accounted for 66% of all import licences.

At the beginning of the 1990s, the process of agricultural trade liberalisation advanced more rapidly. The quantitative restrictions on imports of 12 traditional crops were eliminated by 1991, except for maize and beans. With the inception of the North American Free Trade Agreement (NAFTA) in 1994, all the import barriers insulating the agricultural sector against trade with Canada and the United States became tariffs or tariff quotas, and were scheduled to be eliminated gradually for all commodities. As of 2006, most of the NAFTA tariffs on agricultural product imports either have been phased-out, or are close to zero (Table 3.1). However, transitional tariffs for the four products deemed most sensitive – maize, dry edible beans, milk and sugar – are to be phased out by 2008. Export licences were phased-out and completely eliminated by 1994. Although these tariff eliminations apply only to bilateral trade with Canada and the United States, they mark a significant step towards trade liberalisation given the importance of these trading partners: in 2005, 78% of total agro-food imports came from NAFTA countries, and 86% of Mexico's agricultural and food exports were destined for those same countries.

Table 3.1. Tariffs on imports of selected agricultural products

	MFN bound in 2006	Applied MFN 2006	NAFTA 2006 (from US)	NAFTA tariff zero in
Wheat	67%	67%	0%	2003
Maize	*194%	*194%	*18%	2008
Barley	115%	115%	0%	2003
Sorghum	45%	**0% - 15%	0%	1994
Rice	45%	20%	0%	2003
Soybeans	45%	**0% - 15%	0%	2003
Sugar	0.36 USD/kg	0.36 USD/kg	0.078 USD/kg	2008
Dairy products (except milk powder)	38% - 45%	10% - 15%	0%	2003
Milk powder	*125%	*125%	*24%	2008
Beef	45%	20% - 25%	0%	1994
Pigmeat	45%	20%	0%	2003
Poultrymeat	***234%	***234%	0%	2003
Eggs	45%	45%	0%	2003
Dry edible beans	***125%	***125%	12%	2008
Tomatoes	36%	10%	0%	2003
Potatoes	***245%	***245%	0%	2003
Apples, pears and other fruit	45%	20%	0%	2003

* Intra-quota tariff is zero.

** The tariff rates depend on the dates in the year.

*** Intra-quota tariff is 50%.

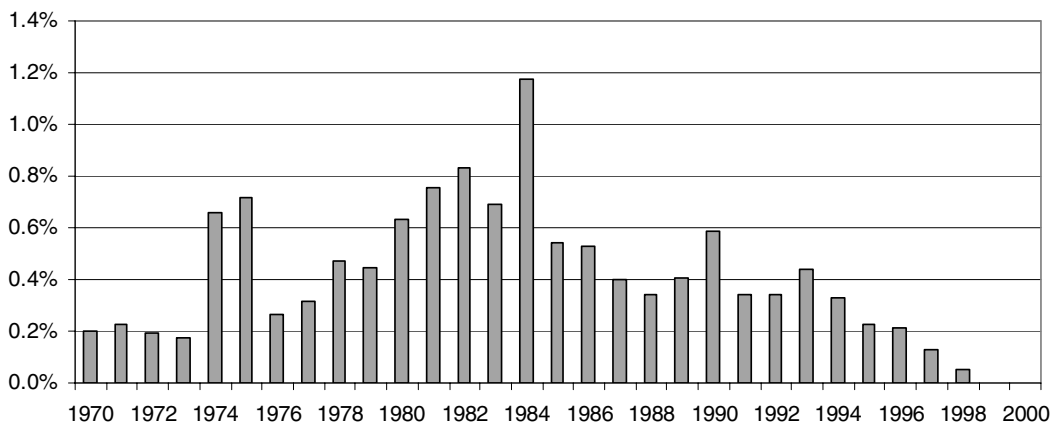
Sources: Secretariat de Economía, *New Import Tariffs 2006*; WTO and EU Commission, *Applied Tariffs database*.

Mexico has continued to conclude trade agreements with other countries during this period. To date, twelve Free Trade Agreements have been signed with countries or blocks of countries within North America, Central America, South America and Europe. Most recently, trade agreements with Uruguay and Japan entered into force in 2004 and 2005 respectively.

Domestic market intervention

The oldest and principal form of agricultural support implemented in Mexico, from the mid 1960s to the beginning of the 1990s, was an expensive combination of price support and general consumption subsidies based on trade barriers and direct intervention in the market. The principal institution involved in implementing this policy was the *Compañía Nacional de Subsistencias Populares* (CONASUPO, National Company of Popular Subsistence), supporting producers through a price floor on basic crops, especially maize and beans, while subsidising urban consumers, especially of *tortillas*. Federal transfers to CONASUPO absorbed close to half a percentage point of GDP annually, on average, over a quarter of a century (Figure 3.2).

Figure 3.2. Budgetary transfers to CONASUPO as a per cent of GDP



Source: Anexo Estadístico, Informe de Gobierno, various years.

Until 1990, CONASUPO would purchase, at government determined prices, all major grains and oilseeds production for which no buyer had been found. In 1991, CONASUPO ceased its activities of direct intervention in the marketing of agricultural products and, between 1990 and 1998, made maize and bean purchases only, and discontinued such purchases for all other crops. Following this period during which the role of CONASUPO in the market was gradually reduced, it was dismantled in 1999.

As a way to help producers and traders to adjust to this transition, the government introduced *Apoyos y Servicios a la Comercialización Agropecuaria* (ASERCA, Agricultural Marketing Support and Services) in 1991 with the purpose of giving assistance to wheat, sorghum, rice, soybean and other oilseeds producers through a “marketing payment” that covered the difference between an announced policy price and a price equivalent to the import price of the commodity (called the *indifference price* as a buyer would be equally willing to buy domestic or imported goods at that price). The

marketing support given through ASERCA, from its creation until 2000, was not national in coverage; its scope was limited to states with an historical surplus¹ of one of the products mentioned above. Following the dismantling of CONASUPO, maize was incorporated into the ASERCA marketing support scheme, again with support given only to those states with surplus production historically.

“Marketing payments” were made to buyers who would pay the producer an agreed price superior to the regional *indifference* price. With the objective of streamlining the programme and reducing its cost, as of 1998 ASERCA made payments to first time buyers who bid for them at auction. In return for the payments, the buyers undertook to pay an administered minimum price to the producers. In December 2000 this system was stopped and ASERCA made direct payments to producers. The intention was to make producers themselves responsible for selling their products and thereby to make them more responsive to market signals. Through 2000-2001, support was calculated on the basis of average costs of production by state (*Apoyos a la rentabilidad*). It was deemed that this method did not offer the best results, and as of the spring-summer 2002 season calculations based on the *indifference* prices were reinstated.

As of 1998, new states were incorporated in the ASERCA marketing support scheme. In 2003, the focus on “states with surplus harvests” was replaced by “producers with surplus production”. In other words, coverage was expanded to include the whole country. In that same year, product coverage was expanded to include all grains and oilseeds — with the exception of dry edible beans — with the aim of eliminating distortions among crops. In addition, the practice of announcing an agreed price for each season on a year-by-year basis was replaced by a multi-year commitment over a five-year period for each product in the programme. This new scheme, adopted in 2003, is known as “Target Income” (*Ingreso Objetivo*). The provisions of the programme vary according to each commodity covered as shown in Table 3.2.

Table 3.2. Target Income programme: main parameters

Product	Target income	Target income	US price 2005/2006
	(MXN / tonne)	(USD / tonne)	(USD / tonne)
Wheat	1 800	166.28	131.5
Triticale	1 800	166.28	n.d.
Fodder wheat	1 525	140.88	n.d.
Maize	1 650	152.42	82.4
Sorghum	1 270	117.32	74.3
Cotton	-	1 410.96	1 042.8
Rice	2 100	194.00	168.0
Soybean	3 000	277.14	207.02
Safflower	3 300	304.85	278.0
Canola	3 500	323.33	207.23

Exchange rate of 10 8250 MXN/USD from Banco de México fixed exchange rate for obligations in foreign currency, 15 July 2006; USDA-ERS for US price data, estimated for 2005/2006 in August 2006.

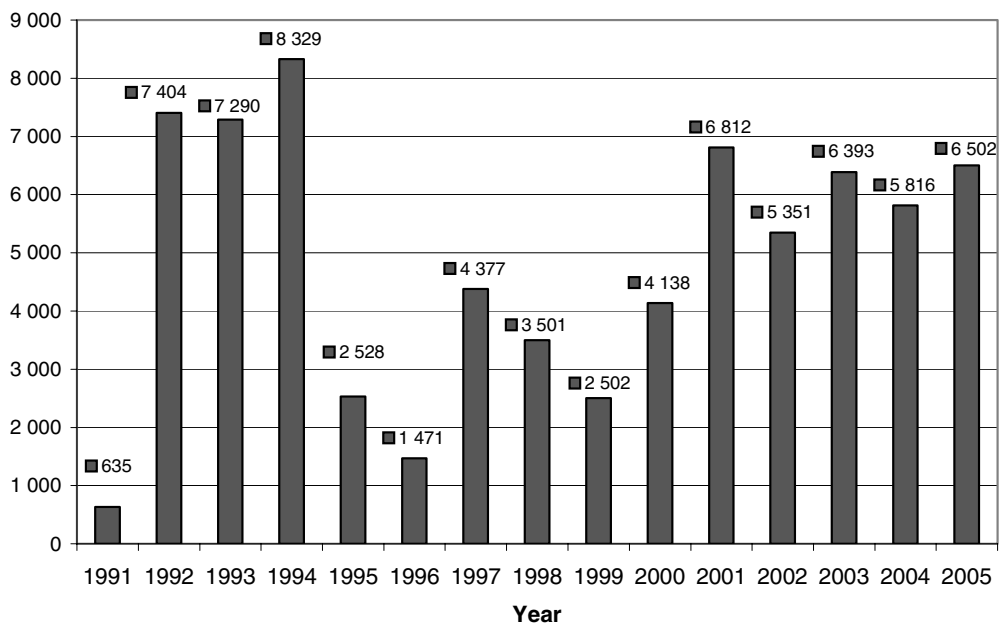
Source: ASERCA.

The Target Income scheme operates as a deficiency payment, so that when the market price is lower than the Target Income minimum price per ton, ASERCA calculates a “complementary support” price. The complementary support is calculated before harvest

and is based on the estimated price that potential buyers would be willing to pay, in that production region, as compared to the alternative of importing the same product (the *indifference* price which is the international price plus transport and storage). As the complementary support is determined before the harvest period, the price per ton *ex post* can differ from the Target Income. In order to encourage producers to be more responsive to market signals it is a condition of the support that the producer must show that the harvest has been sold. This scheme pays only up to a government set maximum yield per hectare that is determined for each region. If a producer reports a higher yield, the support is truncated. However, the maximum yields can change from one year to the next. In this way the programme recognises advances made in productivity, so the limits imposed on payments increase over time.

In addition to the Target Income Subprogramme, ASERCA operates a series of measures designed to deal with surplus production, and to improve market integration under the general heading of *Programa de Apoyos Directos al Productor por Excedentes de Comercialización para la Reconversión Productiva, Integración de Cadenas Agroalimentarias y Atención a Factores Críticos* (Programme of Direct Support to Producers for Marketing Surplus for Productive Re-orientation, Integration of Food Supply Chain and Attention to Critical Factors). The most important measures relate to price hedging and generally to the promotion of the knowledge and skills necessary for risk management. There are also measures for crop conversion. An instrument for temporary withdrawal of seasonal surpluses from the market is made available to producer and buyer organizations, through assistance to cover storage and financial costs.

Figure 3.3. Evolution of agricultural marketing support 1991-2005
2005 Million MXN



Source: Direction General of Marketing Policy - ASERCA; Informes de Gobierno 2001, 2005 and 2006.

Overall the marketing programmes operated by ASERCA accounted for MXN 6 502 million, representing 14% of the SAGARPA budget, in 2005. ASERCA spending on marketing support since its inception in 1991 is shown in Figure 3.3. The distribution of

the spending between programmes and among commodities within the Target Income programme is shown in detail in Annex Table II.B2.

Income support — PROCAMPO

The *Programa de Apoyos Directos al Campo* (PROCAMPO, the Programme of Direct Payments to the Countryside), operated by ASERCA, started in 1993, before the inception of NAFTA, to help farmers cope with lower trade protection and with the removal of direct price support programmes. The objectives of PROCAMPO were fivefold:

- To improve competitiveness at the domestic and international levels in order to improve the living standards of rural families and to modernize the marketing system.
- Facilitate land conversion where it is possible to use the land for activities with higher returns that will provide economic certainty to rural producers and improve their capacity to adapt to change.
- Encourage adoption of advanced technologies and introduce production methods based on efficiency and productivity.
- Raise the incomes of rural producers, particularly those of the poorest producers.
- Contribute to the recovery and conservation of forests, reduce land erosion and water pollution, and develop an awareness of the importance of natural resources conservation.

Initially, PROCAMPO covered land owners who grew any of nine selected crops (maize, wheat, beans, rice, sorghum, soybeans, cotton, safflower and barley) during the three agricultural seasons previous to August of 1993. The programme was established for a 15-year period, and is to be phased out by 2008. By linking the payment to historical use of land, rather than current production, it was intended to help farmers switch to more profitable crops in the context of a more competitive economy. Moreover, by paying all land owners who grew one of these crops, rather than only those who sold their output, the programme's scope extends to subsistence farmers. The programme's benefits to poor land-owners were increased by a modification that introduced a minimum payment size equivalent to the payment for one hectare that applied even to those who own less land. In 1995, PROCAMPO was further modified to expand the number of eligible crops. Nevertheless, there remain some restrictions: recipients must allocate the land to producing crops on this list, other crops, fruits or vegetables, to pasture for livestock or in an approved environmental programme.

The various changes to the conditions and provisions of PROCAMPO are described in detail in Annex Table II.B3. The annual payment rates that have applied since the scheme began in 1994 are recorded in Table 3.3. Expenditure under the PROCAMPO programme has varied little in real terms in recent years, accounting for about 14 billion MXN in 2005 and about 40% of all SAGARPA spending. One of the changes made recently allows, by arrangement with certain financial institutions, for a producer to receive the present value of future entitlements, in exchange for which he must submit an investment plan. In 2005, 12% of PROCAMPO spending was capitalised under this provision. On average, since 1994 programme spending is equivalent to 5% of agricultural GDP.

Table 3.3. Programme of Direct Payments to the Countryside (PROCAMPO)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
(payments are expressed in real MXN pesos per hectare)												
Autumn-Winter	1 416	1 254	1 060	995	980	958	974	1 012	999	979	948	963
Spring-Summer	1 502	1 379	1 166	1 143	1 104	1 083	1 071	1 079	1 052	-	-	-
Preferential Payment	-	-	-	-	-	-	-	-	-	1 156	1 174	1 160
Normal Payment	-	-	-	-	-	-	-	-	-	1 015	980	963

Deflated using the implicit price index of the aggregate GDP, base 2005; the “preferential payment” refers to a preferential payment for rain fed area during the spring summer season established in 2003.

Source: Sexto Informe de Gobierno, 2006.

Input support measures

Before the 1990s, the Mexican government participated actively in the agricultural inputs market mainly through state-owned corporations. This included fertilizers, handled by FERTIMEX; seeds, by PRONASE; and other inputs such as pesticides, machinery and diesel fuels. The companies were privatized during the 1990s, and some of these subsidies have been reduced or completely eliminated. Subsidies to insurance and irrigation have been provided in all years since 1990, as have subsidies to interest, capital or credit.

Energy subsidies

In 2002, the *Ley de Energía para el Campo* (LEC, Law of Energy for the Countryside or Field Energy Law) was enacted; this act established a special programme to support electricity and fuel used in agricultural activities. Electricity in Mexico is subsidised for all sectors, but agriculture pays a lower price than any other sector. Prior to 2003, there were two prices charged for electricity for agricultural pumping: one for low tension and another for medium tension. After the LEC in 2002, two additional prices were introduced: the first one is a preferential, single price that applies at all times. The second, lower price is available for pumping during the night. There is an annual limit to the number of kilowatts that benefit from these low prices, based on the level of extraction permitted.

Also within the LEC framework, a programme of preferential pricing for diesel was started in 2003. The programme attempts to lower production costs by setting a preferential price for diesel that fuels machinery and equipment used in agricultural and livestock production. The US diesel price is taken as the reference in setting the preferential price. Beneficiaries of this programme receive a magnetic pre-charged chip card, for use at authorised gas stations, containing data concerning the number of litres that users are allowed to buy at the lower price.

Rural and farm credit support policy

Towards the end of the 1990s there were severe problems in the agricultural and fisheries credit system. This was due in part to the high interest rates that resulted from the 1995 crisis, in part from the prevailing culture of defaulting on loans in the expectation that the government would step in with re-financing or “forgiveness” measures, but also to basic structural deficiencies in the agricultural finance system. At

that time, the agriculture credit scheme included commercial banks; trusts like FIRA (Trusts related to Agriculture, Bank of Mexico) and *Fideicomiso de Riesgo Compartido* (FIRCO, Trust of Shared Risk); *Nacional Financiera* (NAFIN, National Financier); some credit institutions with specific aims like the Mexican Bank of External Trade (BANCOMEXT); and the Bank of Rural Development (BANRURAL).

FIRA operated at one remove from producers, channelling credit through the commercial and development banks. *Banco Nacional de Comercio Exterior* (BANCOMEXT, Mexican Bank of External Trade), since the beginning of its operations, has been oriented to exports activities. Credit activities in Banrural mainly depended on the public purse and offered interest rates below market rates; Banrural experienced financial problems with 57% of its outstanding loans unpaid and restructuring was necessary in 2003, Banrural was replaced by *Financiera Rural* (Rural Financier), which is organised with the same objectives as FIRA, although *Financiera Rural* can grant credit directly to producers.

The creation of rural financial intermediaries has been promoted, especially in less developed rural areas where they did not previously exist. The objective is to grant rural credit through rural sector financial intermediaries such as credit unions or savings banks or SOFOLES (Financial Societies of Limited Purpose). These organisations also provide financial services to non-agricultural, low income households in rural areas. In this way, FIRA's resources are not exclusively channelled through commercial banks, but also, through new financial intermediaries, who accounted for between 15% and 20% of the credit granted to the rural sector in 2005.

Other non-banking financial intermediaries, such as factoring agencies and leasing agencies, have also been given access to FIRA credit. In April 2006, the Chamber of Deputies approved a new law to create Multi-Purpose Financial Societies (SOFOMES) in order to diversify the sources of credit to those currently outside the system. This law will help leasing and factoring agencies to grant credits, increase competition, reduce market interest rates and eliminate excessive regulation.

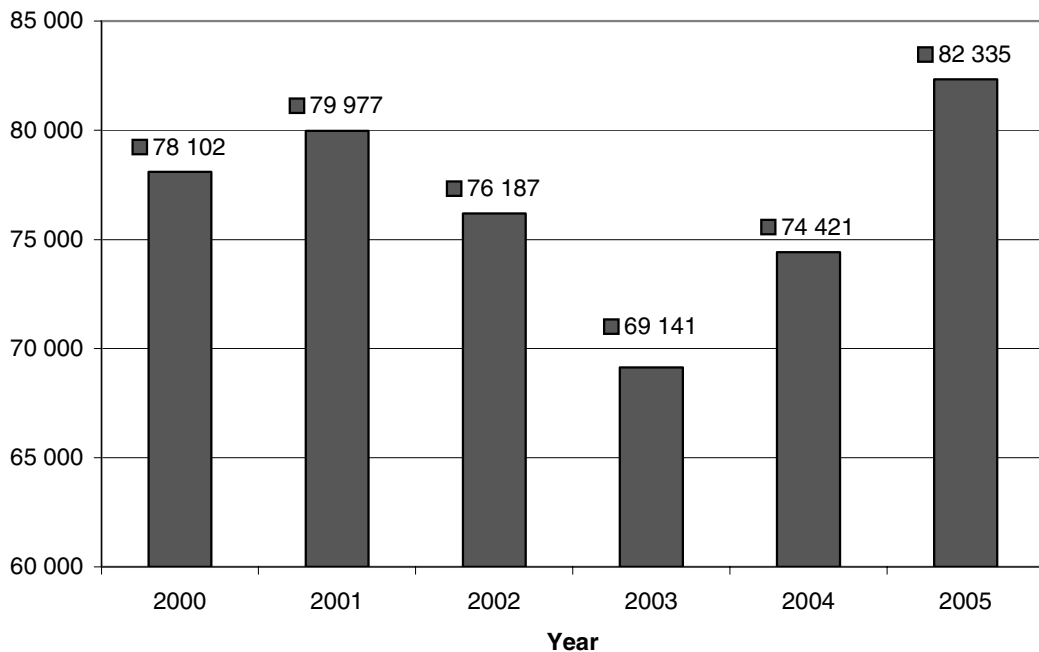
Because the sector is perceived to be a high risk one, the traditional practice of financial agents has been to grant credit only when the funds can be secured through a mortgage arrangement, endorsement or other funding guarantee. These procedures exclude many producers. SAGARPA encourages the use of cash guarantees through a transition scheme. The *Programa de Apoyo para Acceder al Sistema Financiero Rural* (PAASFIR, Support Programme for Access to the Financial Rural System), provides a cash guarantee in addition to those guarantees supplied by FIRA. Under PAASFIR rules, producer's organizations have to establish a trust known as a *Fondo de Inversión y Contingencia para el Desarrollo* (FINCAS, Rural, Investment and Risk Trust for Rural Development) which is established with a mixture of private and public resources. In order to establish FINCAS, producers' organisations have to guarantee at least 10% of each credit line they contract. SAGARPA (PAASFIR) through FIRCO or other financial intermediaries, provides up to 19.5% of the total amount of the credit contracted by producers, as a complement of the FINCA's initial capital. During the period 2002 to July 2006, PAASFIR transferred resources of MXN 1 270 million to 452 FINCAS, which support 20 Product Systems. In 2005 under the FINCAS credit lines, FIRA and Rural Financier gave credit of approximately MXN 5 896 million to a total of 165 445 producers in the rural sector.

At the end of 2005, credit to the agriculture, forestry and fishing sectors was MXN 82 335 million, similar to the level reached in 2001. Between 2001 and 2003, due

to the restructuring of the credit system, the levels were much lower but have been growing (Figure 3.4).

Figure 3.4. Credit granted to the agriculture, forestry and fishing

(MXN 2005 million)



Policies for water and other natural resources

The *Comisión Nacional del Agua* (CNA, the National Water Commission), is responsible for co-ordinating water policy since its creation in 1989. In 1992, the National Water Law replaced earlier legislation with the overall objective to achieve sustainable water resources management and development at the river basin or aquifer level, with participation by major water users and other stakeholders. This law was amended in 2004 to add agencies responsible for individual water basins and to impose higher penalties on illegal behaviour. These new laws did not completely replace the previous system; claims to water concessions have continued throughout these reforms, albeit with amendments in the direction of establishing measurable and tradable property rights.

Water policy has long subsidised agricultural users relative to others, although some of this support has decreased in recent years. Since 1982, when water abstraction charges were established, farmers have been exempt, although this exemption was terminated in 2003. In addition, farmers could be charged for water pollution since 1992.² Thus, while the CNA reduces costs associated with agriculture, particularly irrigation, the share of operating and maintenance costs that farmers are expected to pay has increased from 20% in the early 1990s to 80% now.³ As regards the electricity used to pump this water for irrigation, however, agriculture is the most heavily subsidised sector with a 28% cost recovery (price/cost ratio) in contrast to 94% for industry and 43% for domestic use (Table 3.4).⁴ More generally, the strengthening of hydro agricultural infrastructure and projects for increasing efficiency in water management have been priorities for some

time. In 2005, investment for hydro agricultural infrastructure reached MXN 4 843 million. However, public spending on hydro agriculture infrastructure has been uneven through the last decade, with falling support until 2002 followed by an increase in subsequent years. Subsidies for the agricultural sector have been relatively stable since 1995, however, with an average level of MXN 7 074 million in the last decade.

Table 3.4. Public expenditure in hydro agricultural infrastructure and the agricultural electricity subsidy

	Public spending on hydro agricultural infrastructure (2005 MXN million)	Subsidy (2005 MXN million)	Agricultural electricity subsidy		
			Cost recovery (Price/Cost)	Beneficiaries (Thousand)	Subsidy per user (2005 MXN)
1995	6 675	5 482	0.33	79	69 388
1996	7 509	7 423	0.28	81	91 641
1997	6 047	7 312	0.28	84	87 044
1998	4 078	6 787	0.30	87	78 016
1999	3 607	6 887	0.29	90	76 523
2000	3 802	7 408	0.28	92	80 521
2001	2 709	6 616	0.29	95	69 638
2002	2 405	6 665	0.31	97	68 450
2003	4 087	7 473	0.28	100	74 732
2004	6 164	7 529	0.27	103	73 098
2005	4 483	8 235	0.28	105	78 429

Source: Anexo Estadístico, 5° Informe de Gobierno, Government of Mexico, and Luna.

The irrigation infrastructure for agricultural activities has been improved over this period.⁵ First, in terms of irrigation facilities, the incorporated area for irrigation between 2001 and 2004 was nearly 43 000 hectares. Since 2005, two important projects, Baluarte Presidio and El Tigre, facilitate irrigation on an area of 22 500 hectares. Also, the rehabilitated and improved area since 2001 has reached more than 545 000 hectares, 32% more than in the period 1995-98. In addition, other programmes are being implemented, such as the Programme of Irrigation Districts Transfers to Organised Users to support training and education for future administrators that must be completed before granting subsidies for irrigation infrastructure improvements. Second, investment in “temporal areas” has been significant, especially during the period 1995-98. Third, works for the protection against floods in productive areas has increased in the last two years by over 35%.

Water policy is largely the responsibility of the CNA, or split among different levels of government. However, a SAGARPA programme, *Programa de Adquisición de Derechos de Uso de Agua* (PADUA, Water Rights Acquisition Programme) started in 2003 whereby owners of water concessions are offered a one-off payment to relinquish voluntarily their right, or part of their right, on a permanent basis. In practice, due to lack of information and inability to enforce strict controls widely, the programme targets unused water concessions, providing the owner with money to convert to activities that are less water-intensive, such as livestock production, or out of agriculture. The budget of

this programme is modest, particularly compared to spending on programmes that are oriented towards increasing productivity or income.

Irrigating land requires electricity, as well as water, so the agricultural policy component subsidising energy is relevant. The level of energy subsidies provided to each producer is based on that producer's production practices, so, as indicated earlier, operations relying on irrigation will be paid more than those that do not, all else equal, although the higher subsidy would not offset fully the energy costs associated with irrigation.

Box 3.1. Water concessions

Although the state's exclusive property right over water resources is defined clearly in the relevant passages of the Constitution and laws, the conditions for granting concessions have not always been very stringent.^a Generally speaking, the government is not in a position to refuse a claim for a concession unless the relevant aquifer has been certified and that certification process proves that the aquifer is over-exploited. If there is no basis for asking people to limit their access, then there are no controls on extraction. In such untracked or uncharted areas, any wells that are found and registered typically must be given a concession if ownership can be established. In 2002, the 327 thousand individual concessions summed to 218 billion m³ by volume and, of these totals, 186 thousand individuals in the agricultural sector held concessions for 56 billion m³ by volume.^b

Rising pressure on water supplies around cities that accompanies urbanisation is met by a combination of administrative fiat and expenditures. The drain of Mexico City on its aquifer, for example, is three times the reload capacity, so the city buys water drawn from other aquifers. Revenue from these sales is not required to be used to buy water from neighbouring aquifers and, in any case, the administrators responsible for other aquifers that provide water to urban areas cannot buy water as there is no legal market for water. Instead, these administrators must make water available by granting fewer new concessions – which is permitted only if the aquifer is certified – or by encouraging concession owners who are not using their rights to renounce their unused concessions. Thus, the money collected by urban water consumers cannot be passed to water rights owners in rural areas, except if somehow incorporated into a programme like PADUA that provides payments for concession-holders to relinquish their rights.

Sources: a. Interviews with SAGARPA officials unless otherwise noted; b. Garduno (2005), based on CNA data.

Other natural resources

Policies relating to other natural resources are in early stages of development, although measures are incorporated in other policies. Mexico conducted a survey of biodiversity in 1998 and an inventory of soil in 2001, but these efforts provided data of only limited use for policy makers.⁶ Many investment support programmes developed since the middle 1990s have provisions intended to ameliorate natural resources. Recipients of PROCAMPO payments are permitted to maintain land according to an approved environmental plan, without producing any crops or livestock. Most payments under PROGAN, a programme to improve grassland management which is described in a later section, relate to environmental stewardship.

Policies to improve productivity

Alianza – productive development

Alianza (*Alianza para el Campo*) began in 1996 and was revised in 2003 (*Alianza Contigo*) to serve as an umbrella for around 100 programmes, including many that focus on increasing agricultural productivity and helping farmers to add more capital to their

operations. The basic objectives of *Alianza* elements that focus on agricultural productivity are to increase productive infrastructure, combat animal diseases, transfer relevant technology and promote integrated development of rural communities. The composition of sub-programmes implemented has changed over time, but in general terms some of the most important have been devoted to improving rural equipment, livestock and agricultural product quality and to increasing investment in capital goods. In general, *Alianza*'s yearly expenditures since its inception are around 3% of agricultural GDP, which includes rural poverty alleviation as noted below. Final beneficiaries are required to provide matching contributions in order to access certain programmes.

Until 2000, *Alianza*'s operational rules were complicated and support was concentrated in certain states and on a limited number of producers. Programmes did not always respond adequately to market needs. After 2000, several changes were made to the programmes and more resources have been channelled in real terms. One of the main changes was to link capital investment with the development of efficient marketing mechanisms.

In 2003, *Alianza*'s objectives highlighted the fostering of agribusiness in rural areas and the strengthening of competitiveness in the agri-food chains through capitalization. This was done to improve producers' income as well as to diversify employment sources in the countryside. The *Alianza* rules adopted in 2003 (*Alianza Contigo*) simplified the programmes and grouped them in three main areas of endeavour: capitalization, product chain enhancement and creation of technologies for supporting the agri-food system. The purpose, provisions and target populations of the main programmes and sub-programmes of *Alianza* are described in detail in Annex Table II.B4.

Alianza currently accounts for about 16% of total spending by SAGARPA, a smaller share than in some recent years but much higher than at the beginning when only 6% of SAGARPA spending was devoted to it. Current total expenditure (2005) and its composition among the main programmes and sub-programmes is detailed in Table 3.5, which also indicates the share of federal expenditures in total spending under the different headings.

The **Agriculture Enhancement Programme** integrated and re-structured previous programmes. The main objective is to enhance production, productivity and competitiveness through research, technology transfer, training, capitalisation, diversification and the consolidation of product systems. The Agriculture Enhancement Programme has three sub-programmes: development of investment and capitalisation; strengthening product systems; and research and technology transfer. The first subprogramme channels support for capital goods acquisition and for infrastructure improvement, while the second seeks to strengthen managerial capacity in the product systems. The research and technology transfer component supports the creation, validation, transfer and adoption of technology.

The **Livestock Enhancement Programme**, on the other hand, is aimed at the capitalisation of livestock production units through the improvement of infrastructure; the acquisition and modernisation of equipment; and the adoption of new technologies. This programme includes two subprogrammes: livestock development (*Desarrollo Ganadero*) and development of integrated agricultural and livestock projects (*Desarrollo de Proyectos Agropecuarios Integrales*).

Table 3.5. *Alianza Contigo* expenditures in 2005

Programme title	Total* (thousand MXN)	Federal (thousand MXN)	Share of federal spending in total spending
TOTAL	9 362 180	7 234 014	77.3
Agriculture	2 489 396	1 907 599	76.6
Investment and capital strengthening	1 609 913	1 120 999	69.6
Product systems strengthening	68 346	54 871	80.3
Research and technology transfer	514 609	435 201	84.6
Other	296,528	296 528	
Livestock	1 455 535	1 072 701	73.7
Livestock development	1 227 529	909 314	74.1
Development of integrated agricultural and livestock projects	144 401	79 782	55.3
Other	83 606	83 606	
Rural development	3 155 790	2 545 174	80.7
Support to rural investment projects	2 069 041	1 619 473	78.3
Development of capacity in the rural sector	467 881	378 270	80.8
Strengthening of enterprises and rural organizations	352 655	281 218	79.7
Fish	266 213	266 213	
Aquaculture and fisheries**	908 904	836 803	
Animal and plant health and food safety	1 214 145	772 837	63.7
Other programmes	138 410	98 900	71.5

* Includes resources from both federal and state levels.

** For further explanation in *Alianza's* fisheries and aquaculture programmes, see Part III.

Source: VI Informe de Gobierno, 2006.

Box 3.2. *Alianza* and decentralising policy implementation

Operation of *Alianza* programmes is designed to decentralise the decision-making and implementation, and to provide more safeguards against waste and corruption. Priorities are set at local levels by consultative bodies, typically organised around a particular commodity. Moreover, while funding for some programmes may go to individuals, as well as to groups of producers, precedence is given to projects that are supported by the consultative body. To provide support more effectively, support for projects tends to be provided in stages leading from gathering information and planning to purchases of productive assets for farms or for infrastructure to technical assistance to exploit best new equipment and techniques – with subsidies provided at each stage on a cost-sharing basis. Design mechanisms to limit the potential for corruption include payment schedules that correspond to intermediate and final targets, transparency such as by published tendering for work and the greater number of participants in decision-making.

State and municipal governments are encouraged to participate actively. Lower levels of government are able to supplement the federal subsidies for most projects to improve technology, infrastructure or conservation or to develop better their poorer rural areas. The formula governing allocations of federal money under some programmes depends, in part, on expenditures by the lower levels such that their participation is rewarded with some additional federal money. Moreover, consultative bodies are defined at these levels, and the corresponding body at the national level is comprised in part of representatives drawn from the lower bodies. Thus, with these reforms the priorities and mechanisms to achieve these targets are being integrated among levels of government.

Additionally, in order to improve the equity of the Programme, the budget is assigned by means of a formula, which considers: the importance of the agriculture sector in the State economy; its contribution to the national agricultural GDP, as well as some indicators of relative development in order to attenuate the regional disparities.

Source: Interviews with SAGARPA officials unless otherwise noted.

Alianza – rural development

The scope of *Alianza* extends beyond support to commercial producers, as sub-programmes grouped under the *Programa de Desarrollo Rural* (PDR, Programme of Rural Development) are intended to help poor farmers. Four sub-programmes of *Alianza* target rural development objectives, explicitly with a tertiary goal to limit migration. Their focus is on (1) human capital, (2) physical capital such as infrastructure and natural resources, (3) economic development, and (4) social capital in the form of organisations or participatory frameworks. Eligibility is determined by poverty: the first criterion is individual poverty, and the second criterion is regional poverty. Other criteria include the potential to generate local economic activity and employment. Areas suffering droughts may also be targeted for improvements to water infrastructure, such as dams and water collection equipment, and to grasslands.

The first priority of rural development spending under *Alianza* is to help producers to build social capital, which entails organising groups and creating councils that then serve as the forums in which further priorities can be established within the legal framework. Subsequent support is provided to help the producers purchase capital investments or technical assistance — or, more commonly, both — identified by the consultative body. The step-by-step process, and particularly the initial phases to decentralise decision-making, raises costs and introduces delays, but builds local support and helps better target spending (Box 3.2).

Of all components of *Alianza*, the rural development thrust is most clearly integrated among ministries. SAGARPA, with less than a third of the overall budget in 2005, shares responsibilities with seven other Ministries. The Undersecretary of Rural Development plays the lead role in these programmes. Nevertheless, approximately 40% of the expenditures are on projects related to agriculture, and some of the rest, such as spending on information technology, finance or environmental tourism, may overlap with agricultural activities. Consistent with the underlying emphasis on decentralisation, states and municipalities are encouraged to participate and typically contribute a further 25% to federal expenditures. The Programme for Animal and Plant Health and Food Safety supports campaigns for the control and eradication of pests and diseases, protection of the sanitary status, and promotes and develops food safety programmes.

PROGAN – Programme to Improve Livestock Productivity (Programa de Estímulos a la Productividad Ganadera)

In 2003, the Programme to Improve Livestock Productivity (PROGAN) was created with the objective of improving productivity by increasing the production of forage from pasture lands and the adoption of technological practices that improve yields. This generates a virtuous circle for the environment as it discourages extensive livestock systems and generates increased vegetation cover which in turn improves the retention and infiltration of ground water. The livestock producer undertakes to implement certain practices to improve vegetation and to respect sanitary regulations.

The operational rules of PROGAN require cattle to be registered in the National System of Individual Cattle Identification (SINIIGA). This allows individual cattle to be identified, strengthens sanitary control and facilitates movement of cattle, better technical handling of the herd, genetic improvement and better marketing, contributing to actions in favour of public health, and helps to prevent cattle rustling. Registration of cattle in the

System offers certainty and legal security to the owner. PROGAN support consists of a payment per animal over four years (Table 3.6).

Table 3.6. PROGAN payments

Year of support	Support (MXN per cow)
1	300
2	400
3	500
4	600

Source: Diario Oficial de la Federación (DOF), 17 June 2003.

Other policy measures

Commercial promotion and agro- business development

With the purpose of improving the integration of producers in both domestic and international markets, a programme has been put in place to strengthen and consolidate supply, and to stimulate the demand for Mexican agro-food products. Marketing is supported through generic campaigns at the national level (*Mexico Calidad Selecta*, or Mexico Selected Quality) and the promotion of exports through participation in domestic and international exhibitions that promote quality Mexican products. The Marketing Links System and the Direct Marketing Programme seek to develop links between suppliers and buyers and between producers, packers and buyers in supermarket chains.

The *Programa de Fomento a los Agronegocios* (FOMAGRO, Agri-Business Promotion Programme) stimulates the creation of new businesses through risk sharing and by assisting with the development of business plans, providing technical advice and training, infrastructure and equipment. It also helps with the constitution of liquid guarantees.

Weather-related disasters

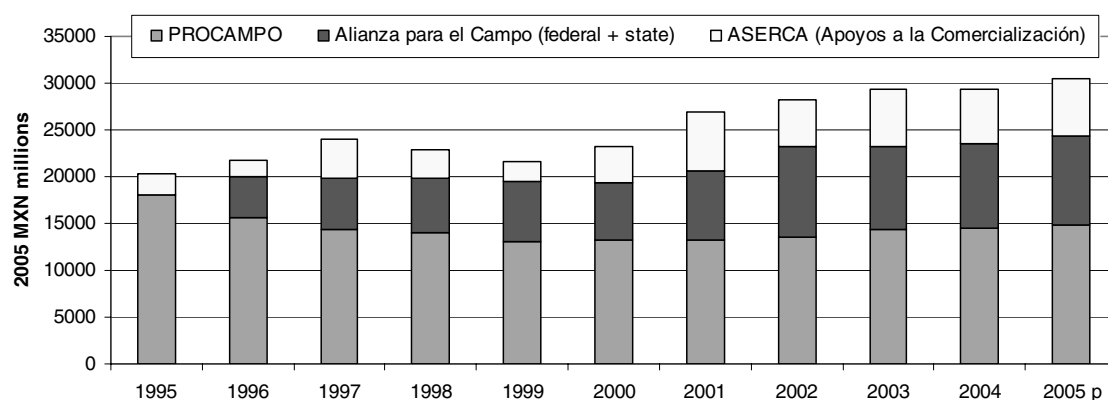
Two programmes are available to deal with weather-related disasters. The beneficiaries of the programmes are different. The programme of sustainable agriculture in areas subject to climatic disasters take a preventive approach by supporting construction and other works aimed at improving the fixed assets of the rural population. This programme is aimed at areas in each state where production is affected by recurring weather problems. The other programme, *Fondo para atender a la Población Afecta por Contingencias Climatológicas* (Fund to Assist Rural Populations Affected by Weather Related Disasters, or FAPRACC) supports low income producers in areas of rain fed grassland by granting a payment per hectare or per animal. It also helps affected producers to find temporary employment and with the acquisition of insurance.

Total expenditures on agricultural policies

Figure 3.5 shows the evolution of spending (by SAGARPA) on the main agricultural support programmes in Mexico since the mid 1990s. Together, PROCAMPO, *Alianza* and Marketing Support Programme have provided some MXN 30 billion in 2005. Expenditures on these programmes have been growing in real terms, particularly from

2001. However, budgetary expenditures are only a partial measure of support provided to agriculture and to producers because transfers from consumers are excluded. The OECD indicators of support presented and analysed in the next chapter overcome these limits.

Figure 3.5. Expenditures by agricultural support programmes, in 2005 MXN millions



Source: Quinto Informe de Gobierno, Anexo Estadístico, 2005.

NOTES

1. This refers to those states where regional supply exceeds regional demand historically.
2. OECD (*forthcoming 2007*).
3. OECD (*forthcoming 2007*).
4. Anexo Estadístico, 5° Informe de Gobierno, Government of Mexico.
5. Data of this paragraph are drawn from *Anexo Estadístico, 5° Informe de Gobierno*, Government of Mexico, unless otherwise stated.
6. OECD (*forthcoming 2007*).

Chapter 4.

Agricultural policy transfers and welfare effects

Introduction

The OECD provides estimates of the support generated by agricultural policies.¹ These data include estimates of the transfers from consumers and taxpayers to producers, from taxpayers to consumers, and from taxpayers to the overall sector that can be presented on an absolute or on a relative basis, depending on the purpose. The data can be disaggregated according to the basis of payments — whether linked to production, to land or to some other criterion — to understand better how the reforms have led to a re-instrumentation of support. This chapter presents these data for Mexico in order to assess the changing level and composition of support provided to producers, to consumers and to the sector overall during the reform period.

These data do not provide estimates of the economic effects of policies, but are commonly used as an input into economic models that do provide such estimates, including one maintained by the OECD. The results of simulations to understand how these transfers affect the income of commercial farmers, the welfare of subsistence farmers and other agents are also presented in this chapter.

The analysis in this chapter is limited to the welfare effects of changes in agricultural policies. The next chapter provides a detailed representation of commodity markets and how they would evolve over time in response to the policy reforms. The link between agricultural policy and rural poverty, including institutional changes associated with the land tenure system, are addressed in a later chapter, as are the effects of agricultural policies on market infrastructure and natural resources.

Monetary transfers due to agricultural policies

The evolution of Mexico's agricultural policies since 1991 has been described in the preceding chapter as a radical shift from market intervention, with domestic prices raised relative to world prices using tariffs and import quotas, to a mixture with some remaining price support supplemented by support provided directly on the basis of land. Throughout these past fifteen years, additional support has been provided on the basis of the inputs used by commodity producers, such as energy and capital. One way to evaluate policies before and after the reforms is to identify the transfers that they generate – transfers from consumers or taxpayers to producers, and from taxpayers to consumers.

Producer Support Estimates

The Producer Support Estimate (PSE) measures the value of transfers to producers from consumers and taxpayers. The PSE is expressed as the absolute value, nominal or real, or in the form of the %PSE, which is relative to gross farm receipts. If expressed in absolute terms, the PSE provides a measure of the overall policy effort. Stated relative to gross farm receipts, the %PSE indicates the share of gross farm receipts explained by agricultural policy – with the rest being explained by the value of production at world prices – and is particularly useful for comparisons.

The PSE can be decomposed according to the criteria that a producer must meet in order to be eligible for a transfer (Table 4.1). Often, eligibility depends only on selling domestically produced agricultural commodities. Policies that raise domestic prices relative to border prices impose higher costs on domestic consumers of goods, and provide domestic producers with higher revenue. This form of support, Market Price Support (MPS), requires border measures, tariffs or import quotas, to prevent arbitrage that would otherwise occur in the presence of differences between domestic and border prices. Transfers from taxpayers to producers take the form of payments that producers receive directly or indirectly on the basis of the amount of output they produce, the amount of land they own, the amount of inputs they use or on some other basis.

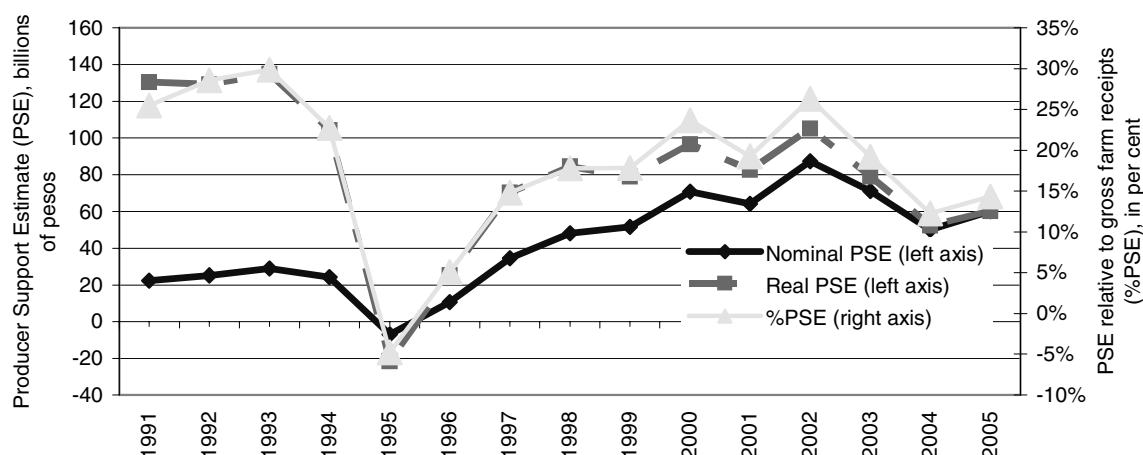
Table 4.1. Selected agricultural policies and their classification in OECD support estimates

Producer support estimate				
Market price support	Payments based on output	Historical entitlement	Inputs	Other
Import license	Target price	PROCAMPO*	Energy subsidies	PROGAN*
Tariffs	Target Income		Fertilizer subsidies	Disaster payments
Guaranteed producer prices	<i>Alianza fondo del cafe</i>		Irrigation subsidies	
			Capital subsidies	
General services support estimate				
Research and development	Inspection	Infrastructure	Marketing and promotion	Other
INIFAP*	SENASICA*	Irrigation subsidies Rain-fed area subsidies	ASERCA market development*	CONASUPO* stock holding
Consumer support estimate				
Transfers from consumers to producers		Transfers from tax-payers to consumers		
Market price support generated by trade barriers		CONASUPO* subsidies ASERCA apoyos comercializacion*		

* ASERCA market development = Programa de Apoyos Directos a la Comercialización y Desarrollo de Mercados Regionales; CONASUPO = Compañía Nacional de Subsistencias Populares; INIFAP = Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias; PROCAMPO = Programa de Apoyos Directos al Campo; PROGAN = Programa de Estímulos a la Productividad Ganadera; SENASICA = Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria.

The effect of the major policy changes over the last fifteen years on transfers to producers is evident from these data (Figure 4.1). The absolute nominal level of transfers to producers as measured by the PSE, rose from over MXN 20 billion to MXN 87 billion in 2002, before falling to MXN 60 billion in 2005. The drop in 1995 relates to the financial crisis and the peso devaluation: the sudden rise in border prices expressed in pesos to levels that exceeded domestic prices led to a negative transfer from consumers to producers for some commodities — implying that consumers were paying less than border prices, and producers receiving less, for a brief period of time. Ignoring 1995, growth in the PSE averaged 12% per year.

Figure 4.1. Producer Support Estimate, MXN billion (PSE) and relative to gross farm receipts (%PSE)



The PSE can be adjusted to take account of inflation. If considered in terms of purchasing power, then the real (2005) PSE was highest in the early 1990s. Moreover, the 12% trend growth of the nominal PSE corresponds to a trend decrease of 3% per year in the real value of transfers to producers. However, the data do not show a stable downward trend, but rather a shift in the level; the decrease in real PSE appears to be from one level before the currency crisis and the start of the reforms to another level that has prevailed since the middle 1990s.

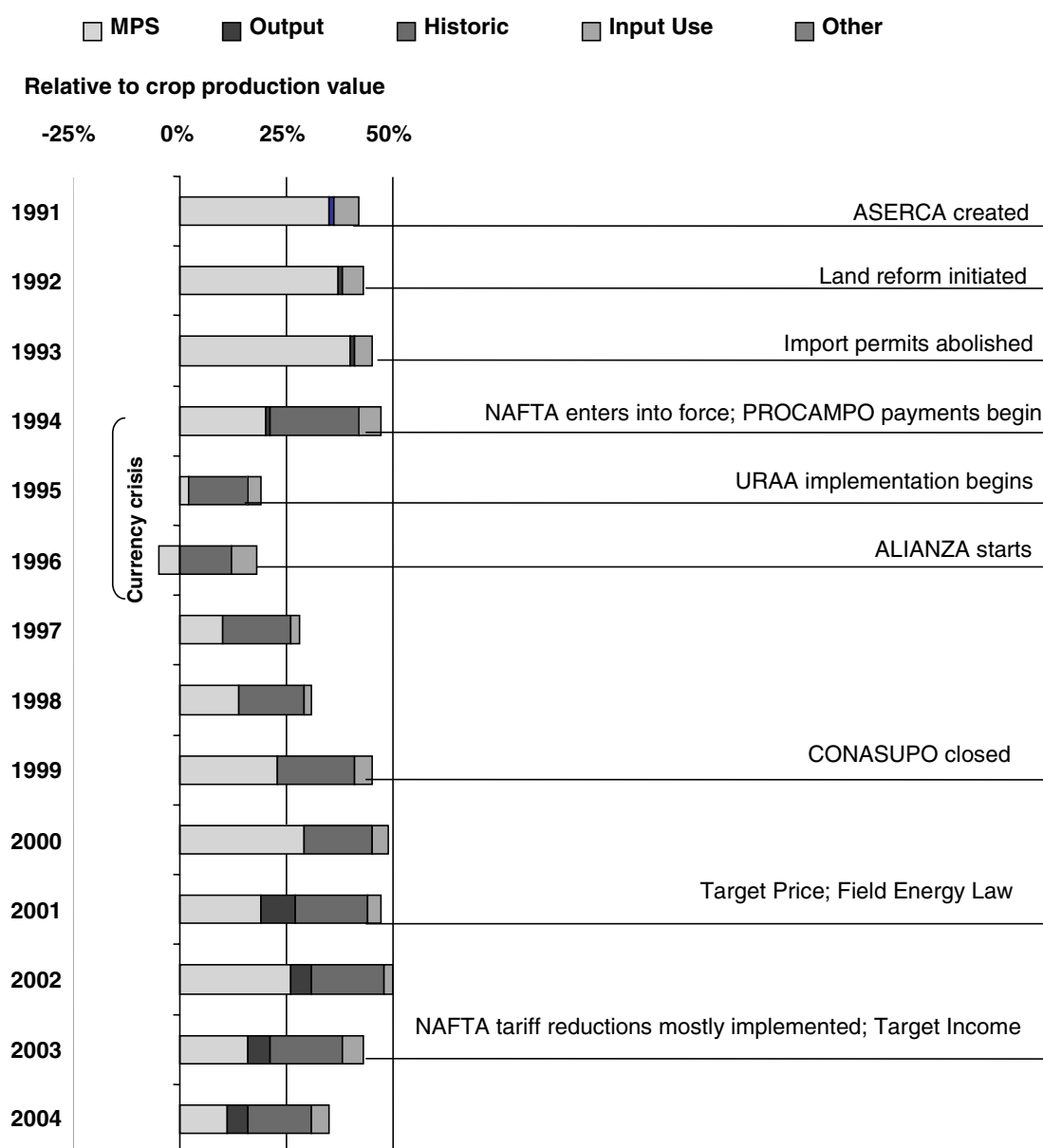
Whereas the PSE in nominal terms peaked in 2002, the %PSE was highest in 1993 when policy-induced transfers accounted for 30% of gross farm receipts. The %PSE fell dramatically during the currency crisis of the middle 1990s, but has increased afterward. However, the sharp decrease at the time of the sudden peso devaluation does not explain the sustained difference in the %PSE: the share of policy induced transfers in gross farm receipts has decreased from levels of 25-30% at the start of the 1990s to a range of 12-26% after 1996. Although these ranges overlap, these estimates of the share of support in farm receipts suggest that the reforms have caused an important shift away from intervention and towards market-orientation.

Changes in the composition of the %PSE for crops follow directly from the major policy initiatives outlined in the last chapter (Figure 4.2). These support estimates are composed of two broad categories, MPS and budgetary support, and the latter can be further disaggregated according to the basis of the payments. In Mexico, important categories of budgetary support are payments based on commodity output, payments based on historical entitlements and payments based on input use. Other forms of support (payments based on input constraints, on overall farm income or for other reasons) are expressed here as a single aggregate. By examining the composition of the %PSE, the contribution of important policy initiatives becomes more apparent and, as will be shown later in this chapter, the transfers can be associated more directly to economic incentives of different agents in the agricultural sector.

The composition of the %PSE reveals the re-instrumentation of support brought about by Mexico's agricultural policy reforms over the last 15 years, in particular regarding the shift from price support to direct payments. At the start of the 1990s, all policy transfers were associated with MPS – the higher domestic prices caused by barriers to trade – and payments based on input use as state-owned agencies and other mechanisms were

employed to deliver agricultural inputs to producers at costs lower than market prices. Institutional reforms, chief of which was the constitutional amendment that introduced land reform, do not directly create transfers that can be measured by the PSEs and, hence, do not directly show up in the %PSE composition. However, if they are closely related to changes in policy instruments that do generate transfers, then the institutional reforms would be reflected indirectly in the %PSE composition. In any case, the implementation period may be long and the effects may relate more to the distribution than to the magnitude of transfers.²

Figure 4.2. Evolution of the crop Producer Support Estimate (%PSE)



The composition of support changed significantly as a consequence of reforms introduced in the 1990s. The largest shift occurred in 1994, when the import barriers began a rapid decline and PROCAMPO was introduced. PROCAMPO payments are based on historical area planted to any of a list of crops, as explained in the previous chapter, so this form of budgetary support is categorised as a payment based on historical entitlements. While the %PSE in 1994, at 47%, was only marginally higher than the 45% observed in 1993, the share of gross crop farm receipts explained by the MPS fell by half, from 40% to 20%, and the share of payments based on historical entitlements in gross crop farm receipts rose from nothing to 21%.³

The currency crisis of the mid-1990s affected MPS strongly, explaining more of the decrease in support in 1995 and 1996 than the policy reforms. MPS is responsive to market conditions, particularly to the gap between domestic prices, over which policy makers have some control, and border prices that depend on prevailing conditions in world markets and exchange rates. In contrast to a budgetary payment that may be fixed — indeed, must be planned in advance for the purpose of government accounting — the level of support generated by barriers to trade may vary substantially from year to year. This reflects the fact that a rising border price that is not transmitted to domestic markets implies that producers sell at a lower price than they would if the higher price signal was transmitted, and a falling border price that is not transmitted to domestic markets implies that producers are selling at a higher price than they would if the price signal was transmitted.

The macroeconomic stability achieved soon after the currency crisis is apparent in the composition of the %PSE. Since 1998, the MPS has fluctuated from about 15% to 30% of gross crop farm receipts, still well below the levels of 35% to 40% of the early 1990s. Payments based on historical entitlements have remained at 15% to 18%. This period is dominated by the implementation of the reforms to tariff levels, putting downward pressure on MPS, and by institutional reforms which are not discussed here. A major policy initiative apparent in recent years is the introduction of ASERCA payments based on output in 2001, initially in the form of Target Price but by means of the Target Income programme from 2003. Before 2001, the support was tied to the marketing of crops through intermediaries who committed to paying a minimum price to farmers, as discussed in Chapter 3, and was consequently a consumer subsidy – albeit one that helped to sustain market price support. The mechanism has since been amended to pay directly to farmers, so the programme is categorised as a payment based on output as the support is linked to the volume of crop sales.⁴

Payments based on input use is a small but stable component of support to crop producers. Since 1990, payments based on input use have ranged between 2% to 9% of gross crop farm receipts, with the lowest values observed in the mid-1990s. This type of support was more important when the government provided inputs at discount in the early 1990s — although substantially lower than during the 1980s — and again in recent years. The recent increase in payments based on input use has been associated with programmes, including some under the umbrella of *Alianza*, that attempt to help farmers access credit or to improve their operations, both of which are clearly motivated by efforts to overcome obstacles to rural development as noted before and analysed in greater depth in Chapter 6. A large part of recent expenditures are related to subsidised energy use, namely payments based on purchases of electricity and fuel under the Field Energy Law (*Ley de Energía para el Campo*).

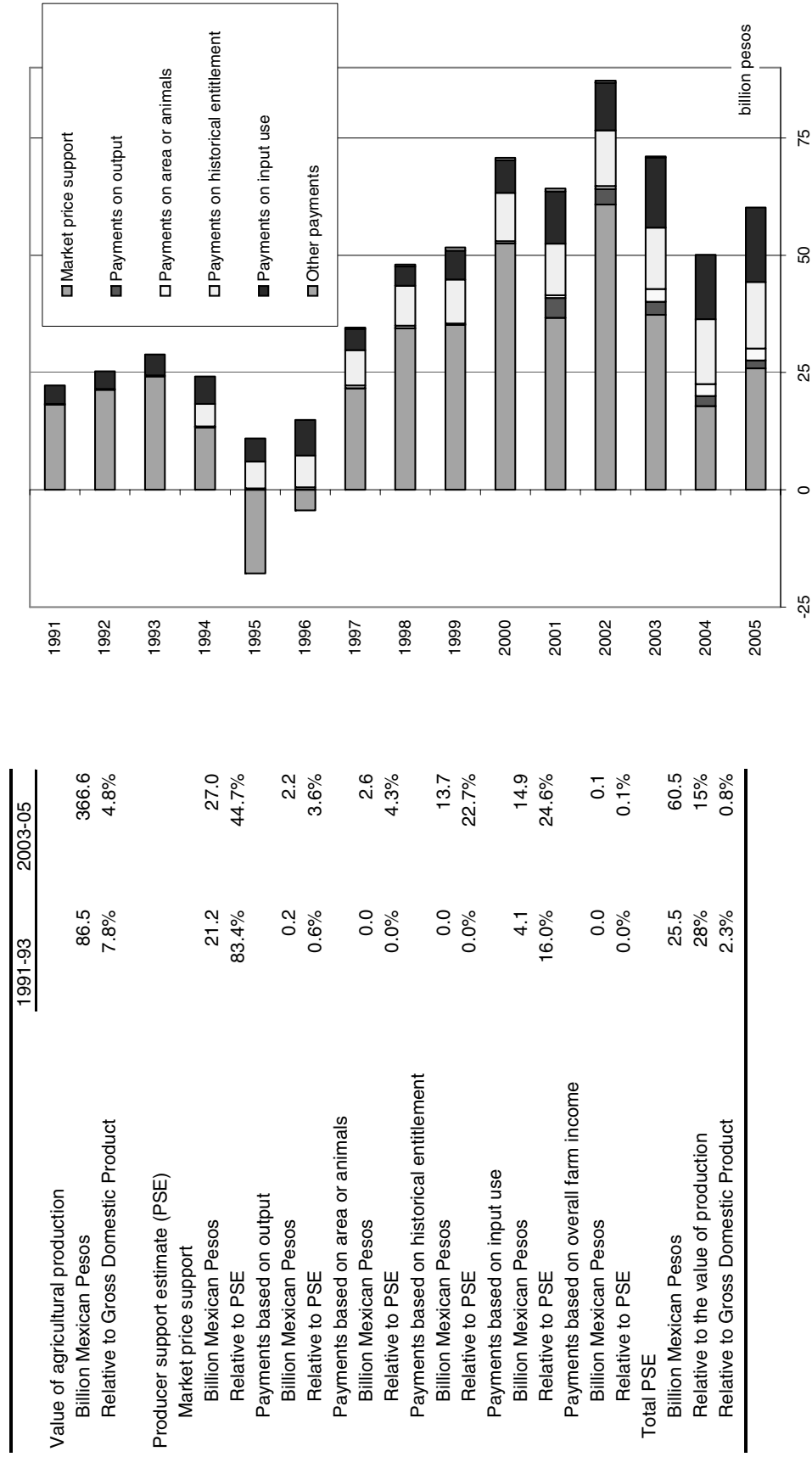
The support to producers of livestock and livestock products can be assessed in the same way. The share of gross livestock farm receipts generated by policy-induced transfers for livestock products was 24% to 34% in the early 1990s, fell dramatically during the currency crisis and then rose to 27% in 2002, but has otherwise been well below the levels at the start of the period, falling to as low as 4% in 2004. The share of MPS remains important and, as evident from the %PSE data for crops, the livestock %PSE shows the implementation of reforms to trade measures: the MPS declines dramatically after 1994. Prior to these reforms, until 1994, the share of livestock producer gross receipts explained by MPS was 21% to 26%, whereas the share was less than 20% in all subsequent years but one. Payments based on input use were larger in the early 1990s, equivalent to as much as 9% of gross farm receipts from livestock in 1994, but have been lower since then at 2% to 3%. In recent years, payments based on animal numbers have grown with the introduction of the PROGAN programme, but remain less than 2% of the value of gross livestock farm receipts.

The livestock %PSE is lower than the crop %PSE overall, in part because of the mechanisms used to support crop producers. MPS, as stated above, generates a transfer from consumers to producers. In the case of crop MPS, some of the consumers are other producers. Livestock owners must pay more than border prices for crop and crop products that they feed to their animals. These higher costs, called excess feed costs in the OECD's PSE method, are taken into account in the calculation of PSEs. In the absence of higher feed costs, the net transfer to producers would be higher throughout the period — the PSE would be raised by 7% on average — although the magnitude of excess feed costs fluctuates from year to year with changing market conditions. While not fully offsetting, the reduction in border measures for crop products reduced the excess feed costs at the same time that lower tariffs for livestock products lowered the transfers to livestock producers.

The level and composition of total PSE for the aggregate of all commodities highlights further the reforms to Mexico's agricultural policies over the last 15 years (Figure 4.3). As noted in Chapter 2, the nominal value of agricultural production has risen, but the share of agriculture in the total economy has fallen from 8% on average in 1991-93 to an average of 5% in 2003-05. Over the same period, the %PSE has fallen from 28% to 15%. Relative to GDP, then, the average share of transfers to producers induced by policies has fallen further, from over 2% to less than 1%.

The share of MPS in the PSE has fallen dramatically as border measures to restrict trade have been relaxed, or even eliminated. Although falling relative to total PSE from 83% in 1991-93 to 45% in 2003-05, this category of support nevertheless rose in nominal terms: MPS averaged MXN 21 billion in 1991-93 and rose to MXN 27 billion in 2003-05. However, the 27% growth between these two periods was slower than the rate of inflation, implying a decline in MPS of 74% in real terms.

Figure 4.3. Composition of the OECD Producer Support Estimate for Mexico



The share of other forms of support in the PSE have increased during this period. The largest increase is in payments based on historical entitlements due to the introduction of PROCAMPO as part of the reform process. There was effectively no budgetary support of this type in 1991-93, but the 2003-05 average was MXN 14 billion or 23% of the PSE. Payments based on output provided by ASERCA, which averaged MXN 2.2 billion or 4% of the PSE in 2003-05, are another new form of support. Payments based on area or animal numbers have also been developed, rising from almost nothing to MXN 2.6 billion as PROGAN was introduced and expenditures associated with disaster payments became important. Payments based on farm income or on input constraints are quite small or zero.

Payments based on input use have always been an element of support in Mexico, at MXN 4 billion or 16% of the PSE in 1991-93 and MXN 15 billion or 25% of the PSE in 2003-05, although the underlying policies changed over time. In the early 1990s, the dominant policy of this type provided interest concessions of more than MXN 1 billion of transfers in each year until 1996, when capital grants were introduced. These grants, including some associated with *Alianza*, have risen steadily in value since then to MXN 4.8 billion on average in 2003-05, representing the second largest form of payment based on input. In contrast, MXN 0.9 billion in subsidies to irrigation and MXN 0.7 billion to animal feed in 1991-93 were peaks in absolute and relative terms. In subsequent years the support to feed use that was provided via CONASUPO and ALBAMEX was abolished. Support to irrigation provided directly to farmers has fallen to MXN 0.6 billion in 2003-05, and now represents a much smaller share of the total PSE. The new categories that explain much of the increase in payments based on input are based on energy use, MXN 5.8 billion on average in 2003-05, and another MXN 2.5 billion on average that went to producers for pest and disease control measures.

Consumer Support Estimates

MPS is associated with transfers to producers from consumers, who are required to pay higher prices than they would if they purchased goods at world prices. The consumer support estimate (CSE) is the balance of these transfers and any direct budgetary support provided to consumers, and measures the transfers to consumers valued at farm-gate prices. In most OECD members, including Mexico, the CSE is negative as the costs of transfers to producers associated with MPS are greater than subsidies to food consumption.

The CSE amounted to MXN -18 billion in 1991-93 and MXN -34 billion in 2003-05 on average (Table 4.2). These figures are equivalent to MXN -91 billion and MXN -36 billion in real terms (base 2005), or to 22% of the value of consumption in 1991-93 and 9% of the value of consumption in 2003-05. The cost of agricultural policies to consumers would have been much higher at the start of the 1990s but for the presence of large offsetting subsidies at the expense of taxpayers. These transfers averaged MXN 4.7 billion in 1991-93, equivalent to nearly 6% of the value of consumption. Subsidies to consumers peaked at over MXN 10 billion in 1996, during the currency crisis, with maize consumption subsidies alone accounting for over MXN 7 billion. Since then, transfers from taxpayers to consumers provided by agricultural policy have fallen to average less than MXN 0.4 billion, a fraction of a per cent of consumption in 2003-05, and largely limited to providing subsidised milk. These changes reflect the reforms discussed previously: transfers from consumers associated with MPS have been reduced, but not eliminated, by the reduction in barriers to trade; and the policies intended to

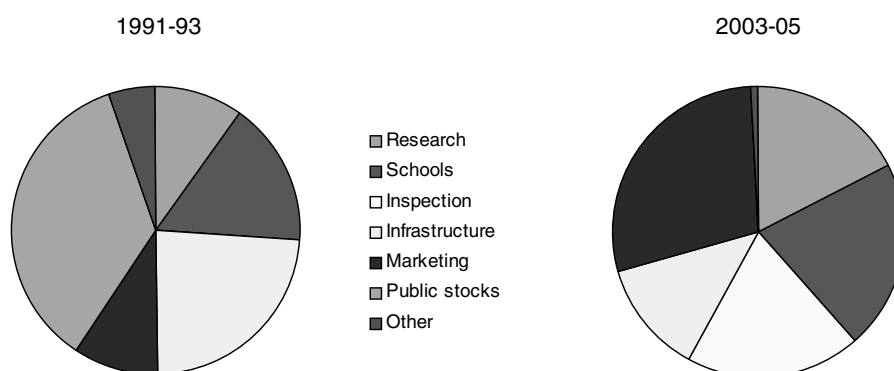
achieve social objectives are no longer part of agricultural policy. These new programmes, including PROGRESA/ *Oportunidades*, are, thus, not counted in the CSE.

Table 4.2. Consumer, General Service and Total Support Estimates

	1991-93	2003-05	Ratio
Value of consumption at farm-gate prices			
Billion Mexican Pesos, nominal	80.6	356.8	4.43
Billion Mexican Pesos, in 2005 prices	417.8	374.8	0.90
Relative to GDP	7.3%	4.7%	0.65
Consumer support estimate (CSE)			
Billion Mexican Pesos, nominal	-17.7	-33.5	1.90
of which, consumer subsidies	4.7	0.4	0.08
Billion Mexican Pesos, in 2005 prices	-91.2	-35.5	0.39
of which, consumer subsidies	24.0	0.4	0.02
Relative to the value of consumption	-21.9%	-9.5%	0.44
of which, consumer subsidies	5.8%	0.1%	0.02
General services support estimate (GSSE)			
Billion Mexican Pesos, nominal	3.4	9.4	2.77
Billion Mexican Pesos, in 2005 prices	17.5	9.9	0.57
Relative to the TSE	10.2%	13.4%	1.32
Relative to GDP	0.3%	0.1%	0.40
Total support estimate (TSE)			
Billion Mexican Pesos, nominal	33.5	70.3	2.10
Billion Mexican Pesos, in 2005 prices	173.1	74.2	0.43
Relative to GDP	3.0%	0.9%	0.31

General Services Support Estimates

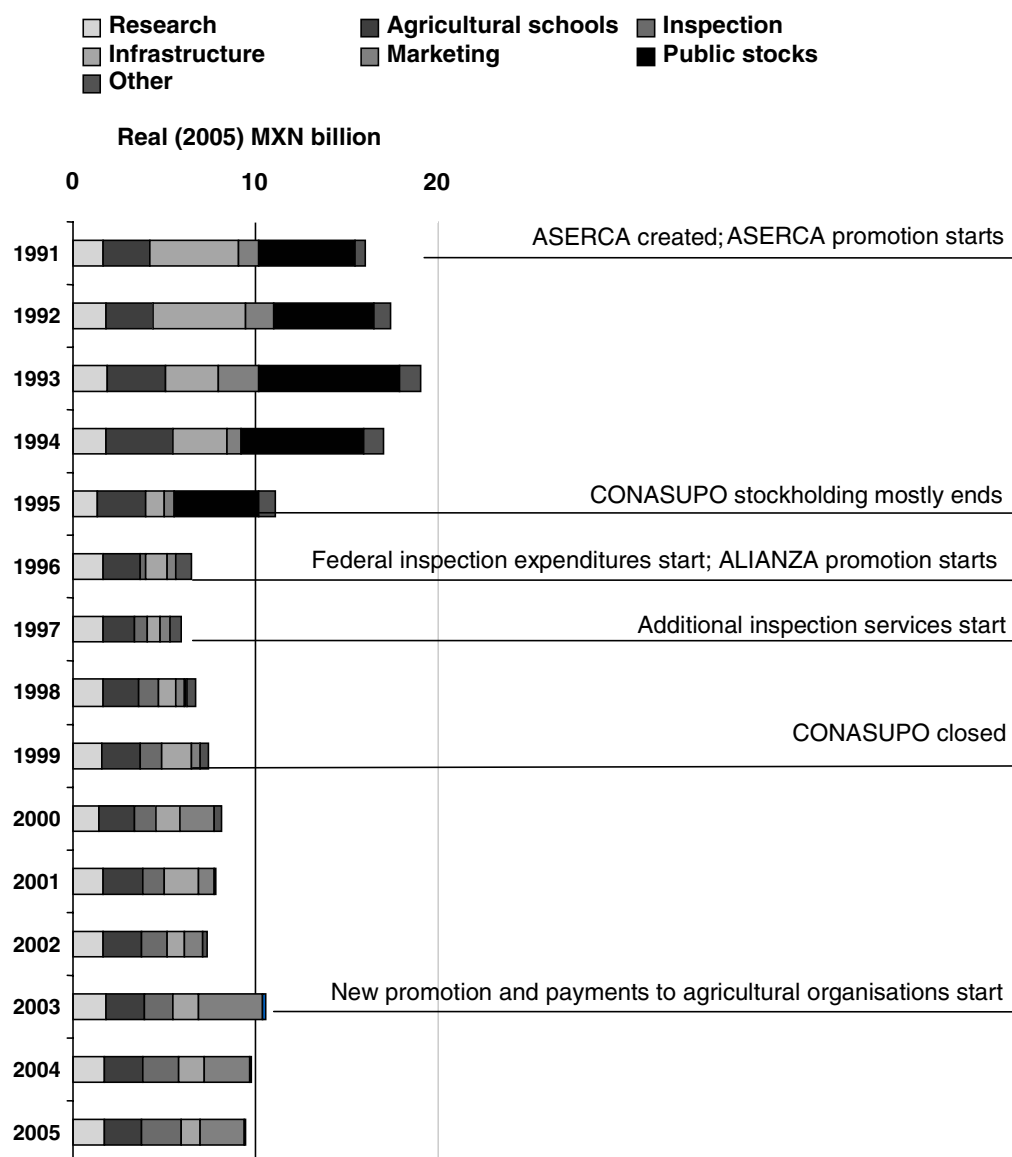
Not all the transfers associated with agricultural policies are provided to specific producers or consumers, but some are instead provided to the sector as a whole. For example, public expenditures on research and education, market infrastructure or inspection services that do not accrue to individual producers or consumers instead benefit the sector overall. The General Services Support Estimate (GSSE) is an indicator of these transfers. In the case of Mexico, whose agricultural sector is less well integrated with global markets for some goods, due to a high-cost distribution system, product quality or for other reasons, the GSSE might be expected to represent an important element of agricultural policy; many of the policies noted in the previous chapter that are intended to improve sectoral performance, rather than individual farmers' income, are counted here. In fact, the GSSE accounts for a tenth or more of the transfers to the sector as a whole. The total nominal value of MXN 3.4 billion in 1991-93 and MXN 9.4 billion in 2003-05 implies a near tripling, but corresponds to a reduction by 43% in real terms (Table 4.2).

Figure 4.4. Composition of General Services Support Estimate (GSSE)

	1991-93	2003-05
Research and development	10%	17%
Agricultural schools	16%	21%
Inspection services	0%	19%
Infrastructure	24%	13%
Marketing and promotion	9%	28%
Public stockholding	36%	0%
Miscellaneous	5%	1%

Transfers to agriculture as a sector can be disaggregated to understand better how the emphasis of this type of agricultural support has evolved (Figure 4.2). In 1991-93, the largest category was public stockholding, with 36% of the total GSSE, owing entirely to the activities of CONASUPO in the marketing of goods – a role which has since vanished completely. At 24% of the GSSE, infrastructure spending represented the second largest component at the start of the 1990s, but the share decreased to 13% in the most recent years. In both time periods, infrastructure spending is comprised almost entirely of support to irrigation systems and rain-fed areas for crop production, but the emphasis has increasingly been on irrigated crops. These programmes are regional in nature rather than farm specific and therefore are counted under the GSSE, not the PSE. Research and schools are two categories of some importance both before the reforms, and after: research and development programmes accounted for 10% of the GSSE in 1991-93 and 17% in 2003-05, with some of the increase explained by the introduction of programmes under *Alianza*; and agricultural schools accounted for 16% of GSSE in 1991-93 and 21% in 2003-05. In fact, schooling represents the second largest component of the GSSE in recent data — but these data relate only to transfers caused by agricultural policies, and do not measure the effects of other policies or spending by other Ministries. The largest category in 2003-05 is marketing and promotion, with 28% as opposed to 9% of the GSSE in 1991-93, with most of the increase explained by the introduction of ASERCA programmes to facilitate the marketing process.

Figure 4.5. Evolution of the General Services Support Estimate (GSSE)



The evolution of GSSE over time is a direct consequence of the programmes and agencies in place, and the expenditures on each programme (Figure 4.5). In real terms, the expenditure on research and development has remained fairly stable and, during the 1991-2005 period, the largest change in programmes has been the addition of an *Alianza* programme to facilitate technology transfer alongside growing expenditures under INIFAP. Agricultural school programmes have likewise been fairly stable in composition and level of real expenditure. Expenditures on inspection services, at least at the federal level, began in 1996 with the introduction of the main programme that accounts for most of the expenditures and most of the growth in expenditures on inspection services since then, but some smaller programmes were added in 1997. The decrease in real infrastructure spending was associated largely with a cut in spending focused on rain-fed

areas and on support not tied to irrigation, including a reduction in expenditures on infrastructure relating to livestock production. Promotion and marketing expenditures were dispersed through several programmes over the period, but were dominated by ASERCA since 1991. A programme introduced under *Alianza* in 1996 began with small real expenditures initially, but has since increased to account for a large portion of the promotion and marketing effort. Even more recently introduced programmes also contribute to this effort, including payments channelled through agricultural organisations. Public stockholding of CONASUPO, as noted above, was largely eliminated in 1995, well before the agency itself was closed in 1999.

Total Support Estimate

The total transfers to the sector, the Total Support Estimate (TSE), is the sum of PSE, GSSE and the taxpayer costs of consumer subsidies, less import tariff receipts.⁵ The TSE was MXN 33.5 billion in 1991-93 and rose to MXN 70.3 billion in 2003-05 — an increase in nominal terms but a decrease in real terms by more than half. The share of TSE in GDP fell over the review period from 3.0% in 1991-93 to 0.9% in 2003-05.

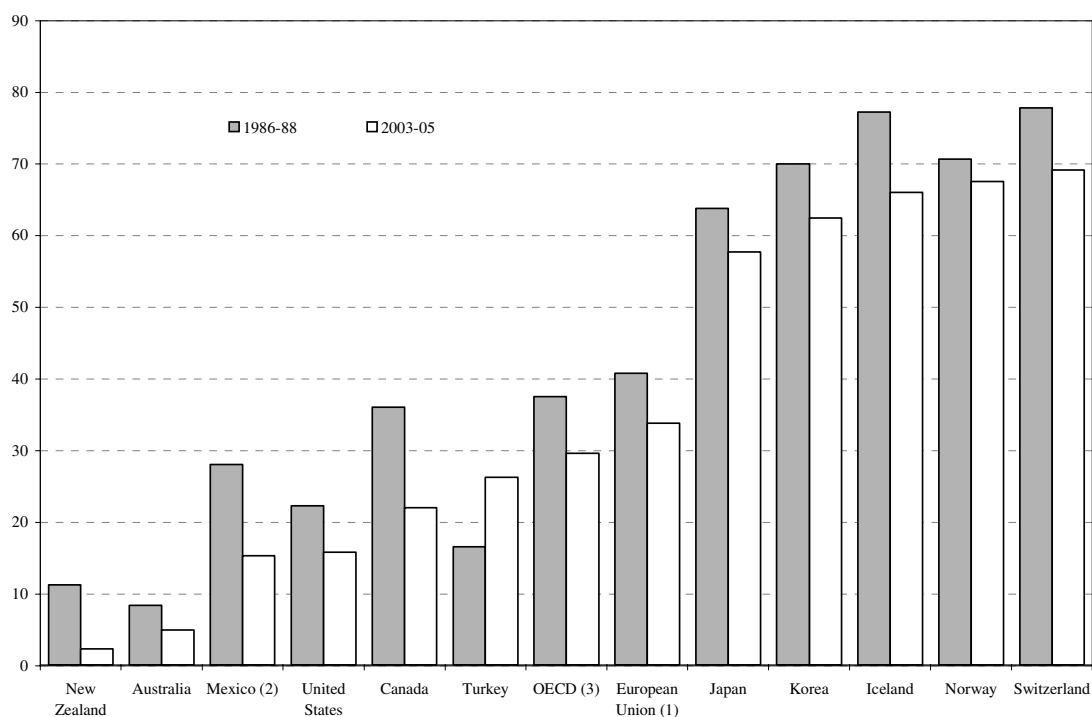
Relative to other OECD members

Producer support estimates

The general trends of support over the recent past are indicated by comparing three year averages, so as to smooth year-to-year fluctuations (Figure 4.6). The reforms have lowered the share of support in gross farm receipts so that, according to the latest data, Mexico belongs to the group of OECD members providing less than average support, but even before the reforms the %PSE of Mexico was below the OECD average. While the OECD average fell from 37% in 1986-88 to 30% in 2003-05, the %PSE of Mexico fell from 28% in 1991-93 before reforms started to 15% in 2003-05.

Agricultural policy explains a smaller share of gross farm receipts in Mexico than on average among OECD members, but is high if compared to at least some non-member countries (Figure 4.7). Recent data compiled by the OECD indicate that the transfers generated by agricultural policies of China represent 8% of gross farm receipts in China and 7% in South Africa, about half the 15% share in Mexico. The relative importance of agricultural policy is even lower in Russia, at 5%, and Brazil where agricultural policy transfers account for 3% of gross farm receipts.

Figure 4.6. Producer Support Estimate relative to gross farm receipts (%PSE) among OECD countries



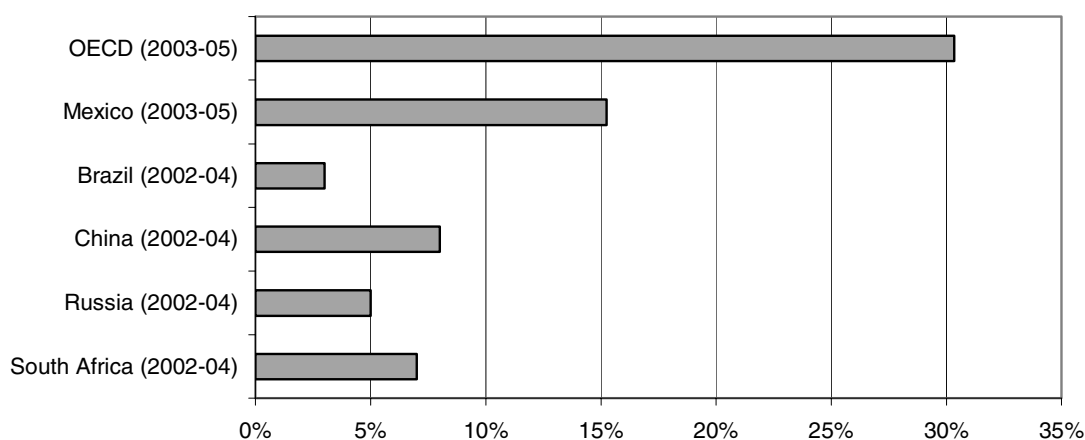
1. EU12 for 1986-94 including ex-GDR from 1990; EU15 for 1995-2003; EU25 from 2004.

2. For Mexico, 1986-88 is replaced by 1991-93.

3. Austria, Finland and Sweden are included in the OECD total for all years and in the EU from 1995. The Czech Republic, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. The OECD total does not include the six non-OECD EU member states.

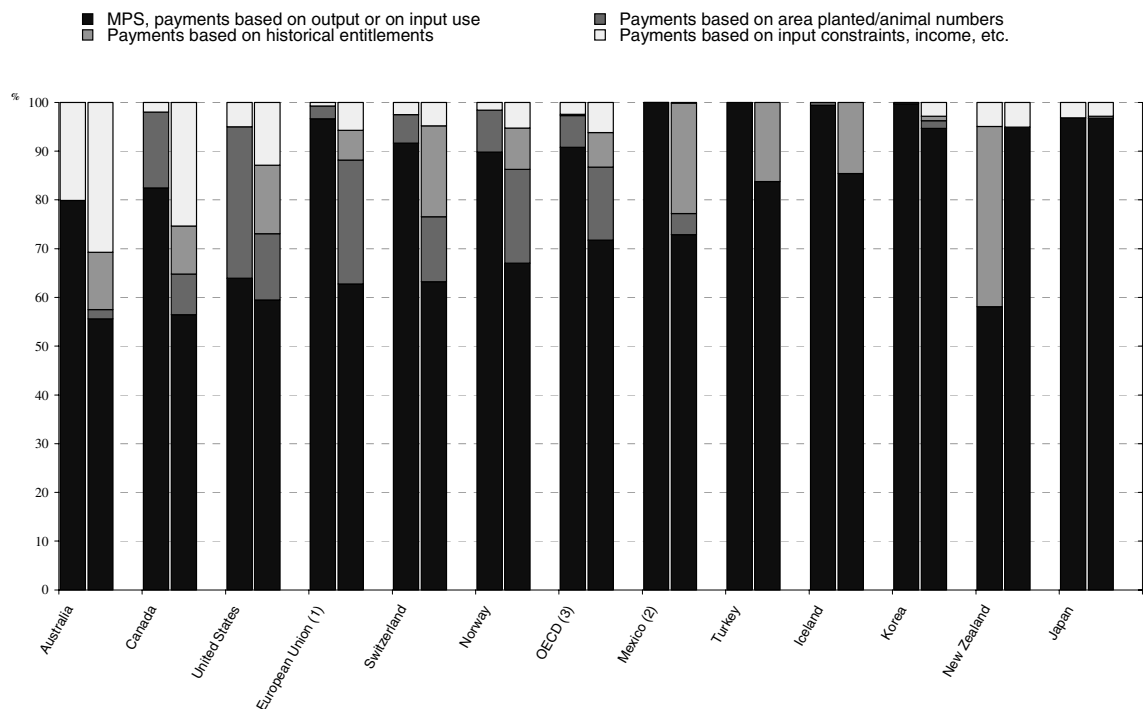
Source: OECD, PSE/CSE database, 2006.

Figure 4.7. Producer Support Estimates relative to gross farm receipts (%PSE) including non-member countries



The forms of support differ among OECD members. As discussed above, the share of the PSE of Mexico that is delivered by means of MPS has been reduced, the share provided on the basis of input use is more or less the same and new forms of support have been introduced that generate important transfers based on historical entitlements and on output. Mexico was not the only OECD member to shift to new support mechanisms in recent years (Figure 4.8). The total share of support provided in the form of MPS, payments based on output or payments based on input use has fallen in almost all OECD members, including Mexico where this total fell from 100% to 74%. For the OECD as a whole, the share fell from 91% to 72%. Payments based on historical entitlements in Mexico — PROCAMPO — account for 23% of the PSE, and have also become an important mechanism of support in the OECD, with 7% of PSE in 2003-05, including 14% in the United States and 10% in Canada, as well as 6% in the European Union as the Single Payment Scheme is introduced. Payments based on area or on animal numbers, account for 4% of the 2003-05 PSE in Mexico. Their share is larger in other OECD members, accounting for 15% of support. However, it has fallen in the United States from 31% in 1986-88 to 6% in 2003-05 and in Canada from 16% in 1986-88 to 8% in 2003-05.

Figure 4.8. Composition of Producer Support Estimate among OECD members



For each country the first vertical bar relates to 1986-88, the second to 2003-05.

Countries are ranked according to 2003-05 levels of market price support and payments based on output or on input use.

1. EU12 for 1986-94 including ex-GDR from 1990; EU15 for 1995-2003; EU25 from 2004.

2. For Mexico, 1986-88 is replaced by 1991-93.

3. Austria, Finland and Sweden are included in the OECD total for all years and in the EU from 1995. The Czech Republic, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. The OECD total does not include the six non-OECD EU member states.

Source: OECD, PSE/CSE database, 2006.

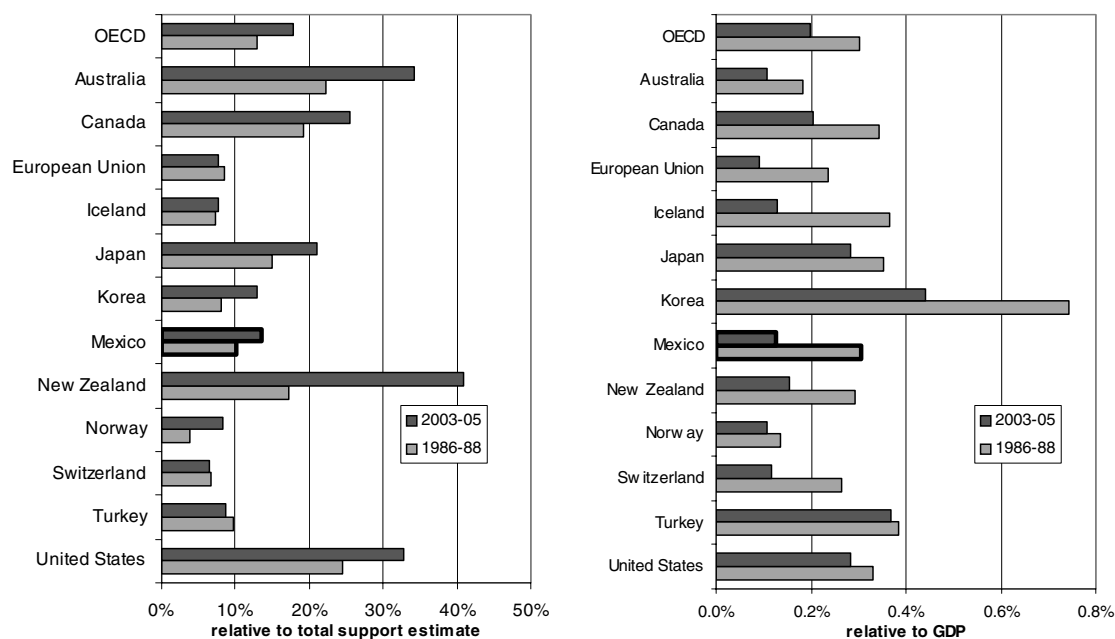
General services Support Estimates

The GSSE, as noted above, measures transfers to the sector overall, reflecting the focus of many agricultural policies in Mexico and other OECD members on improving the infrastructure and technology applied in the sector, as well as to provide inspection, marketing and other services. OECD countries spent about USD 40 billion on general services in 1986-88, and USD 66 billion in 2003-05. Of this total, Mexico accounted for about USD 1 billion, on average, in each period. Such absolute measures do not reflect the magnitude of such support relative to the agricultural sector, nor to the economy overall.

The importance of general services in overall agricultural policies in Mexico, as measured by the share of GSSE in TSE, is below the OECD average (Figure 4.9). Whereas the GSSE represented 13% of TSE for the OECD overall in 1986-88 and 18% in 2003-05, the share in Mexico was lower, at 10% in the 1991-93 period and 14% more recently. Mexico's share trails particularly far behind certain countries that allocate more than a third of their support to general services.

In contrast to the rising importance of GSSE measured in absolute terms or relative to TSE, the size of GSSE relative to the overall economy is declining throughout the OECD, including in Mexico (Figure 4.9). On average, the OECD members allocate less than a third of a per cent of GDP on general services to the sector overall. Mexico spending in 1991-93 was roughly equal to the OECD average of 1986-88, 0.3%, but has fallen below the average to 0.1% as compared to the 0.2% OECD average.

Figure 4.9. GSSE among OECD members

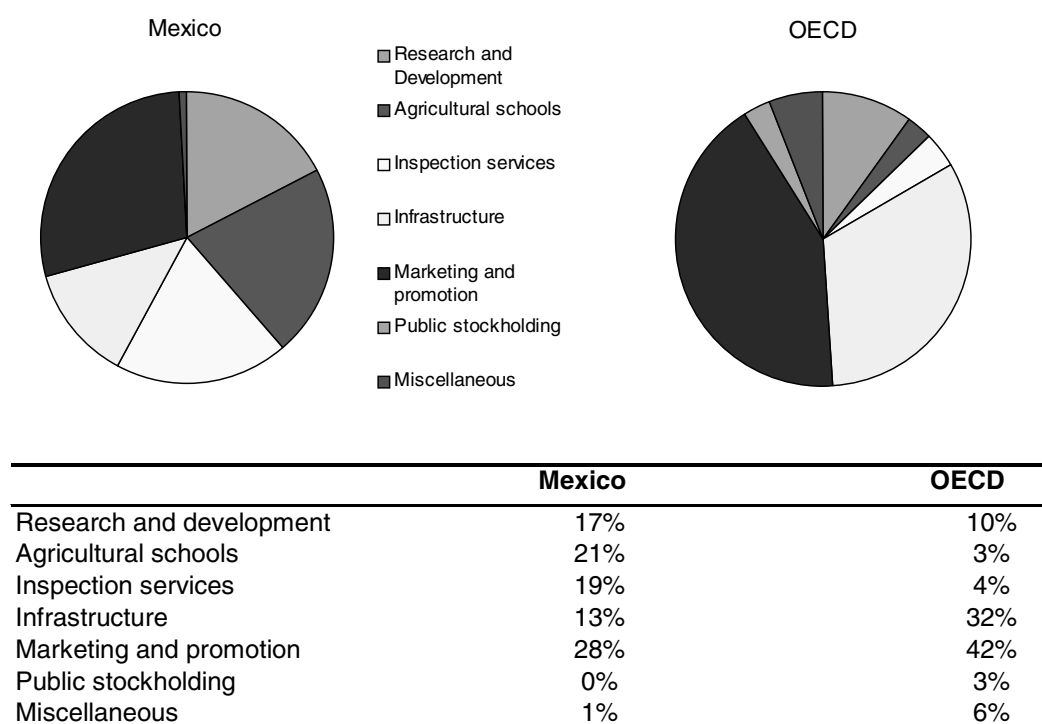


EU12 for 1986-94 including ex-GDR from 1990; EU15 for 1995-2003; EU25 from 2004. For Mexico, 1986-88 is replaced by 1991-93. Austria, Finland and Sweden are included in the OECD total for all years and in the EU from 1995. The Czech Republic, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. The OECD total does not include the six non-OECD states.

Source: OECD, PSE/CSE database 2006.

Decomposing the GSSE shows that Mexico, like many other OECD members, spends more on marketing than any other GSSE category, but that spending in Mexico focuses as well on research, education and inspection, while OECD members overall prioritise infrastructure (Figure 4.10). In the OECD as a whole, marketing and promotion accounted for 42% of GSSE in 2003-05 – equivalent to 8% of TSE – and this category represented more than half the GSSE in two countries. In Mexico, this share was lower, at 28%. The share of agricultural schools, research and development in GSSE in Mexico is three times the OECD average, but several OECD members place even greater priority on programmes of this type, at least as measured by share of TSE. The share of inspection services in GSSE is also higher than the OECD average in Mexico, at 19% as compared to 4%. Infrastructure spending associated with agricultural policy as a share of GSSE in Mexico, which was 13% in 2003-05, was less than the OECD average of 32%.

Figure 4.10. Mexico and OECD GSSE composition in 2005



What these data omit

Institutional arrangements that do not generate transfers directly are typically excluded from the OECD support estimates. Thus, the data do not reflect the structure of land tenancy determined by the constitution, nor the changes introduced in the course of land reform, although agricultural policies that provide support to facilitate the process of land reform or to help small farmers adapt are included. The presence of state-owned enterprises is included in these support estimates to the extent that they provide transfers among different agents, and in the event that they implement any import barriers, but any inefficiencies or distorting practices embodied in their activities in the market are not measured as such. Institutional arrangements relating to resource use may not yet be fully captured in the OECD support estimates; the transfer embodied in privileged access to

resources such as water that producers receive are currently not included from the PSEs. Institutional arrangements, including those relating to land reform and water use, are addressed in Chapter 6 of this study.

The TSE, PSE, CSE and GSSE are not measures of the effects of policies on production, consumption, trade or welfare, nor on the distribution of the transfers and effects. In economics, the term “welfare” is not a reference to social security; economic welfare has a specific meaning that goes beyond the first incidence of transfers generated by policies. Thus, whereas PSE data describe to and from whom transfers take place as a result of agricultural policies, questions of welfare must be addressed by considering how agents respond to the signals given by these transfers. Relevant agents are producers, consumers and traders of the commodities, and their activities are conditioned by other factors as well, including general conditions in the market and in the economy overall. The next section of this chapter discusses the effects of agricultural policies on welfare.

Welfare effects of agricultural policies

A common goal for agricultural policy is to improve economic welfare generally and farm income in particular. The remainder of this chapter is dedicated to evaluating the impact of Mexican agricultural policy on the welfare of those participating in the sector. Other important impacts of policies, such as those on commodity markets, rural poverty and natural resources are addressed in later chapters.

In this context, economic welfare is defined as the extent to which benefits of a policy change exceed the costs that are paid. For consumers and producers, welfare can be defined more explicitly as the consumer surplus, the utility valued in monetary terms that consumers receive from the goods they buy in excess of the total costs they pay for them, or producer surplus, which is the profit of owners of inputs, such as labour, capital and land. Agricultural commodities are the output of activities undertaken by a wide set of agents that include any seller of inputs into agricultural product, such as fertilizers and capital goods, and the taxpayers who fund agricultural programmes, and not only farmers (who provide their own labour and capital). For calculations of welfare to be inclusive, they must include the effects of changes in agricultural policies on all sector participants.

Agricultural commodity production may affect the environment in negative and positive ways that lead to benefits for which no payment is made and costs for which no compensation is provided in the market. Measuring these benefits and costs — positive and negative externalities — is beyond the capacity of current OECD modelling tools, and so they are not included in the assessment provided here. However, wider impacts of agricultural policies and institutions on poverty and on natural resources are considered in a later chapter.

As mentioned above, Mexico’s agricultural policies have moved from being predominantly market price support that increases domestic producer prices to being predominantly budgetary payments. The most significant of these in terms of the welfare implications of this change is the PROCAMPO programme. Programmes such as PROCAMPO, which are based on historical rather than current aspects of agricultural production, have been shown in previous OECD documents to be some of the most efficient at generating positive welfare benefits for producers for a given level of transfers.⁶ In general, it has been shown that MPS, payments based on commodity output, and payments based on input use are the forms of support least efficient at transferring

income to producers, while payments based on area and payments based on historical entitlements (*e.g.* PROCAMPO) are the most efficient means for governments to increase aggregate farm income.

Box 4.1. Brief summary of the Policy Evaluation Model (PEM)

The OECD Policy Evaluation Model was used for the analysis in this chapter. The PEM models the agricultural sectors in six OECD regions, namely Canada, the European Union, Japan, Mexico, Switzerland and the United States, representing in an aggregate manner the production of wheat, coarse grains, oilseeds, beef, and milk. PEM is an equilibrium displacement model. Starting from an equilibrium state where supply equals demand in every represented market, the model is solved by returning all markets to an equilibrium after the introduction of a policy shock. The model is calibrated to match observed production and trade in a specific base period and makes use of estimates of supply and demand responsiveness in each market (elasticities of demand and supply), information on the production technology (elasticity of substitution of factors of production), and information on relative factor intensity.

The PEM measures welfare changes to the different participants in the agricultural sector by measuring the changes in producer and consumer surplus that result from any policy scenario. The change in budgetary expenditure is also tracked — taxpayers benefit when government expenditures decline.

A technical note describes the modifications made to this model specifically for its use here (*Technical Note to the OECD Study of Agricultural Policies in Mexico* available at www.oecd.org). In brief, edible dry beans were added to the model, as was subsistence maize production, and improved input market representation.

Transfer efficiency

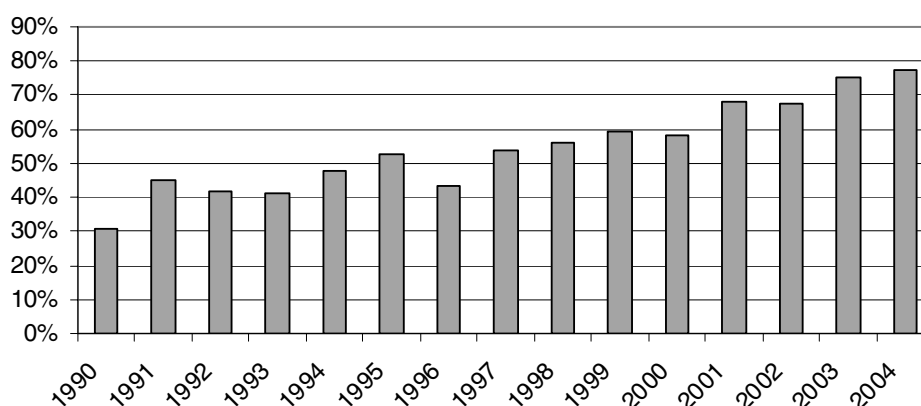
A key measure of agricultural policy is its transfer efficiency. This is defined as the ratio of the change in producer welfare to the change in policy transfers. It measures the proportion of agricultural policy transfers that actually accrue to agricultural producers. Transfer efficiency is always less than perfect (value of one) because the suppliers of purchased inputs are able to capture some proportion of the benefit of any policy.⁷ Consumers and taxpayers also gain or lose from policy changes. Deadweight losses also reduce the potential benefit to producers. These losses are a result of allocative inefficiency – the reduction in consumer and producer surplus resulting from policies that distort output away from its efficient level. To the extent that raising farm income is an objective of agricultural policies, higher transfer efficiency is critical to achieve that end with least costs and fewest unintended consequences.

In order to evaluate the impact of the evolution of Mexican agricultural policy on farm welfare, a simulation model was used to estimate the total transfer efficiency of the mix of agricultural policies in place in each year between 1990 and 2004. To generate welfare estimates, it is assumed that producers earn the producer surplus from the factors of production that they own — their land, their own labour, and their livestock. This means that changes in producer welfare are driven by changes in the rental rate of land, the (implicit) wage rate of the farmer's labour, the value of the livestock herd and the changes in the respective quantities used of each of these factors. The changes in welfare of other agents, namely the suppliers of purchased inputs, consumers and taxpayers, are calculated in a similar manner. Simulation results from models such as that used here represent just one of many possible outcomes, and are intended to illustrate the implications of the economic assumptions and reasoning that they contain.

Simulation results show that the estimated transfer efficiency of Mexican Agricultural policy has improved steadily, from an initial level of around 30% in 1990 to in excess of

70% in 2004 (Figure 4.11).⁸ That is to say, an additional MXN 100 transferred through the array of agricultural support existing in 1990 would raise farm income by only MXN 30, whereas MXN 70 of an additional MXN 100 spent on the policies existing in 2004 would find its way to farmers. Thus, the effectiveness of Mexican agricultural policy at transferring income to farmers has more than doubled over the study period, from an initial condition where less than one peso in three was actually captured by producers in the form of a net income increase. This reflects mainly the reduced importance of MPS in the total PSE — and the increasingly narrow base of MPS which mostly relates to milk in recent years — and the increasing importance of the PROCAMPO programme.

Figure 4.11. Estimated transfer efficiency of Mexican agricultural policy 1990-2004, per cent



Source: OECD PEM model.

Transfer efficiency is a good measure of the cost-effectiveness of policies whose intent is to improve the welfare of agricultural producers, the ultimate intent of a large proportion of agricultural policy in most countries. High transfer efficiency can be taken to be a characteristic of good agricultural policy. Many factors determine the transfer efficiency of a policy or set of policies, but the most important of these is the extent to which policies alter production decisions in commodity markets. Generally speaking, the more a policy distorts production, the lower its transfer efficiency. Typically, a policy is more production distorting the more transfers are affected by the level of production, and the more concentrated the policy is on specific commodities. As the link between payment and production strengthens, a producer is encouraged to increase output even more.⁹ If the economically optimal response to a certain policy is to increase production, the farmer will do so and bear the increased costs of such an expansion. Moreover, as all farmers respond by producing more, they purchase greater quantities of inputs, so the prices of inputs is assumed to rise with demand and further increase costs on farms. Those increased costs must be subtracted from the benefits the producer sees from the policy in question, such as a higher price for the producer's output.

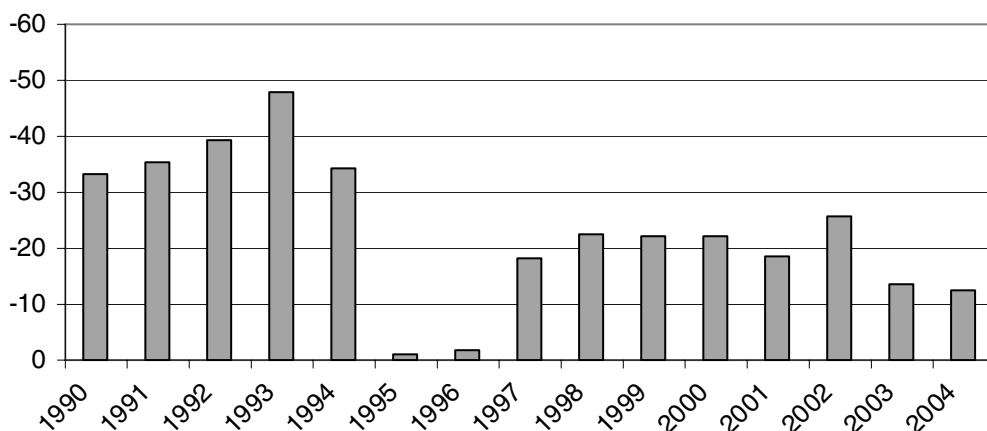
The most transfer efficient policies do not greatly influence the production decisions of producers, and thereby accrue more directly to their income. Designing programmes to maximise transfer efficiency usually also leads to less distortion of production and trade, which is an important part of minimising the negative effects of agricultural programmes

on trading partners and is a key goal of multilateral trade negotiations. In other words, policies that succeed at raising efficiency of transferring income to farmers also tend to be more benign in terms of distortions to production and to international trade.

Deadweight loss

Another measure of the cost effectiveness of policies is the amount of deadweight losses they impose. Where agricultural policies lead to large distortions in production and trade, society as a whole pays a price due to misallocated resources. Measured as the difference between the gains to producers and input suppliers and the losses to consumers and taxpayers arising from agricultural support, for Mexico, this indicator is relatively high in the early 1990s and lower after the 1995-1996 currency crisis (Figure 4.12).¹⁰ Interpretation of this measure in 1995 and 1996 is difficult because of the large negative MPS for several commodities in those years. The data problems for these years make estimation of deadweight loss unreliable.

Figure 4.12. Estimated deadweight loss due to agricultural policies, real MXN billion, base 2004



Source: OECD PEM.

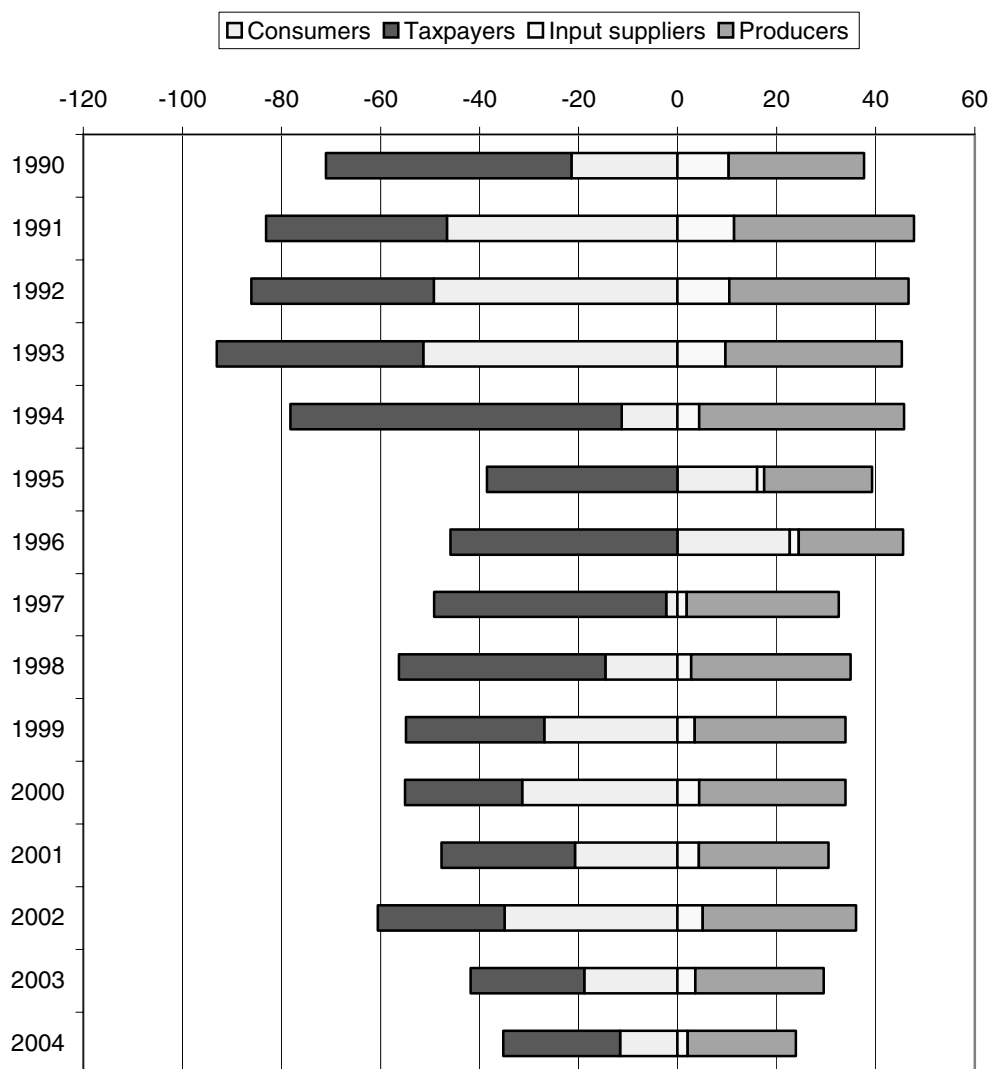
The decline in this indicator after 2000, indeed its value in general, is strongly determined by MPS levels in each year. The increase in payments based on input use (the most distorting form of support) that took place in 2003 and 2004 raised the value of this indicator relative to what would otherwise be the case, but the greater decline in MPS over the same period results in an overall decline.

Benefits and costs

The main beneficiaries of the increase in transfer efficiency and reduction in deadweight loss are consumers and taxpayers (Figure 4.13). While the benefits to producers in real (2004) terms have been relatively flat over the period, ranging from MXN 27 billion in 1990 to MXN 21 billion in 2004, with a high of 40 billion in 1994, costs to consumers have fallen from an average of almost MXN 50 billion in the early 1990s to 12 billion in 2004. Tax expenditures too have fallen by nearly half from MXN 50 billion in 1990 to MXN 24 billion in 2004, following the elimination of the

substantial consumer subsidies associated with the MPS in the early to mid-1990s but ignoring the introduction of PROGRESA/*Oportunidades*.¹¹ Benefits to input suppliers fell from an average of around MXN 10 billion in the early 1990s to around MXN 4 billion in the last part of the study period.

Figure 4.13. Estimated distribution of benefits and cost of support, real MXN billion, base 2004



Calculated as the negative of the welfare changes from removal of support. Figures for 1995 and 1996 exceptional due to negative MPS.

Source: OECD PEM.

Subsistence producers

Many producers grow crops for their own consumption. These producers are not participating in the marketplace, and so are not greatly affected in their capacity as producers by programmes that affect market price. They may not use a great deal of purchased inputs such as herbicides or fertilizer to produce their crop, doing so mainly

by virtue of their own labour on small plots of land. To investigate the likely impact of agricultural policies on this community, it is assumed that a fixed amount of land is planted to maize for own consumption each year (1.4 million hectares) and that this amounts to some 17% of total production of coarse grains in Mexico (Box 4.2).¹²

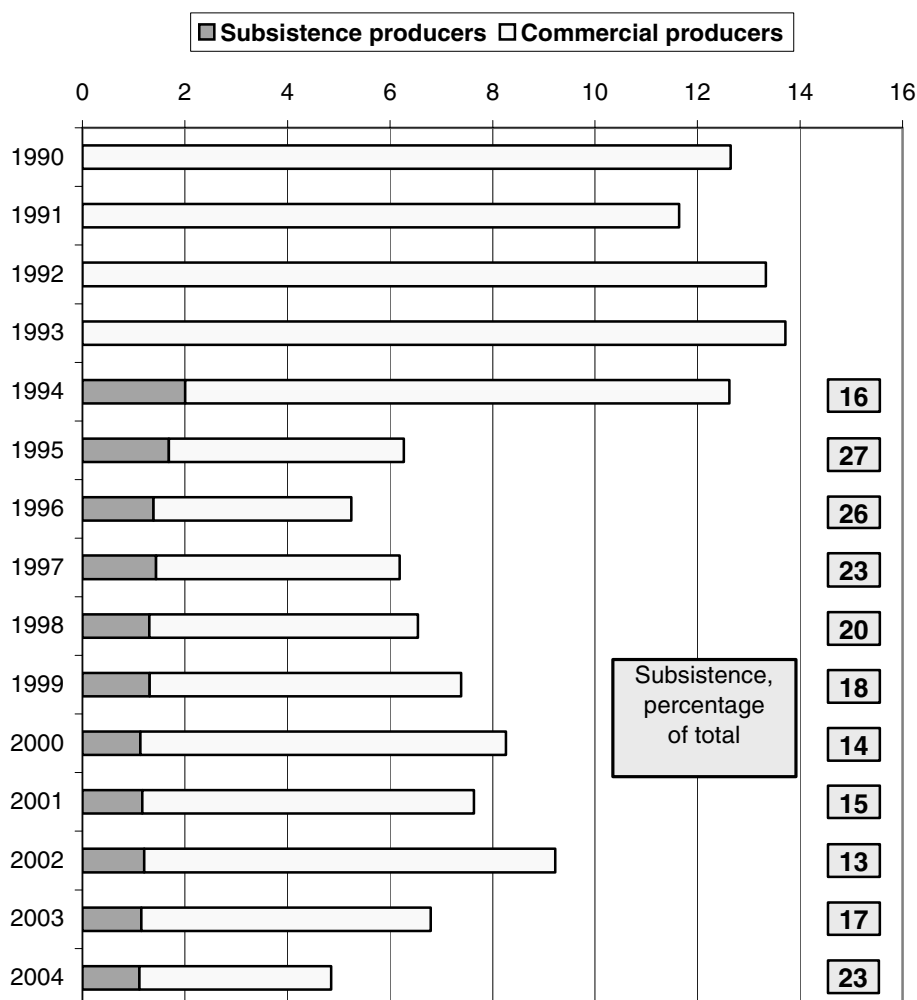
Box 4.2. Subsistence maize production

The model used for the policy experiments made in this chapter treats subsistence farmers differently from commercial farmers, as does the model used to estimate commodity market effects in the next chapter. In both cases, the models are adapted to the current study by treating subsistence farmers as a distinct group, and assuming that they do not change production in response to market signals. This assumption has the virtue of being simple and offers a clear, if extreme, look at the most important distinction between commercial and subsistence farmers: their degree of connection to commodity markets. Moderating this assumption would change the simulation results but likely not the conclusions drawn from them.

There is a body of literature studying subsistence agriculture in Mexico, focusing on subsistence maize production. Data from all sources indicate that subsistence producers overall are net buyers of maize; subsistence production must be supplemented by further purchases in order to meet household needs. However, the impacts of changing price signals on subsistence farmers in Mexico is a matter of debate that goes beyond the present study's scope. Ashraf, McMillan and Zwane, for example, note that even though subsistence production is not sold, the implicit value represents a large share of imputed household income, so a price reduction could lower seriously their income, but they find that the effects of falling prices historically has not had any important effect on subsistence farmers. On the other hand, other authors find evidence of price links and important effects of market changes on subsistence farmers, if sometimes indirectly as in the case of Dyer, Boucher and Taylor.

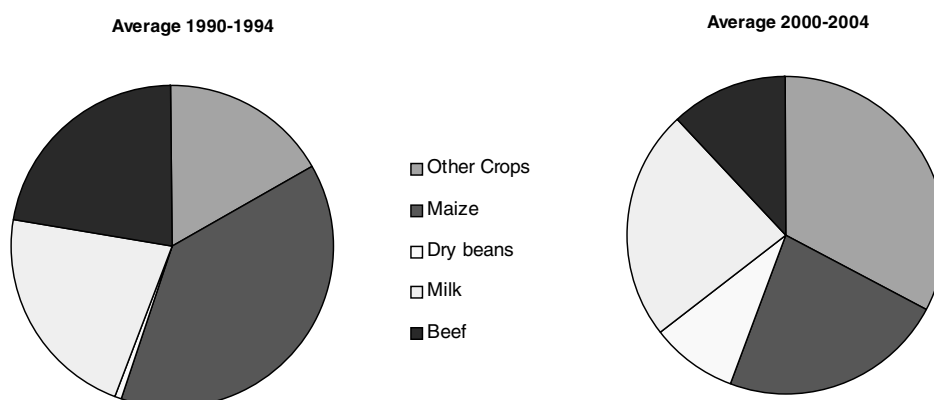
These producers do not sell into commercial markets, and so do not benefit from MPS. They may be net consumers of maize, but their benefits from consumer subsidies are likely to be small. Their labour is unpaid; the maize they produce is the only return to their labour. This limited connection to markets means that reaching subsistence producers with agricultural policies in a meaningful way is difficult. However, programmes that offer a direct payment to these producers based on their landholdings have the potential to be effective. These producers do not participate in markets, either for their output, or for inputs, including their own land and labour, so only direct payments in the style of PROCAMPO will reach them, and these will act like a lump-sum transfer, where the producer's benefit is equal to the full value of the payment. Accordingly, the benefits to subsistence producers of maize is calculated as the proportion of PROCAMPO payments they are expected to receive based on the proportion of land used for such production. Benefits to other producers of maize are calculated in the usual fashion as the producer surplus to the owned factors of labour and land. For these producers, payments based on land such as PROCAMPO increase the producer surplus for land. Taking this approach, subsistence maize producers, who gain nothing from policies in the early 1990s, receive between 13 and 27% of the benefits of this programme to all maize producers (Figure 4.14). As the rate of payments is fairly steady, variations in the proportion of benefits result from market effects impacting returns to commercial maize production.

Figure 4.14. Distribution of estimated policy gains, subsistence and commercial producers of maize, real MXN billion, base 2004



Source: OECD PEM.

The change in the composition of support, both in terms of the instruments used and their degree of targeting toward specific commodities, brought about a distribution of benefits of agricultural programmes that is more balanced across commodities (Figure 4.15). In the early years of the study period, support is targeted mainly towards maize, milk, and beef production. Moving away from commodity-specific MPS payments improved the distribution of support to crops other than maize. That said, support to milk remains mainly in the form of MPS; by the end of the study period, this commodity received more than half of total MPS.

Figure 4.15. Distribution of estimated programme benefits, percent of total, 1990-94 and 2000-04

	1990-94	2000-4
Total, MXN billions	33.9	26.2
Other Crops	17%	33%
Maize	38%	23%
Dry beans	1%	9%
Milk	22%	24%
Beef	23%	12%

Source: OECD PEM.

Alternatives

The above results demonstrate that the transition from an agricultural policy characterised mainly by market price support to one based on more decoupled budgetary payments such as PROCAMPO as the main form of policy support has led to improvements in the effectiveness and efficiency of Mexican agricultural policy as far as farm incomes are concerned. What is the scope for further changes in the policy mix to lead to additional improvements? Significant use of input support is still being made, and remaining tariffs generate market price support for many commodities, particularly milk. Input support is taxpayer funded, whereas consumers pay for market price support (MPS) to producers, but the use of historical entitlements to smooth the phasing out of tariffs on bilateral trade with NAFTA partners was an important feature of reform. In this section, input subsidies and MPS are also removed and replaced by an increase in the PROCAMPO programme of the same value. This simulation would lead to increased benefits for producers and for the agriculture sector in general – or, alternatively, re-instrumentation of this sort could be used to achieve a given objective relating to commercial producer income at lower cost (Table 4.3) These scenarios are not intended to suggest an expansion of PROCAMPO as such, but rather as an indication of the potential benefits available from continued reform.

Currently, input support is mainly directed at the use of energy for fuel and to provide irrigation, while MPS is directed mainly at milk (68%) and maize production. If the support provided on the basis of input purchases had been shifted into PROCAMPO, the result would be an increase in total welfare by MXN 196 million, and producer welfare by MXN 751 million. This re-instrumentation would disrupt the existing pattern that

shifts most of the benefits to input suppliers, as producers would no longer be encouraged to purchase subsidised inputs. Eliminating the remaining MPS and making these transfers instead a part of PROCAMPO increases net welfare by MXN 6 209 million, and the welfare of producers by MXN 4 376 million. Consumers, who pay the cost of transfers via MPS, save over MXN 12 billion, while taxpayers who bear the cost of the shift to budgetary payments, are made worse off by over MXN 9 billion. Hired labour and other input suppliers are made worse off as removing the production distorting effects of MPS reduces output and therefore demand for factors of production. In either case, the effect on subsistence farmers is positive: whereas land-owners may be eligible for PROCAMPO without selling goods, the benefits of MPS and input subsidies accrue primarily if not exclusively to commercial producers.

Table 4.3. Some alternative policy scenarios, 2004

Policy situation	Size of transfers affected	Welfare effects on agents					
		Producers	Input suppliers	Hired labour	Taxpayers	Consumers	Total
		MXN million					
Moving input support to PROCAMPO	1 579	751	-479	-29	-16	-31	196
Moving MPS to PROCAMPO	10 675	4 376	-713	-165	-9 410	12 120	6 209

Source: OECD PEM.

Conclusion

The transfers from consumers and taxpayers to producers generated by Mexico's agricultural policies fluctuate substantially during the 1990-2005 period, but are now somewhat lower relative to gross farm receipts than at the start of this period. The reforms caused a more important re-orientation in the mechanisms by which support is delivered. In particular, barriers to imports that create market price support – higher prices in the domestic market that consumers must pay to producers – has been partly replaced by payments based on historical entitlement in the form of the transitional PROCAMPO programme. This re-orientation is not complete: market price support remains in place as tariffs for several key products are still being phased out and, moreover, tariffs are being eliminated as a result of bilateral rather than multilateral agreements so barriers to other countries' trade remain in place. At the same time, subsidies to producers' purchases of inputs have been shifted to emphasise different inputs, focusing more on financial and energy inputs in recent years, but in any case account for a roughly constant share of the total transfers.

Mexico's support for the sector as a whole has been affected by the termination of CONASUPO and its direct intervention in the market, and growth in programmes to support markets and information often under the umbrella of *Alianza* or operated by ASERCA. As a consequence, general support for agriculture is no longer dominated by public stock-holding. Instead, marketing and promotion expenditures now dominate general support to the sector. Research, education and especially inspection services

account for large shares of the total, as well. Infrastructure support, with a falling share of these general expenditures, is at present comprised largely of subsidies to irrigation projects.

Mexican agricultural policy has moved from being dominated by market price support and payments based on input use, the two forms of support that are most distorting and least effective at increasing producer welfare, to its current situation where an important means of support (PROCAMPO) is quite effective and efficient at improving farm welfare. This evolution in the composition of Mexican agricultural support has improved farm welfare at lower (deadweight) cost to society. Moreover, subsistence producers of maize have benefited from this transition, from an early situation where they were not helped by agricultural support, to a situation where they receive real benefits from agricultural policy. Further consolidating this process by replacing the remaining (significant) amounts of input support and MPS with targeted payments would continue this course of improvement.

The welfare results of this analysis presented here focus on the impacts of agricultural policies only, and only upon the actors in the agricultural sector. Within the set of included policy options, payments based on historical entitlements such as PROCAMPO are the most effective at improving farm incomes. This does not mean that PROCAMPO or similar programmes are always the best approach, not without specifying more clearly the objective. For example, rural poverty alleviation and rural development are also important policy goals. While agriculture and farm income is a part of the rural economy, the path to faster rural development does not necessarily lie in improved agricultural income via PROCAMPO, nor in increased agricultural production. The interaction of agricultural policies and rural poverty, with special attention given to the distribution of benefits, is addressed in Chapter 6.

NOTES

1. The OECD estimates measures of support for all OECD members as reported in the OECD's annual *Monitoring and Evaluation Report*. A full explanation of the concepts, method, interpretation and guidelines for the use of the OECD support indicators in policy evaluation can be found in *Methodology for the Measurement of Support and Use in Policy Evaluation* [<http://www.oecd.org/dataoecd/36/47/1937457.pdf>], and a less technical discussion is available in *Agricultural Support: How Is It Measured and What Does It Mean?* [<http://www.oecd.org/dataoecd/63/8/32035391.pdf>].
2. These considerations are discussed later in and the following chapters.
3. With respect to the PROCAMPO payments, it is important to note the problem of allocating payments based on historical entitlement to specific commodities in PSE calculations. In fact, the restrictions on these payments are that the land be used for crops, livestock, forestry or an approved environmental use. In the OECD's method for PSE calculations, the payments in each year are divided among crops based on current planting on eligible land, but are not allocated to livestock products. Allocation methods are also applied for similar programs in other OECD members, but this practice is under review at the time of writing of this publication (*Agricultural Policies in OECD Countries: at a Glance*, OECD, 2006.)
4. Since 2001, there have been two limits imposed on the amount that an individual crop producer may receive. First, there is a maximum payment amount that may be received per agent and, second, there is a reference yield set at a regional level beyond which no payments are made. However, these limits are ignored in the present assessment as difficulties of enforcement are assumed to prevent stringent application of these constraints.
5. The calculation of TSE prevents double-counting certain components of CSE.
6. See OECD (2001), *Market Effects of Crop Support Measures*.
7. The model holds as a basic tenant that there are no or only minimal imperfections in the market, but some researchers posit that there is evidence of incomplete markets for rural finance to small-scale producers. This argument is noted again later, in the context of input market policies, and the potential for multiplier effects is ignored here.
8. These results, as with those for all simulation models, hinge on the assumptions that underlie its workings. In particular, the OECD Policy Evaluation Model used here assumes that prices operate to clear well-operating markets, both for commodities and factors of production. Some modifications of the model have been made to accommodate, for example, non-commercial producers. However, the complexities of the land tenure system, such as the system of *ejidos*, are such that the results should be interpreted with due care.

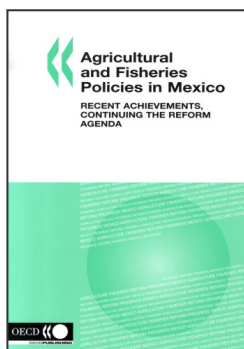
9. In practice, Mexico's current payments based on output for most crops, namely the Target Income Programme, and the subsidies to input use are subject to certain limits that are intended to place an upper bound on the amount a single producer can receive. The analysis here ignores the potential that these limits could reduce the production-enhancing effect on an individual beyond a certain point, which could indeed occur if these limits were binding, although there would nevertheless be effects on decisions about which crops, if any, to produce.
10. Including consumer subsidies made as a part of agricultural policy, which benefit consumers as well as producers and input suppliers, and amounted to about 6% of the value of consumption in the early 1990s. These subsidies do not include payments made under PROGRESO/*Oportunidades*, which are not agricultural policies.
11. PROGRESA/*Oportunidades* are not components of agricultural policies, so expenditures under these programs are not included in PSE data and the effects are not estimated in the analysis of this chapter.
12. These assumptions are maintained in the AGLINK analysis of Mexican commodity markets in the following chapter.

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