OECD Review
of Agricultural Policies

Brazil

OECD
OECDPUBLISHING

OECD Review of Agricultural Policies

Brazil

OECD

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members

This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

This document has been produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union.

Foreword

This Review of Agricultural Policies in Brazil *was undertaken as part of an initiative to provide analyses of agricultural policies for four major agricultural economies outside the OECD area, the others being China, India and South Africa. The study measures the extent of support provided to agriculture using the same method that OECD employs to monitor agricultural policies in OECD countries. In addition, it focuses on key interactions between Brazil and OECD countries, including the impacts of trade and agricultural policy reforms. The aims of the country study is to strengthen the policy dialogue with OECD members on the basis of consistent measurement and analysis, and to provide an objective assessment of the opportunities, constraints and trade-offs that confront Brazil's policy makers.*

The study was carried out by the OECD Directorate for Food, Agriculture and Fisheries. The principal authors were Jonathan Brooks and Olga Melyukhina, who received valuable contributions from Darryl Jones, Andrea Cattaneo, Hsin Huang and Garry Smith. Research and statistical support was provided by Florence Mauclert and Adriana Verdier, and technical and secretarial assistance by Stefanie Milowski and Anita Lari.

The study benefited from the substantive input of a range of Brazilian experts. Information on domestic policies was provided by Guillerme Leite da Silva Dias from the University of São Paolo (USP); Gervasio Castro de Rezende and José Garcia Gasques from the Institute of Applied Economic Research (IPEA); Antônio Salazar Brandão from the Federation of Industries of the State of Rio de Janeiro; and Vicente Marques from the Centre for Agrarian Studies and Rural Development of the Ministry of Agrarian Development (NEAD). Information on trade policies was provided by researchers at the Institute for International Trade Negotiations (ICONE), including Mário Jales, Antônio Neto, Joaquim da Cunha Filho and Marcos Sawaya Jank. The analysis of changes in incomes, poverty and inequality was provided by Steven Helfand and Edward Levine from the University of California, Riverside (USA). A database and framework for assessing the prospective impacts of global trade and agricultural policy reforms in Brazil was provided by a research team at the FIPE/USP, including Carlos Azzoni, Fernando Gaiger, Joaquim Guilhoto, Eduardo Amaral Haddad, and Tatiane de Menezes. This was complemented by modeling work undertaken by Scott McDonald (University of Sheffield, UK).

The study benefited greatly from the support of the Brazilian Ministry of Agriculture and Food, the Ministry of Agrarian Development, and the National Treasury, whose experts provided essential information on the functioning of agricultural programmes in Brazil as well as comments on the draft report.

The study was made possible through voluntary contributions from Germany, the Netherlands, New Zealand, Spain, Switzerland, the United States, as well as funding from the European Union.

The study was reviewed in a roundtable with Brazilian officials and experts in Brasilia in March 2005. Subsequently, Brazilian agricultural policies were examined by the OECD's Committee for Agriculture in its 141st session in June 2005, bringing together policy-makers from Brazil, OECD member countries and some non-OECD countries. The report is published under the authority of the Secretary-General of the OECD.

Stefan Tangermann, Director, Directorate
for Food, Agriculture and Fisheries

Table of Contents

List of boxes

List of tables

List of figures

ISBN 92-64-01254-0
OECD Review of Agricultural Policies
Brazil

Highlights and Policy Recommendations

Brazil provides relatively little support to its farmers. Producer support, as measured by the PSE, accounted for 3% of the gross value of farm receipts in 2002-04 – a rate comparable with that of New Zealand (2%) and Australia (4%), and far below the OECD average (30%). The highest support levels are for import-competing staples (wheat, maize and rice) and cotton, ranging between 6% and 17% for these products.

Support to farmers accounts for about three-quarters of all support to agriculture, with the remaining quarter delivered as general services to the sector, such as research and extension, training, and the development of rural infrastructure. These general services include important long term investments, but have been declining in relative terms at the expense of credit subsidies, about half of which stem from the restructuring of farm debt accumulated over the period of macroeconomic instability in the late-1980s to mid-1990s.

The low level of producer support reflects the radical transformation of the Brazilian economy that has occurred over the last 15 years. The abandonment of import substitution policies has enabled agriculture to grow rapidly. Livestock output rose particularly quickly in the 1990s, while more recently there has been a boom in the production of soybeans, driven by high prices and a low exchange rate. These effects have since dissipated, so it is unrealistic to extrapolate current growth rates. Agricultural growth has been mostly attributable to improved productivity and lower prices for imported inputs, with increases in agricultural area a more recent factor.

The recent boom in Brazil's agricultural exports has been associated with a change in the composition and direction of trade. There has been a shift away from traditional tropical products, such as coffee and orange juice, towards soybeans, sugar, and meats, notably poultry and pigmeat. Although OECD country markets are still very important, with more than 40% of agricultural exports destined for the European Union, the fastest export growth is with countries outside the OECD area, notably China and Russia. Even so, the majority of agricultural production in Brazil serves the domestic market. The share of agricultural production exported has typically averaged around 25%, although that share climbed to 30% in 2004.

Having substantially liberalised its own agricultural policies, the main source of future benefits to Brazil is reforms in other countries, where access to OECD country markets is the most important issue. Brazilian exporters are impeded by high tariffs in key markets, tariff escalation according to the degree of processing for several important commodities, unfavourable treatment under trade preference schemes and tariff-rate quota systems, and significant non-tariff measures (notably for livestock products).

At the domestic level, sectoral growth could be further supported through improvements in infrastructure, changes in the credit system (notably on the treatment of outstanding debt), and a simplification of tax policies.

At the same time, there is a strong need for effective social policies. Although rural poverty has fallen significantly in Brazil, the situation for the poorest of the rural poor has actually deteriorated, and poverty has become increasingly concentrated in the North and North East regions. This calls for targeted measures to upgrade the farming skills of smallholders, and to facilitate income diversification and the exploitation of non-farm opportunities. Investments at the individual level, for example through education and health expenditures, are important, as are policies that foster rural development, such as infrastructure development.

1. Reforms and their impacts

Brazil's economy has undergone radical reforms that have provided a more stable investment climate and stimulated agricultural growth

Brazil is a major player in the global economy, with a population of 180 million and a GDP of USD 1 300 billion (in PPP terms) that places it among the ten largest economies in the world. The country is endowed with vast natural resources, and has an agricultural area that is exceeded only by China, Australia and the United States. Primary agriculture accounts for 8% of GDP, while agricultural products account for about 30% of exports. Agriculture thus plays an important role in the overall functioning of the nation's economy.

Over the past 15 years, the Brazilian economy has undergone a radical transformation. Following the abandonment of import substitution policies in the late 1980s, the government embarked upon a wide range of reforms. These included macroeconomic stabilisation, structural reforms and trade liberalisation. Macroeconomic stability was achieved in the mid-1990s when, following several unsuccessful stabilisation plans, the *Real Plan* invoked the budgetary restraint necessary to bring inflation under control. Structural reforms included the privatisation of state-owned enterprises, the deregulation of domestic markets, and the establishment of a customs union, Mercosur, with other South American countries. Policy changes included deep tariff cuts and the elimination of non-tariff barriers to trade.

Agriculture both contributed to these reforms and benefited from them. Through the 1990s, there was a scaling down of expenditures on price support and subsidised credit; the markets for wheat, sugar cane and coffee were deregulated; and trade was liberalised not just on the import side, but also for exports, notably with the elimination of export licenses, quotas and taxes. Agriculture benefited in overall terms from the change in development paradigm, as it removed the discrimination against the sector that was implicit in the support for manufacturing industry, and helped establish a more stable investment climate.

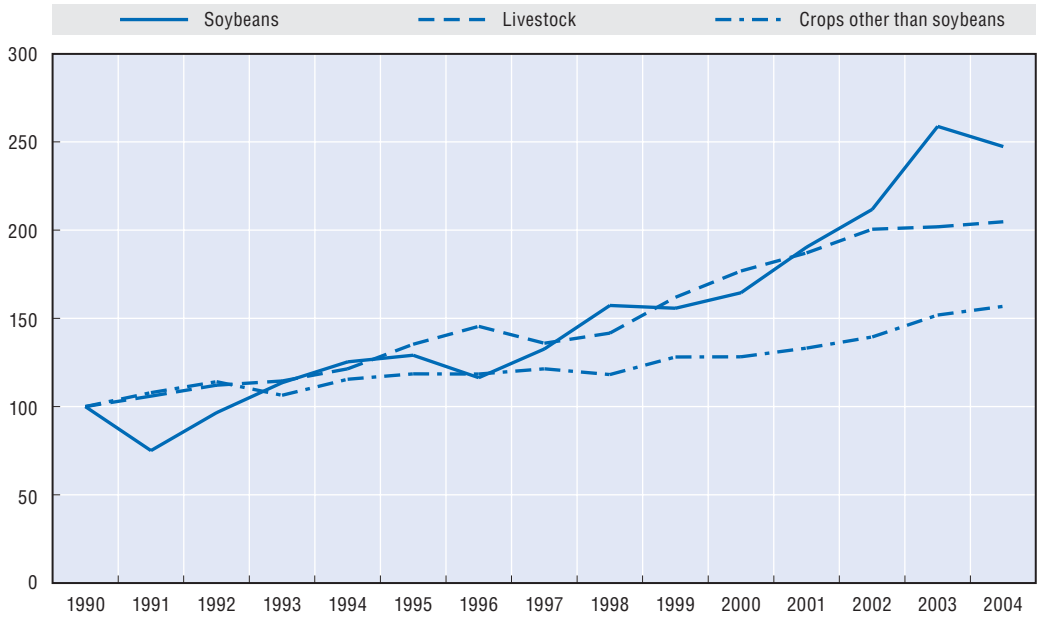
The Brazilian economy is now much more robust than it was ten years ago, but it remains vulnerable to outside shocks, as evidenced by contagion from the Asian crisis in 2001, and the effects of weak market sentiment in the run-up to the presidential election of 2002.

Macroeconomic stabilisation, by removing the regressive effects of inflation, led to a substantial reduction in the level of poverty, which fell by 10 million in just two years (1994-95). But reforms also induced adjustment stresses, including within the agricultural sector, where producers of importable commodities (such as wheat) were suddenly forced to compete. Moreover, reforms have not resolved Brazil's social problems. The incidence of poverty remains high, at more than 30% of the population, while the distribution of income is among the most unequal in the world.

Agriculture has grown rapidly since the abandonment of import substitution policies, and this growth has accelerated in the last few years (Figure 0.1). A large share of this

Figure 0.1. **Output indices for crops and livestock products, 1990-2004**

1990 = 100



Source: IBGE/SIDRA.

expansion has occurred in the Centre West of the country, where, through the 1990s, livestock output rose particularly rapidly. More recently there has been a boom in the production of soybeans and complementary crops (*e.g.* second crop maize). Much of the recent boom is attributable to the combination of a short term strengthening of world prices and a low exchange rate. These effects have since dissipated, so it is unrealistic to extrapolate current growth rates.

Agricultural growth has been mostly attributable to improved productivity and lower prices for imported inputs, with increases in agricultural area a more recent factor

The growth in output has occurred despite falling long term prices for most commodities. One reason is that output prices fell more slowly than input prices through most of the 1990s, as the opening up of trade allowed access to imported inputs (notably machinery). Allied to this, productivity improved substantially, with a 40% improvement in total factor productivity between 1990 and 2004. The productivity of importables (wheat, dairy) improved more than that of exportables, as the former were exposed to foreign competition while the latter were competitive anyway. In fact, some crops that were formerly imported have recently become net exports (*e.g.* maize and cotton). Yields have improved substantially, thanks largely to agricultural research tailored to climatic conditions in the Centre West, while big improvements in labour productivity (77% between 1990 and 2004) reflect the release of farm labour from the sector. However, with high real interest rates, access to capital remains a problem for many farmers, and continues to dampen overall productivity growth.

Until recently, it was productivity growth rather than the mobilisation of new factor resources that underpinned agricultural growth. Total agricultural area remained more or

less constant through the 1990s, as increases in the Centre West were offset by reductions in the South and South East. However, between 2000/01 and 2003/04 the area planted to crops increased from 52 to 61 million ha, with soybean area alone increasing by 50%. The rapid expansion of soybean acreage in the Centre West can be seen as a precursor to more balanced agricultural development in this region, as infrastructure development catches up and producers stand to benefit from external economies of scale. The shift in the locus of agricultural production has also led to an increase in the average size of farm operations, as land in the Centre West offers greater economies of scale.

The growth in soybean area and rising demand for pasture from livestock farmers threatens the Amazon rainforest. In addition there are concerns about the environmental impacts of agricultural development in the *Cerrado* grasslands. Since 1990, Brazil has lost an area of forest equal to the size of the United Kingdom. Large scale commercial ranchers are responsible for the majority of this deforestation, ahead of logging and the migratory slash and burn practises of many subsistence farmers. Some argue that soybean farming has contributed indirectly, by causing the migration to the forest frontier of displaced cattle ranchers and subsistence farmers. The trade-off between the economic benefits of agricultural expansion and the environmental benefits of forest preservation is a difficult domestic policy decision facing Brazil, while the choice of instrument to achieve the desired balance needs to take account of the difficulties of policing such a vast area. Deforestation would be more limited if more integrated farming practises with higher livestock stocking rates were adopted in the *Cerrado*. Current research in Brazil is oriented towards this objective.

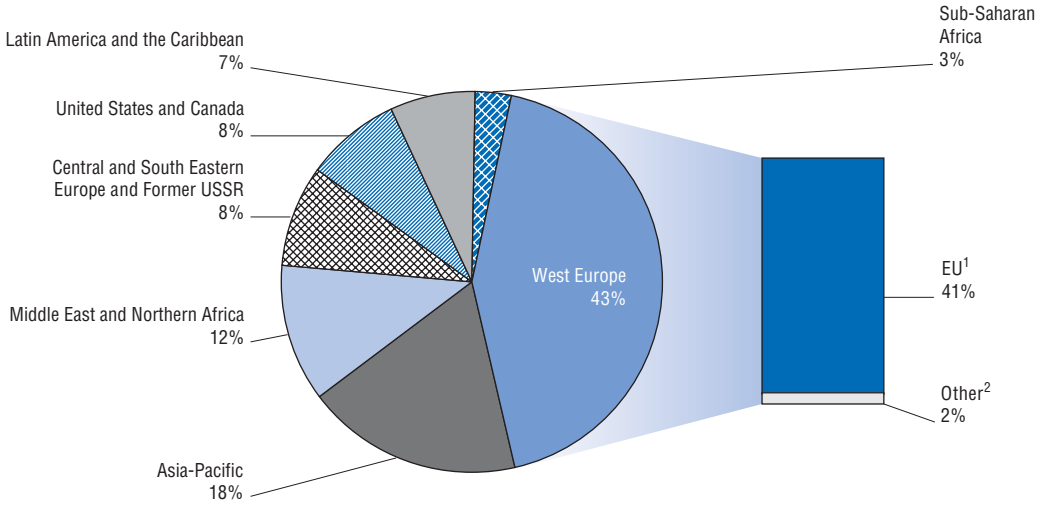
The recent boom in Brazil's agricultural exports has been associated with a change in the composition and direction of trade

Despite rapid export growth, the majority of agricultural production in Brazil serves the domestic market. The share of agricultural production exported has typically averaged around 25%, although that share climbed to 30% in 2004. This share is similar to that of the United States (which also has a large domestic market), but lower than that of other agricultural exporters such as Canada, where 40% of production is exported, and Australia, where the exported proportion averages about two-thirds. The domestic market is likely to continue to be the main outlet for production. On the supply side, the recent production boom is likely to fade with weaker prices, a higher exchange rate, and the exposure of infrastructure bottlenecks. On the demand side, there is considerable scope for poorer Brazilians to consume more products with relatively high income elasticities (such as meat and fruit and vegetables).

The recent export boom has been driven primarily by soybeans and soybean products, but supported by other products, such as sugar, poultry and pigmeat. In the last few years, Brazil has become an exporter of maize and cotton (both of which can be rotated with soybean production). More generally, there has been a shift in the composition of exports, away from traditional tropical products, such as coffee and orange juice, towards soybeans, sugar, and meats, notably poultry and pigmeat.

The direction of agricultural trade has also changed. Although OECD country markets are still very important, with more than 40% of agricultural exports destined for the European Union (Figure 0.2), and exports to most OECD countries are increasing in absolute terms, the fastest export growth is with countries outside the OECD area, notably China and Russia (Figure 0.3).

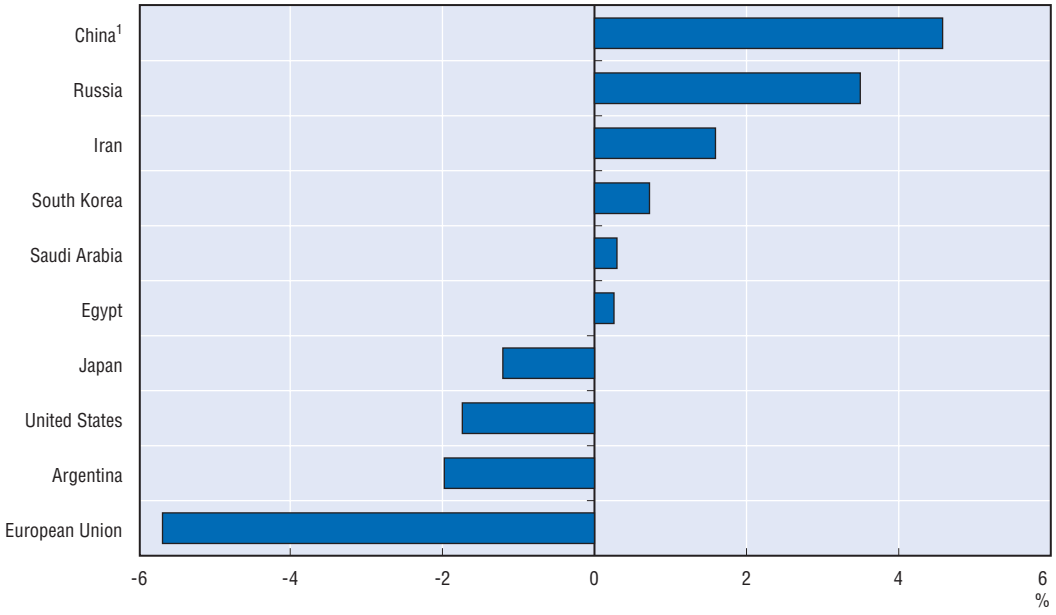
Figure 0.2. **Brazilian agro-food exports by destination region, 2000-03 average**



1. EU-15.
2. Other countries include Cyprus, Iceland, Liechtenstein, Malta, Norway and Switzerland.

Source: MDIC-ALICE.

Figure 0.3. **Changes in export shares of Brazil's major export destinations between 2000 and 2003**



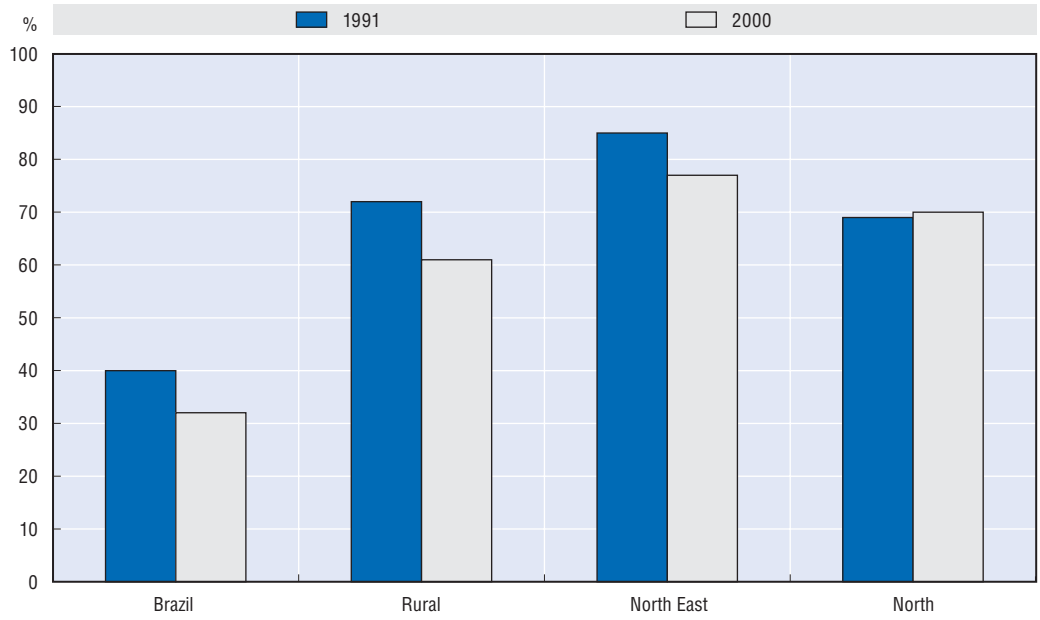
1. Includes Mainland China, Hong Kong, and Macao.

Source: MDIC-ALICE.

Shifts in the scale, composition and location of production have been associated with profound structural changes within the agricultural sector. These changes have had important implications for the level and distribution of incomes, and the incidence of poverty.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Figure 0.4. **Poverty in Brazil, 1991 and 2000**
Per cent of population below the poverty line



Source: Helfand and Levine (2004) based on the Demographic Census.

Although rural poverty has fallen significantly in Brazil, the situation for the poorest of the rural poor has actually deteriorated, and poverty has become increasingly concentrated in the North and North East regions

In general terms, per capita income growth has led to a substantial fall in the incidence of poverty and extreme poverty. For Brazil as a whole, real per capita incomes rose by 29% between 1991 and 2000, reducing the proportion of the population living in poverty from 40% to 32% (Figure 0.4), and the share living in extreme poverty from 20% to 15%.*

The incidence of poverty is higher in rural areas, but because 80% of the population live in urban areas the number of urban poor exceeds the number of rural poor. In the 1990s, rural incomes rose more rapidly than urban incomes (32% *versus* 23% between 1991 and 2000). This enabled rural poverty to fall from 72% of households in 1991 to 61% in 2000, and extreme rural poverty to decline from 45% to 36% over the same period.

However, the improvement in rural incomes has not been principally attributable to agricultural incomes, which grew by just 2% between 1991 and 2000, compared with non-agricultural income growth of 38%. Moreover, agricultural income became more concentrated among richer households (although it remains less concentrated than non-agricultural income), and so made little contribution to poverty reduction.

The situation for the bottom 20% of rural households, who are well below the extreme poverty line (more than a third of rural households), has actually deteriorated. A trebling of

* The poverty and extreme poverty lines are set at ½ and ¼ respectively of the August 2000 minimum monthly wage per person (BR 151). At the contemporaneous nominal exchange rate, this translated into a poverty line of approximately USD 1.33 per person per day and an extreme poverty line of USD 0.67 per person per day.

government transfers between 1991 and 2000 helped poor households in general, but many of the poorest missed out because they fell outside the remit of the formal economy and the coverage of pensions and other programmes.

These national averages mask important regional variations. Income growth in the Centre West has been strong enough to reduce rural poverty, even though inequality has increased. Rural poverty has fallen more slowly in the North East and actually risen in the North (where the rural population has actually grown), meaning that rural poverty is increasingly located in these regions.

Structural changes at the farm level have been reinforced by wider developments along the food chain. In particular, the increasing share of retail sales accounted for by supermarkets carries important implications for farm structures. The associated growth of contracting offers opportunities for some producers, who may, for example, see their credit constraints eased through the forward supply of seed. However, it poses a threat to many smallholders who may not be able to meet the standards set by downstream purchasers, yet find it increasingly difficult to find local outlets.

The opportunities for smallholders also depend on the success of land reform initiatives and associated credit programmes. So far, the scale of land reform has not been sufficient to make a significant dent in the overall poverty figures, and it is likely that its ultimate potential will depend on how well it is complemented by broader investments (*e.g.* in education) that improve households' income earning potential both within and outside agriculture.

2. Current agricultural policies

Brazil provides a relatively low level of support to its agricultural sector; most of that support goes to producers in the form of preferential credit

Brazilian agricultural policies have been broadly liberalised, although there continues to be an array of policy interventions. Total support to the sector, as measured by the Total Support Estimate (TSE), averaged BRL 8.2 billion (USD 2.7 billion) per year in 2002-04, or 0.5% of GDP. The cost of support to the overall economy is low relative to most OECD countries, and is roughly comparable to that in Australia (0.3%) and New Zealand (0.4%).

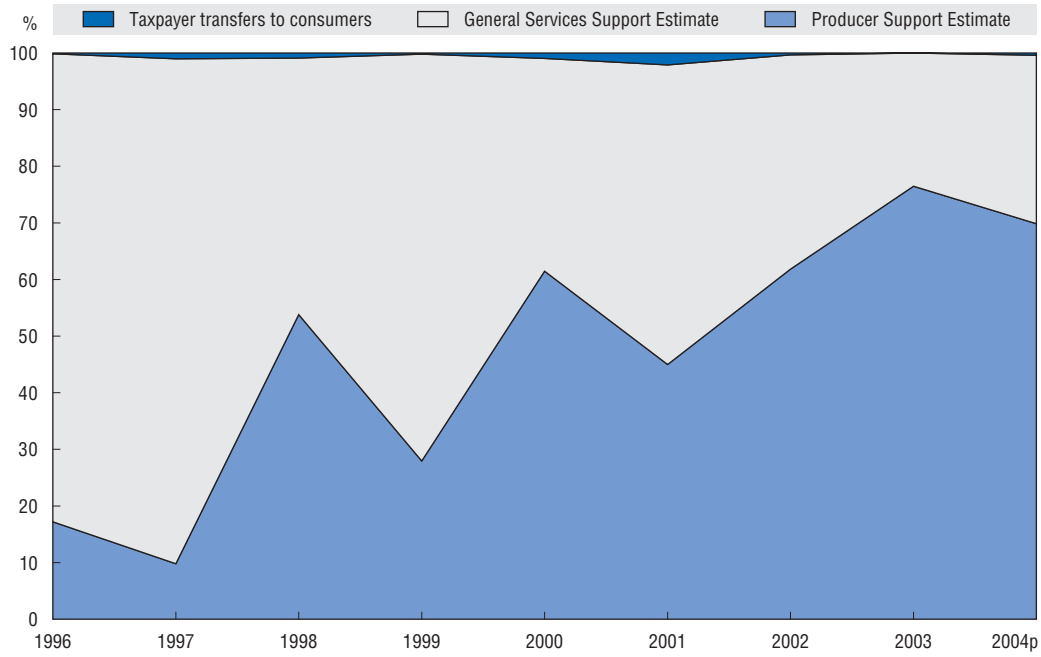
Most of this support is delivered to producers, as opposed to general services to the sector. Indeed, producers received about three-quarters of total support to agriculture in 2002-04 (Figure 0.5). Producer support in Brazil, as measured by the percentage PSE, accounted for an average of 3% of the value of gross farm receipts between 2002 and 2004 – a rate of support that is comparable with that of New Zealand (2%) and Australia (4%), and far below the OECD average of 30% (Figure 0.6).

The highest support levels are for import-competing staple crops (wheat, maize and rice) and cotton (Figure 0.7). These commodities receive minimal border protection, but producers are effectively compensated for having to compete with other Mercosur partners, as the value of domestic assistance is approximately equivalent to Brazil's current extra-Mercosur tariff.

Producer support is provided mostly through taxpayer transfers associated with preferential credit to the sector (Figure 0.8). Brazil's official credit system, which accounts for about 28% of agricultural borrowings, confers special treatment on the agricultural sector, through the administered allocation of credit resources and controlled interest rates. This system has been justified on the grounds that it offsets high market interest

Figure 0.5. **Composition of the Total Support Estimate in Brazil**

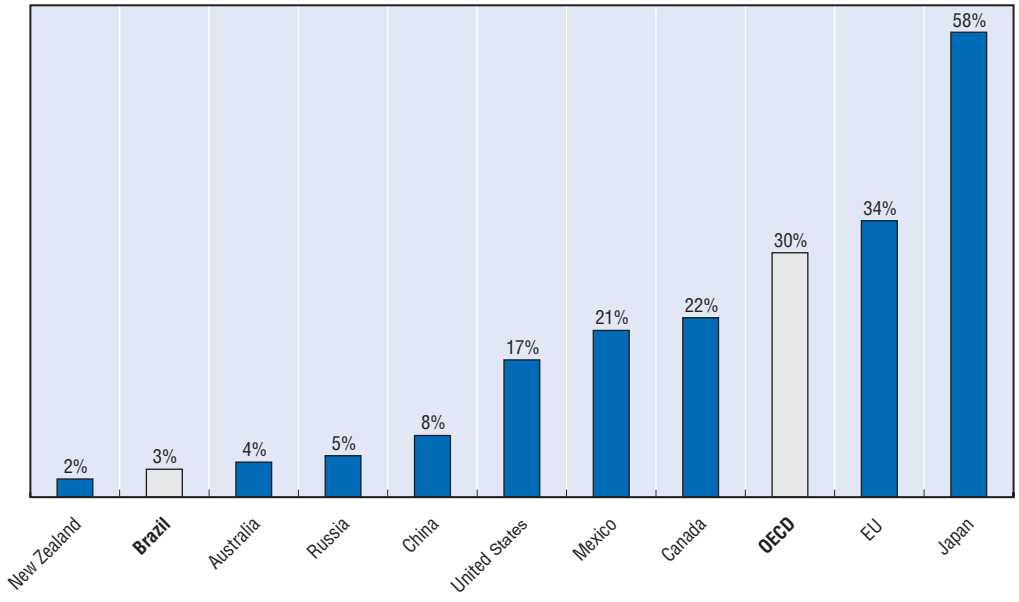
Per cent



Source: OECD PSE/CSE databases 2005.

Figure 0.6. **Producer Support Estimate in Brazil and selected countries, 2002-04 average**

As per cent of gross farm receipts

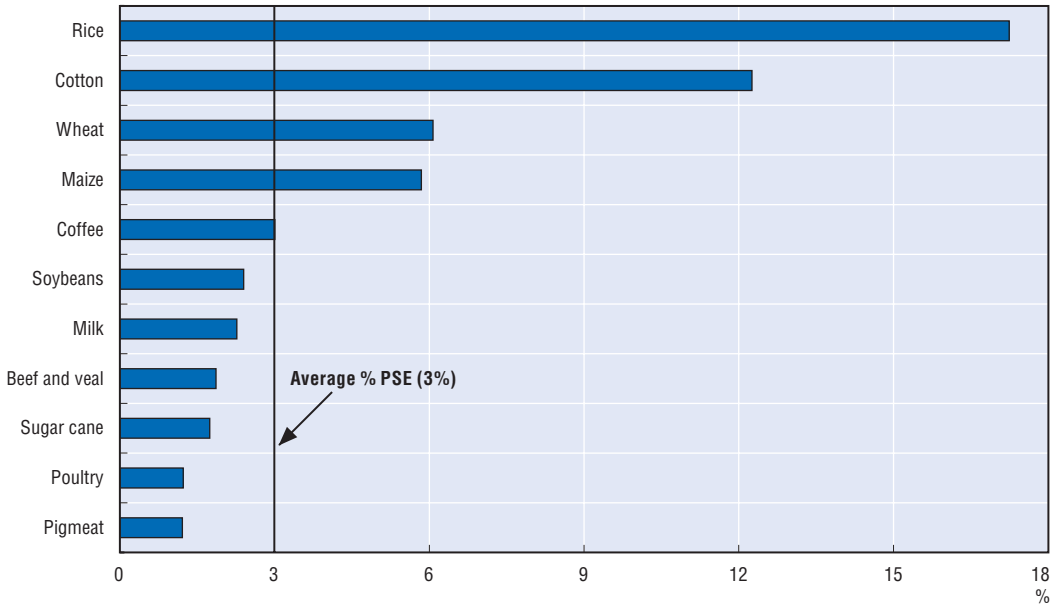


Note: 2002-03 average for China and Russia.

Source: OECD PSE/CSE databases 2005.

Figure 0.7. **Brazil's Producer Support Estimate by commodity, 2002-04 average**

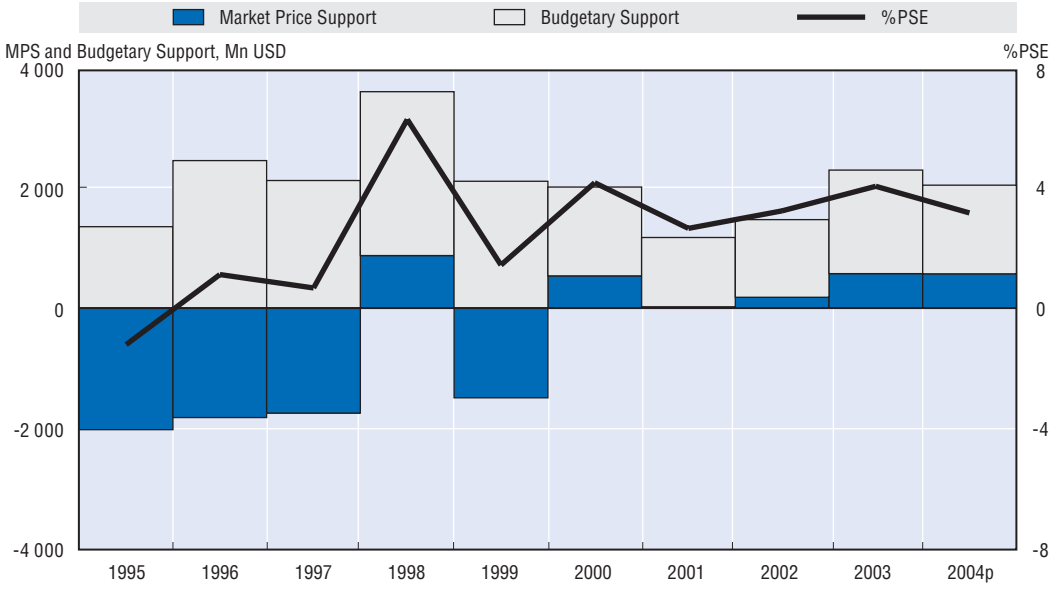
As per cent of gross farm receipts



Source: OECD PSE/CSE databases 2005.

Figure 0.8. **Composition of Producer Support Estimate, 1995-2004**

Million USD



Source: OECD PSE/CSE databases 2005.

rates that are a legacy of macroeconomic instability (from which agriculture suffered disproportionately). A further rationale for special treatment of the sector emanates from social goals, where affordability of production credit is seen as a crucial element of

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

supporting income generation among the rural poor. The preferences are to some extent eroded by the practice of banks imposing additional requirements on rural borrowers (such as the purchase of insurance) as a condition for receiving reduced interest credit.

Approximately one half of the overall benefit from credit support stems from the restructuring of large farmers' debt accumulated over the period of macroeconomic instability in the late 1980s to mid-1990s. Debt rescheduling was unavoidable, given the need to renew the flow of liquidity into the sector. However, successive rescheduling has created "moral hazard" and led to defaults that are likely to continue in anticipation of further concessions. This may impede fresh lending. Also, to the extent that debt rescheduling involves budgetary support, it may crowd out more productive public spending (*e.g.* for infrastructure development).

Aside from preferential credit, Brazil employs several mechanisms to support producer prices, such as intervention purchases and commodity loans. However, these do not result in broad, sector-wide price distortions. Indeed market price support has tended to be close to zero in recent years.

The purported aim of price support policies is to reduce price instability, as well as to provide a limited subsidy to producers who are considered to be at a disadvantage, either because their costs are raised by underdevelopment of infrastructure, or because of locally depressed incomes. Insofar as these policies are locally targeted to keep potentially viable farmers afloat until they become profitable – either as infrastructural development catches up, or as investments to improve semi-subsistence farmers' competitiveness take hold – they have the potential to correct market failures. On the other hand, they also have the potential to retard adjustment among farmers whose best prospects lie ultimately outside agriculture.

To summarise, Brazil provides little support to its agricultural sector, yet it has become more distorting and less oriented towards long-term development. The share of support provided to producers, mostly in the form of credit subsidies, is increasing, while expenditures on general services are becoming less important. However, the latter category includes important long-term investments for Brazil, in areas such as research and extension, training, and the development of rural infrastructure.

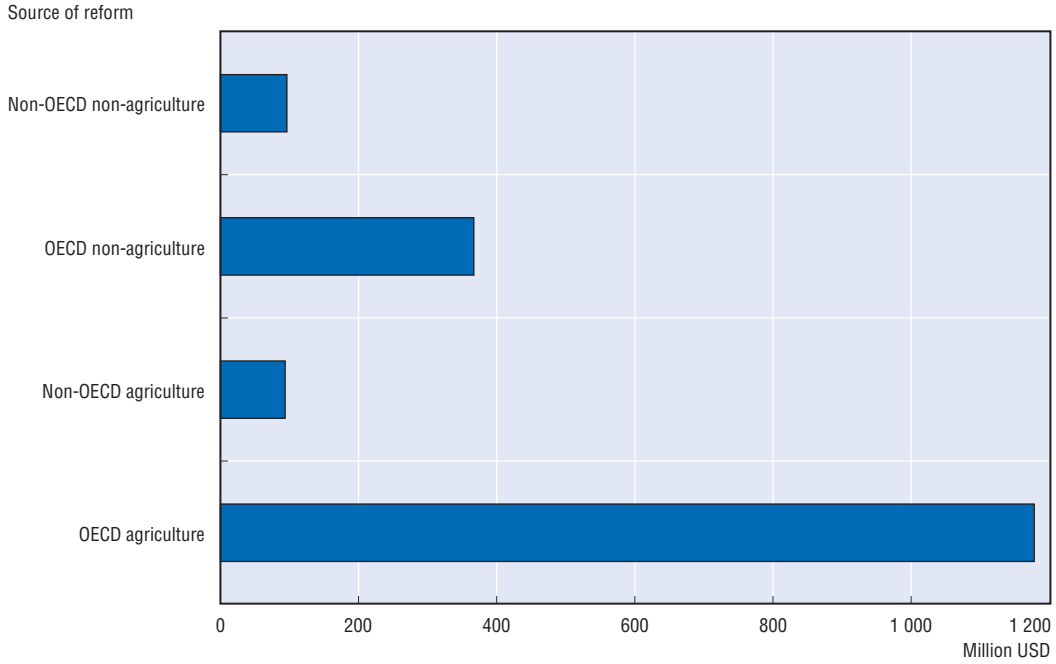
3. The future benefits of policy reforms

The benefits to Brazil from multilateral reform will come mainly from reforms in agricultural policies, where access to OECD country markets is the most important issue

Given that Brazil has broadly liberalised its own agricultural policies, most of the future benefits to the country from multilateral agricultural policy reforms are expected to come from the removal of protectionist measures in other countries. Indeed, Brazil is expected to be one of the biggest external beneficiaries from reforms in OECD countries and elsewhere.

For Brazil, agricultural reforms matter more than reforms to any other sector, and the majority of the potential gains derive from reforms in OECD countries (Figure 0.9). It is estimated that a 50% cut in tariffs and export subsidies globally and for all sectors, together with a 50% reduction of domestic support to agriculture in OECD countries, would provide a welfare gain to Brazil of USD 1.7 billion, equating to about 0.3% of GDP. Of these gains, 59% would come from tariff reductions on agricultural products by OECD members. The gains to Brazil from agricultural policy reforms in OECD countries account for more than half of all the gains to developing countries.

Figure 0.9. **Welfare gains to Brazil from multilateral reform**



Source: GTAPEM.

There are two reasons why OECD reforms matter most: first, a large share of Brazil's agricultural exports go to OECD countries (notably the European Union), and protection in these markets is relatively high; second, OECD countries account for the majority of support that undermines Brazil's competitiveness in third country markets. That said, a rising proportion of Brazil's exports is going to non-OECD country destinations, notably China and Russia, which makes policies in these countries of increasing importance.

Among the areas in which an agreement on reforms is being pursued, market access is paramount for Brazil, as for world markets overall. Brazil faces a range of difficulties in gaining access to foreign agricultural markets, especially among OECD countries. These include:

- **High tariffs** in key markets (notably sugar, poultry, orange juice, beef and pigmeat, and tobacco).
- **Tariff escalation** according to the degree of processing (notably in the soybean sector, and for processed food products and coffee).
- **Discriminatory import regimes**, such as country-specific TRQ allocations, and preference schemes, which typically do not favour Brazil. These mechanisms for controlling imports tend to be relatively important in the sugar, beef and cotton sectors and are applied most by those countries which represent Brazil's biggest overall markets, *i.e.* the European Union, the United States, China and Russia.
- **Non-tariff measures**, such as sanitary and phyto-sanitary regulations, which, irrespective of their legitimacy, impede market access. These are a particular problem for meat products, where several countries do not accept Brazil's contention that specific

regions should be considered as free from foot-and-mouth disease, even if this is not the case for the country as a whole.

Reforms in these areas, and accompanying reductions in domestic support promise gains to Brazil that are expected to be widespread among different groups of households:

- **Commercial agricultural producers** with links to foreign markets are expected to reap most of the benefits that derive from higher international prices. Potential losses to import-competing sectors are less of a threat, since these sectors have already been opened up to imports from low-cost Mercosur members (*e.g.* Argentine wheat).
- **Non-commercial "family" farms** are also expected to benefit, to the extent that they are integrated with markets. This does not rule out the possibility that some households will lose, for example because they are net consumers of agricultural products, or because land rental payments are forced up by more than any increase in farm receipts. But on balance this is not expected to be the case – even for the poorest farm households.
- **Non-agricultural households** are also expected to gain from multilateral reforms, with the benefits from higher profits and wage payments in the agro-food sector and elsewhere exceeding the losses to consumers from higher food prices.
- **Wage-earning agricultural employees** should be a major beneficiary from the expansion in commercial production and exports; most likely from an increase in employment (*i.e.* a brake on the structural decline) rather than higher wages, given the high rate of unemployment (and underemployment) in Brazil.

In the case of the reform scenario described above, real incomes are expected to increase between 2% and 4% for agricultural producers, by around 3% for agricultural employees and by about 1% for urban households. These income gains lead to a modest decline in the incidence of poverty. Because commercial farmers gain more than smallholders, inequality among producers is expected to increase. But the wider gains to agricultural employees and urban households (who account for about 80% of the population) imply that the overall effect on income inequality is likely to be broadly neutral.

In any event, these impacts are much milder than those induced by market changes, including global demand growth and declining real agricultural prices. Indeed, it is important not to confuse all the enhanced opportunities for exporters, or the adjustment stresses facing farmers (often operating on a small scale) whose productivity cannot keep pace with price declines, with the more limited impacts of multilateral reforms.

4. Policy challenges

Brazil's agricultural policies seek to reconcile the pursuit of agricultural growth with social and environmental objectives; sectoral growth can be supported domestically through improvements in infrastructure and the country's credit and tax systems; while internationally the biggest need is for improved access to key markets

Agricultural policy design in Brazil involves reconciling multiple objectives. These objectives include the promotion of agricultural growth and competitiveness within the constraints of environmental objectives, and the design of specific policies that are tailored to the needs of poor farm and rural households.

Weak infrastructure is emerging as a significant bottleneck to agricultural development. Producers in Brazil are typically a long distance from their principal markets, and face internal logistics systems that are relatively underdeveloped. For example, only

10% of all highways in Brazil are paved, compared with 29% in neighbouring Argentina. Moreover, transport costs are relatively important for Brazilian exporters, as a relatively large share of the country's agro-food exports tends to be in the form of bulk commodities.

The upgrading of rural infrastructure need not be detrimental to the environment, but nor is it likely that an unregulated expansion of agricultural area will provide sufficient protection to environmentally important areas. Brazil's policies need to take account of the implicit trade-off between the economic benefits and environmental costs of agricultural growth in the Amazon region, while their design needs to reflect the difficulties of policing such a vast area.

For many agricultural producers, the terms and availability of credit are also a major constraint. Commercial agri-businesses typically receive their payments in hard currency (mostly US dollars), which provides evidence of creditworthiness to lenders. In many cases, these companies do their own lending to agricultural suppliers, either by providing credit or financing inputs (such as fertiliser) directly. In Brazil, for example, soybean farmers often find it cheaper to obtain finance from the crushers.

The greatest difficulties arise for businesses that are obliged to borrow on the domestic market. Although the economy has stabilised in recent years, macroeconomic uncertainty still has a disproportionate effect on less well-established companies without easy access to overseas lenders. High real interest rates mean that access to credit from banks is almost prohibitive, despite government subsidies. General credit subsidies risk crowding out non-agricultural investment more than targeted subsidies to land reform recipients and smallholders under the PRONAF programme.

Tax policies also have an important effect on producers' opportunities. Under Brazil's ICMS (value added) tax system, each of the country's 26 states imposes its own taxes and exemptions. This distorts producers' incentives, while the system's complexity places an additional burden on taxpayers.

The shadow that hangs over attempts to improve competitiveness, and to build successful agri-businesses around a core comparative advantage in agriculture, is trade protection in important markets and subsidised production and exports by rival suppliers. Some of the adverse impacts can be cushioned by moves into products where effective demand is less constrained (*e.g.* tropical products), but these policies nevertheless impose an important constraint on the agro-food sector's growth prospects. With supply-side improvements likely to continue, the need for further liberalisation of trade in agricultural products becomes more important.

The social challenges presented by agricultural development call for targeted adjustment policies and effective safety nets

In addition to the need to continue improvements in agricultural competitiveness, Brazil also faces a number of social challenges associated with agricultural development. Agricultural employment fell by 14% between 1992/93 and 2001/02. This decline is not exceptional by international standards, but it indicates particularly strong adjustment in the labour market, given that the sector's share of national income was more or less constant over the same period.

Moreover, agricultural growth has made little impact on the problem of rural poverty. More than 60% of the rural population has an income below an absolute poverty line of half the minimum wage, while income inequality in rural areas has gone up over the last

decade and the poorest have become poorer. Out-migration from rural areas may have helped reduce rural poverty, but to a large extent this has shifted the burden to urban areas. Rural poverty is increasingly concentrated in the North and North East, where there is a heightened need for effective development policies and social safety nets.

Poverty rates are influenced by two competing forces. On the one hand, economic growth at the national level helps raise incomes, and generates demand-linkages throughout the economy. On the other hand, structural change poses a threat to poor producers who are progressively less able to compete. The competitive pressure may come from imports or from domestic pressures. Given that Brazil has little tariff protection, the major challenge to less competitive producers comes not from further liberalisation, but rather from structural change within the country, where traditional producers (often operating on a small scale) have experienced long-term price declines but not shared in the cost reductions that generated them. Indeed, Brazil is becoming increasingly competitive in a number of products that have been important to small scale farmers (*e.g.* dairy, maize); a positive development, but one that nevertheless puts pressure on smallholders.

The key need is for targeted adjustment policies. For some households, programmes to upgrade farming skills (*e.g.* through extension) may enable them to become competitive within the sector. At the same time, it is important to recognise that the long-term (inter-generational) future for most semi-subsistence farm households lies outside agriculture, so there is a parallel need for measures that facilitate income diversification and the exploitation of non-farm opportunities. Investments at the individual level, for example through education and health expenditures, are important here, as are policies that foster rural development, such as infrastructure development.

Many of the policies that improve competitiveness, or facilitate adjustment, fall within the general services element of the calculation of total support to agriculture. Yet this component of support has been falling at the expense of producer support, mostly provided in the form of credit subsidies and debt reduction. Moreover, the majority of producer support has not been targeted at poorer agricultural households, while the poorest of the rural poor are outside the scope of several economy-wide social policies, particularly pensions.

Policies to improve commercial competitiveness and address social objectives need to take account of the macroeconomic constraints that bind policy makers. Neither improvements in competitiveness nor long term poverty reduction are attainable without economic growth and stability, which in turn require fiscal discipline and hence the adoption of well-targeted measures. Such policies have the potential to create a virtuous circle, with improved competitiveness and enhanced human capital supporting faster economic growth.

In overall terms, Brazil has pursued essential policy reforms that have benefited the agricultural sector and helped raise incomes and reduce poverty. A shift of support towards longer term investments in areas such as infrastructure, and research and extension should further enhance competitiveness, while better targeting of agricultural and economy-wide social policies could enable agricultural development to be more fully inclusive than it has so far been.

ISBN 92-64-01254-0
OECD Review of Agricultural Policies
Brazil

Chapter 1

The Policy Context

Over the past 15 years the Brazilian economy has undergone dramatic structural reforms and achieved much greater macroeconomic stability. The agricultural sector has both contributed to these reforms and benefited from them, with production and exports growing rapidly, particularly in recent years. Yet although economic growth has helped reduce the incidence of poverty, low incomes remain a concern, especially in rural areas, and there has been little progress in reducing income inequality. This chapter describes the main changes in the macroeconomic and policy environment since Brazil switched from import substitution to open market policies at the end of the 1980s, and assesses their impact on the agricultural sector. As such, it provides context for an evaluation of agricultural policies in Brazil (Chapter 2), and an examination of the impacts that multilateral trade policy reforms will have on the level and distribution of incomes (Chapter 3).

The chapter is structured as follows: Section 1.1 describes the agricultural sector's strategic importance to the Brazilian economy, while Section 1.2 considers the ways in which macroeconomic, structural and policy reforms have influenced the economy, including their effects on the allocation of resources between sectors. Section 1.3 then focuses more specifically on the impacts that policy reforms and structural change have had on the agricultural sector. In the light of this analysis, Section 1.4 sets out the main challenges confronting Brazilian policy makers. Essentially these relate to the need to sustain agricultural growth, while simultaneously making faster progress on reducing poverty and curbing inequality.

Map of Brazil

1.1. Agriculture's importance to the Brazilian economy

Brazil is among the world's ten largest economies, with a GDP exceeding USD 1 trillion (in PPP terms). It has the fifth highest population (now over 180 million) and the fifth largest surface area. With a GDP per capita of USD 7 600 in PPP terms Brazil qualifies as an "upper middle income" country (Table 1.1). Yet poverty is prevalent and income inequality extreme, with 8.2% of the population living on less than USD 1 per day, and 22.4% on less than USD 2 per day (Table 1.4).

In recent years, Brazil's economic growth has been disappointing by international standards. Real GDP grew by an average of 2.5% per year between 1990 and 2002, which is slightly lower than the average for Latin America and the Caribbean (2.7%), and not much faster than population growth (1.6%). These growth rates are much lower than those achieved in Asia, especially East Asia (7.5%) and China (9.7%) (Table 1.2). However, growth in 2004 was 5.2% and the macroeconomic fundamentals are in place for sound growth in 2005 and 2006 (3% to 4%).

Brazil is endowed with vast agricultural resources. The country's agricultural area is exceeded only by China, Australia and the United States (Table 1.3). About three-quarters

Table 1.1. **Income and population: comparative indicators, 2000-02 average**

		GDP, PPP (current USD)	GDP, PPP (current USD)	GDP (current USD)	GDP (current USD)	Population, total	Population, total	GDP per capita, PPP
		USD billion	In % of world	USD billion	In % of world	Million	As % of world total	Current USD
1	United States	9 953.9	21.28	10 055.0	31.75	285.3	4.66	34 883.3
2	China	5 377.5	11.50	1 174.2	3.71	1 271.6	20.76	4 230.0
3	Japan	3 365.1	7.20	4 311.0	13.61	127.0	2.07	26 496.7
4	India	2 632.6	5.63	482.0	1.52	1 032.3	16.85	2 550.0
5	Germany	2 197.3	4.70	1 902.6	6.01	82.3	1.34	26 683.3
6	France	1 550.5	3.32	1 353.4	4.27	59.2	0.97	26 193.3
7	United Kingdom	1 504.0	3.22	1 478.0	4.67	59.1	0.96	25 463.3
8	Italy	1 487.0	3.18	1 117.0	3.53	57.7	0.94	25 776.7
9	**Brazil**	**1 309.9**	**2.80**	**521.0**	**1.65**	**172.3**	**2.81**	**7 600.0**
10	Russian Federation	1 119.3	2.39	305.4	0.96	144.8	2.36	7 730.0
	South Africa	438.0	0.01	115.5	0.36	44.7	0.01	9 790.0

Source: World Bank (2004), *World Development Indicators*.

Table 1.2. **Relative economic growth**

	1991-1993	1994-1996	1997-1999	2000-2002	1991-2002
Brazil	**1.9**	**4.3**	**1.4**	**2.4**	**2.5**
China	12.3	10.9	7.9	7.8	9.7
India	3.7	7.5	5.9	4.6	5.4
South Africa	– 0.6	3.6	1.8	3.1	2.0
Sub-Saharan Africa	– 0.1	3.6	2.8	3.1	2.3
Middle East and North Africa	4.2	3.0	2.8	3.5	3.4
Latin America and Caribbean	**3.9**	**3.4**	**2.4**	**1.1**	**2.7**
East Asia and Pacific	9.7	9.5	4.3	6.5	7.5
South Asia	3.9	6.8	5.4	4.4	5.1
Europe and Central Asia	– 6.8	– 2.3	1.7	4.7	– 0.7
OECD 25[1]	4.3	4.9	4.7	4.1	4.5

1. All OECD countries except Czech Republic, Hungary, Korea, Poland and Slovak Republic.

Source: World Bank (2004), *World Development Indicators*; Quarterly National Accounts database, OECD.

of this land is devoted to permanent pasture, and it is estimated that agricultural production could rise significantly through the conversion of this land to arable cropland. Indeed, the government estimates that there are 90 million ha of potential cropland in the Centre West region that could be exploited without encroaching on the Amazon rainforest.

There are essentially two distinct agricultural areas. The first, comprised of the southern one-half to two-thirds of the country, has a semi-temperate climate and higher rainfall, better soils, higher technology and input use, adequate infrastructure, and more experienced farmers. This area produces most of Brazil's grains, oilseeds and export crops. The other area, comprising the drought-prone North East region and the Amazon basin, lacks well distributed rainfall, good soil, adequate infrastructure, and access to capital. Although most farmers in the latter area produce for their own consumption, exports of forest and tropical products are increasingly important. Central Brazil contains substantial areas of grassland with only scattered trees.

Table 1.3. **Land use patterns, 2002**

Million ha

	Total area	Agricultural area	Permanent pasture	Arable and permanent crops	Arable land	Permanent crops	Agriculture, value added (% of GDP)[1]	Employment in agriculture (% of total employment)[2]
Brazil	**851.5**	**263.6**	**197.0**	**66.6**	**59.0**	**7.6**	**8.8**	**20.6**
China	959.8	554.0	400.0	154.0	142.6	11.3	15.4	46.9
India	328.7	181.2	11.1	170.1	161.7	8.4	22.7	66.7
South Africa	121.9	99.6	83.9	15.7	14.8	1.0	3.8	10.9
Argentina	278.0	177.0	142.0	35.0	33.7	1.3	10.7	0.4
Chile	75.7	15.2	12.9	2.3	2.0	0.3	8.8	13.5
Australia	774.1	447.0	398.4	48.6	48.3	0.3	3.8	4.9
New Zealand	27.1	17.2	13.9	3.4	1.5	1.9	7.0	9.1
United States	962.9	411.9	233.8	178.1	176.0	2.1	1.6	2.4

1. 2001 data for Australia and United States; 1998 data for New Zealand.
2. 2001 data for Argentina, Australia, New Zealand and United States; 2000 data for China; 1999 data for South Africa; 1995 data for India; Brazilian GDP data from IBGE.

Source: UN-FAO; FAOSTATS; World Bank (2004), *World Development Indicators*; IBGE.

Table 1.4. **Poverty and income inequality: comparative measures**

	% of population living below USD 1 a day in 2001	% of population living below USD 2 a day in 2001	Income share held by highest 20%	Income share held by lowest 20%	Gini Coefficient[1]
	1993 PPP	*1993 PPP*	*Latest year available 1995-2002*	*Latest year available 1995-2002*	*2001*
Brazil	8.2	22.4	63.2	2.4	0.59
China			50.0	4.7	
Rural	26.5	71.0			0.36
Urban	0.3	6.5			0.33
India			41.6	8.9	
Rural	41.8	88.4			0.28
Urban	19.3	60.5			0.35
South Africa	10.7	34.1	66.5	2.0	0.58
Korea, Rep.	< 2[2]	< 2[2]	37.5	7.9	0.32[2]
Mexico	9.9	26.3	59.1	3.1	0.55
Turkey	1.2	12.8	46.7	6.1	0.40

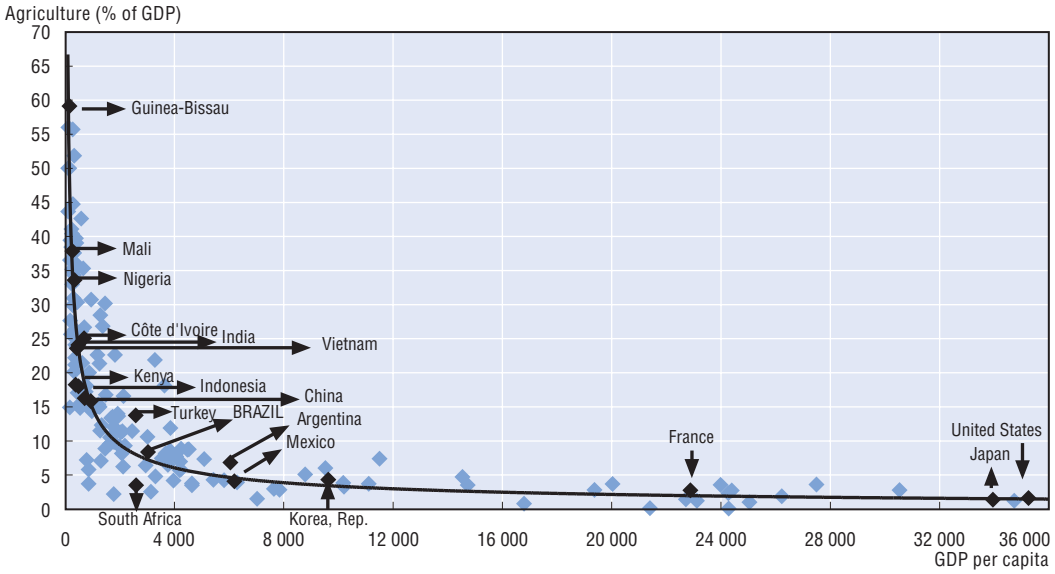
1. Gini Index is a measure of inequality between 0 (everyone has the same income) and 1 (richest person has all the income).
2. Data are for 1998.

Source: POVCAL; World Bank (2004), *World Development Indicators*; Brazil data obtained from PNAD.

The country's geographically varied climate has led to a diversified agriculture of both temperate and tropical zone products. Brazil is the world's biggest supplier of sugar cane, orange juice, citrus fruits and coffee, the second biggest in soybeans, and third in tobacco and poultry. It is also a major producer of corn, rice and beef.

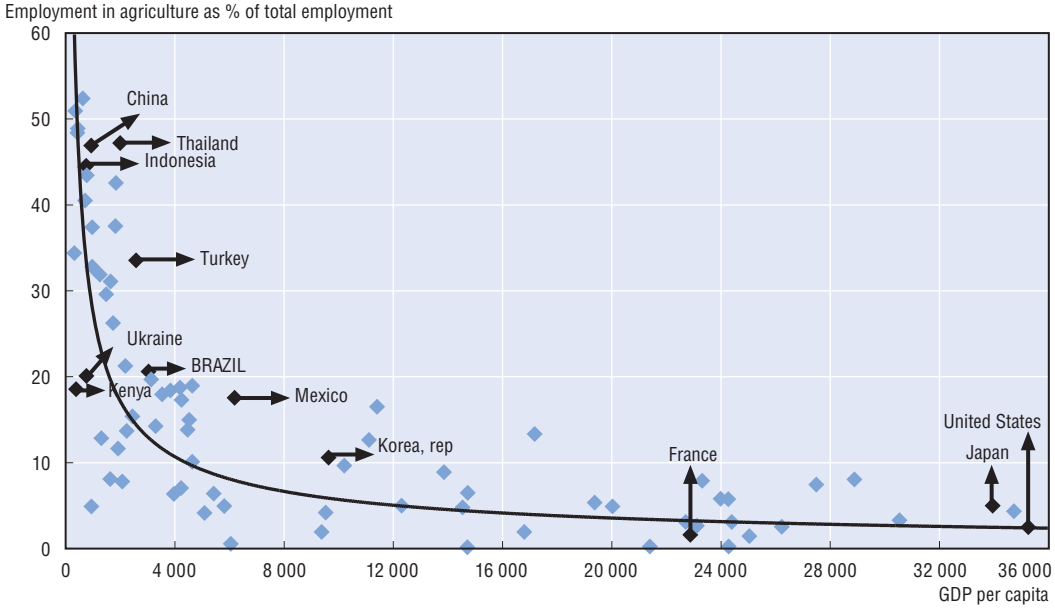
Even though Brazil has abundant natural resources, agriculture's share of GDP is, at 8.8%, no more than one would expect given its level of development (Figure 1.1). On the other hand, the sector's share of employment is, at 20%, considerably higher than is typical for a country at such an income level (Figure 1.2). The implied low labour productivity

Figure 1.1. **Agriculture's share of GDP *versus* GDP per capita, 2000-02 average**



Source: World Bank (2004), *World Development Indicators*; IBGE.

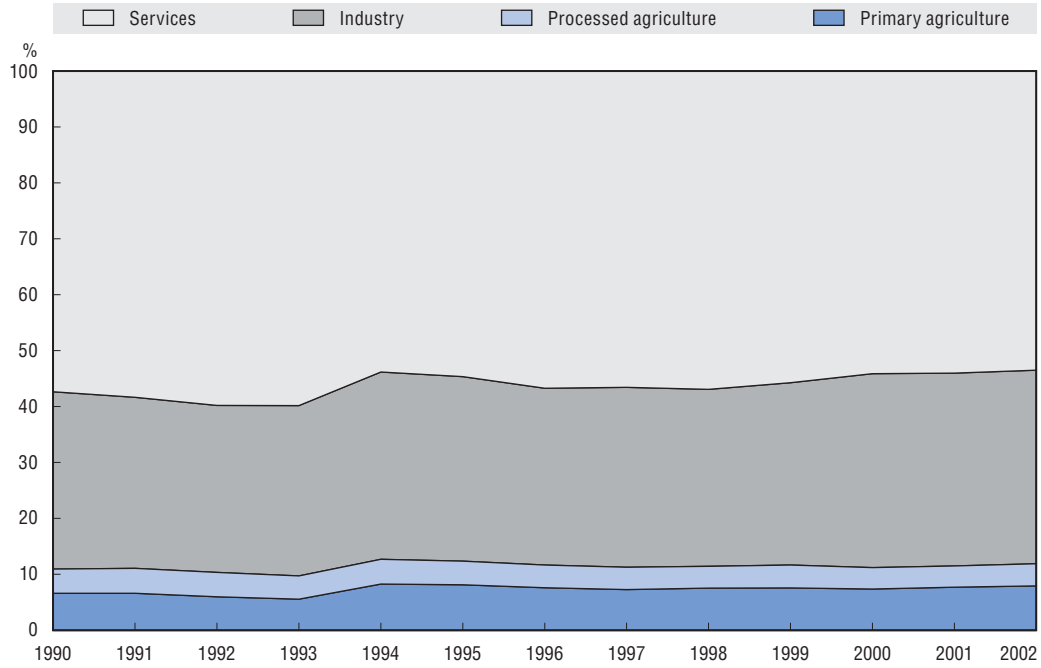
Figure 1.2. **Agriculture's share of employment *versus* GDP per capita, 2000-02**



Source: World Bank (2004), *World Development Indicators*; IBGE.

reflects the dualistic nature of farming in Brazil, where a small share of the sector accounts for the majority of output (and exports), but there are many more small-scale, relatively unproductive, producers.

Figure 1.3. **Shares of GDP by sector, 1990-2002**



Source: IBGE.

Agriculture's share of economic activity has changed little in the last ten years (Figure 1.3). This runs counter to the general tendency for agriculture's relative importance to diminish with economic development. Partly this reflects weak economic growth, but another important factor has been the reversal of import substitution industrialisation (ISI) policies which discriminated against agriculture. The successful mobilisation of new resources, notably in the Centre West, has also stimulated agricultural growth, while in recent years production and exports have been boosted by a lower real exchange rate and higher prices for key commodities.

Agriculture and its associated industries are especially important to trade, accounting for nearly 30% of total exports. These exports, which exceeded USD 20 billion in 2003, are of considerable macroeconomic importance, as they tend to partially offset trade deficits elsewhere. Brazil's economic growth has often been circumscribed by balance-of-payments constraints, with rising per capita incomes leading to higher demand for imports that are not matched by export growth. One difficulty arises from the relatively low share of exports in national income compared with similarly large countries. Exports of goods and services accounted for 15% of Brazilian GDP in 2002, compared with ratios of 32% in Mexico, 27% in France and 31% in Germany.[1] There are several possible reasons for this low ratio. One is the considerable distances to Brazil's main markets (notably the European Union and the United States), with relatively high transport costs acting as a form of natural protection, particularly for low value products. Another is formal trade protection applied to Brazilian exports, particularly of agricultural products. Relatively high agricultural tariffs tend to discriminate against Brazil, given its comparative advantage in this sector. A final factor may be the historical legacy of import substitution policies.

At the same time, Brazil struggles with significant absolute poverty, with more than a fifth of the population living on less than two dollars a day, and one of the world's most unequal income distributions (Table 1.4).The country's population is relatively urbanised, and the majority of the poor are located in urban areas. However, the incidence of poverty is more than twice as high in rural areas. There is therefore a need to reconcile policies promoting commercial growth with those tailored to the needs of poorer households. This implies a clear vision of the prospective role of smallholder agriculture, and of how labour released by the farm sector can be absorbed. Policies evaluated in Chapter 2 include those designed to transform small-scale (semi-subsistence) agriculture into commercially viable enterprises, those promoting income diversification (notably through off-farm employment), and measures aimed at non-farm job creation in rural areas. Insofar as it takes time to develop the rural economy, a further issue concerns the design of effective social safety nets.

Moreover, it is important not to overlook the impact that agricultural policies can have on poor households in urban areas, given that these households spend a significant share of their income on food, and may seek seasonal employment in agriculture. The economy-wide effects of agricultural policy reforms are explored in Chapter 3.

1.2. Economic policy reforms in Brazil

The Brazilian economy began a significant process of restructuring in the 1990s. Trade was liberalised, state owned enterprises privatised, domestic markets deregulated, and a customs union with other South American countries (Mercosur) established (Helfand and Rezende, 2004). The extent of the reforms was profound. For example, average industrial tariffs were reduced from over 100% in the late 1980s to 13% in the 1994-97 period (Rossi Jr. and Ferreira, 1999). Agricultural policies were no exception to these general moves towards greater openness and less state intervention.

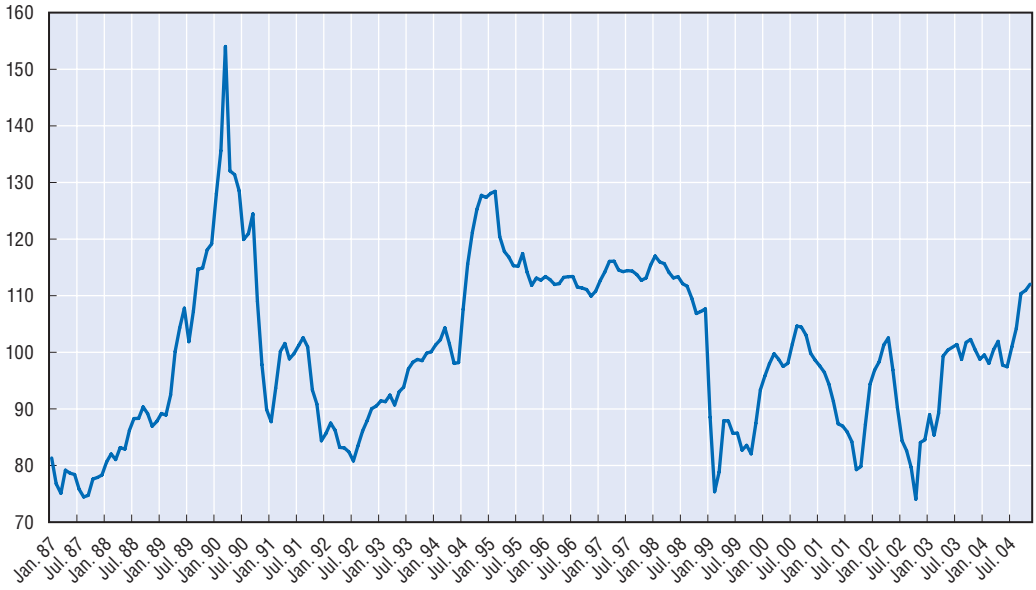
The previous model of import substitution enabled Brazil to develop quite rapidly after the Second World War. Between 1945 and 1980, GDP grew by more than 7% per annum, with average growth reaching 8.8% per annum in the 1970s. Strong growth led to a substantial decline in poverty levels, from 68% of all households in 1970 to 35% in 1980. However, this growth came at the expense of high inflation, large external deficits and the accumulation of a substantial foreign debt burden. Import substitution helped diversify the economy's productive base, but it also shielded the economy from competition, which, with time, reduced competitiveness. Moreover, while poverty levels fell, income inequality rose and regional development was unbalanced.[2]

By the 1980s, the ISI model was exhausted. Throughout the decade, as elsewhere in Latin America, inflation and the fiscal position were persistently out of control. Brazil became less attractive to foreign investors, growth faltered, and there was not enough saving (either foreign or domestic) to finance investment. Following the 1982 Mexican debt crisis, the 1980s became known as the "lost decade" for Brazil, and Latin America generally.

It took eight years and six plans to achieve stability, as successive governments froze prices without tackling the fiscal position or restoring external credibility.[3] Only in 1994 did the last of these plans, the *Real Plan* (1994-98) bring inflation under control, with annual price increases falling from 500% in June 1994 to 7% in June 1997 and 3.5% in June 1998. The *Real Plan* gave special attention to the country's fiscal position. A constitutional amendment in 1994 gave the Treasury more control over expenditures. Together with an

Figure 1.4a. **Real effective exchange rate**

Average 2000 = 100



Note: An increase of the index indicates an appreciation. The real effective exchange rate is calculated as the ratio of domestic to foreign wholesale prices for Brazil's 16 most important commercial partners, converted at the nominal exchanges rate (USD/BRL) and weighted by each partner's share in total Brazilian exports in 2001.

Source: IPEA.

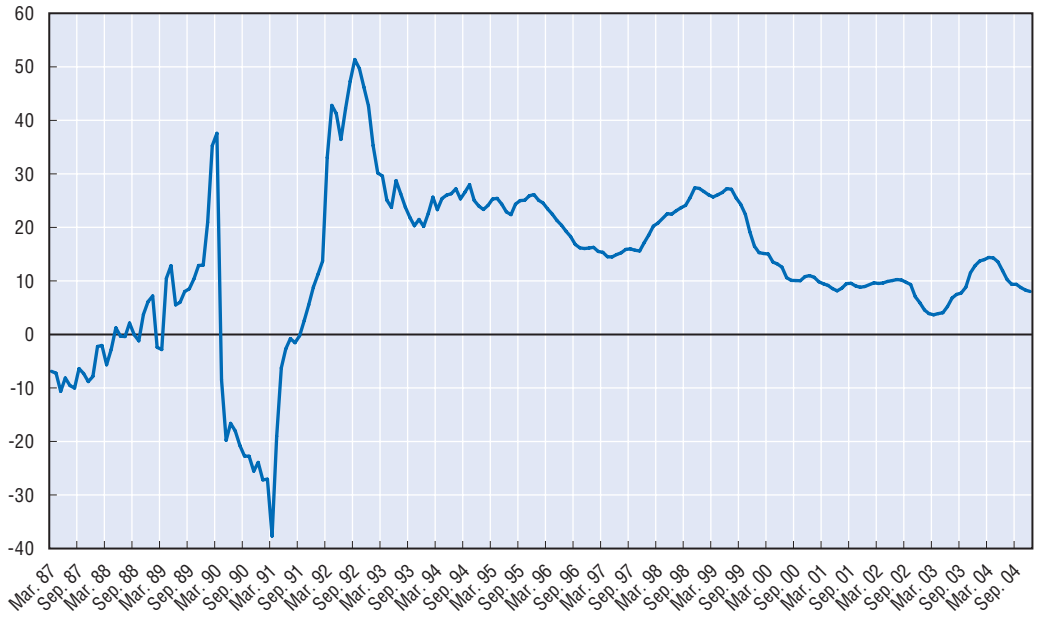
increase in tax revenues this resulted in primary surpluses in 1994 and 1995. Trade liberalisation was accelerated, which kept a lid on inflationary pressures and, with domestic interest rates much higher than international rates, led to capital inflows. As a result, the *real* appreciated after its introduction in mid-1994 (Figure 1.4a).

Macroeconomic stabilisation had several important economic effects. First, it removed the regressive effects of inflation, thus leading to a substantial reduction in poverty. In contrast with previous stabilisation plans, this improvement was sustained, with an estimated 10 million people being taken out of poverty in two years.[4] Second, in conjunction with greater openness, it had a profound effect on economic incentives in different sectors. Industrial employment fell, as the manufacturing sector was hit by the higher exchange rate, although the process of adjustment was eased somewhat by employment creation in the service sector, and by net job creation by small and medium-sized enterprises. Many of these new jobs were in the informal economy. In overall terms, "open" unemployment rose from 5% in 1993 to 9% in 1998, while total unemployment (including hidden unemployment) rose to 18% (IPEA, 2000).

The impacts on agriculture were complex. Macroeconomic uncertainty had reduced the attractiveness of financial assets. This caused the prices of land, cattle and commodities to rise, which increased borrowing and investment in agriculture. The *Real Plan*, like the plans that preceded it, caused resources to return into financial assets, and prompted an asset price cycle that led to increased indebtedness. When combined with high real interest rates and currency appreciation, the effect was a severe financial crisis in the sector. On the other hand, land prices stabilised at about half their level in the 1980s. This facilitated access to land for competitive producers, and lowered the costs of the

Figure 1.4b. **Real interest rate**

Per cent



Note: Interest rate – SELIC; inflation rate – IPCA.

Source: IPEA.

government's land reform programme. Moreover, with low inflation, investment started to recover. The adoption of modern machinery and equipment, which could now be imported more freely, had an immediate effect on productivity.

In broader terms, the agricultural sector benefited from the abandonment of ISI policies. Reduced industrial protection improved agriculture's terms of trade, and the sector benefited from the 1996 Kandir Law, which exempted raw materials and "semi-manufactured" products destined for export from value added taxes. While greater economic stability reduced the incentive to hold land and other physical assets, it nevertheless established a more attractive investment climate over the long term. The macroeconomic effects of reform were complemented by sector-specific reforms that were introduced either as part of the overall reform package, or to meet specific sectoral objectives. These included trade liberalisation, a reform of price support and credit policies, deregulation of several key markets and an ambitious agrarian reform programme. These policy initiatives are discussed in Chapter 2.

As part of the stabilisation policy, the government decided in 1995 to keep the exchange rate within a narrow band. This required high real interest rates, which prompted capital inflows and restored foreign reserves (Figure 1.4b). However, a subsequent lowering of real interest rates was prevented by sub-national (state and municipal) governments missing their fiscal targets. High real interest rates in turn harmed the fiscal position, with the public sector deficit rising from 4.5% of GDP in 1997 to 8% in 1998, largely due to higher interest payments. Combined with the disappearance of the primary surplus, the public debt grew dramatically.

A higher real exchange rate from 1995 onwards, together with low domestic savings, led to a deterioration of the current account and an unsustainable accumulation of foreign debt. By 1998, the ratio of foreign debt to GDP was as high as before the 1982 Latin American debt crisis. Economic growth stalled, and in 1999, with contagion from the Asian crisis a major factor, Brazil experienced its own foreign exchange crisis. This time, with a sufficient consensus to consolidate fiscal adjustment, the subsequent depreciation of the currency did not stoke inflationary pressures. This has enabled monetary policy to be used as a tool to target inflation directly.

From a structural standpoint, there has been some widening of the tax base, but the country remains dependent on overseas finance and continues to be vulnerable to overseas shocks. Indeed, a string of adverse supply shocks have hit the Brazilian economy since the floating of the *real* in 1999. At the international level these shocks included the slowdown in the world economy in 2001-02 and heightened geopolitical uncertainty; while at the domestic level an energy shortage in 2001 was followed by a deterioration in market sentiment in the run-up to the presidential election in 2002. In such a context, exports have been the main engine of growth, with agriculture and agribusiness exports at the forefront. However, the long-term sustainability of such prodigious agricultural export growth is questionable. Commodity prices have slipped back from their recent peak, and by the end of 2004 the real exchange rate had climbed back to a level higher than that preceding the 1999 devaluation (Figure 1.4a).

1.3. The effects of economic reforms on Brazilian agriculture

Output

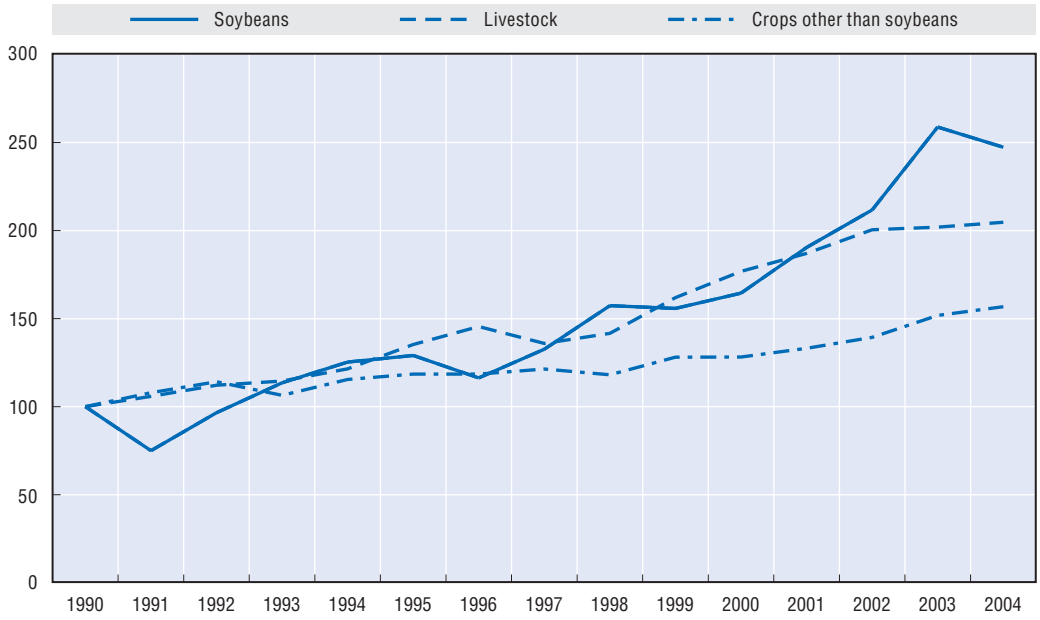
The superior growth of agriculture relative to manufactures in the 1990s conceals important structural changes within the sector. Producers of exportables benefited from the reduced implicit taxation of exports and the elimination of quantitative restrictions on exports, producers of importables now had to compete, while those in regulated markets (notably wheat, milk, sugar and coffee) faced lower prices and higher competition, irrespective of the net trade position.

Figure 1.5 shows output indices for crops and livestock products from 1990 to 2004. Trade liberalisation and deregulation of the markets for several importables led to a contraction of crop output in the early 1990s, as domestic production was replaced by imports. This effect was eventually overwhelmed by higher output of exportable crops, where growth was relatively rapid from 1993 and has accelerated sharply since 1999. A substantial share of this growth is attributable to soybeans and complementary crops (*e.g.* second crop maize).

A striking feature of the 1990s was the growth in livestock production. The appreciation of the exchange rate through much of this period was less of a problem for livestock than for crops because a smaller share is exported, and because it lowered the domestic cost of maize and soybeans, which are the main ingredients for feed, as well as genetic material for breeding.[5] The biggest growth has been in poultry production, which has trebled since the beginning of the 1990s. More recently, production of beef has increased rapidly, with the share of production exported jumping from 10% to 20% between 2000 and 2004. This increase is driven by rising global (and domestic) demand. Exports have also been boosted by the gradual elimination of foot-and-mouth disease in

Figure 1.5. **Output indices for crops and livestock products, 1990-2004**

1990 = 100



Source: IBGE/SIDRA.

most Brazilian states; and by BSE problems in Europe, and more recently in the United States and Canada.

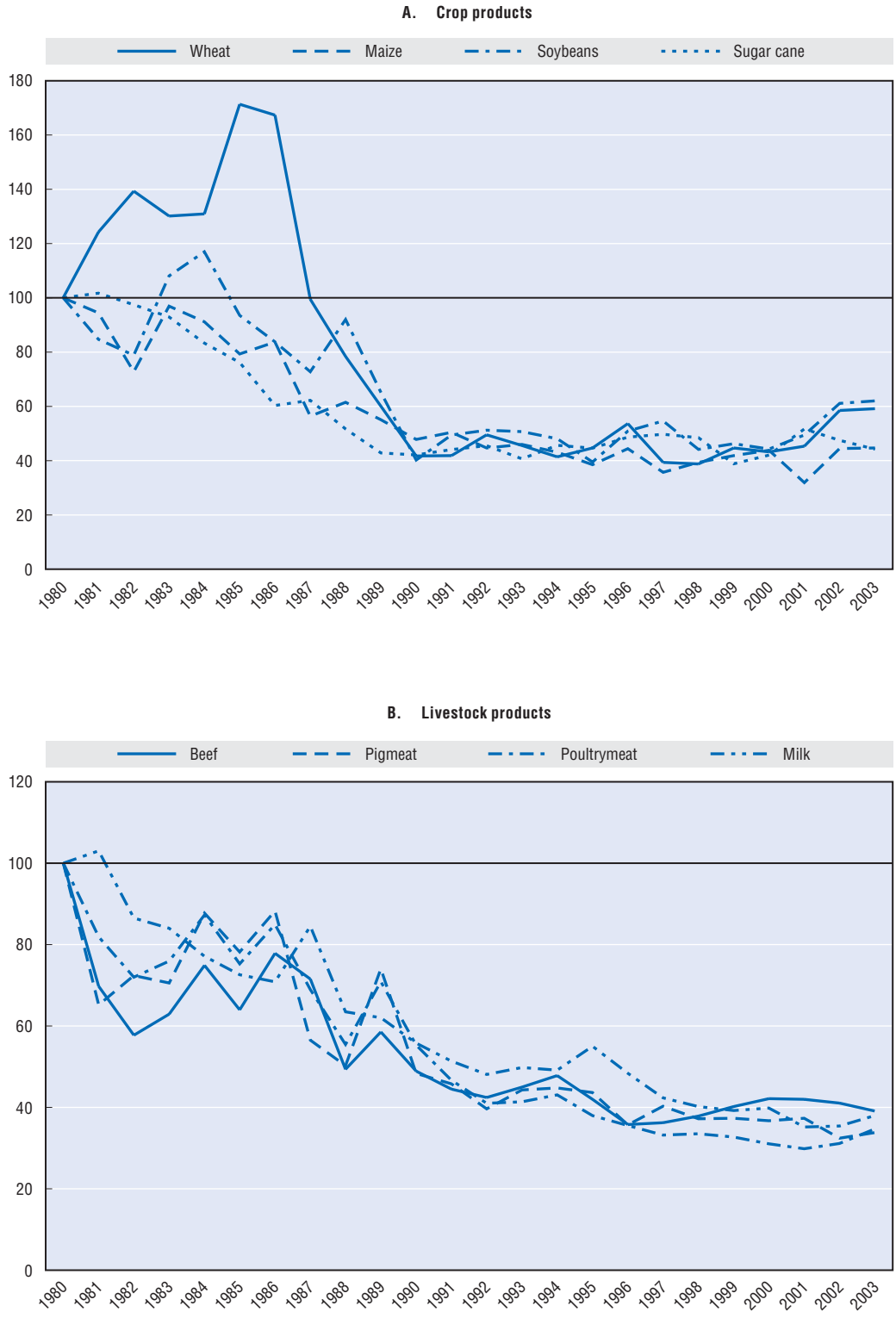
Agricultural output has continued to grow despite falling real producer prices for most agricultural commodities. The real prices of all the main agricultural products fell considerably between the mid-1980s and the end of the 1990s (Figure 1.6). In 1999/2000, real prices for the major crop products were less than 40% of their average levels between 1980 and 1985, while for livestock products the fall was even more pronounced. On the other hand, output prices have risen slightly relative to the prices of purchased inputs over the same period. The relaxation of exchange rate controls in 1999, and the subsequent depreciation of the currency, has led to some strengthening of crop prices over the last few years, but, as noted, this exchange rate effect has since dissipated.

Land allocation

The liberalisation of agriculture has also led to a shift in the geographical location of production away from the South and South East to the Centre West (see regional map on page 37). Total agricultural area remained more or less constant through the 1990s, as increases in the area planted to soybeans and complementary crops were offset by reductions elsewhere. However, in the three years between 2000/01 and 2003/04 total planted area soared from 52 to 61 million ha (Table 1.5), with the area planted to soybeans increasing by 50%. The expansion in soybean area has in turn boosted area of crops that are rotated with soybeans, notably second crop maize and most recently cotton. More generally, the rapid increase in soybean area can be seen as a precursor to more balanced agricultural

Figure 1.6. **Real producer price indexes for main agricultural commodities**

1980 = 100



Note : Producer prices deflated by IGP DI (General Price Index – Internal Supply).

Source: FGV; BACEN.

Regional map of Brazil

development in the Centre West, as infrastructure development follows and producers stand to benefit from external economies of scale.

Increasing soybean area in the Centre West, and rising demand for pasture from livestock farmers, have heightened concerns arising from the expansion of agriculture in the Amazon forest and the *cerrado* savanna, the world's greatest remaining tract of accessible potential farmland. The nature of these concerns, and policy options are discussed in Box 1.1. The fate of the Amazon rainforest is just one environmental issue linked to agriculture, albeit the one that attracts the greatest international interest. The broader linkages between agricultural activity and Brazil's environment are complex and vary considerably within Brazil. For example, commercial farming in the southern states of Rio Grande do Sul, São Paulo and Paraná is highly input intensive, with fertiliser use in these regions comparable to rates in Japan and Korea (between 250 and 300 kg per ha). Farming systems in these areas have led to a number of specific concerns regarding, for example, the impact of agricultural water use on resource levels, and pesticide use on water quality. In the Centre West, on the other hand, farming systems are more extensive, and farmers in this region increasingly use direct planting, which avoids erosion and protects the soil, and, by sparing machinery and equipment, reduces fuel costs. Furthermore, the cattle industry is mostly pasture based and does not generate the same degree of environmental problems associated with animal manure (*e.g.* impact on water quality, ammonia emissions) that are a major issue in many OECD countries, where

Table 1.5. **Land allocation by region**

Products	Planted area (1 000 ha)			Accumulated change			
				Between 1990/91 and 2000/01		Between 2000/01 and 2003/04	
	1990/91	2000/01	2003/04	1 000 ha	%	1 000 ha	%
Soybeans	9 743	13 970	21 244	4 227	43.4	7 274	52.1
Centre West	2 946	5 760	9 568	2 813	95.5	3 808	66.1
South/South East	6 507	7 156	10 006	649	10.0	2 850	39.8
Maize 1st crop	12 652	10 546	9 457	– 2 106	– 16.6	– 1 089	– 10.3
Centre West	1 519	1 206	758	– 313	– 20.6	– 448	– 37.2
South/South East	8 000	6 482	5 573	– 1 518	– 19.0	– 909	– 14.0
Beans 1st crop	1 881	1 285	1 371	– 595	– 31.7	86	6.7
Centre West	40	55	61	16	39.7	6	11.2
South/South East	1 473	859	896	– 614	– 41.7	37	4.3
Cotton	1 939	868	1 069	– 1 070	– 55.2	200	23.0
Centre West	171	542	605	371	216.9	64	11.8
South/South East	935	173	167	– 762	– 81.5	– 6	– 3.2
Rice	4 233	3 249	3 598	– 984	– 23.3	349	10.7
Centre West	777	631	862	– 146	– 18.8	231	36.6
South/South East	1 821	1 326	1 392	– 494	– 27.1	66	4.9
Total of crops above	30 446	29 918	36 738	– 528	– 1.7	6 820	22.8
Centre West	5 452	8 193	11 854	2 741	50.3	3 660	44.7
South/South East	18 736	15 996	18 034	– 2 740	– 14.6	2 038	12.7
Maize 2nd crop	800	2 426	3 668	1 627	203.5	1 242	51.2
Wheat	2 146	1 710	2 727	– 436	– 20.3	1 017	59.5
Beans 2nd and 3rd crops	3 624	2 594	2 886	– 1 030	– 28.4	293	11.3
Total for winter crops[1]	7 447	7 929	10 525	482	6.5	2 595	32.7
Total for all crops	51 800	51 600	60 640	– 200	– 0.4	6 781	13.1

1. "Total for winter crops" includes: maize 2nd crop, beans 2nd and 3rd crops, wheat, barley and other minor crops.
Source: CONAB; IBGE.

animals are predominantly raised indoors or on feed-lots. However, there is a trade-off between the environmental costs of adopting more intensive livestock systems and the benefits that derive from reduced pressure to exploit new farmland. In overall terms, any agricultural production cannot fail to have an impact on the environment, and Brazil faces the difficult challenge of reconciling its environmental objectives with its ambitious agenda for agricultural growth, which includes the development of new agricultural areas in the Centre West.

Agricultural trade

Policy reform enabled both exports and imports of agricultural products to increase. Between 1990-94 and 2000-03 the value of agro-food exports increased by 73% from USD 9.8 billion per year to USD 16.9 billion (Table 1.6). The substitution away from domestically produced importables initially led to a rise in agro-food imports, but this effect was reversed in the late 1990s so that, overall, agro-food imports increased by just 19% over the same period, from USD 2.9 billion to USD 3.5 billion. There was a decline in exports at the end of the 1990s, caused by a recession in world agricultural markets which coincided with the Asian and Russian financial crises. Since then, there has been a boom, with Brazilian agro-food exports increasing sharply between 2000 and 2003. With imports

Box 1.1. **The impact of agriculture on the Brazilian Amazon**

The Brazilian Amazon, together with the surrounding *Cerrado*, contains the largest portion of the world's terrestrial biodiversity. Deforestation of the Amazon is therefore a major concern, both nationally and internationally. Using the OECD's driving force, pressure, state and response framework, this box examines briefly the extent of deforestation (state), the role of agriculture in the process (pressure), the main factors explaining agriculture's role (driving forces) and what policy actions have and could be done (response).

According to the Brazilian National Space Research Institute (INPE), the total area of deforestation of the Amazon increased from 15.2 million hectares in 1978 to over 60 million ha by 2001 and is rapidly approaching 70 million ha.[1] This represents over 16% of the Amazon forest. Since 1990, Brazil has lost an area of forest the size of the United Kingdom. While the annual trend has been variable over the period, with a peak in 1995, the increase in the rate of deforestation since 1999 has caused a great deal of publicity. Deforestation is concentrated in three Amazonian states: Mato Grosso, Pará and Rondonia – the so-called "arc of deforestation".[2] These states' share in the annual rate of deforestation has risen from around 75% in the early 1990s to 87% in the early 2000s.

While logging can be a major cause of deforestation in tropical rainforests, it is not a major direct contributor to deforestation of the Amazon (Kaimowitz *et al.*, 2004). However, it can damage the forest, as the selective logging practice of most operators makes it easier for forests to catch fire and the creation of access roads by foresters facilitates the movement of farmers into the forest areas. In numerical terms, the largest group of farmers in the Amazon region is subsistence farmers. An estimated 600 000 subsistence farmers clear on average 600 000 ha of forest each year to cultivate crops (Shean, 2004). These farmers practise a migratory slash and burn policy, farming the cleared land with staple crops like manioc, rice and beans for 2 to 3 years before moving on.

Although fewer in number, large-scale commercial ranchers account for the largest share of deforestation, felling approximately 1.4 million ha every year. The number of cattle grazed in the nine states that comprise the Legal Amazon doubled between 1990 and 2002, accounting for 80% of the growth in the total Brazilian herd. Cattle numbers have increased most dramatically in the three states that have experienced the greatest rates of deforestation.

Anecdotal evidence suggests that the recent expansion in soybean area has largely taken place on idle, unproductive or less-profitable pasture land. While some argue that there are agronomical difficulties and economic costs associated with turning virgin rainforest into crop land (Brandão *et al.*, 2005), others argue that this is in fact happening, either directly, or indirectly, through the migration to the forest frontier of displaced cattle ranchers to clear new lands and re-establish their operations (WWF, 2003 and ISA, 2005).

In addition to the Amazon, concerns have also been raised about the environmental impact of agricultural expansion in the *Cerrado*. Extending over two million square kilometres, this savannah area is home to a large and unique biodiversity (estimated as high as 10 000 species, of which 45% are found only here). While agriculture has expanded rapidly in this region since the 1960s, it is estimated that there still remains approximately 650 000 square kilometres of undeveloped *Cerrado* land with agricultural potential (Brandão *et al.*, 2005).

So what have been the main driving forces behind the expansion of agriculture into the Amazon forest? A number of studies carried out in the late 1980s focused on the stimulus for pasture conversion and cattle ranching provided by government subsidised credit *via* the regional development agency for the Amazon (SUDAM), and by various tax breaks (Norton and Alwang, 2004). These incentives were terminated or phased out at the beginning of

Box 1.1. **The impact of agriculture on the Brazilian Amazon** *(cont.)*

the 1990s. However, recent studies continue to highlight the influence on agricultural expansion of government agricultural credit programmes [*e.g.* MODERFROTA, a credit programme for agricultural machinery and equipment, (Brandão *et al.*, 2005)] and research programmes, *e.g.* the development of high yielding tropical soybean varieties (Shean, 2004).

The basic explanation for the expansion of cattle ranching is that it is a low-risk, highly profitable business for those involved, with rates of return on the "arc of deforestation" that are much higher than elsewhere in the country (Margulis, 2003). In addition to cheap land and favourable climatic conditions, a number of external developments have made Amazonian cattle ranching profitable. Urban income growth in Brazil, coupled with the emergence of processing facilities and marketing channels created a strong impulse to expand beef production into the Amazon during the early to late 1990s (Mertens *et al.*, 2002). Since then, the development has been export led, driven by the 1999 devaluation of the *real* and the gradual elimination of foot and mouth disease (FMD) in most Brazilian states which provide access to markets in Europe, Russia, and the Middle East (Kaimowitz *et al.*, 2004).

Another important driver has been the development of roading systems as transport costs have a fundamental impact on the profitability of agricultural options in the Amazon (Ferraz, 2001; Chomitz and Thomas, 2003). In this respect, it has been predicted that the Brazilian government's plan to pave approximately 6 000 km of highways cutting through the core of the Amazon will lead to 120 000 to 270 000 km^2 of *additional* deforestation and forest impoverishment through logging and fires over the next two to three decades (Nepstad *et al.*, 2001).

Finally, deforestation has been undertaken by farmers because it facilitates land appropriation (Cattaneo, 2001; Fearnside, 2001). Brazilian legislation recognises the right *de posse*, which is a first step towards ownership, obtained by the land occupation and use. As a result, ranchers have considered themselves "obliged" to clear forests to guarantee their tenure because any landowner who did not clear would, in practice, lose the land either to expropriation or to invasion.

The trade-off between the economic benefits from agricultural expansion and the environmental benefits from forest preservation is ultimately a domestic policy decision that pertains to Brazil. The difficulty in making this trade-off is perhaps most clearly illustrated in the case of roading, where there are clear economic gains and environmental losses associated with the improvement of the transport network. At the same time, any environmental policy needs to take account of the difficulties of policing such a vast area. For that reason, some have argued that regulated farming in the Amazon may result in less destruction than an outright ban (*e.g.* Brandão *et al.*, 2005).

Given that part of the incentive to clear forest for agriculture is due to institutional and market failures, it may be in Brazil's own interest to put in place policies that limit these distortions. In this regard, the Action Plan for Deforestation Prevention and Control in the Amazon, launched in March 2004, can be seen as a positive step. The plan includes the introduction of a unified land registry system, improved enforcement of laws concerning deforestation and the illegal occupation of government land, reviews of public investment projects, and greater control over agricultural credit.

However, significant obstacles are likely to prevent a quick solution. Regulating access to areas of the forest that are not meant for agricultural development is unlikely to occur in the near future due to the financial resources required for monitoring and enforcing of such an operation. In addition, implementation of the Plan has been delayed because of bureaucratic problems and the difficulties in co-ordinating among the 13 ministries involved. The need for clear priorities, deadlines and precise goals would also be helpful.

Box 1.1. **The impact of agriculture on the Brazilian Amazon** *(cont.)*

The Amazon forest's suitability for livestock production could be limited if Brazilian agricultural researchers' vision of the future farming system in Brazil (especially in the *Cerrado* region) comes to be. This would involve an integrated farming system which combines crops and pasture into one enterprise. Producers could reduce pasture acreage by 75% while also increasing their stocking rate by 190% (going from 1.1 cattle per hectare to 3.2 per hectare). Even if these schemes do take hold, an implicit trade-off exists between protecting biodiversity in the Amazon or in the *Cerrado*.

1. INPE defines deforestation as the conversion of areas of primary forest by human activities aiming at the development of agriculture activities as detected by orbiting satellites.
2. These three states fall within the "Legal Amazon", an administrative region that comprises nine states (the other six are Acre, Amapá, Amazonas, Roraima, Maranhão and Tocantins) and covers five million square kilometres – more than 50% of Brazil's total land area.

Table 1.6. **Brazil's agro-food trade,[1] 1990-2003**

USD million

	1990-94	1995-99	2000-03	2000	2001	2002	2003	Per cent change 2000 to 2003	
								1990-94	1995-2000
Agro-food export, f.o.b.	9 764	14 812	16 889	12 915	16 288	17 073	21 281	73	14
Agro-food import, f.o.b.[2]	2 915	5 563	3 469	3 915	3 226	3 230	3 505	19	–38
Agro-food trade balance	6 849	9 249	13 420	8 999	13 062	13 842	17 776	96	45
Coverage rate of agro-food import by export, %	335	266	487	330	505	529	607	–	–
Share of agro-food trade in total trade, %									
Export, f.o.b.	27	30	27	23	28	28	29	–	–
Import, f.o.b.[2]	12	10	7	7	6	7	7	–	–

1. Agro-food trade as defined in Annex 1 of the URAA.
2. Brazilian import data are officially reported on a f.o.b. basis.

Source: MDIC – ALICE.

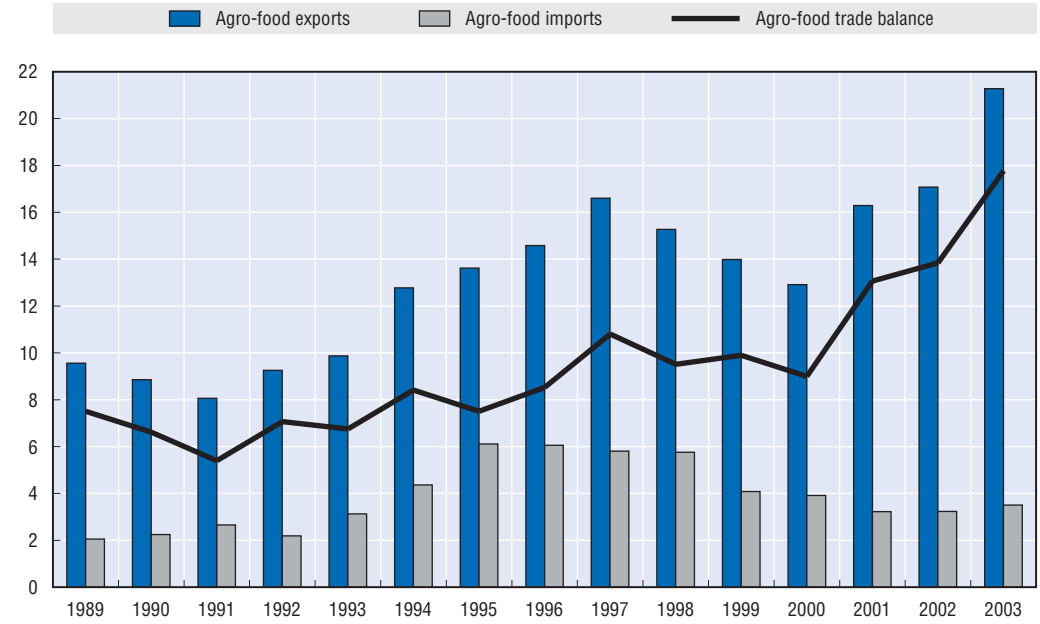
more or less constant, this caused Brazil's agro-food trade surplus to almost double over the same period, reaching a record USD 17.8 billion in 2003 (Figure 1.7).

The rapid increase in the value of Brazil's agricultural exports in the past ten years reflects mostly a physical expansion of trade, and to a lesser degree the impact of price increases.[6] A substantial rise in the export volumes was observed for almost all the country's major exportables in recent years (Figure 1.8).

The export boom has been driven primarily by soybeans and soybean products, but supported by other products, notably sugar and meats. In the last few years, Brazil has become a significant exporter of maize, and regained its net export position in cotton. As a result of these changes, there has been a significant change in the composition of agricultural exports (Figure 1.9). The export shares of soybean products, sugar and alcohol, and meat have increased, while the shares of orange juice and coffee have declined. In overall terms, however, agricultural exports remain concentrated on a few commodities.

Figure 1.7. **Evolution of Brazil's agro-food trade, 1989-2003**

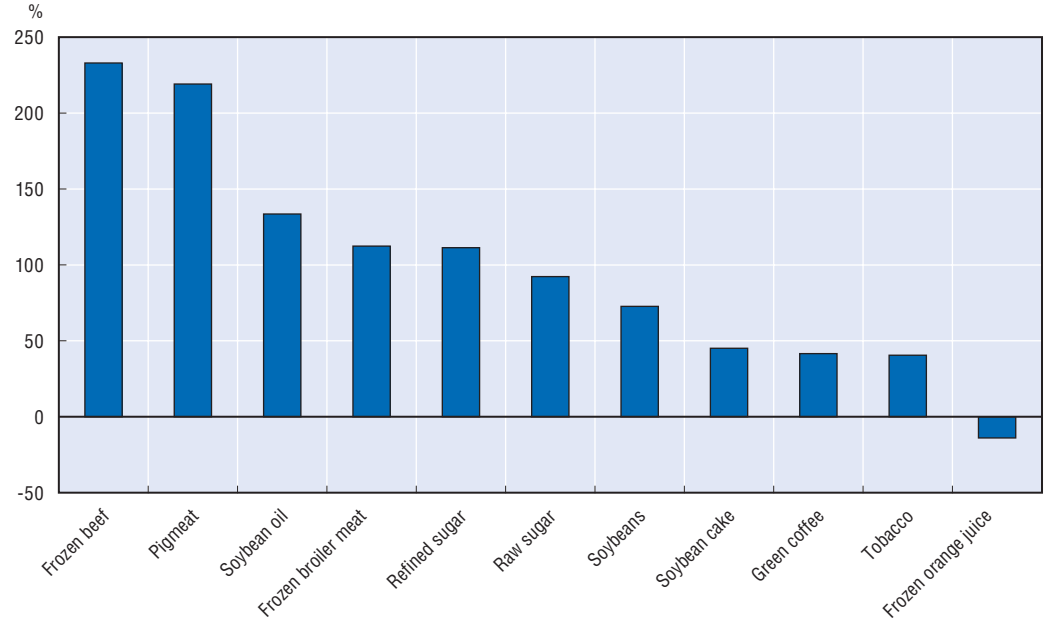
USD billion



Source: MDIC – ALICE.

Figure 1.8. **Changes in export volume of Brazil's major agricultural exportables between 2000 and 2003**

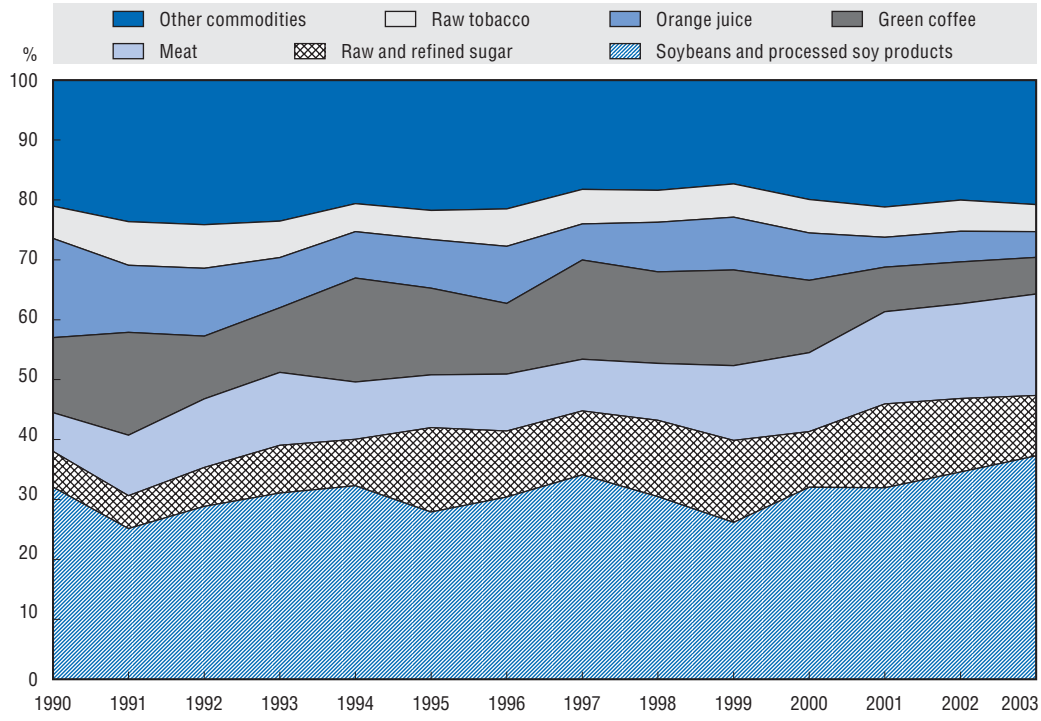
Per cent



Source: MDIC – ALICE.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Figure 1.9. **Commodity shares in Brazilian agro-food exports, 1990-2003**



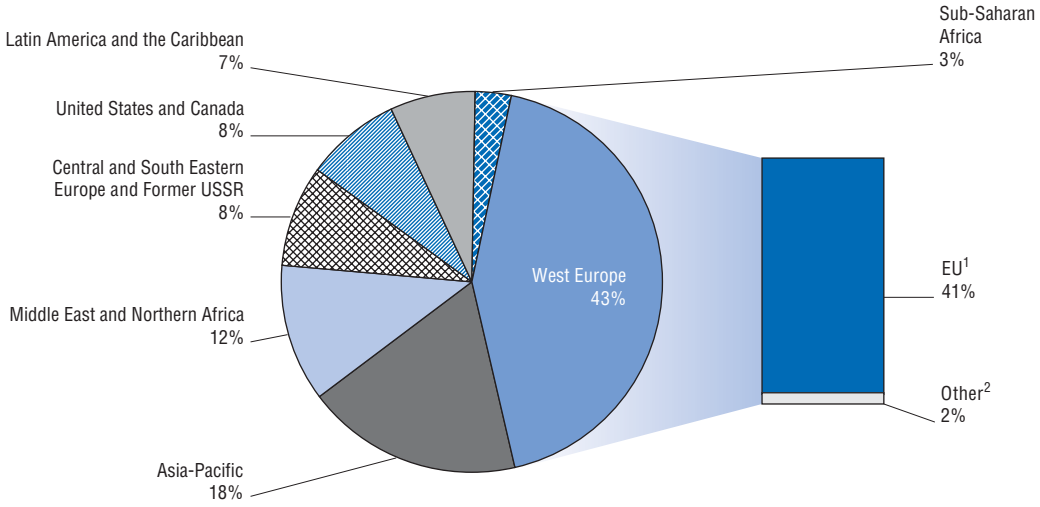
Source: MDIC – ALICE.

Primary and processed exports of soybeans and products, sugar, meat, coffee, orange juice and tobacco account for three-quarters of agricultural export earnings (Annex 1.A1, Table 1.A1.1). Within the soybean sector, exported volumes of unprocessed soybeans increased considerably in the second half of the 1990s, following the removal in 1996 of ICMS taxes on exported primary products, and in response to the emergence of the large Chinese market for uncrushed beans. Brazilian exports of soybeans to China surged from 15 000 tonnes to 6 million tonnes between 1996 and 2003.

OECD countries account for more than half of Brazil's agro-food exports, although that share is declining. In 2000-03, the European Union alone accounted for 41% of agro-food exports (Figure 1.10). The most important individual markets are, in order of size, the European Union, China, the United States, Russia and Japan. Since 2000, the European Union, the United States and Japan have been accounting for a declining share of Brazilian agro-food exports, at the expense of China, Russia and other rapidly growing markets (Figure 1.11 and Annex 1.A1, Table 1.A1.2). Argentina was also an important export destination until its financial crisis in 2000, but its share of Brazil's agro-food exports almost halved between 2000 and 2002, causing it to fall from 5th to the 13th position. This appears to have been a temporary decline, as in 2003 sales to Argentina started to recover. Other major importers from Brazil are South Korea and several Middle Eastern and North African countries, such as Iran, Saudi Arabia, and Egypt.

The longer term geographical shift in Brazil's agro-food exports is apparent from regionally aggregated data (Annex 1.A1, Table 1.A1.3). Western Europe's (mostly the

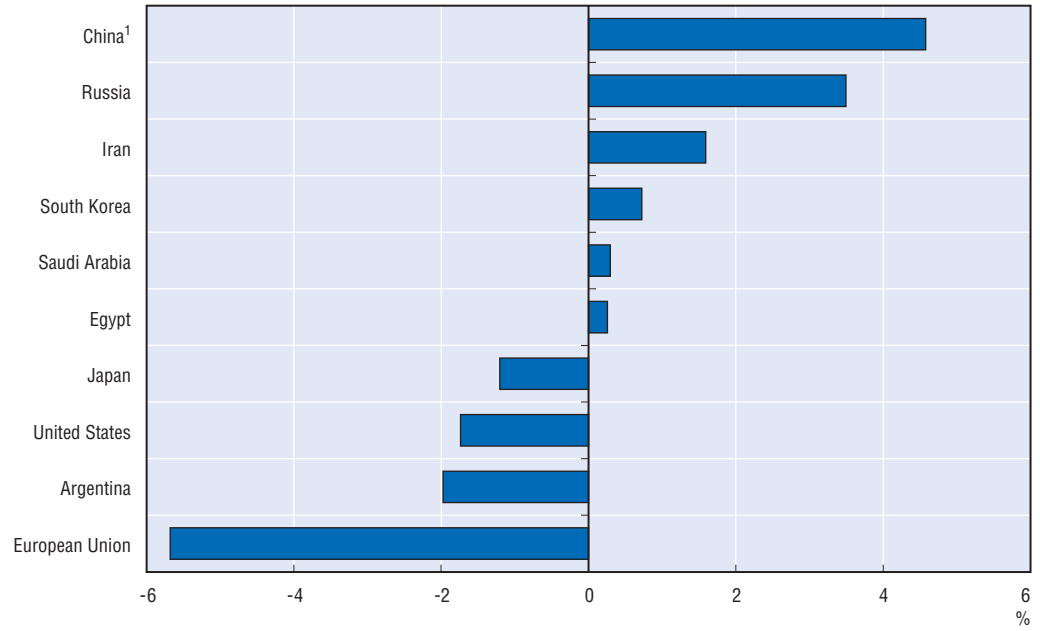
Figure 1.10. **Brazilian agro-food exports by region of destination, 2000-03 average**



1. EU-15.
2. Other countries include Cyprus, Iceland, Liechtenstein, Malta, Norway and Switzerland.

Source: MDIC – ALICE.

Figure 1.11. **Changes in export shares to Brazil's 10 major export destinations between 2000 and 2003**



1. Includes Mainland China, Hong Kong, and Macao.

Source: MDIC – ALICE.

European Union's) share of agricultural exports declined from 53% in 1990-94 to 43% in 2000-03, even though the value of exports rose in nominal US dollars. Similarly, the share of the North America (the United States and Canada) fell from 15% to 8% over the

same period, even declining in nominal terms. On the other hand, the share of agro-food exports going to the Asia-Pacific region increased from 13% to 18%, while that going to the Middle East and North Africa increased from 8% to 12%, and that going to Central and South Eastern Europe and the Former Soviet Union rose from 3% to 9%. The proportion of sales to Latin American and Caribbean countries rose by just 1%, from 6% to 7%, as depressed sales to Argentina were offset by increased exports to other countries in the region.

Imports

Agricultural imports currently account for only 7% of Brazil's total import expenditures. For the majority of agro-food items, Brazil is self-sufficient or only marginally dependent on imports (Table 1.7). The main exception is wheat, where imports cover more than half of domestic needs.

Table 1.7. **The share of imports in total domestic consumption of main agricultural commodities in Brazil**

Per cent

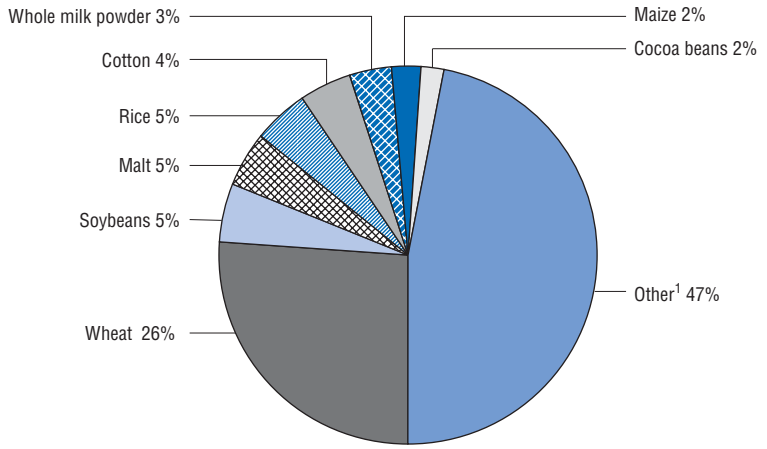
	Average 1990-92	Average 1995-97	Average 2000-04
Wheat	55.0	68.7	55.5
Maize	2.7	2.1	1.2
Rice	1.6	6.2	7.8
Beans	3.4	5.1	3.0
Sugar	0.7	0.3	0.0
Milk	0.0	0.5	0.0
Beef and veal	3.9	4.4	1.2
Pigmeat	0.9	0.4	0.0
Poultry	0.0	0.0	0.0
Eggs	0.3	0.2	0.0

Source: FAO; IBGE and OECD.

Wheat alone comprised 26% of all Brazilian agricultural imports in 2000-03 (Figure 1.12). Over this period the country purchased abroad about 7 million tonnes per year, making it the world's second largest wheat importer after Italy. Other major importables are soybeans, malt, rice, cotton, and whole milk powder. Together with wheat, these commodities account for 45% of total Brazil's agro-food imports (Annex 1.A1, Table 1.A1.4). The significance of soybeans among Brazil's imports is due to the fact that crushers located in the regions bordering Paraguay often find it cheaper to import soybeans than to transport them from inland areas.

Latin America and the Caribbean provide over two-thirds of Brazil's total agro-food imports, with most of these imports coming from the three Mercosur partners: Argentina, Paraguay, and Uruguay (Figure 1.13 and Annex 1.A1, Table 1.A1.5). These countries are Brazil's main suppliers of wheat (about 88% was coming from Argentina), soybeans (all imported from Paraguay), maize (99% from Argentina and Paraguay), rice (78% from Uruguay and Argentina) whole milk powder (all supplied by Argentina and Uruguay) and malt (over one half imported from Argentina and Uruguay). Argentina alone accounts for almost 46% of Brazil's agricultural imports (Annex 1.A1, Table 1.A1.6). The European Union and the United States are the other significant partners, providing about 14% and 8% of total Brazil's agro-

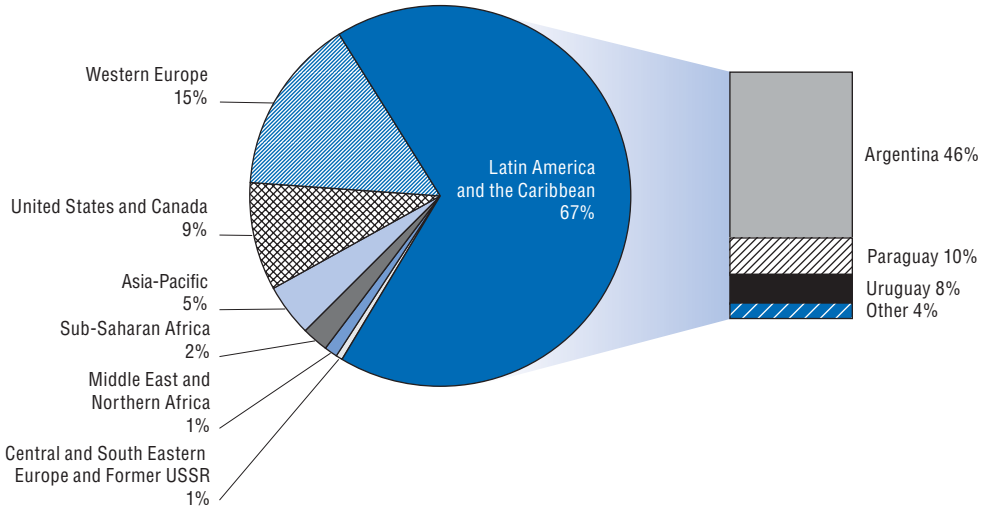
Figure 1.12. **Brazil's agro-food imports by product, 2000-03 average**



1. Commodities with a share below 2% each of the total.

Source: MDIC – ALICE.

Figure 1.13. **Brazil's agro-food imports by region of origin, 2000-03 average**



Source: MDIC – ALICE.

food imports respectively. The European Union is an important supplier of malt and wheat flour, while the United States is one of the main exporters of rice and cotton to Brazil. The top five partners account for over 80% of agro-food products purchased abroad, implying that Brazil's agricultural imports are considerably more concentrated than its exports.

Despite the recent boom in exports, the majority of agricultural production is destined for the domestic market. Agricultural exports accounted for 31% of agricultural production in 2004, compared with shares of 41% in Canada and 74% in Australia, two other major agricultural exporters. On the other hand, the share is higher than that of the United

States (22%) which, like Brazil, supports a large internal market. As Brazil is self-sufficient in most commodities, imports are small relative to domestic consumption (less than 5%). As noted, however, agricultural trade has is of considerable macroeconomic importance to Brazil, as a major source of foreign exchange earnings.

Some of the recent acceleration of export growth can be seen as a temporary effect attributable to the coincidence of the devaluation in 1999 and a period of relatively high commodity prices. In the longer term, a major question mark hangs over the sustainability of these growth rates. Land availability does not seem to be a major issue, notwithstanding environmental concerns. However, there is some uncertainty over the speed with which permanent pasture can be utilised for crop production, given underdeveloped physical infrastructure. Real cropland prices, having been more or less constant between 1996 and 2002, jumped by 30% in 2003. The OECD's Outlook for temperate zone commodities is summarised in Box 1.2.

Productivity improvements

Reforms have also had a beneficial effect on productivity, which, following a period of stagnation, improved significantly in the 1990s. Figure 1.14 shows the evolution of total factor productivity (TFP) since 1975, by component. It is important to notice that the productivity of labour has increased dramatically, while land productivity has increased significantly too. The productivity of capital has increased more slowly, meaning that the sharp improvement in yields overstates gains in TFP.

Improvements in yields reflect several factors: improvements in plant technology (notably due to state-sponsored research by Embrapa), the withdrawal of less productive land and the increased use of more productive land in new areas (again linked to new technology), the exit of less efficient producers, and a shift to more productive regions. Technical change and economies of scale have led to the development of very large farms in the Centre West. Gasques and Conceição (2000) estimate that total factor productivity grew more rapidly in the Centre West than elsewhere. Productivity gains were especially important for milk, poultry and pig production, where rapid modernisation took place.

In most cases, yields of importable crops increased more rapidly than those of exportables. This trend was already apparent under the umbrella of trade protection, as research was more geared to import substitution. With the exception of maize and cotton, which can be rotated with soybeans, reforms led to a shift of resources out of import-competing crops and declines in harvested areas (Table 1.5). This in turn had a beneficial effect on yields. Cotton yields increased dramatically, as production moved to the Centre West, with this product becoming a net export in 2001. The impact of reform on exportables was more modest, as these products were already competitive anyway. The major exception is soybeans, where the adoption of new technologies in the Centre West enabled yields to increase by 22% between 1989-92 and 1995-98.

On balance, improvements in yields more than made up for the decline in area planted to importable crops (Figure 1.15). The notable exception is wheat, where production fell accordingly**.** The expansion in livestock output is largely due to increases in the number of animals slaughtered, although productivity of the beef herd has increased.

Capital intensity varies considerably by region. Commercial farming in the southern states of Rio Grande do Sul, São Paulo and Paraná is highly mechanised, and facilitated by good infrastructure. It is also highly input intensive, with fertiliser use in these areas comparable to rates in Japan and Korea (between 250 and 300 kg per ha). On the other hand,

Box 1.2. **The outlook for commodity production and trade in Brazil**

According to the latest OECD-FAO Agricultural Outlook, world market prices for most agricultural products are expected to continue to decline in real terms to 2014. This reflects the fact that the forces that strengthen agricultural product supply (largely productivity gains) tend to outweigh the forces that drive stronger demand for these products, such as income and population growth. The price outlook faced by Brazilian producers will, to some extent, be improved by the expected further depreciation of the *real* against the US dollar and domestic economic growth of around 4% per year that should boost domestic demand. In response to this price outlook, and with emerging infrastructural bottlenecks restraining supply, production growth in Brazil for most agricultural products is projected to increase, but less rapidly than over the last decade. Supply and demand adjustments will, in turn, affect trade in agricultural products, boosting imports of some products and slowing the export growth of others. Commodity-specific information on the production and trade prospects for a range of agricultural products in Brazil are shown in Box Table 1.8 below.

Table 1.8. **Brazil agricultural commodity projections**

Commodity		Production				Net trade			
		Average 1999/2000-2003/04	2004/05 est.	% growth		Average 1999/2000-2003/04	2004/05 est.	% growth	
				1993-2003	2004-14			1993-2003	2004-14
Soyabeans	mt	39.2	57.0	7.8	3.1	13.6	23.0	15.2	4.0
Soyabean meal	mt	18.5	24.7	4.9	2.4	11.4	16.0	3.8	2.2
Soyabean oil	mt	4.6	6.1	5.0	2.4	1.7	3.4	16.6	2.3
Maize	mt	39.6	49.0	4.6	1.6	–0.9	– 0.5	–9.4	1.3
Wheat	mt	3.3	5.7	0.5	0.3	–6.6	– 4.5	–1.0	5.0
Rice	mt	7.2	6.2	0.2	0.8	–0.6	– 0.8	7.1	–0.9
Sugar	mt rse	21.9	29.4	8.7	3.0	12.1	18.4	14.0	8.2
Beef	mt cwe	6.9	7.8	4.5	1.6	0.8	1.4	12	1.5
Pigmeat	mt cwe	2.5	2.4	7.4	4.0	0.3	0.5	25.6	3.1
Poultry	mt rtc	6.6	8.3	8.3	2.1	1.3	2.5	15.5	1.7
Milk	mt pw	21.4	23.8	3.4	2.0				
Butter	kt pw	72.0	80.0	4.4	2.3	–5.0	– 1.0	–15.2	21.0
Cheese	kt pw	454.0	498.0	3.7	2.3	–11.0	– 9.0	–0.9	–3.1
Skim milk powder	kt pw	65.0	74.0	7.8	0.5	–23.0	– 10.0	–10.5	–3.4
Whole milk powder	kt pw	279.0	318.0	6.7	0.3	–72.0	– 37.0	4.1	4.3

Est.: estimate.
Source: OECD-FAO (2005).

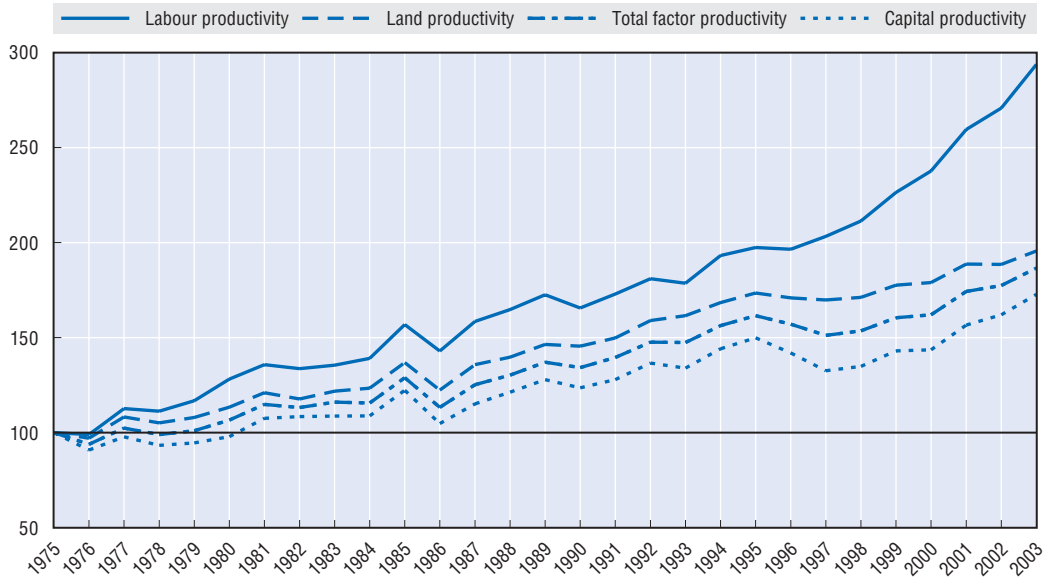
A consistent feature of the Outlook is the continued ascendance of Brazil as a leading agricultural trader. Strong demand for oilseeds in traditional importing countries is projected to lead to an expansion in the global oilseed market with exports from Brazil virtually dominating the expanding marketplace. As a result, Brazil may even surpass the US as the world's leading oilseed exporter over the projection period. In addition, Brazil features as a large player within the Latin America region for exports of soybean oil. Despite expectations of continuing low world sugar prices, Brazil is expected to remain the world's largest sugar exporter, with combined sales of both raw and white sugar projected to increase by nearly 44% over the next ten years. In addition, Brazil is expected to become

Box 1.2. **The outlook for commodity production and trade in Brazil** *(cont.)*

the world's largest beef exporter over the same period. Likewise, additional supplies needed for a growing global market for pork are expected to be met by Brazil expanding its investment in the sector. Similarly, Brazil is positioned to further expand poultry production and to maintain its role as the largest exporter of poultry meat. Finally, Brazil belongs to the group of countries that are expected to increase their share of global milk production over the coming decade and this is reflected in changes in dairy product trade.

Figure 1.14. **Total factor productivity in Brazil, 1975-2003**

1975 = 100



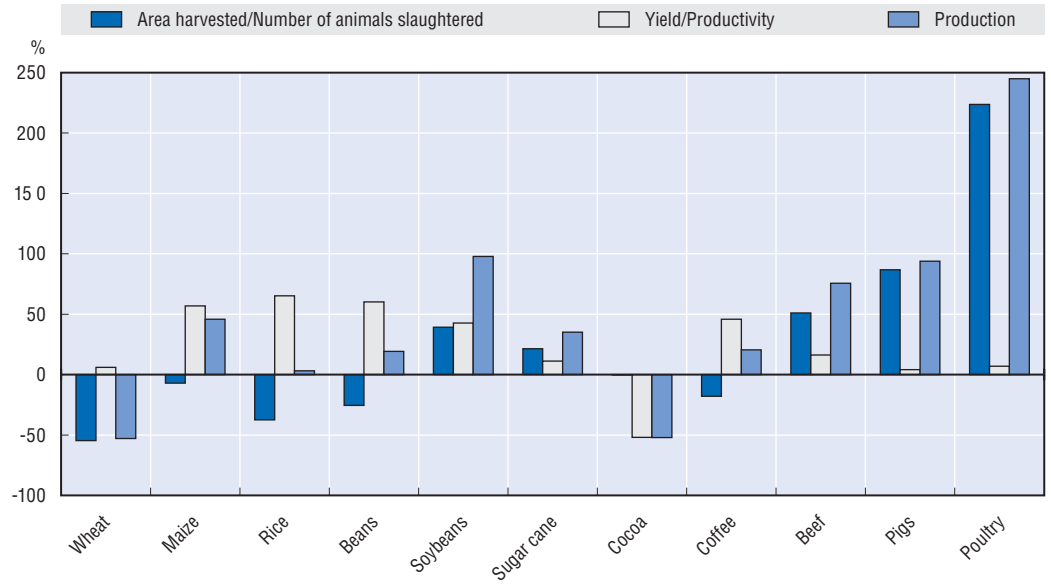
Source: Calculations by Gasques, Bastos and Bacchi.

the less developed north eastern part of the country, where most of the traditional farms are located, suffers from basic deficiencies in access to capital. Gasques and Conceição (2000) suggest that one reason for the weak performance of capital is the general lack of access to investment and working capital among small and medium-sized farmers. This raises the question of whether these farmers are inherently uncompetitive, or whether some have the prospect of being competitive if failures in capital markets are corrected. This question is taken up in the following discussion of farm sizes.

Trade liberalisation and the associated reduction in protection for industry, together with an appreciating real exchange rate prior to 1999, increased the demand for tradable inputs. A further factor was a substantial increase in agricultural wages, with the minimum wage increasing from BRL 70 per month to BRL 100 in May 1995. Fertiliser consumption more than doubled between 1990 and 2000 (a period over which planted area was constant), and was a major contributor to increasing yields in the 1990s (Figure 1.16). Although real tractor prices fell

Figure 1.15. **Changes in production, productivity, area and slaughtered livestock numbers**

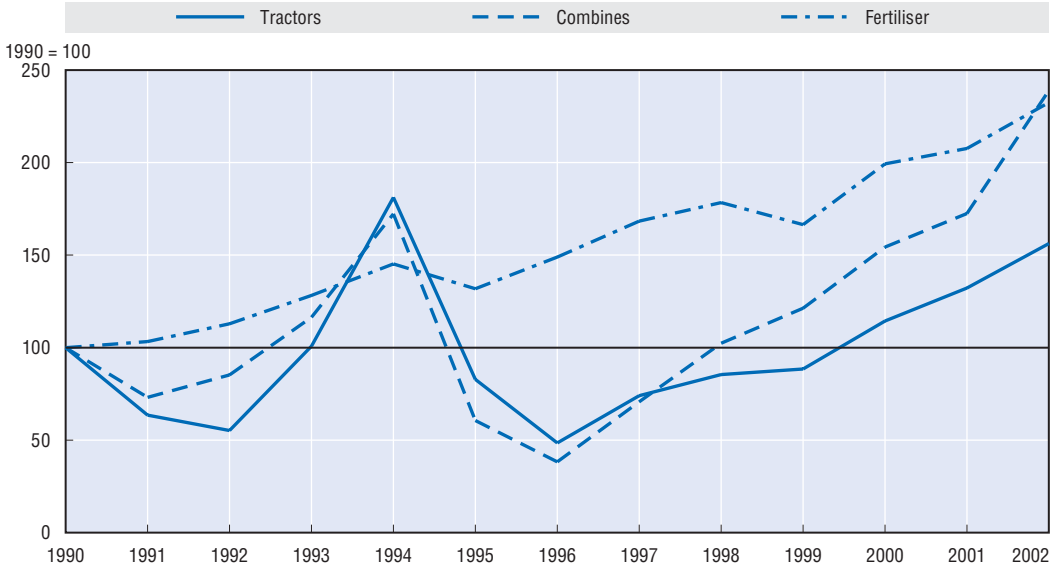
1999-2002 compared to 1985-1989



Source: FAO and IBGE.

Figure 1.16. **Trends in input use**

Domestic sales 1990-2002



Source: For tractors and combines: Anfavea; for fertiliser: Ministry of Agriculture Web site (Anda).

during the decade, sales of tractors and combines were as much dependent on the availability of investment credit, which was severely curtailed in the mid-1990s. The peak in 1994 was due to the sharp appreciation of the *real*, which lowered the prices of imported goods.

Employment

Higher real wages exacerbated pressures to reduce the farm labour force. The mechanisation of sugarcane production in São Paulo state is an example of this, as is the development of mechanised cotton production to the Centre West (and the phasing out of manual cotton-picking in the South). Agricultural employment fell by 13% between 1992 and 2002, with relatively rapid reductions in the share of employment in both the South East (where the share of production declined) and the Centre West (where the share of production rose). Over the same period, the share of the North East in agricultural employment rose from 45% to 50%, reflecting the lack of development in this region (Table 1.9).

Table 1.9. **Agricultural employment**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Agricultural employment in million	18.50	18.25	. .	18.15	16.65	16.77	16.34	17.37	. .	15.53	16.14
of which: employees, %	27	27	. .	26	27	26	26	25	. .	27	27
of which: self employment, %	24	24	. .	25	25	26	27	26	. .	26	26
of which: North East, %	45	45	. .	48	48	50	50	50	. .	50	50
of which: South East, %	26	26	. .	24	25	23	23	24	. .	23	23
of which: South, %	21	21	. .	20	20	19	20	19	. .	20	21
of which: Centre West, %	7	7	. .	7	7	7	7	7	. .	6	6

Note: People 10 years or older, employed in the reference week. Rural data excludes the North which is not covered by the PNAD survey. No surveys were conducted in 1994 and 2000.

Source: PNAD survey.

Farm sizes

Structural changes within Brazilian agriculture have tended to result in larger operations. As a consequence, there has been a fall in the total number of farms in Brazil, although the extent of that fall is disputed.[7] The main force behind this development is the expansion of production in the Centre West, where land is cheap and farms benefit from substantial economies of scale. This puts small-scale producers, most of whom are located in other regions, under increased competitive pressure. As recently as 1995, this change was not evident in the structural data (Table 1.10). There are several possible reasons for this. One is that policy reforms in the late 1980s and early 1990s, including the elimination of subsidies for land clearing in the Amazon region, reduced incentives for land concentration. Another is that lower inflation took away the incentive for speculative landholding. A further factor is that a decline in number and total area of small farms between 1985 and 1995 offset significant growth between 1980 and 1985. In the case of larger farms, the most important explanation is probably that pasture has simply made way for soybeans and other crops.

The shift toward production of exportables, coupled with the shift in the location of production, has nevertheless led to the adoption of technologies that favour larger operating structures. Even in traditional areas, and for crops like corn and beans, which

Table 1.10. **Structure of landholdings**

Total area (ha)	1980		1985		1995	
	Number of properties	Total area	Number of properties	Total area	Number of properties	Total area
	%	%	%	%	%	%
0 – less than 10	50.35	2.47	52.83	2.66	49.43	2.23
10 – less than 50	31.49	10.18	29.68	10.52	31.20	9.97
50 – less than 100	7.58	7.50	7.55	8.04	8.24	7.76
100 – less than 500	8.33	23.74	7.89	24.13	8.47	23.57
500 – less than 1 000	1.12	11.01	1.03	10.92	1.20	11.36
1 000 – less than 10 000	0.87	28.67	0.83	29.24	0.97	30.59
More than 10 000	0.04	16.45	0.03	14.49	0.04	14.51

Source: IBGE – Agricultural Census from 1980, 1985 and 1995.

feature in the production portfolios of small farms, large farms have been increasing their yields more rapidly, placing pressure on smaller operations (Table 1.11 and Figure 1.17). One exception is rice, possibly because yields were already considerably higher for medium-sized farms, but even here yields in the Centre West have been increasing more for large farms than for small ones.[8]

Table 1.11. **Percentage change in yields by farm size, 1985-1996**

Farm size (ha)	Beans	Corn	Cotton	Rice (South)[1]	Rice (CW)[1]	Wheat	Cocoa	Coffee	Oranges	Sugar cane	Soybeans
0-5	15	14	18	72	1	– 10	– 36	– 2	– 23	– 18	50
5-10	11	24	– 4	68	1	– 9	– 35	– 4	– 24	– 18	24
10-20	21	29	– 6	56	6	– 6	– 38	5	– 23	– 9	29
20-50	19	38	– 6	43	12	– 3	– 41	13	– 22	– 7	25
50-100	29	55	12	21	17	– 4	– 44	17	– 16	– 6	24
100-1 000	81	73	44	13	50	13	– 45	16	– 13	– 2	25
1 000-10 000	164	95	49	11	56	35	– 40	9	10	7	29
10 000 and more	107	108	31	– 11	45	–	–	–	42	– 1	24
Total	34	63	24	19	45	6	– 43	12	– 12	2	28
Number of farms in 1985 (1000s)	2 946	3 461	438	228	140	143	112	526	889	403	420

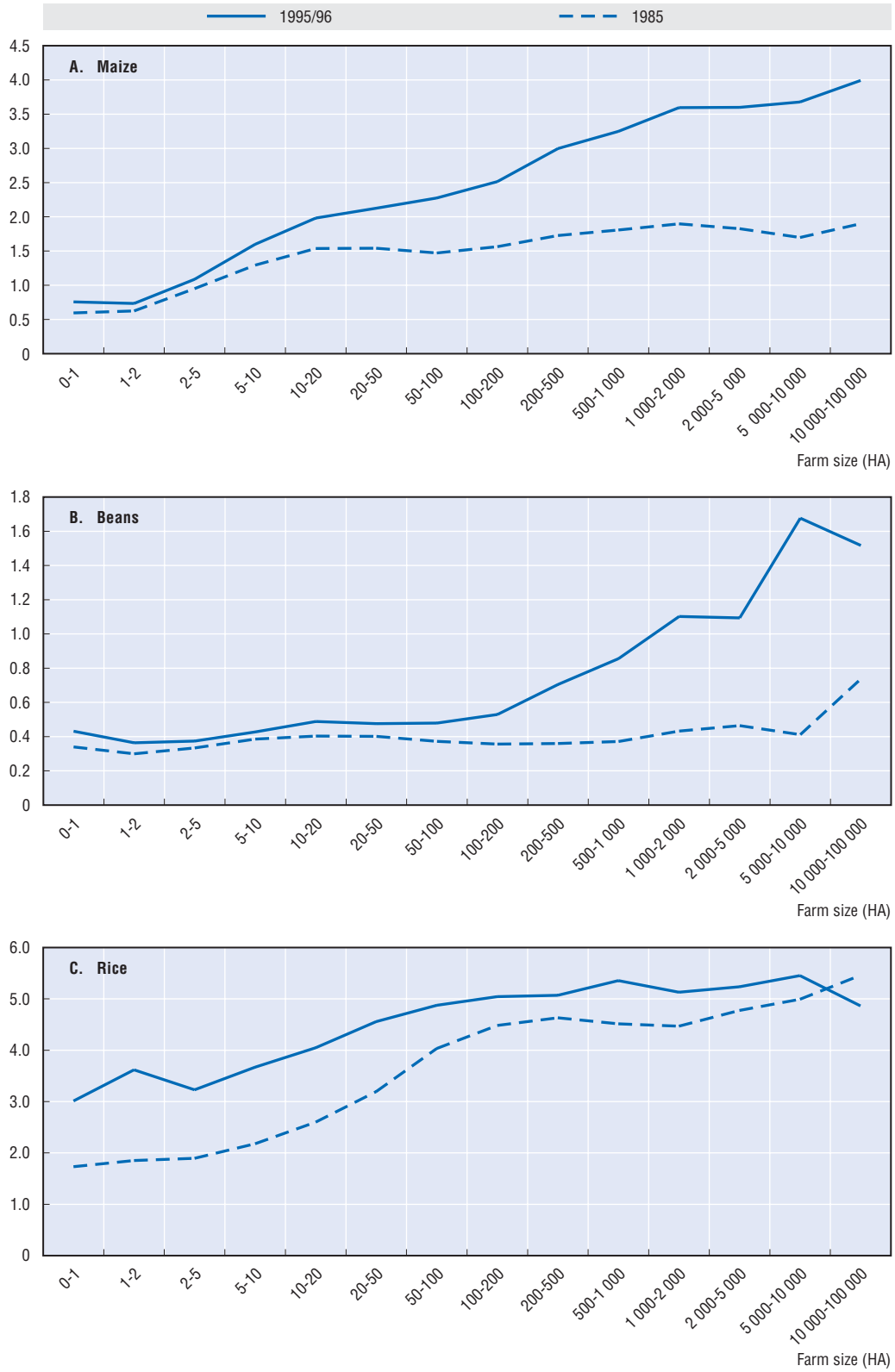
1. The data for the South refer to the states of Rio Grande do Sul and Santa Catarina. CW is the Centre West region.
– There were fewer than 50 farms in each of these cases, and they had an insignificant amount of production.

Source: Helfand and Rezende (2004) based on data from the agricultural censuses, IBGE.

In the case of the Centre West, Helfand (2003) estimates that technical efficiency first falls and then rises with farm size (the converse of what is normally believed). He finds that differences in efficiency across farms are further explained by ease of access to institutions, credit and modern inputs, and argues that easier access in these areas would make small and medium-sized farms (around 20 to 200 ha) more efficient, and raise the relatively weak productivity of capital noted earlier.

Figure 1.17. **Yields for major crops by farm size**

Tonnes per hectare



Source: Helfand and Rezende (2004); data from IBGE – Agricultural Census from 1985 and 1995/96.

Food chain linkages

A further feature of the post-reform period has been the much higher concentration of the downstream sector, particularly at the retail level. By 2000, supermarkets accounted for an estimated 75% of food retail sales, compared with less than 20% at the beginning of the 1990s (Reardon and Berdegué, 2002). This has potentially important implications for the farm sector, as supermarkets start contracting directly with producers and specifying strict quality and other standards. This development offers advantages for producers who are able to obtain a contract, and may, for example, see their credit constraints eased through the forward supply of inputs such as seed. However, it causes increasing difficulties for those farmers who cannot meet demands from downstream purchasers, yet find it increasingly difficult to find local outlets for their products. This is a particularly important issue in sectors such as fresh fruit and vegetables and dairy, where one would naturally expect relatively good prospects for small and medium scale producers, due to fewer economies of scale compared with grains and livestock products, and relatively high opportunities for increasing the value added of the product (Reardon and Farina, 2004). In short, the rise of supermarkets is likely to accelerate adjustment at the farm level, and the shake-out between those households with a future in farming and those whose best prospects lie in other sectors.

Consumption

Despite rapid export growth, the vast majority of agricultural production in Brazil remains destined for domestic consumption. Brazilians consume on average about 3 000 calories per day, a figure which is considerably higher than the developing country average, and exceeds the averages for China, India and South Africa (Table 1.12). As per capita incomes rise, this number would be expected to approach the developed country average of 3 260. However, Brazilians consume about 20% less protein than their counterparts in developed countries, so the most significant changes would be expected to come from a diversification of the diet among poorer households.

Table 1.12. **Food consumption patterns, 2000-02**

	Brazil	China	India	South Africa	Argentina	United States	Developed countries	Developing countries
Total calories per day	3 010	2 958	2 420	2 917	3 075	3 794	3 300	2 657
from vegetable sources	2 353	2 360	2 229	2 559	2 120	2 757	2 436	2 304
from animal sources	657	598	191	358	954	1 037	864	353
Protein (grammes/day)	81.3	82.2	56.4	76.1	100.1	114.2	99.7	68.4
Fat (grammes/day)	92.3	86.9	50.6	75.2	105.8	156.7	122.0	64.4
Meat (kg/year)	80.0	51.2	5.1	39.8	96.0	121.8	78.0	27.9

Source: FAOSTAT.

Incomes and poverty

The implications of reform for incomes and poverty are explored in more detail in Chapter 3. At this juncture it is instructive to note that per capita incomes rose by 29% in real terms between 1991 and 2000. This reduced the share of people living in poverty by

18%. The pace of reduction in poverty was about the same in rural as in urban areas, although extreme poverty declined more rapidly in rural areas. On the other hand, as shown in Chapter 3, the situation for the poorest of the poor in rural areas actually deteriorated, with rural poverty becoming increasingly concentrated in the North East and North regions. There was a very slight increase in income inequality across the economy as a whole, with the Gini coefficient rising from 0.63 to 0.65.

The immediate welfare of the poorest households depends on whether or not they fall within the ambit of social policies. The current structure of Brazil's social programmes is described in Box 1.3. The poverty gap, *i.e.* the wedge between a poor person's income and the poverty line (in this case the one adopted by IPEA and the Ministry of Planning, Budget and Management), is relatively low in Brazil. This implies that a sizeable reduction in poverty could be achieved by devoting relatively few budgetary resources to income transfers to the poor. Thus OECD calculates that, based on indicators for 2002, perfectly targeted transfers totalling 2.7% of GDP would suffice to bring the income level of the poor to the poverty line (OECD, 2005). In contrast, federal means-tested income transfers currently amount to 1.5% of GDP. The need to maintain public spending over a sustained period is noted, as are some of the difficulties of targeting payments in Brazil.

1.4. Policy challenges

Agricultural policy design in Brazil involves reconciling multiple objectives. These objectives include the promotion of agricultural growth within the constraints of environmental objectives, and the design of specific policies that are tailored to the needs of poor farm and rural households.

Sustaining agricultural growth

Agriculture and its associated industries are strategically important to Brazil, owing to their sizeable contribution to output and employment, and their even more important share of exports. Accordingly, it is important that growth be maintained, subject to its consistence with environmental and other objectives. The agro-food sector as a whole has benefited from macroeconomic stabilisation, structural reforms and agricultural policy changes. These developments have progressively enabled resources to be reallocated to those agricultural sub-sectors in which the country has a comparative advantage. More recently, production and exports have boomed on the strength of a weakened currency and high commodity prices. As these more transitory phenomena pass, it is important that the fundamental structural changes that have helped boost agricultural development are consolidated.

Brazil's comparative advantage in agriculture stems from an abundance of actual and potential farmland. The low cost of farmland is to some extent offset by higher variable costs, notably for transport, fertiliser, machinery and through interest on capital. Insofar as these costs are a function of relatively low economic development and weak macroeconomic fundamentals, they should come down over time. This would further enhance Brazil's core comparative advantage in agriculture.

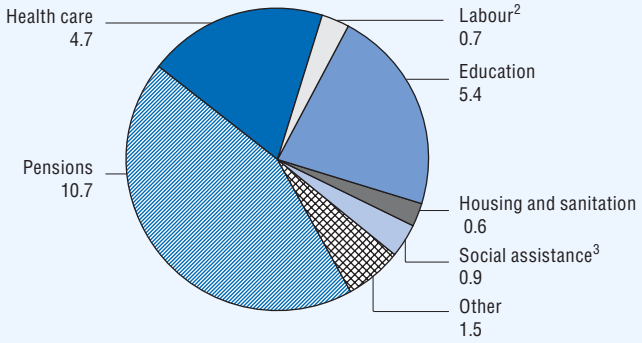
Weak infrastructure is emerging as a significant bottleneck to agricultural development, as other constraints to competitiveness subside. The costs of getting products to overseas markets are a particular concern, since most producers are a long distance from their principal markets, and face internal logistics systems that are relatively underdeveloped. For example, 10% of all roads in Brazil are paved, compared with

Box 1.3. **Social programmes in Brazil**

Government spending on social programmes in Brazil – including education, healthcare, housing, social security (pensions) and unemployment assurance – accounts for one-quarter of GDP. This share is high given Brazil's income level, and on a par with the OECD average.

The composition of social spending is shown in Figure 1.18 below. Spending on pensions accounts for nearly half the total, with a share of 11% of GDP. This proportion exceeds the OECD average and is similar to that of several OECD countries with much older populations. Despite reforms, spending on pensions is likely to rise with the ageing of the population. Yet with only about 40% of the labour force covered, the Brazilian social security system fails to protect many workers in the informal sector, who typically receive lower wages and less protection from social safety nets. In addition, spending on education and healthcare is low in comparison with OECD countries.

Figure 1.18. **Composition of general government social spending, 2002**[1]



1. The numbers refer to spending levels in per cent of GDP.
2. Includes active labour market and unemployment insurances.
3. Includes family allowances, incapacity and related benefits.

Source: Reis and Rocha (2004), and Ministry of Finance.

The 2005 *OECD Economic Survey of Brazil* points to a number of ways in which the targeting and equity of social programmes could be improved. These include ensuring that the social security system becomes fiscally sustainable over time; shifting the composition of education spending towards the primary and secondary school level; and focusing more on preventative healthcare. The diversity of social programmes, coupled with decentralised service delivery, often results in an overlap of initiatives and mandates, thus raising delivery costs. Greater emphasis on internal co-ordination in the design and implementation of social programmes – at the federal, state and municipal level – is recommended as a way of improving efficiency.

Source: OECD (2005).

29% in neighbouring Argentina. Moreover, transport costs are relatively important for Brazil, as a large share of the country's agro-food exports tend to be in the form of bulk commodities.

This source of cost disadvantage is gradually being reduced. The southern states are well connected to the main ports of Parana, Santa Catarina and Rio Grande do Sul, while investment in the *Cerrado* region, including development of the Amazon's tributaries, is bringing transport costs down sharply. In the case of soybeans, completion of the North West corridor project is expected to reduce shipping cost to the coast from USD 45 to USD 15 per tonne. Such cost reductions can create a virtuous circle of agricultural investment and development of supporting infrastructure, with a considerable proportion of the latter being paid for by the private sector (as is happening in the cases of the Ferronorte Railway and the Madeira Waterway).

In general, the yields for major crops are lower than in the most competitive suppliers, so it is low costs rather than high land productivity that drive competitiveness. There are several reasons for relatively low yields, including relatively extensive farming systems, the practice of double cropping, and a small technology gap. In overall terms, however, the soils are similarly fertile, and the gap in yields is closing, largely on the strength of the increased chemical inputs and the use of improved seeds. Brazil estimates that its soybean yields exceeded those in the United States for the first time in 2001, largely as a consequence of research and extension tailored to local climatic conditions. This closing of the gap may be delayed by the expansion of acreage in the Centre West, where soils are less fertile than those in southern part of the country. However, this region possesses other attributes that should nevertheless help maintain yields, including good water filtration and drainage and a suitability for large-scale mechanisation. A more general impediment is that Brazil's production base is becoming more diversified. This changing production mix calls for new research, and the benefits may take time to feed through.

For many agricultural producers, the terms and availability of credit are also a major constraint. Commercial agri-businesses typically receive their payments in hard currency (mostly US dollars), which provides evidence of creditworthiness to foreign lenders. In many cases, these companies do their own lending to agricultural suppliers, either by providing credit or financing inputs (such as fertiliser) directly. In Brazil, for example, soybean farmers often find it cheaper to obtain finance from the crushers.

The greatest difficulties arise for businesses that are obliged to borrow on the domestic market. Although the economy has stabilised in recent years, macroeconomic uncertainty still has a disproportionate effect on less well-established companies without easy access to overseas lenders. High real interest rates (see Figure 1.4b) mean that access to credit from banks would be almost prohibitive but for government subsidies (see Chapter 2).

Smaller, but potentially competitive, agricultural businesses, also face a structural problem in demonstrating creditworthiness. For many of these producers, "asymmetric information" between borrowers and lenders means that there is likely to be an under-provision of credit. There are two options for resolving this dilemma. One is government intervention. Indeed, Brazil has a range of policies designed to increase the availability of credit within the agricultural sector (discussed in Chapter 2). The other possibility is alternative financing arrangements (such as the provision of credit or direct inputs by the purchaser). This may be a viable possibility for some producers, but many farmers with only weak integration to markets are unlikely to be able to meet the exacting demands from food manufacturers and retailers.

Tax policies also have an important effect on producers' opportunities. Under Brazil's ICMS (value-added) tax system, each of the country's 26 states imposes its own taxes and

exemptions. This distorts producers' incentives, while the system's complexity places an additional burden on Brazilian producers.

The emergence of large food retailers in Brazil has created a demand for differentiated commodities as well as for processed food products. The tendency of big supermarket chains to invest not only in big urban areas, but also in smaller cities, is having a significant impact on the role played by the farmer within the food chain. Agricultural supply is increasingly demand driven, through supermarkets and/or importers, requiring of farmers a new business oriented approach, and the capacity to react to information signals coming from the consumer *via* the retailer.

The capacity to export more differentiated and diversified products faces international and domestic constraints. At the international level, tariff escalation is a significant obstacle (see Chapter 3). At the domestic level, shortcomings in areas such as logistics, access to credit, and R&D investments may be eased by public sector involvement, including partnerships with the private sector. The scope for entering international production and distribution networks often depends on the capacity to attract FDI. Good co-ordination across the food chain is a further condition for benefiting from technology transfers and up-grading product quality.

The shadow that hangs over attempts to improve competitiveness, and to build successful agri-businesses around a core comparative advantage in agriculture, is trade protection in important markets and subsidised production and exports by rival suppliers. Some of the adverse impacts can be cushioned by moves into products where effective demand is less constrained (*e.g.* tropical products), but these policies nevertheless impose an important constraint on the agro-food sector's growth prospects. With supply-side improvements likely to continue, the need for further liberalisation of trade in agricultural products becomes more important.

Social challenges

Notwithstanding agriculture's continued importance to the national economy, agricultural employment fell by 14% between 1992/93 and 2001/02. This decline is not exceptional by international standards, but indicates particularly strong adjustment pressures, given that the sector's share of national income actually increased slightly over the same period. Moreover, it has put a significant strain on social programmes. The combination of aggregate growth on the one hand, and resource reallocations including the shedding of labour, as well as the withdrawal of land in less productive areas, makes for a complex policy environment.

Moreover, neither economic growth in general, nor agricultural growth in particular, have solved the problem of poverty and hunger. More than 30% of the population has incomes below an absolute poverty line of half the minimum wage, while inequality has gone up slightly over the last decade. Out-migration from rural areas may have helped reduce rural poverty, but to a large extent this has shifted the burden to urban areas.

Poverty rates are influenced by two competing forces. On the one hand, economic growth at the national levels helps raise incomes, and generates demand-linkages throughout the economy. On the other hand, structural change poses a threat to poor producers who are progressively less able to compete. The competitive pressure may come from imports or from domestic pressures. Given that Brazil has little tariff protection, the major challenge to less competitive producers comes not from overseas, but rather from

structural change within the country, where traditional producers (often operating on a small scale) have experienced long-term price declines but not shared in the cost reductions that generated them. Indeed, Brazil is becoming increasingly competitive in a number of products that have been important to small scale farmers (*e.g.* dairy, maize). The relative strength of demand linkages to the poor, and adjustment pressures is discussed in Section 1.3.

The difficulty confronting Brazil (and other developing countries) is the asymmetry of development. Developed OECD countries went through a gradual period of adjustment which enabled labour to be shed from agriculture over a relatively long period. This was possible because productivity improvements were relatively gradual and the differences between the least and most efficient were less marked. Nowadays, however, poor semi-subsistence farmers coexist alongside farmers using highly efficient modern practices, implying a technological spread of several decades. This places intense adjustment pressure on smallholder agriculture. Accordingly, it is not sufficient to simply assume that economic growth alone will lift poor farmers and rural households out of poverty.

While land reform can help, receiving land and credit is not likely to be enough. If such policies are linked to viable business plans then they may achieve some success. However, it is clear that the force of adjustment pressure is so strong that the long term future of most of these households lies outside agriculture. Hence there is a need for policies that facilitate adjustment, and provide social assistance for those who cannot adjust. The role of agricultural policies in the context of adjustment stress is discussed in Section 1.2.

1.5. Conclusions

Brazilian agriculture has undergone a radical transformation since the abandonment of import substitution policies in the late 1980s. Agricultural growth has been particularly rapid in recent years, and while current growth rates are unlikely to be sustainable, the sector is nevertheless expected to benefit from a relatively stable macroeconomic environment, supply-side improvements and reduced trade protection in overseas markets. But it is clear that agricultural growth itself will not reduce poverty and inequality. Indeed, it is likely to put greater pressure on less competitive producers. For this reason, agricultural policies need to be integrated with economy-wide policies to ensure that those whose prospects lie outside agriculture can adjust as smoothly as possible, and that contingencies are made for those who cannot.

In 2002, a new government, led by Luiz Inácio Lula da Silva of the Partido dos Trabalhadores, was elected with a mandate to address the country's wide social divisions. The government pledged to tackle poverty and one of its manifestations – hunger. Accordingly it introduced a number of direct programmes under the auspices of the flagship *Zero Hunger* initiative. The agricultural elements of this initiative are examined in Chapter 2.

The analysis in this chapter underlines the fact that these programmes do not exist in a policy vacuum. In the first place, long-term poverty reduction requires economic growth and stability, which is not obtainable without sound macroeconomic management and fiscal discipline. Under such constraints, ambitious social programmes can only be sustained if they are well-targeted and cost-effective. Second, given agriculture's role in underpinning economic performance in general, and easing the country's balance of payments constraint in particular, it is important that agricultural policies targeted at poorer farmers are not themselves detrimental to further improvements in the productivity of the sector's more competitive elements.

Although the rapid growth of commercial agriculture poses a threat to less competitive farmers, there is no need for a conflict of interest over policy. First, there is scope for a range of policy initiatives that would benefit both groups. Most obviously, these relate to the elimination of market failures which arise from weak domestic infrastructure and malfunctioning of the agricultural and rural credit system. It is likely that many small and medium-sized farms could in fact be competitive if these market failures were addressed. Second, adjustment and effective social programmes have the potential to help uncompetitive farmers find higher returns outside the agricultural sector. Finally, agricultural growth need not be detrimental to the environment, but nor is it likely that an unregulated expansion of agricultural area will provide sufficient protection to environmentally important areas.

Within this general context, Chapter 2 reviews specific agricultural policy developments in Brazil, while Chapter 3 examines in more detail the links between policy reforms and the distribution of income. In describing the links between structural change, policy and the generation and distribution of income, the aim is to arrive at conclusions on how the policy mix can be designed to reconcile rapid agricultural growth with faster headway in reducing poverty and inequality.

Notes

1. Brazil has a higher ratio than the United States, which is the word's largest economy and can accordingly support a high degree of specialisation.
2. The Gini coefficient increased from 0.50 to 0.59 between 1970 and 1980 (Rocha, 2000).
3. The stabilisation plans were the Cruzado Plan (1986-87), the Bresser Plan (1987-88), the Verão Plan (1989-90), Collor Plans I and II (1990-91), and the *Real Plan* (1994-98). For a discussion of these plans, see *OECD Economic Survey of Brazil* (2001).
4. According to the household survey PNAD, the share of the population in absolute poverty declined from 41.7% to 33.9% between 1993 and 1995, a reduction of 10 million persons. This proportion has since stabilised with an estimated 50 million people still living in absolute poverty. There was no survey in 1994.
5. Helfand and Rezende (2001).
6. For some important groups, such as coffee and pigmeat products, export prices declined.
7. Estimates of the decline in the number of farms vary from 8% to 16% over ten years, depending on the data source used (Helfand and Brunstein, 2001).
8. Changes in yields for all major crops are given in Table 1.11. Cocoa and orange yields were adversely affected by plant diseases.

ANNEX 1.A1

Brazil's Agricultural Export and Import Data 1990-2003

Table 1.A1.1. **Brazil agricultural exports by commodity, 1990-2003**

#	NCM	Commodity	1990-94		1995-99		2000-03		2000		2001		2002		2003	
			USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total
1	1201.00	Soybeans	886	9.1	1 603	10.8	3 059	18.1	2 188	16.9	2 726	16.7	3 032	17.8	4 290	20.2
2	2304.00	Soybean cake	1 675	17.2	2 133	14.4	2 129	12.6	1 651	12.8	2 065	12.7	2 199	12.9	2 602	12.2
3	0901.11.10	Green coffee	1 348	13.8	2 199	14.8	1 316	7.8	1 559	12.1	1 208	7.4	1 195	7.0	1 302	6.1
4	1701.11.00	Raw sugar	450	4.6	1 189	8.0	1 156	6.8	761	5.9	1 401	8.6	1 111	6.5	1 350	6.3
5	2009.11.00	Frozen orange juice	1 046	10.7	1 200	8.1	903	5.3	1 019	7.9	813	5.0	869	5.1	910	4.3
6	0207.14.00	Frozen broiler meat cuts	213	2.2	416	2.8	802	4.7	445	3.4	790	4.8	881	5.2	1 092	5.1
7	1701.99.00	Refined sugar	219	2.2	642	4.3	772	4.6	438	3.4	878	5.4	982	5.8	790	3.7
8	2401.20.30	Tobacco (Virginia)	506	5.2	696	4.7	698	4.1	581	4.5	681	4.2	737	4.3	792	3.7
9	1507.10.00	Soybean oil	386	4.0	707	4.8	608	3.6	300	2.3	415	2.5	675	4.0	1 042	4.9
10	0202.30.00	Frozen boneless beef	171	1.7	196	1.3	517	3.1	333	2.6	501	3.1	508	3.0	726	3.4
11	0207.12.00	Frozen whole broilers	243	2.5	373	2.5	483	2.9	359	2.8	502	3.1	454	2.7	617	2.9
12	1005	Maize	1	0.0	30	0.2	287	1.7	9	0.1	497	3.1	268	1.6	375	1.8
13	1602.50.00	Beef preparations	247	2.5	277	1.9	285	1.7	252	2.0	252	1.5	299	1.7	338	1.6
14	0201.30.00	Fresh and chilled boneless beef	49	0.5	62	0.4	276	1.6	170	1.3	237	1.5	268	1.6	428	2.0
15	0203.29.00	Pigmeat (other)	51	0.5	119	0.8	265	1.6	144	1.1	225	1.4	289	1.7	404	1.9
16	2101.11.10	Instant coffee	189	1.9	327	2.2	192	1.1	202	1.6	186	1.1	167	1.0	214	1.0
17	2106.90.10	Beverage preparations	7	0.1	53	0.4	177	1.0	294	2.3	214	1.3	98	0.6	101	0.5
18	2401.20.40	Tobacco (Burley)	81	0.8	127	0.9	150	0.9	138	1.1	142	0.9	150	0.9	171	0.8
19	0801.32.00	Cashew nuts	117	1.2	151	1.0	132	0.8	165	1.3	112	0.7	105	0.6	144	0.7
20	2207.10.00	Ethyl alcohol	46	0.5	71	0.5	110	0.7	35	0.3	92	0.6	166	1.0	147	0.7
		Top 5 items[1]	5 405	55.4	8 324	56.2	8 563	50.7	7 178	55.6	8 212	50.4	8 406	49.2	10 455	49.1
		Top 10 items[1]	6 899	70.7	10 981	74.1	11 960	70.8	9 274	71.8	11 476	70.5	12 190	71.4	14 898	70.0
		Top 20 items[1]	7 932	81.2	12 572	84.9	14 317	84.8	11 042	85.5	13 935	85.5	14 453	84.7	17 837	83.8
		Other items	1 832	18.8	2 241	15.1	2 573	15.2	1 873	14.5	2 354	14.5	2 619	15.3	3 444	16.2
		Total	9 764	100.0	14 812	100.0	16 889	100.0	12 915	100.0	16 288	100.0	17 073	100.0	21 281	100.0

1. Ranking based on 2000-03 period.

Source: MDIC – ALICE.

Table 1.A1.2. **Brazil agricultural exports by partner, 1990-2003**

#	Country	1990-94		1995-99		2000-03		2000		2001		2002		2003	
		USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total
1	European Union	4 814	49.3	6 599	44.5	6 976	41.3	5 833	45.2	6 794	41.7	6 875	40.3	8 403	39.5
2	China[1]	230	2.4	733	5.0	1 211	7.2	645	5.0	889	5.5	1 273	7.5	2 037	9.6
3	United States	1 380	14.1	1 338	9.0	1 158	6.9	1 112	8.6	935	5.7	1 124	6.6	1 462	6.9
4	Russia	123	1.3	583	3.9	1 031	6.1	411	3.2	1 083	6.7	1 208	7.1	1 421	6.7
5	Japan	534	5.5	823	5.6	730	4.3	644	5.0	711	4.4	764	4.5	804	3.8
6	Iran	120	1.2	279	1.9	455	2.7	247	1.9	391	2.4	436	2.6	745	3.5
7	Saudi Arabia	157	1.6	244	1.6	387	2.3	265	2.1	398	2.4	385	2.3	500	2.4
8	Argentina	218	2.2	430	2.9	351	2.1	448	3.5	433	2.7	204	1.2	318	1.5
9	South Korea	76	0.8	138	0.9	265	1.6	118	0.9	294	1.8	298	1.7	349	1.6
10	Egypt	95	1.0	199	1.3	223	1.3	107	0.8	296	1.8	259	1.5	231	1.1
11	United Arab Emirates	24	0.2	101	0.7	218	1.3	145	1.1	226	1.4	233	1.4	268	1.3
12	Chile	46	0.5	82	0.6	203	1.2	134	1.0	194	1.2	225	1.3	259	1.2
13	Nigeria	86	0.9	163	1.1	184	1.1	114	0.9	228	1.4	213	1.2	181	0.8
14	Canada	107	1.1	117	0.8	163	1.0	123	1.0	135	0.8	168	1.0	226	1.1
15	Morocco	71	0.7	110	0.7	147	0.9	89	0.7	140	0.9	193	1.1	165	0.8
16	India	96	1.0	103	0.7	144	0.9	82	0.6	162	1.0	191	1.1	140	0.7
17	Romania	28	0.3	53	0.4	119	0.7	56	0.4	149	0.9	86	0.5	185	0.9
18	Norway	37	0.4	62	0.4	112	0.7	136	1.1	96	0.6	102	0.6	112	0.5
19	Thailand	51	0.5	83	0.6	109	0.6	84	0.7	78	0.5	118	0.7	155	0.7
20	Indonesia	31	0.3	118	0.8	104	0.6	53	0.4	62	0.4	121	0.7	180	0.8
	Top 5 partners[2]	7 081	72.5	10 076	68.0	11 106	65.8	8 644	66.9	10 411	63.9	11 243	65.9	14 127	66.4
	Top 10 partners[2]	7 747	79.3	11 366	76.7	12 787	75.7	9 830	76.1	12 222	75.0	12 826	75.1	16 271	76.5
	Top 20 partners[2]	8 323	85.2	12 358	83.4	14 289	84.6	10 847	84.0	13 692	84.1	14 476	84.8	18 142	85.2
	Other	1 441	14.8	2 455	16.6	2 600	15.4	2 068	16.0	2 596	15.9	2 596	15.2	3 139	14.8
	Total	9 764	100.0	14 812	100.0	16 889	100.0	12 915	100.0	16 288	100.0	17 073	100.0	21 281	100.0

1. Includes Mainland China, Hong Kong and Macao.
2. Ranking based on 2000-03 period

Source: MDIC – ALICE.

Table 1.A1.3. **Brazil agricultural exports by region, 1990-2003**

	1990-94		1995-99		2000-03		2000		2001		2002		2003	
	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total
Western Europe[1]	5 129	52.5	6 916	46.7	7 261	43.0	6 104	47.3	7 095	43.6	7 160	41.9	8 685	40.8
Asia-Pacific[2]	1 251	12.8	2 477	16.7	3 108	18.4	2 132	16.5	2 815	17.3	3 223	18.9	4 261	20.0
Middle East and Northern Africa[3]	749	7.7	1 453	9.8	1 976	11.7	1 228	9.5	1 968	12.1	2 094	12.3	2 613	12.3
Central and South Eastern Europe and Former USSR[4]	273	2.8	861	5.8	1 433	8.5	682	5.3	1 484	9.1	1 565	9.2	2 001	9.4
United States and Canada[5]	1 502	15.4	1 477	10.0	1 344	8.0	1 255	9.7	1 090	6.7	1 318	7.7	1 712	8.0
Latin America and the Caribbean[6]	619	6.3	1 256	8.5	1 218	7.2	1 236	9.6	1 311	8.1	1 060	6.2	1 265	5.9
Sub-Saharan Africa[7]	187	1.9	372	2.5	550	3.3	277	2.1	525	3.2	653	3.8	745	3.5
Total	9 764	100.0	14 812	100.0	16 889	100.0	12 915	100.0	16 288	100.0	17 073	100.0	21 281	100.0

1. The European Union, EU territories, Cyprus, Iceland, Liechtenstein, Malta, Norway and Switzerland.
2. Australia, Bangladesh, Bhutan, Brunei, Cambodia, China (including Hong Kong and Macao), Fiji, India, Indonesia, Japan, Kiribati, Laos, Malaysia, Maldives, Micronesia, Mongolia, Myanmar, Nepal, New Zealand, North Korea, Pakistan, Papua New Guinea, the Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam.
3. Afghanistan, Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen.
4. Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, the Slovak Republic, Slovenia, Tajikistan, Turkmenistan, the Ukraine, Uzbekistan, and Yugoslavia.
5. The United States, its associated commonwealths and unincorporated territories, and Canada.
6. South America, Central America, Mexico, and the Caribbean.
7. All African countries, except Algeria, Egypt, Libya, Morocco, and Tunisia.

Source: MDIC – ALICE.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Table 1.A1.4. **Brazil agricultural imports by product, 1990-2003**

#	NCM	Commodity	1990-94		1995-99		2000-03		2000		2001		2002		2003	
			USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total
1	1001	Wheat	554	19.0	844	15.2	906	26.1	865	22.1	872	27.0	878	27.2	1 010	28.8
2	1201.00	Soybeans	75	2.6	197	3.5	169	4.9	133	3.4	138	4.3	175	5.4	231	6.6
3	1107.10.10	Non-roasted malt	112	3.8	210	3.8	165	4.8	156	4.0	183	5.7	165	5.1	157	4.5
4	5201.00	Non-carded and non-combed cotton	244	8.4	360	6.5	154	4.4	323	8.3	95	2.9	64	2.0	134	3.8
5	0402.21	Whole milk powder	57	1.9	218	3.9	121	3.5	197	5.0	84	2.6	145	4.5	58	1.7
6	1005	Maize	112	3.8	119	2.1	87	2.5	179	4.6	62	1.9	35	1.1	71	2.0
7	1801.00.00	Cocoa beans	1	0.0	26	0.5	73	2.1	60	1.5	31	1.0	86	2.7	116	3.3
8	1006.30	Milled non parboiled rice	155	5.3	207	3.7	72	2.1	57	1.5	55	1.7	49	1.5	126	3.6
9	2204.21.00	Wine (other)	19	0.7	51	0.9	59	1.7	65	1.7	63	2.0	50	1.5	57	1.6
10	2004.10.00	Prepared potatoes	0	0.0	39	0.7	49	1.4	53	1.4	54	1.7	50	1.6	40	1.1
11	0703.20	Garlic	35	1.2	87	1.6	49	1.4	57	1.5	51	1.6	46	1.4	43	1.2
12	1006.20.20	Husked non parboiled rice	24	0.8	41	0.7	49	1.4	50	1.3	51	1.6	34	1.1	61	1.8
13	1006.10	Rice in husk	32	1.1	79	1.4	45	1.3	25	0.6	27	0.8	27	0.8	103	2.9
14	2304.00.	Soycake	0	0.0	30	0.5	41	1.2	16	0.4	36	1.1	58	1.8	55	1.6
15	0808.20.10	Pears	32	1.1	78	1.4	41	1.2	51	1.3	50	1.5	35	1.1	29	0.8
16	0201.30.00	Boneless fresh or chilled beef	3	0.1	29	0.5	39	1.1	43	1.1	36	1.1	30	0.9	47	1.3
17	2309.90.90	Animal feeds	10	0.3	21	0.4	37	1.1	25	0.6	30	0.9	45	1.4	48	1.4
18	0711.20.10	Olives	40	1.4	54	1.0	34	1.0	44	1.1	35	1.1	31	1.0	26	0.7
19	2208.30.20	Bottled whisky	10	0.4	43	0.8	34	1.0	32	0.8	41	1.3	33	1.0	30	0.9
20	1901.20.00	Baking mixes and doughs	0	0.0	3	0.1	20	0.6	2	0.1	3	0.1	23	0.7	54	1.5
		Top 5 items[1]	1 041	35.7	1 830	32.9	1 516	43.7	1 673	42.7	1 372	42.5	1 427	44.2	1 590	45.4
		Top 10 items[1]	1 329	45.6	2 272	40.8	1 855	53.5	2 088	53.3	1 638	50.8	1 697	52.5	2 000	57.1
		Top 20 items[1]	1 514	51.9	2 736	49.2	2 246	64.8	2 434	62.2	1 996	61.9	2 059	63.7	2 497	71.2
		Other items	1 401	48.1	2 827	50.8	1 223	35.2	1 482	37.8	1 230	38.1	1 172	36.3	1 008	28.8
		Total	2 915	100.0	5 563	100.0	3 469	100.0	3 915	100.0	3 226	100.0	3 230	100.0	3 505	100.0

1. Ranking based on 2000-03 period.

Source: MDIC – ALICE.

Table 1.A1.5. **Brazil agricultural imports by region, 1990-2003**

	1990-94		1995-99		2000-03		2000		2001		2002		2003	
	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total
Latin America and the Caribbean[1]	1 609	55.2	3 296	59.2	2 340	67.4	2 681	68.5	2 247	69.6	2 118	65.6	2 313	66.0
Western Europe[2]	457	15.7	805	14.5	521	15.0	552	14.1	530	16.4	491	15.2	510	14.6
United States and Canada[3]	475	16.3	772	13.9	313	9.0	305	7.8	223	6.9	329	10.2	394	11.2
Asia Pacific[4]	142	4.9	270	4.8	161	4.7	146	3.7	121	3.8	190	5.9	188	5.4
Sub Saharan Africa[5]	75	2.6	225	4.0	77	2.2	150	3.8	57	1.8	37	1.1	64	1.8
Middle East and Northern Africa[6]	37	1.3	45	0.8	36	1.0	41	1.1	41	1.3	33	1.0	31	0.9
Central and South Eastern Europe and Former USSR[7]	120	4.1	148	2.7	19	0.5	38	1.0	6	0.2	28	0.9	2	0.1
Total	2 915	100.0	5 563	100.0	3 469	100.0	3 915	100.0	3 226	100.0	3 230	100.0	3 505	100.0

1. South America, Central America, Mexico, and the Caribbean.
2. The European Union, EU territories, Cyprus, Iceland, Liechtenstein, Malta, Norway, and Switzerland.
3. The United States, its associated commonwealths and unincorporated territories, and Canada.
4. Australia, Bangladesh, Bhutan, Brunei, Cambodia, China (including Hong Kong and Macao), Fiji, India, Indonesia, Japan, Kiribati, Laos, Malaysia, Maldives, Micronesia, Mongolia, Myanmar, Nepal, New Zealand, North Korea, Pakistan, Papua New Guinea, the Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Tuvalu, and Vietnam.
5. All African countries, except, Algeria, Egypt, Libya, Morocco, and Tunisia.
6. Afghanistan, Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen.
7. Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, the Slovak Republic, Slovenia, Slovenia, Tajikistan, Turkmenistan, the Ukraine, Uzbekistan, and Yugoslavia.

Source: MDIC – ALICE.

Table 1.A1.6. **Brazil agricultural imports by country, 1990-2003**

		1990-94		1995-99		2000-03		2000		2001		2002		2003	
		USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total	USD mn	% of total
1	Argentina	1 006	34.5	2 167	38.9	1 583	45.6	1 898	48.5	1 601	49.6	1 384	42.8	1 450	41.4
2	European Union	421	14.5	763	13.7	482	13.9	530	13.5	481	14.9	461	14.3	454	13.0
3	Paraguay	233	8.0	388	7.0	348	10.0	313	8.0	272	8.4	355	11.0	451	12.9
4	Uruguay	242	8.3	476	8.6	270	7.8	305	7.8	233	7.2	247	7.6	296	8.5
5	United States	327	11.2	581	10.5	262	7.5	241	6.2	179	5.5	285	8.8	343	9.8
6	Chile	94	3.2	167	3.0	87	2.5	99	2.5	90	2.8	83	2.6	76	2.2
7	Indonesia	11	0.4	36	0.7	61	1.7	44	1.1	24	0.8	87	2.7	87	2.5
8	Canada	148	5.1	190	3.4	49	1.4	63	1.6	41	1.3	43	1.3	50	1.4
9	Côte d'Ivoire	2	0.1	21	0.4	37	1.1	63	1.6	19	0.6	25	0.8	41	1.2
10	China[1]	25	0.9	43	0.8	28	0.8	26	0.7	23	0.7	34	1.0	28	0.8
11	New Zealand	7	0.3	46	0.8	22	0.6	27	0.7	24	0.7	25	0.8	12	0.4
12	Mexico	8	0.3	43	0.8	20	0.6	35	0.9	20	0.6	14	0.4	12	0.3
13	Switzerland	11	0.4	26	0.5	20	0.6	15	0.4	44	1.4	10	0.3	10	0.3
14	Turkey	24	0.8	25	0.5	18	0.5	18	0.5	22	0.7	16	0.5	16	0.5
15	Poland	20	0.7	5	0.1	16	0.4	5	0.1	1	0.0	16	0.5	40	1.2
16	Malaysia	11	0.4	13	0.2	11	0.3	8	0.2	10	0.3	13	0.4	14	0.4
17	Benin	8	0.3	60	1.1	11	0.3	29	0.7	12	0.4	1	0.0	0	0.0
18	India	14	0.5	32	0.6	10	0.3	14	0.4	11	0.3	8	0.3	7	0.2
19	Peru	2	0.1	8	0.1	8	0.2	9	0.2	7	0.2	11	0.3	6	0.2
20	Mali	15	0.5	15	0.3	8	0.2	23	0.6	9	0.3	1	0.0	0	0.0
	Top 5 Countries[2]	2 228	85.2	4 374	86.1	2 945	91.6	3 286	90.8	2 766	91.1	2 731	91.9	2 995	92.7
	Top 10 Countries[2]	2 509	89.7	4 831	91.5	3 206	96.3	3 581	95.5	2 963	96.5	3 002	96.5	3 278	96.9
	Top 20 Countries[2]	2 629	90.2	5 103	91.7	3 350	96.6	3 763	96.1	3 123	96.8	3 117	96.5	3 396	96.9
	Other	286	9.8	460	8.3	120	3.4	152	3.9	103	3.2	114	3.5	109	3.1
	Total	2 915	100.0	5 563	100.0	3 469	100.0	3 915	100.0	3 226	100.0	3 230	100.0	3 505	100.0

1. Includes Mainland China, Hong Kong, and Macao.
2. Ranking based on 2000-03 period.

Source: MDIC – ALICE.

ISBN 92-64-01254-0
OECD Review of Agricultural Policies
Brazil

Chapter 2

Policy Evaluation

This chapter provides an overview and evaluation of agricultural policies in Brazil. Section 2.1 describes the basic objectives that underpin agricultural policies and how those objectives have changed since the abandonment of import substitution policies. It also documents the institutional mechanisms through which policies are implemented. Section 2.2 chronicles the evolution of domestic policies, including credit policies and market interventions, the main elements within the current policy framework; while Section 2.3 examines how Brazil's trade policies have evolved. This section considers changes in import protection, taking account of the opening up of trade under Mercosur, and the use of policies to promote exports. In the light of this information, Section 2.4 quantifies the extent of support provided to agriculture, and the cost that this support imposes on Brazilian consumers and taxpayers. Section 2.5 concludes with the policy implications from this analysis.

2.1. Basic policy objectives, instruments and institutional arrangements

Agricultural policy objectives have tended to reflect the economic and political priorities of the time. Prior to the start of economy-wide reforms in the late 1980s, agricultural policies were an integral part of the ISI strategy, and as such, served two basic objectives. One was to promote food self-sufficiency based on wide-ranging controls over agro-food prices, marketing and trade. The other was to compensate the sector for the anti-agriculture bias of import substitution using such instruments as cheap credit, price supports and public investments (*e.g.* in infrastructure and agricultural research).

By the late 1980s the ISI strategy was no longer affordable. With a change in basic philosophy, agricultural markets were opened up to foreign competition. Within the first few years of the 1990s, Brazil abolished major non-tariff trade controls, drastically reduced tariff protection and began a rapid movement towards Mercosur free trade. Trade liberalisation went hand-in-hand with the deregulation of domestic agricultural markets. These parallel reforms helped to establish an incentive structure which was more compatible with the country's general comparative advantage in agriculture.

However, macroeconomic stability proved elusive until the mid-1990s, prompting policy interventions to improve price stability and to compensate farmers who, as a result of hyper-inflation, lost out through these efforts (*e.g.* through rescheduling of agricultural debt accumulated between the late 1980s to mid-1990s). High interest rates and poorly developed bank lending to the private sector led the government to continue administering credit to the sector.

In addition, persistent poverty and high income inequality in Brazil increased social pressures in the 1990s, including demands for an acceleration of land reform. The recognition that land distribution itself was not enough to provide long-term benefit to smallholders led to adoption of the Programme for Strengthening of Family Agriculture (PRONAF). This programme incorporated accompanying policies targeted to the rural poor, including subsidised credit, training and extension, and the promotion of value-added activities. With the adoption of the Zero Hunger Programme in 2003, support of family farming became part of the broader objective of combating hunger and poverty in Brazil.

Agricultural policies in Brazil therefore serve two main objectives. One is the economic goal of promoting the agro-food sector's continued growth and development. Since the abandonment of import substitution policies, this objective has been pursued chiefly through measures designed to smooth the functioning of markets, attract investment into the sector, and promote agro-food exports through better access to foreign markets. The other is a social function of assisting poorer farmers and other rural households through investments in land reform, family production, education and training. The latter objective is also an economic one to the extent that the social measures adopted also help produce sustainable agricultural development.

Reflecting these multiple – and sometimes competing – objectives, agricultural policy is not the exclusive domain of one Ministry.

The Ministry of Planning, Budget and Management, the Ministry of Finance, the National Monetary Council, and the Central Bank are responsible for general economic, monetary and fiscal policies. They determine the allocation of public resources for agricultural programmes and the basic parameters of these programmes (*e.g.* minimum prices, funds for rural credit, etc.). The Ministry of Agriculture and Food is broadly responsible for the sector's development, while the Ministry of Agrarian Development takes responsibility for policies aimed at poorer farmers (notably land reform). In addition, the recently formed Ministry of Social Assistance and Combat Against Hunger has responsibilities in a number of areas where agricultural policies have significant effects. In most cases, policy is implemented through a specific affiliate of one of these ministries, with consultations across all three. Preferential credit to agricultural producers, a key element of agricultural policies, is administered via the National System of Rural Credit (SNCR). In addition, consultations take place with a wide range of government and public councils, and with industrial associations that represent both commodity specific interests, as well as broader groupings (such as commercial producers and farm workers) (Box 2.1).

2.2. Domestic policies

Domestic price support

Before the reform

Brazil has a long history of government intervention in the agricultural sector. Price interventions were first introduced in the 1940s, amid wartime food security concerns. From the 1950s, Brazil adopted an import substitution industrialisation strategy, which involved wide-ranging controls over supply and prices in the agro-food sector. Prices were both supported for producers and subsidised to consumers. These policies continued until the late 1980s, when the government began to reform what had evolved into an institutionally rigid price system.

A government agency, *Superintendência Nacional de Abastecimento* (SUNAB), regulated the distribution of basic foodstuffs and set prices and profit margins at all levels of the food chain. This agency also controlled agro-food imports and exports, and had the authority to confiscate and dispose of private commodity stocks in emergency situations. At the agricultural producer level, a general price support system existed for "basic" crops, such as rice, maize, soybeans, beans, cassava, and cotton. An intervention agency, *Companhia de Financiamento da Produção* (CFP), carried out direct government purchases of these commodities at minimum guaranteed prices. Producers could also benefit from marketing loans, which enabled them to withhold their crop from the market during periods of peak supply. At the end of the loan term, producers could either sell their crop at the current market price and repay the loan, or deliver it to the CFP at the minimum price. In addition to price supports for basic crops, special marketing regimes existed for wheat, sugar, and coffee. These three sectors were regulated by marketing boards[1] which set overall production and marketing quotas, and controlled prices and trade. The wheat sector was under the most rigid regulation, with a complete state control over all domestic and external transactions in wheat and wheat flour.

In the second half of the 1980s, the agricultural price support system became ineffective. The failure of successive stabilisation plans to control inflation led to a rapid fall in real agricultural prices and a deterioration in the agricultural terms of trade

Box 2.1. **Main institutions involved in development and implementation of Brazilian agricultural policies**

The Ministry of Agriculture and Food (MAPA) is responsible for formulation of general agricultural sector development strategies and policies and their implementation. Formulation of agricultural policy guidelines and supervision of government actions related to agricultural trade and supply lies with the Ministry's Secretariat of Agricultural Policy (SAP/MAPA). Affiliated to MAPA is the National Food Supply Company (CONAB – *Companhia Nacional de Abastecimento*). CONAB is the main agency responsible for formation of public food stocks and implementation of price support policies. Its regional Administrations are located in 21 Brazilian states, each managing a system of local storage facilities. In addition to CONAB, three state-level agencies are involved in government purchasing and stockholding – the Company of Storehouses and Grain Elevators of State of Minas Gerais (CASEMG), the Central Food Supply Agency of the State of Minas Gerais (CEASA/MG), and the Storehouse Company of the State of São Paulo (CEAGESP). Another agency affiliated to MAPA is the Brazilian Corporation for Agricultural Research (Embrapa – *Empresa Brasileira de Pesquisa Agropecuária*), a national agricultural research and extension centre (see "General Services" in Section 2.2 of this Chapter).

The Ministry of Agrarian Development (MDA) was created in 2000 to become a successor of the Office of the Extraordinary Minister on Land Policies. In 2001, MDA also assumed from MAPA responsibilities related to support and promotion of family agriculture. An affiliate of MDA is the National Institute of Colonisation and Agrarian Reform (INCRA – *Instituto Nacional de Colonização e Reforma Agrária*). INCRA's mandate includes the implementation of agrarian reform, maintenance of rural real estate cadastre and administration of federal public lands. INCRA has 29 regional administrations across Brazil. The Centre for Agrarian and Rural Development Studies (NEAD – *Núcleo de Estudos Agrários e Desenvolvimento Rural*) is another MDA affiliate responsible for policy research and analysis, and involvement of civil society in the implementation of rural development policies.

The Ministry of Social Development and Combat Against Hunger (MDS) was formed in January 2004 as the result of consolidation of the Extraordinary Ministry on Food Security and Combat Against Hunger and the Ministry of Social Services. MDS is one of the principal bodies responsible for implementation of the Zero Hunger Programme, in particular the programme's components related to food grants and direct food aid (see "Consumer Measures" in Section 2.2 of this Chapter).

The National System of Rural Credit (SNCR – *Sistema Nacional de Crédito Rural*) incorporates 298 federal, state and co-operative banks providing government-supported credit to agriculture. The system is controlled, co-ordinated and supervised by the Central Bank of Brazil. The leading banks are the Banco do Brasil, Banco do Nordeste, Banco da Amazônia, all three of which are mixed public-private banks. Affiliated to the SNCR, is the Brazilian National Bank for Economic and Social Development (BNDES), which is under the authority of the Ministry of Development, Industry and Trade (see "Credit Policies" in Section 2.2 of this Chapter).

Mixed government and public councils involve major stakeholders in the development of agricultural strategies and policies, including:

- The National Council on Agricultural Policy.
- The Special Council on Coffee Policy.
- The Inter-Ministerial Council on Sugar and Alcohol.
- The Council for Cocoa Trade.

Box 2.1. **Main institutions involved in development and implementation of Brazilian agricultural policies** *(cont.)*

- The Agribusiness Council.
- The Special Commission for Resources.

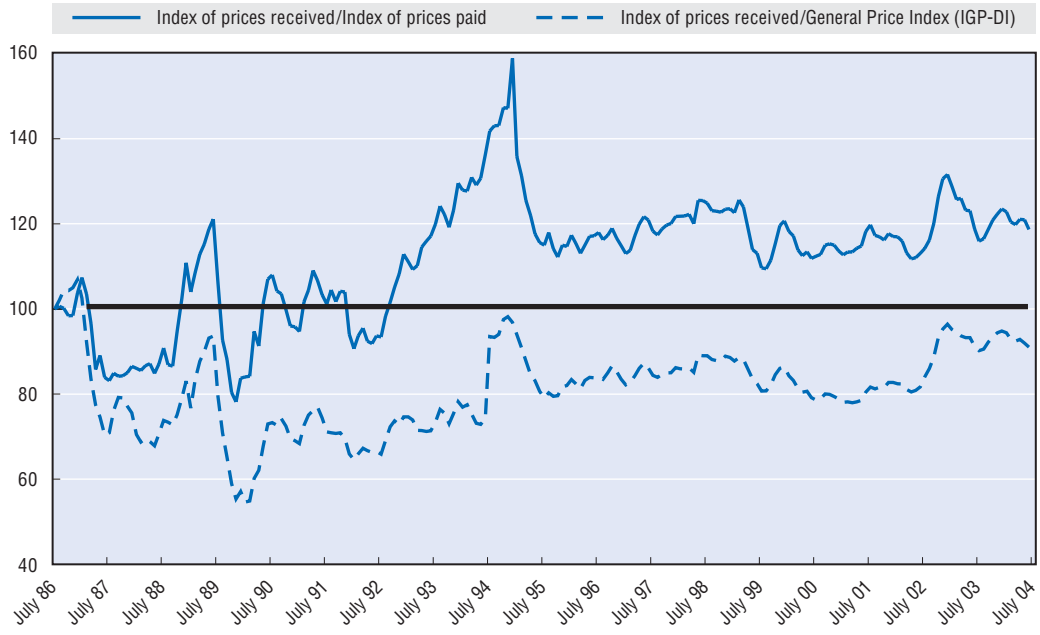
The National Council for Food and Nutrition Security (CONSEA) is subordinated directly to the President of the Republic who is responsible for the development of guidelines for the Zero Hunger Programme and food security actions.

Producer and agribusiness interests are broadly represented in Brazil through *trade-union and industrial associations*, such as: National Confederation of Agriculture (CNA), National Confederation of Agricultural Workers (CONTAG), Organisation of Brazilian Co-operatives (OCB); Brazilian Association of Producers and Exporters of Poultry Meat (ABEF), Brazilian Association of Beef Exporters (ABIEC), Brazilian Association of Vegetable Oil Industries (ABIOVE), Brazilian Coffee Industry Association (ABIC), Brazilian Pork Industry and Exporter Association (ABIPECS), Brazilian Seed Producers Association (ABRASEM), Brazilian Association of Citrus Exporters (ABECITRUS), São Paulo Sugarcane Agro-industry Union (UNICA); Brazilian Association of Milk Producers (Leite Brazil), and others.

(Figure 2.1). The removal of export licensing for primary agricultural products in 1987 brought only a temporary improvement, and the fall in real agricultural prices soon resumed. Price controls at the producer and consumer level required increasing amounts of budgetary funds, thereby contributing to inflation. Under these conditions the government had to freeze minimum prices, which by 1990 had fallen to almost half of their 1981 levels in real terms (Rezende 2000).

Figure 2.1. **Agricultural price trends, 1986-2004**

July 1986 = 100



Source: FGV.

Reforms of the 1990s

In 1990-91, the newly elected Collor government attempted macro-economic stabilisation, and abandoned a commitment to low food prices and import substitution. Brazilian producers faced fewer controls and obtained freer access to world commodity and input markets.

There was radical deregulation of the wheat and coffee sectors. In 1990 the state wheat monopoly was abolished and the Wheat Purchase Commission dissolved. With this, broad supply and price controls in the wheat sector stopped. However, price support at the producer level was maintained, with wheat included on the list of "basic" commodities covered by the minimum price system.

Deregulation of the coffee sector was prompted not only by the domestic situation, but also by developments in the world coffee market. A sharp fall in world coffee prices at the end of the 1980s, coupled with internal macroeconomic constraints, made it difficult for Brazil to support domestic prices in line with obligations under the economic clauses of the International Coffee Agreement.[2] In 1989 Brazil withdrew from the economic part of the Agreement, and in 1990 liquidated the Brazilian Coffee Institute. This was a historical rupture after more than six decades of state control of the sector.

Reform of the sugar and ethanol sectors proved to be more protracted. The government maintained the existing market regime until the mid-1990s, continuing to fix production, and set marketing quotas and prices in the sugar chain. It also remained the official buyer and the sole domestic distributor and exporter of sugar.[3] The ethanol sector operated under a similar regime. Deregulation of the sugar sector began in 1995 when sugar prices and sugar exports were liberalised and the Institute of Sugar and Alcohol was liquidated. Between 1997 and 1999, sugar cane and ethanol prices were freed and the state ethanol purchasing and distribution monopoly was eliminated. Although all direct controls in the sugar/ethanol sector were lifted, consumption of ethanol continues to be regulated indirectly through obligatory blending of ethanol with gasoline (Box 2.2).

In contrast with the wheat, coffee and sugar/ethanol sectors, which have been consistently and profoundly liberalised, the reform of price support for basic commodities has undergone different phases, from a suspension of operations in 1990-91 to their renewal and expansion in 1992-95, and re-instrumentation and targeting from 1996 onwards.

i) 1990-91: short period of suspension. Agricultural prices soared after serious crop failures in 1989/90 and 1990/91, and price interventions were formally inactive during this period. This coincided with a period of budget austerity, which entailed substantial cuts in public funds allocated to the sector. In particular, there was a sharp reduction in resources directed for preferential credit, while at the same time outstanding agricultural debt had multiplied due to inflation. The result was a substantial erosion of producer incentives, which led to reduced plantings in the 1990/91 season, and even raised fears of food shortages (Rezende, 2000).

ii) 1992 to mid-1994: resumption of support and adjustments to high inflation. The weak market situation of 1991 led the government to renew price interventions and increase preferential credit allocations to agriculture, despite rigid monetary targets. In addition, producers received the right to convert working capital loans into marketing loans and if necessary carry the pledged commodity stock over to the following year, with an option of forfeiting it to the government. Another measure was the adoption of the

Box 2.2. **Brazil's sugar and ethanol sectors**

Brazil is commonly recognised as the price leader on the international sugar market, reflecting its status as the world's largest producer of sugar cane and sugar and one of the low-cost sugar producers. It is also the largest sugar exporter and third largest sugar consumer in the world. Besides raw and refined sugar, a large share of the sugar cane crop is allocated to the production of anhydrous and hydrous alcohol (ethanol) for use as a fuel extender or fuel substitute for motor vehicles. As a result of this dual use of sugar cane, Brazil's sugar industry is closely linked with the domestic fuel alcohol industry. Traditionally around 55% of the sugar cane crop has been used for alcohol production and 45% for sugar production. However, the recent growth in sugar production and exports would suggest that sugar is now taking precedence over the production of alcohol in the use of sugar cane. This is the outcome of a complex mix of factors including the world price of sugar, the world price of oil, the substantial devaluation in the currency exchange rate and cost considerations in producing sugar and ethanol. Some 400 mills produce sugar in Brazil, of which around 60% have the ability to produce both sugar and ethanol.

In 2003/04 sugar cane production is estimated at 357 million metric tonnes, with an outlook for even higher production in 2004/05. This cane crop yielded nearly 25 mmt of sugar, raw value, in 2003/04 and around 14 billion litres of fuel alcohol. The volume of output is another record and confirms Brazil's position as the world's largest sugar producer ahead of both India and the European Union. At the same time that sugar production has been increasing, production of alcohol, and particularly anhydrous ethanol, has also been expanding and assuming increased prominence. Exports of sugar have grown rapidly over the last decade from just over 1 mmt in 1990 to around 14 mmt in 2003, making Brazil the largest exporter to the international market.

Government intervention in sugar and alcohol markets

In the past, Brazil intervened heavily in its sugar sector through production quotas, subsidies and export controls including management of export terminals. Oil crises in 1973 and 1979 and the escalating cost of imported oil led the Government of the day to establish the Brazilian Alcohol Programme in 1975 known as "*Proalcool*". This programme was designed to promote the replacement of imported crude oil with domestically manufactured fuel alcohol from sugar cane. As a result, sugar cane production in Brazil increased in the late 1970s in response to the demand for alcohol created by this programme. Initially the alcohol programme authorised the use of mixtures or blending of anhydrous alcohol with petroleum. However, this requirement was extended by the end of the 1970s to include the use of hydrous alcohol as a petroleum substitute for use in alcohol-fuelled automobiles.

The central component of Brazil's ethanol policy is the mandatory blending of anhydrous ethanol with petroleum for use as transport fuel. The government sets the blending rate each season, which can vary between a minimum of 20% and a maximum of 25% of petroleum content. Other measures include requiring government agencies to buy 100% ethanol powered vehicles, offering storage credits to millers, maintaining a differential excise tax rate favouring ethanol over petroleum use, and restricting ethanol imports with an 21.5% *ad valorem* duty and licence requirements. At the start of the ethanol programme, the government fixed the price of petrol above that for ethanol. With the easing of oil prices in the late 1980s, and following a period of hyperinflation, government subsidies for alcohol production declined and demand for alcohol fuelled cars fell sharply. As a result, alcohol production steadied after 1985, and peaked in 1998, as the fleet of ageing alcohol fuelled cars became obsolete and were progressively scrapped.

Box 2.2. **Brazil's sugar and ethanol sectors** *(cont.)*

Interest in ethanol production was rekindled in 2002 in part due to the substantial devaluation of the Brazilian currency and the increase in imported crude oil and domestic petroleum prices. An additional factor has been the introduction of flexi-fuel engines in automobiles which are capable of running on either pure hydrous ethanol or with blends of anhydrous ethanol and petroleum. With a favourable price of ethanol for domestic consumers, the growth in sales of flexi-fuel cars in Brazil has now outstripped the decline of hydrous fuel cars, creating additional demand for fuel ethanol.

During the 1990s, market reforms were introduced throughout the Brazilian agricultural sector. The reforms for sugar included liberalisation of the export market and the removal of sugar price controls in 1995. In addition to the liberalisation of sugar prices, ex-factory prices for anhydrous alcohol were deregulated in May 1997 and the monopoly of the state enterprise Petrobras over the exploration and refining of petroleum was eliminated. By 1999, the government liberalised prices of hydrous alcohol and eliminated control over producer prices for sugar cane (although until 2002 some small direct payments were paid to sugar cane growers in the North East region). As a consequence of the dismantling of the Proalcool programme, prices of both types of ethanol are now market determined, although they continue to benefit from more favourable excise tax treatment than petroleum. In addition, as mentioned, the government continues to mandate the percentage of ethanol that must be blended with petroleum for use as transport fuel. However, the blending ratio is no longer considered a major instrument in softening the price-lowering effect of additional sugar production in Brazil. In a situation of ample and growing supplies of sugar cane, government regulation of the blending ratio, which technically cannot be increased beyond the current ratio of 25%, has lost relevance as a market factor influencing sugar production and exports in Brazil. Medium term projections of Brazil's sugar sector suggest that sugar cane supplies will increase considerably over coming years, thus further marginalising the market relevance of the blending ratio.*

* See OECD-FAO (2005).

"product-equivalence" principle. Under this mechanism, agricultural credit was anchored to minimum prices. The size of rural loans was expressed in physical product terms by dividing the credit value by the current minimum price of a product, with borrowers having the right to repay credit in physical product instead of cash. Given extreme price volatility and inflationary uncertainty, many borrowers opted to convert production loans into marketing loans and eventually cede their crop to the government at minimum prices. This led to a rapid build-up of government intervention stocks.

iii) mid-1994 to 1995: impacts of the new stabilisation plan. The introduction of the *real* led to concerns that the strengthened currency would depress incomes in the sector. Hence, despite monetary and fiscal restrictions, the government again offered high price guarantees for the 1994/95 crop season. Confirming prior expectations of an unfavourable impact of currency appreciation, the agricultural sector experienced a considerable decline in its terms of trade (Figure 2.1), a situation which was further aggravated by that season's record crop. The result was a new build-up of government intervention stocks. At the same time, imports of similar commodities were flowing into Brazil through commercial channels on an increasing scale, in particular due to just opened duty-free trade with

Mercosur partners. This revealed an inconsistency between economy-wide and sectoral stabilisation efforts (Rezende, 2000).

***iv)* 1996 onwards: re-instrumentation and targeting.** These contradictions led to a revision of price support practices. There was a clear need to reduce the fiscal burden of price interventions, including the costs of public stockholding. Also, some policy arrangements were no longer relevant once inflation was under control. As a result, several important changes were made to the price support system in 1996:

- The indexation of minimum prices was stopped, and minimum prices were again fixed for the whole crop season.
- Marketing loans could now only be settled in cash, *i.e.* transfer of physical product in repayment of loans was discontinued.
- Sell option contracts (explained below) were introduced. The principal benefit of this instrument was that it did not require immediate disbursement of funds to the contract holder as was the case with marketing loans.
- A premium, equal to the difference between minimum and market prices, was offered to commercial buyers *via* auctions (see below). This enabled the government to pass some intervention purchases onto private agents and reduce the public cost of price interventions.
- Direct purchases at minimum guaranteed prices were substantially reduced.

Current system

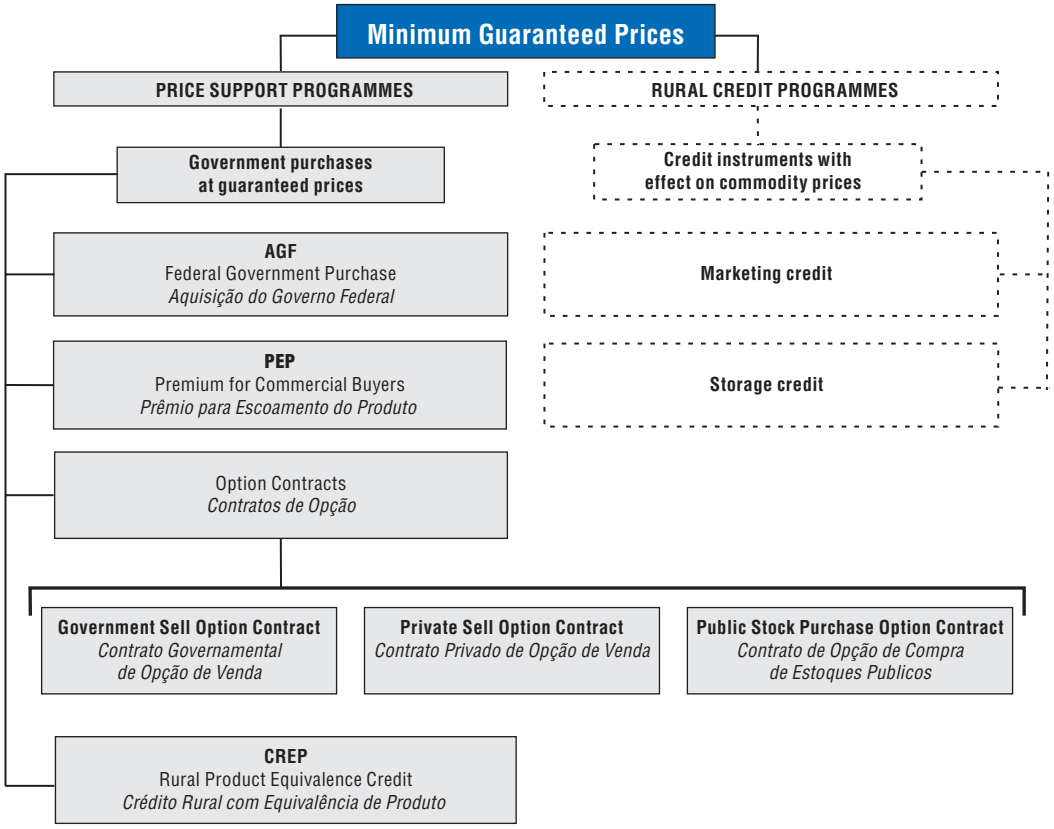
Chart 2.1 depicts the current system of price support in Brazil, which encompasses various forms of commodity purchases at guaranteed prices. These policies interact with a number of credit support programmes, including marketing and storage loans, which also affect prices and are reviewed in the next section of this Chapter.

The aim of the price support system is to reduce agricultural price instability while maintaining domestic prices at around world market levels. Hence the approach is different to that applied in the pre-reform period when support was based on a cost-coverage principle. *Minimum guaranteed prices* (*Preços Mínimos de Garantia*) underpin the Brazilian price support system. These prices are also an important parameter of government marketing credit programmes, as they serve as a basis for defining the maximum loan sizes per borrower. The responsibility for setting the minimum prices lies with the MAPA's Secretariat of Agricultural Policy (SPA/MAPA), with the technical support of the National Food Supply Agency (CONAB), whose decisions are subject to the approval of the Monetary Council, the Ministry of Planning, Budget and Management and the Central Bank. Prices are announced each year before the planting season and are differentiated by main producing regions. (Annex 2.A1, Table 2.A1.1).

Given these minimum prices, the government makes *purchases at guaranteed prices* under a range of different programmes.

Brazil's traditional price support programme *Aquisição do Governo Federal* (AGF) consists of *direct government purchases* from producers and their co-operatives. Commodities are purchased only in those regions where the programme is announced for the current season, and the volume of purchases is limited by the amounts of budgetary funds allocated for this purpose each year. In the 2004/05 season, the AGF covered 12 primary commodities, mostly staple crops, but also several non-food crops such as cotton and jute,

Chart 2.1. **Brazilian agricultural price support system**



and processed products such as manioc flour. Intervention purchases at minimum guaranteed prices are made mainly for wheat, rice, maize, cotton and manioc flour (Table 2.1). Acquisitions of other products are relatively small and are carried out with the purpose of forming food security stocks.[4] In 2003-04 CONAB made very limited direct purchases at minimum guaranteed prices, but began *targeted purchases from family farms* under the *Programa de Aquisição de Alimentos* (PAA). The main objective of this programme is not to influence price levels, but rather to provide social assistance to low-income rural households through support of their agricultural activity. The products are purchased at prevailing market prices and proceeds from the sale of these products are destined for anti-hunger and food security actions (see section "Consumer measures" of this Chapter).

Figure 2.2 shows the ratios between average market and minimum prices for the four main AGF crops, and the shares of overall production covered by the programme. For grains, average market prices in the first half of the 1990s were generally below or close to minimum guaranteed prices. Since the mid-1990s, grain prices have been significantly higher than the government-established minima and AGF purchases have diminished accordingly. For cotton, the programme has been virtually inactive since the beginning of the 1990s.

The *Contrato Governamental de Opção de Venda*, a *government sell option contract*, guarantees the holder, a producer or an agricultural co-operative, a future sale at a fixed "execution" price. The minimum guaranteed price serves as a floor level reference for the

Table 2.1. **Federal government purchase (AGF), 1985-2004**[1]

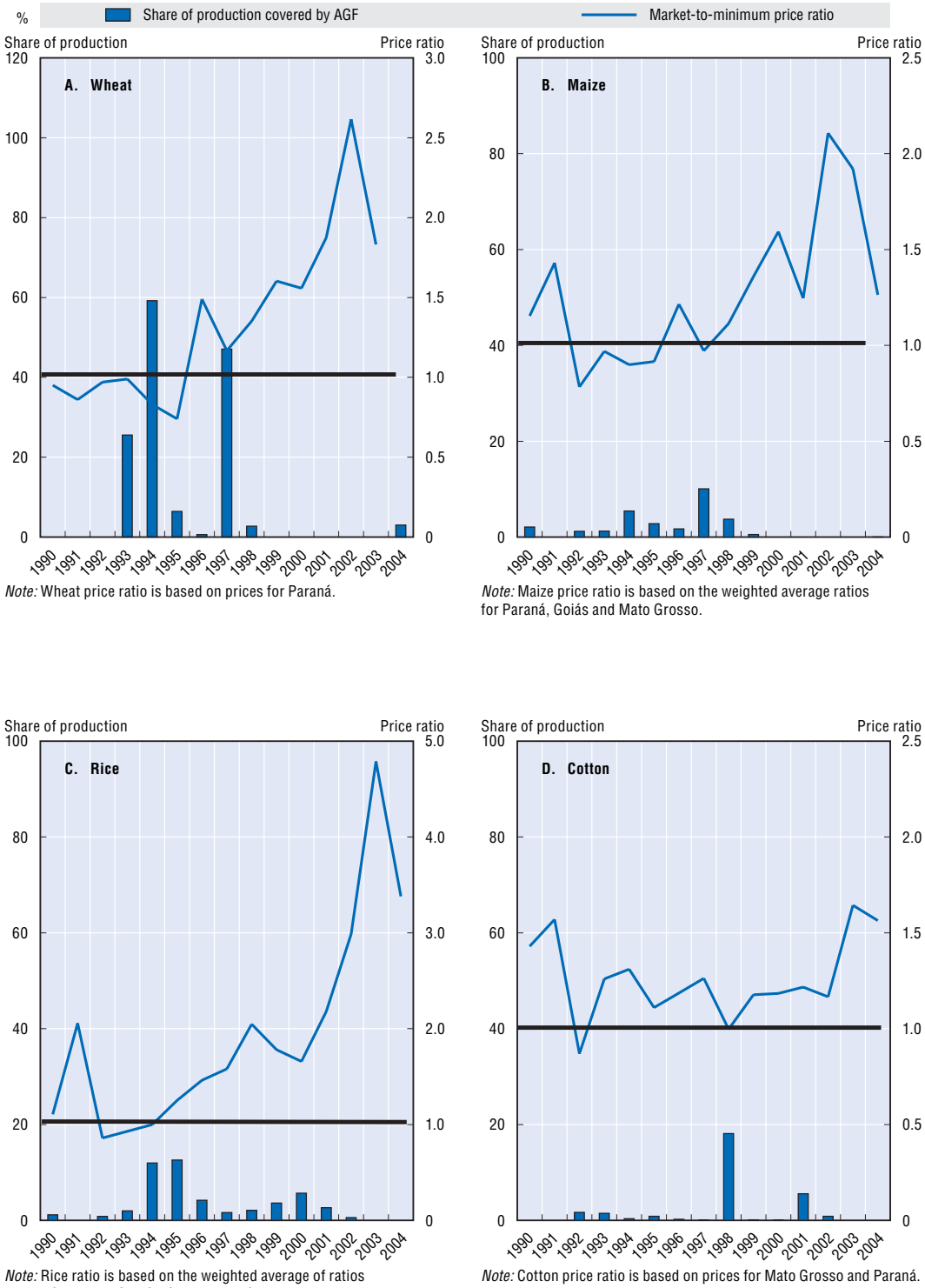
	Wheat	Rice	Maize	Cotton	Other	Wheat	Rice	Maize	Cotton	Share of wheat, maize and rice in total volume of purchases (per cent)
	1 000 tonnes					As per cent of total production				
1985	0	1 502	3 200	. .	2 381	–	17	15	. .	. .
1986	0	1 747	4 282	36	1 457	–	17	21	5	81
1987	0	2 956	5 192	12	1 033	–	28	19	2	89
1988	0	2 197	1 628	23	52	–	19	7	3	99
1989	0	829	996	2	43	–	8	4	0	98
1990	0	85	449	0	200	0	1	2	0	73
1991	0	1	1	0	58	0	0	0	0	3
1992	0	82	369	11	28	0	1	1	2	94
1993	562	199	376	6	7	26	2	1	1	99
1994	1 241	1 262	1 770	2	8	59	12	5	0	100
1995	98	1 414	1 013	4	119	6	13	3	1	95
1996	21	364	555	1	61	1	4	2	0	94
1997	1 171	136	3 318	0	37	47	2	10	0	99
1998	62	161	1 105	70	9	3	2	4	18	99
1999	0	425	173	0	3	0	4	1	0	100
2000	0	631	1	0	3	0	6	0	0	100
2001	0	269	0	49	77	0	3	0	6	80
2002	0	60	0	6	7	0	1	0	1	90
2003	0	0	0	0	0	0	0	0	0	–
2004	183	0	10	0	2	3	0	0	0	99

. . not available
– not applicable
1. Excluding direct purchases from family farms in 2003-04.
Source: CONAB.

execution price. Before each crop season, CONAB announces the products for which sell option contracts will be offered, and the number of contracts in each case. These contracts are then sold at stock exchanges across the country. To purchase an option, the buyer pays an option price, which is established through an auction. The other party to the option contract is the government, represented by CONAB. The latter is responsible for purchasing the product, once the option holder decides to execute the contract. The government may buy back or transfer its obligation to purchase the product before the expiration of the option contract though recourse to redemption (*Recompra dos Contratos de Opção de Venda)* or transfer (*Repasse dos Contratos de Opção de Venda)*. In the first case, the option holder receives a payment equal to the difference between the contract execution price and the current market price. In the second case, a third party assumes CONAB's responsibility to purchase the product at the option execution price. Table 2.2 shows the programme record since its inception. Sell option contracts were applied most broadly in 1999-2000, after the depreciation of the *real* in order to compensate domestic producers for the deterioration in the terms of trade due to higher prices for imported inputs. The only commodity for which option contracts have been issued on a regular basis is maize.

In 2004/2005, the government introduced two new types of option contracts. One is the *Contrato Privado de Opção de Venda*, a *private sell option contract*. This instrument is analogous to the government sell option, but in this case it is the private agent who acts as a product buyer. The government's role is in organising trade in these contracts and paying private

Figure 2.2. **Shares of production covered by AGF and market-to-minimum price ratios for main programme crops**



Note: Wheat price ratio is based on prices for Paraná.

Note: Maize price ratio is based on the weighted average ratios for Paraná, Goiás and Mato Grosso.

Note: Rice ratio is based on the weighted average of ratios for Rio Grande do Sul, Goiás and Mato Grosso.

Note: Cotton price ratio is based on prices for Mato Grosso and Paraná.

Source: CONAB.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Table 2.2. **Government sell option contracts, 1997-2004**[1]

	Unit	1997	1998	1999	2000	2001	2002	2003	2004
Wheat									
Total volume of contracts offered	1 000 tonnes	–	–	–	1 000	200	–	801	655
Total volume contracted	1 000 tonnes	–	–	–	282	0	–	518	–
Total volume executed	1 000 tonnes	–	–	–	21	0	–	0	152
Executed as % of contracted	Per cent	–	–	–	7	–	–	–	–
Executed as % of produced	Per cent				1	–	–	–	3
Average execution price	BRL/tonne	–	–	–	205	–	–	–	–
Per tonne option price	BRL/tonne	–	–	–	2	–	–	–	–
Maize									
Total volume of contracts offered	1 000 tonnes	2 560	–	665	2 512	5 411	8 629	3 111	868
Total volume contracted	1 000 tonnes	1 021	–	353	154	2 132	1 784	1 735	–
Total volume executed	1 000 tonnes	247	–	6	7	603	46	1 384	748
Executed as % of contracted	Per cent	24	–	2	5	28	3	80	–
Executed as % of produced	Per cent	1	–	0.02	0.02	1	0	3	2
Average execution price	BRL/tonne	119	–	142	160	157	167	291	260
Per tonne option price	BRL/tonne	1	–	2	1	4	1	9	. .
Rice									
Total volume of contracts offered	1 000 tonnes	–	–	920	837	–	187	–	–
Total volume contracted	1 000 tonnes	–	–	518	837	–	59	–	–
Total volume executed	1 000 tonnes	–	–	411	765	–	0	–	–
Executed as % of contracted	Per cent	–	–	79	91	–	0	–	–
Executed as % of produced	Per cent			4	7	–	–	–	–
Average execution price	BRL/tonne	–	–	308	296	–	–	–	–
Per tonne option price	BRL/tonne	–	–	3	18	–	–	–	–
Sorghum									
Total volume of contracts offered	1 000 tonnes	–	–	–	–	–	–	892	–
Total volume contracted	1 000 tonnes	–	–	–	–	–	–	94	–
Total volume executed	1 000 tonnes	–	–	–	–	–	–	47	–
Executed as % of contracted	Per cent	–	–	–	–	–	–	50	–
Executed as % of produced	Per cent	–	–	–	–	–	–	0.03	–
Average execution price	BRL/tonne	–	–	–	–	–	–	196	–
Per ton option price	BRL/tonne	–	–	–	–	–	–	1	–
Cotton									
Total volume of contracts offered	1 000 tonnes	–	–	177	67	–	–	–	–
Total volume contracted	1 000 tonnes	–	–	131	67	–	–	–	–
Total volume executed	1 000 tonnes	–	–	45	26	–	–	–	–
Executed as % of contracted	Per cent	–	–	34	39	–	–	–	–
Executed as % of produced	Per cent			9	4	–	–	–	–
Average execution price	BRL/tonne	–	–	2 178	2 203	–	–	–	–
Per tonne option price	BRL/tonne	–	–	25	79	–	–	–	–
Coffee									
Total volume of contracts offered	1 000 tonnes	–	–	–	–	–	395	180	–
Total volume contracted	1 000 tonnes	–	–	–	–	–	139	121	–
Total volume executed	1 000 tonnes	–	–	–	–	–	0	59	–
Executed as % of contracted	Per cent	–	–	–	–	–	0	49	–
Executed as % of produced	Per cent						0	3	–
Average execution price	BRL/tonne	–	–	–	–	–	–	3 335	–
Per tonne option price	BRL/tonne	–	–	–	–	–	–	91	–

– not applicable.

1. Excluding direct purchases from family farms in 2003-04.

Source: CONAB.

agents a "risk premium" if the market price falls below the option execution price. The private sell option contract is seen as an additional instrument for reducing price risks to both producers and agribusiness, at the same time allowing the government to pass actual product purchases onto private agents. Another new type of option is the *Contrato de Opção de Compra de Estoques Públicos*, a *public stock purchase option contract*. In contrast to the traditional use of auctions for discharge of public stock, this procedure involves sales through advance purchases based on an option system.

A *premium for commercial buyers* is offered by auction under the *Prêmio para Escoamento do Produto* (PEP) programme. As with the sell option contract, this instrument was introduced in order to reduce budgetary expenditures on price support and the scale of public stockholding. Under the PEP, the government offers commercial buyers of agricultural commodities – processors or other downstream agents – a premium, which covers the difference between the minimum guaranteed price and the price the buyer is willing to pay. Participants in the programme are those buyers who bid for the lowest premium at regional auctions organised by CONAB. Receipt of the premium is contingent on paying agricultural producers the minimum guaranteed price. Hence the government avoids making actual purchases when offering producers a minimum guaranteed price. Since its introduction, the PEP had been applied to wheat, maize and cotton (Table 2.3). In the case of wheat, the programme was applied only in 1996-98, the first years after the opening of free trade under Mercosur. The main purpose then was to mitigate the effects of duty-free wheat imports from Argentina (in 1998 as much as 81% of total wheat production in Brazil fell under the PEP). The programme was also quite important for cotton in 1998-2002, covering from one half to one third of total production. In 2003 the PEP was inactive and in 2004 it was used on a relatively limited scale.

Table 2.3. **Premium for commercial buyers programme (PEP), 1996-2004**

	Unit	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat										
Total volume sold	Tonnes	166 323	901 121	1 842 144	–	–	–	–	–	165 200
As % of total production	Per cent	5	36	81	–	–	–	–	–	3
Total premium value	BRL 1 000	4 270	29 135	34 496	–	–	–	–	–	18 548
Per unit premium	BRL/tonne	26	32	19	–	–	–	–	–	112
Average market price	BRL/tonne	189	150	153	197	217	251	373	455	410
Maize										
Total volume sold	Tonnes	–	325 360	65 225	227 250	–	906 626	–	–	106 960
As % of total production	Per cent	–	1	0	1	–	2	–	–	0.3
Total premium value	BRL 1 000	–	12 778	3 388	7 861	–	46 808	–	–	9 233
Per unit premium	BRL/tonne	–	39	52	35	–	52	–	–	86
Average market price	BRL/tonne	144	125	143	170	202	163	261	317	303
Cotton										
Total volume sold	Tonnes	–	–	170 028	–	245 517	289 061	224 944	–	12 912
As % of total production	Per cent	–	–	44	–	37	33	32	–	1
Total premium value	BRL 1 000	–	–	31 034	–	56 933	82 186	23 171	–	5 145
Per unit premium	BRL/tonne	–	–	183	–	232	284	103	–	398
Average market price	BRL/tonne	1 221	1 425	1 258	1 438	1 592	1 521	1 752	2 769	3 125

– not applicable.

Source: CONAB; MAPA; and FGV for average market prices.

A *rural product equivalence credit* (*Crédito Rural com Equivalência de Produto – CREP*) offers working capital credit to family farms covered by PRONAF. The credit, which can be repaid in physical product, is expressed in terms of physical output by dividing the total value of the CREP loan by the minimum price of that commodity. The CREP therefore acts as both targeted credit and a price guarantee instrument.

Figure 2.3 shows the volumes purchased under each of the three guaranteed purchase programmes (AGF, sell option contract and PEP). The aggregate volume is distributed by type of programme (Panel A) and by type of commodity covered (Panel B). The use of these instruments has varied according to market conditions, but the overall trend is towards a substantial downsizing of operations compared to the late 1980s. Panel A reflects the re-instrumentation of market interventions, while Panel B shows that these interventions have been directed predominantly to the grain sector.

Trends in domestic and world prices

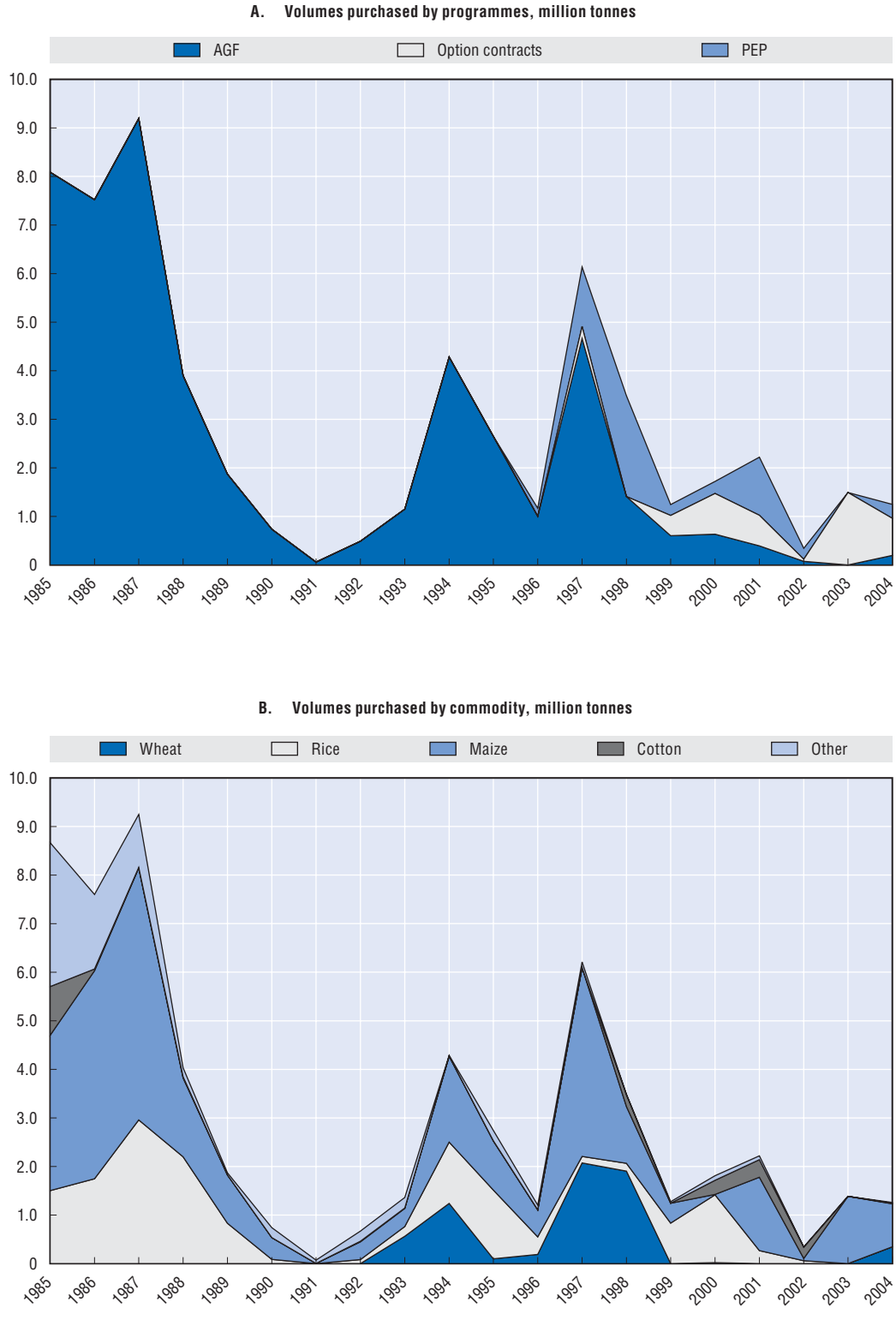
Although the scale of intervention in domestic markets has been reduced, price supports are a continuing feature of some of Brazil's agricultural markets, notably grain and cotton. Notwithstanding the limited scale and scope of these programmes, it is instructive to consider the extent to which they affect domestic prices.

Figures 2.4a-2.4c show domestic prices, accompanying "reference" prices, and traded volumes for Brazil's principal commodities, which in 2000-04 accounted for 78% of total value of agricultural output in Brazil. Domestic prices are measured at the farm gate level, and reference prices are Brazilian trade prices adjusted to represent a comparable opportunity cost for domestic production at the farm gate level.[5] Such a comparison helps gauge the degree of distortions in the Brazilian agricultural markets, and the extent to which the reforms of the 1990s have increased Brazil's integration with international markets.

An inspection of the price trends across commodities leads to several general conclusions:

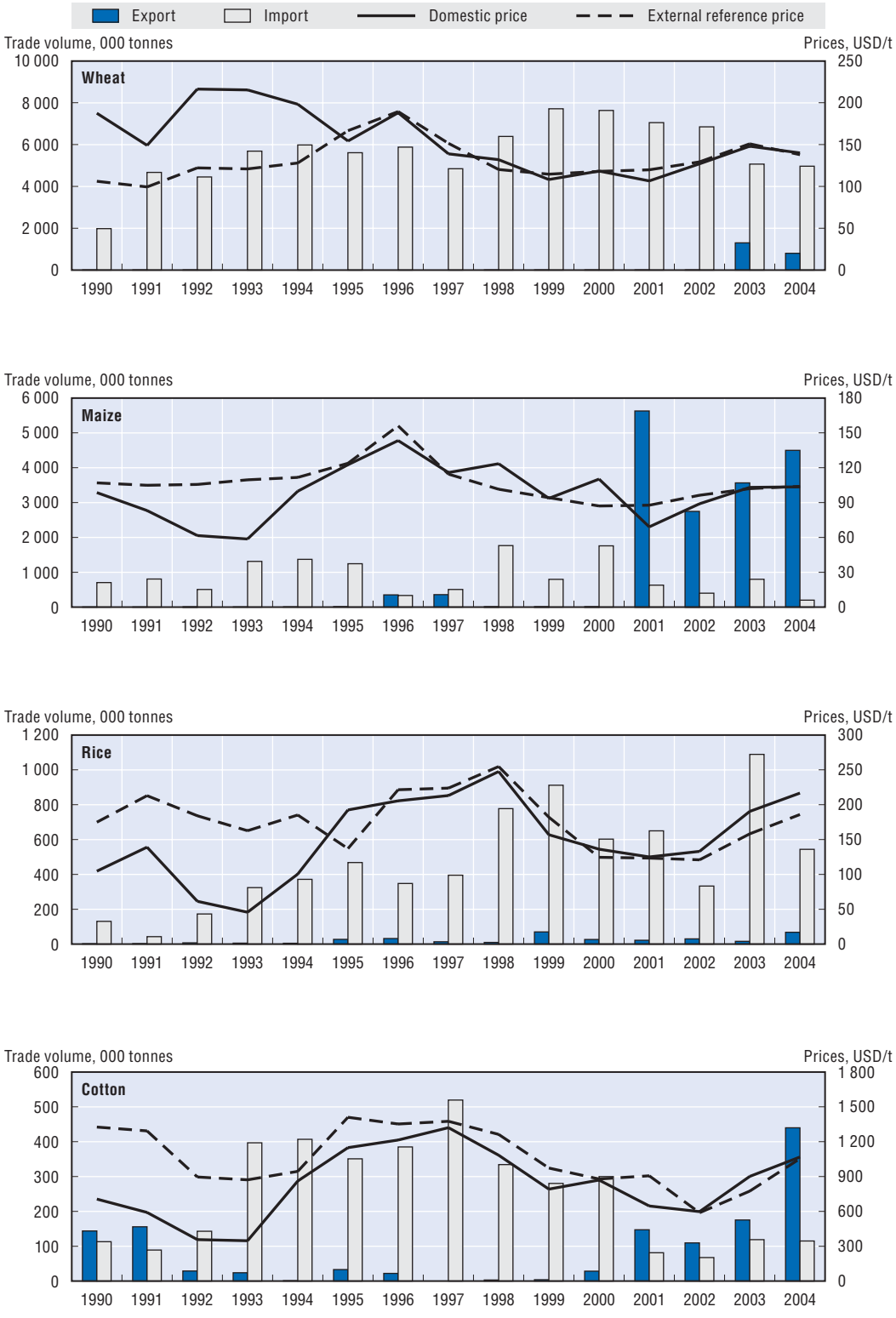
- In the first half of the 1990s there was considerable implicit taxation of the agricultural sector, with the majority of Brazilian domestic prices far below those prevailing on international markets. The reason for this was that agricultural markets in the previous decades were weakly integrated with world markets, due to both high transactions costs and trade restrictions. Furthermore, agricultural prices were regulated and so did not adjust at the same pace as other prices. Hence when the exchange rate fell to reflect economy-wide price movements, this lowered sharply relative agricultural prices in dollar terms.
- Some products, such as wheat and milk, avoided the overall agricultural price depression of the early 1990s. Both sectors entered the 1990s with prices substantially supported during the previous decades and until the mid-1990s received relatively high, albeit declining, tariff protection. Wheat prices were further supported by large government purchases in some of these years.
- Since the mid-1990s, there has been a clear convergence of domestic and international prices. On the import side, little protection was applied, while on the export side supply and price regulations were mostly dismantled.
- With macroeconomic stabilisation, trade liberalisation, and domestic agricultural policy reforms, agricultural prices adjusted more rapidly to changes in world price levels. Brazilian agricultural markets appear to have become closely integrated with the world

Figure 2.3. **Government purchase programmes, 1985-2004**



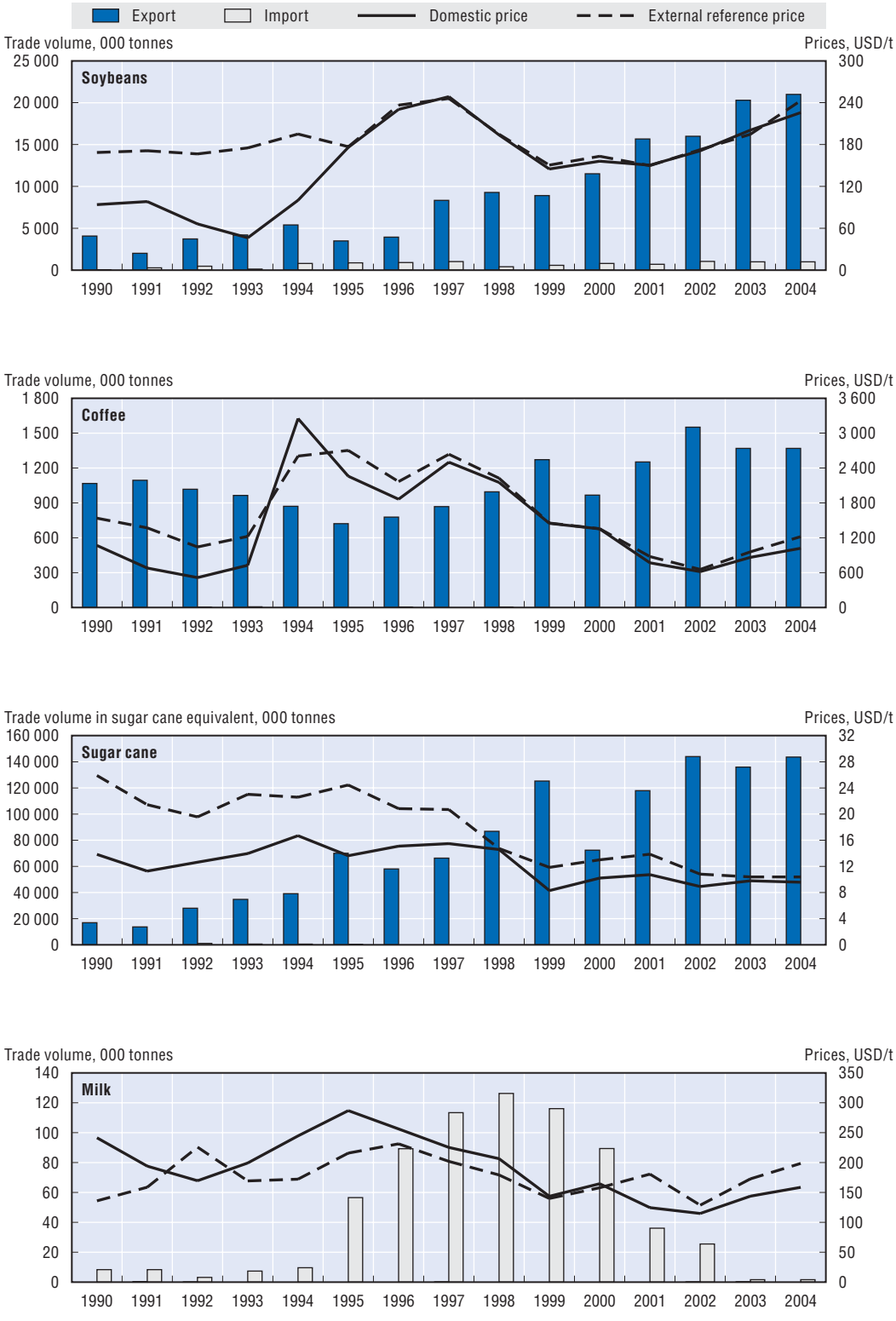
Source: CONAB.

Figure 2.4a. **Trends in domestic and external prices, 1990-2004**



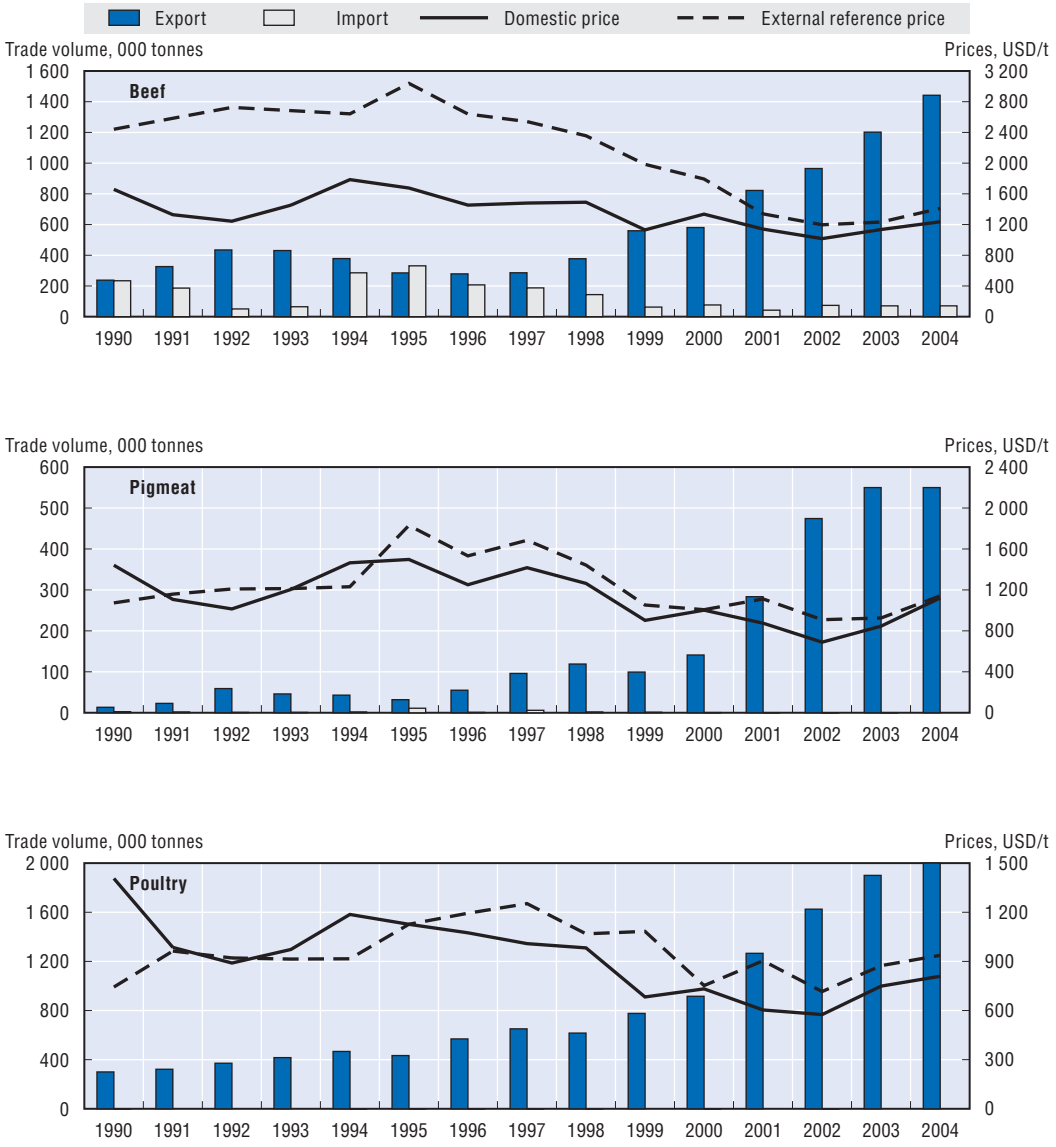
Source: OECD PSE/CSE and Aglink databases; FAO.

Figure 2.4b. **Trends in domestic and external prices, 1990-2004** *(cont.)*



Source: OECD PSE/CSE and Aglink databases; FAO.

Figure 2.4c. **Trends in domestic and external prices, 1990-2004** *(cont.)*



Source: OECD PSE/CSE and Aglink databases; FAO.

system, suggesting that comparative advantage is the dominant factor determining the allocation of resources into and within the Brazilian agricultural sector.

The observed convergence between Brazilian domestic and external price levels suggests that the interventions impose relatively modest distortions on the markets in which they are applied. It is possible to conclude that the Brazilian price intervention system functions as localised interventions which are designed to smooth the effects of temporary excess supplies in specific regions; as well as to provide a limited subsidy to producers who are considered to be at a disadvantage, either because their costs are raised by underdevelopment of infrastructure, or because of locally depressed incomes.

Credit policies

Before the reform

Rural credit is one of the principal areas of assistance to Brazilian agriculture. A specific system for rural credit emerged in the late 1960s, when the government of the day created separate credit systems for various sectors of the economy. The National Rural Credit System (*SNCR – Sistema Nacional do Crédito Rural*) united the three largest banks – Banco do Brasil, Banco do Nordeste, Banco da Amazônia, and other state and private banks. This system accorded substantial preferences to the agricultural sector:

- Banks, obliged to hold a certain share of their sight deposits as an obligatory reserve (*exigibilidades*) at the Central Bank, were given the option of lending part of this obligatory reserve to agricultural borrowers at controlled interest rates, instead of transferring it to the Central Bank at zero-interest. Currently, the share of bank's obligatory reserve that can be allocated to rural lending is set at 25% of banks' sight deposits.
- In addition to these "banks' obligatory funds", resources for agricultural lending came from the federal budget and the rural savings system – rural savings banks were obliged to allocate a fixed percentage of their time deposits for agricultural credit.
- Interest rates on agricultural loans were fixed at the lowest levels in the economy. For most of the 1970s and the early 1980s, banks generally could not apply inflation correction of outstanding rural debt; in the mid-1980s, indexation was applied to the majority of rural credit lines, but was discontinued at the beginning of the *Cruzado* plan in 1986.

Under the conditions of high inflation prevailing in Brazil in the late 1970 and 1980s, the use of controlled interest rates and directed credit resources effectively meant that credit was supplied to agriculture at negative real interest rates.

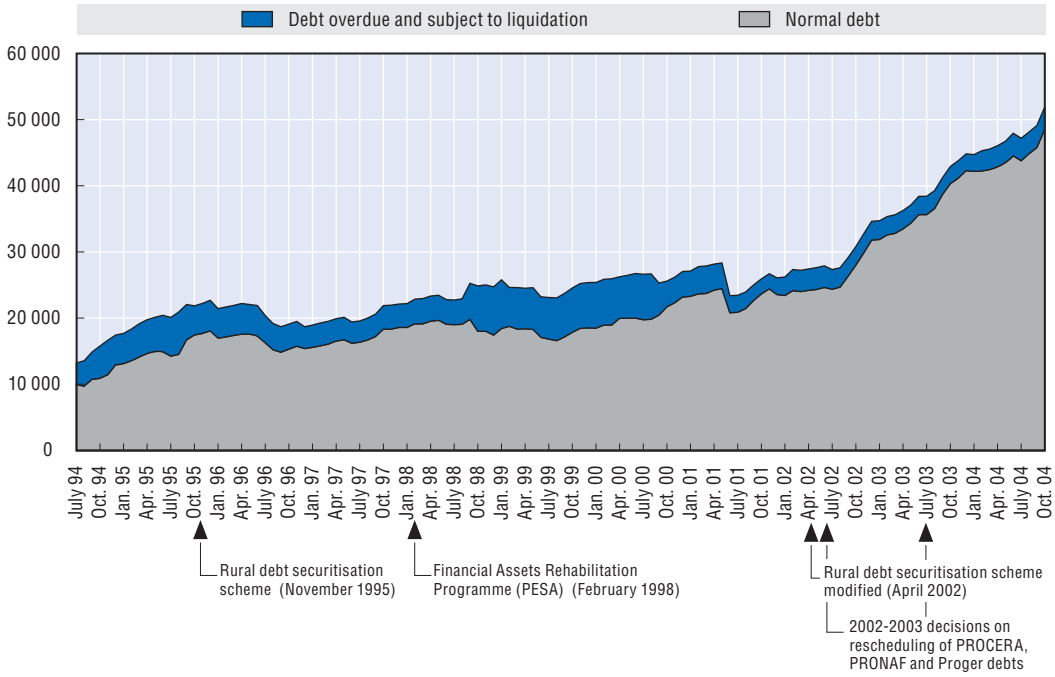
The situation changed drastically in the late 1980s, when hyperinflation plagued the economy. In order to combat inflation, the government needed to limit the expansion of credit, and so re-introduced a monetary correction in rural credit contracts. The outstanding debt had to be adjusted according to monthly inflation, with interest charged on the adjusted debt balance. The result was that rural borrowers faced high and progressively rising interest rates. Their repayment capacity on the other hand was severely limited by the lagged adjustment of output prices to hyperinflation. Non-performing rural loans began to build up, signalling the beginning of the rural debt crisis.

Reforms of the 1990s

Macroeconomic instability continued into the 1990s, with extreme volatility of inflation, the real exchange rate and relative prices. During this period, rural loans continued to be subject to monetary correction, leading to erratic changes in outstanding debt values. The result was an increased accumulation of non-performing loans. After the implementation of the *Real Plan* in 1994, inflation was tamed and a more predictable credit environment established. The monetary correction of debt was abolished and fixed interest rates for rural loans re-introduced. However, an exchange rate peg under the *Real Plan* made the *real* overvalued and restrained income growth in export-oriented sectors. At the same time, import-competing sectors felt strong pressures from the opening up of free trade under Mercosur. By August 1995, the value of non-performing rural loans reached 30% of total outstanding rural credit, and new bank lending had virtually stopped (Figure 2.5).

Figure 2.5. **Rural debt to the financial system, 1994-2004**

End-period balance, BRL million in current prices



Source: BACEN.

Agricultural and banking sector lobbies demanded that the government resolve the rural debt impasse, arguing that it was the result of the overall macroeconomic instability. Another consideration was that rural debt had broad social implications. Non-performing rural loans created spill-over risks for bank investors, as part of those loans drew on the banks' sight deposits. This led the government to decide on a large-scale restructuring of rural debt. Debt restructuring negotiations with different groups of rural debtors and banks started at the end of 1995. This process proved to be long and difficult, involving subsequent renegotiations of initial agreements (see details in Box 2.3). The rural debt remains a concern until present time as non-repayments of the restructured debt persist. At the end of 2004, the outstanding restructured debt stood at BRL 21.8 billion (USD 8.0 billion) with overdue repayments reaching BRL 3.8 billion (USD 1.4 billion).

Although the basic mechanisms of the rural credit system remained unchanged, the debt crisis prompted several important developments.

First, the banks adopted a more rigid approach in determining borrowers' credibility and loan surveillance. Generally, as a result of the debt crisis the banking sector became more risk averse and more oriented towards the most credible agricultural borrowers, in particular those linked with export markets.

Second, there have been several changes in credit policies. Directed funds channelled to the rural credit system were substantially reduced. In 1995 they were almost half their 1989 level in real terms. Next change was the diversification of sources for directed credit. Thus, Constitutional Funds[6] and the Unemployment Insurance Fund (*Fundo de Amparo ao Trabalhador*) were mobilised to contribute to the rural credit system. The purpose of

Box 2.3. **Timeline of the Brazilian rural credit debt rescheduling**

General debt rescheduling[1]

The general debt rescheduling involved two principal arrangements. First, at the end of 1995, the government decided to restructure rural loans with overdue debt not exceeding BRL 200 000 (USD 205 233 at the January 1996 exchange rate) and totalling BRL 8.1 billion (USD 8.4 billion). Under this arrangement, known as *rural debt securitisation*, debtors were granted an extension of repayment for 7 to 10 years with a two-year grace period. The outstanding debt was to be indexed based on the minimum guaranteed price index, and the interest rate was set at 3% per year. In order to re-capitalise the banks involved, treasury bonds were issued with the same period of maturity as the restructured debt, and transferred to the banks. However, these agreements remained largely unfulfilled as non-repayments persisted. This led to a renegotiation of the initial terms of rescheduling in 2001. The new agreement extended the repayment period to 24 years (ending in 2025), "good payers" were freed from indexation of principal debt and granted a 25% rebate on their annual repayments. To become eligible for this modified scheme, producers were obliged to offset all overdue repayments accumulated prior to 2001 and cover at least 35% of repayments due in 2001. The majority of debtors were able to join this modified scheme; however some debtors continued to adhere to the original scheme.

Another rescheduling arrangement concerned loans over BRL 200 000, and was initiated in 1998 under the *Programme of Financial Assets Rehabilitation* (PESA). As of December 1998, the total debt accepted for restructuring under PESA was BRL 1.3 billion (USD 1.1 billion). Treasury bonds were issued with a face value equal to this debt with a 20-year maturity (expiring in 2020). Debtors were obliged to acquire these bonds at their present value (discounted for 20 years by the General Price Index (IGP-M) plus 12% per annum) and transfer them to the banks. Through this transaction the debtors offset their obligation on repayments of the principal debt, as by 2020 the bonds would yield a value totalling the principal debt. The debtors, nevertheless, remained liable for interest payments on the restructured debt which was to be indexed by IGP-M. The interest rates were set at 8%, 9% or 10% depending on the individual debt value, of which the government undertook to compensate 2 percentage points. Not all debtors, however, respected the repayment schedule, and new arrears, now on the rescheduled repayments, emerged. In 2003 the government granted additional concessions to debtors. For "good payers", the part of interest compensated by the government was increased from 2 to 5 percentage points, reducing the effective interest to 3%, 4% and 5% per annum; and the annual outstanding debt indexation was limited to 0.759% per month (9.5% per annum).

At the end of 2004, the outstanding principal debt under both securitisation and PESA schemes stood at BRL 21.8 billion (USD 8.0 billion), with overdue repayments reaching BRL 3.8 billion (USD 1.4 billion).

Rescheduling of small producer debt in 2002-04[2]

At the beginning of the 2000s, a small producer debt issue emerged. This concerned overdue loans under the PROCERA, PRONAF and Proger programmes. According to MDA, the total debt rescheduled involved around 800 000 credit contracts with values not exceeding BRL 35 000 (USD 1 120).

The PROCERA programme was effective between 1986 and 1999, providing loans to agrarian reform settlers. The terms of PROCERA debt rescheduling underwent several amendments involving progressive relaxation of repayment terms. As the conditions are set at present, PROCERA debtors are granted an extension of repayments for 18 years with

Box 2.3. **Timeline of the Brazilian rural credit debt rescheduling** *(cont.)*

an annual interest rate of 1.15% (compared to 6.5% set initially), and a "good payer" rebate of 90% on annual repayments of principal debt.

The PRONAF and Proger programmes covered loans to small farm producers. The rescheduling terms were differentiated by type of credit (working capital and investment) and degree of borrower's indebtedness. In general, the debt concession on working capital loans foresees the extension of repayments for four years, with interest rates of 3% and 4% on outstanding debt. The concession on investment credit debt includes a write-off of 8.2% or 8.8% of the overdue debt and the prolongation of repayments for ten years with reduced interest rate of 3% per annum. In specific cases, "good payer bonuses" are also applied for both investment and working credit repayments.

1. The legal acts containing the main decisions on general debt rescheduling in 1995-2003 are: Federal Law No. 9.138 of 29 November 1995, amended by the Federal Law No. 9.866 of 9 November 1999; Federal Law No. 10.437 of 25 April 2002; Federal Law No. 10.646 of 28 March 2003; and Federal Law No. 10.696 of 2 July 2003.
2. The legal acts containing the main decisions on small producer debt rescheduling are: Federal Law No. 10.462 of 24 May 2002; and Federal Law No. 10.696 of 2 July 2003, amended by Federal Law No. 10.823 of 19 December 2003.

involving these sources in rural lending was that, unlike the federal budget funds, they were not subjected to the restrictive fiscal regime adopted in the late 1980s. Another important change was the introduction of interest rate "equalisation" (*equalização*), or compensation to the lenders for the interest foregone due to interest rate control.

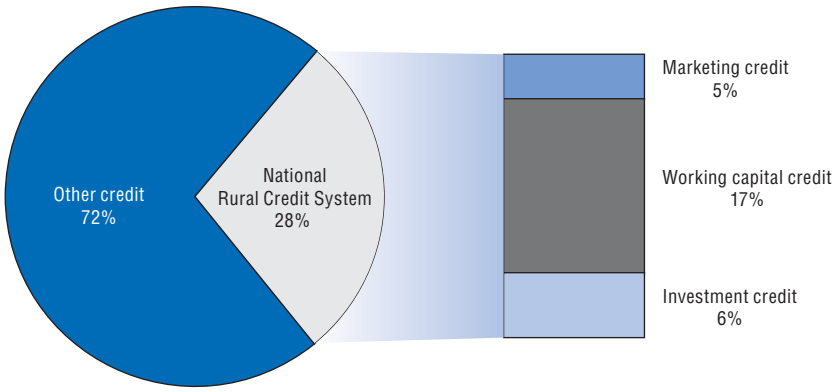
Third, a suite of credit programmes targeted specifically at small-scale family farms emerged under PRONAF programme. After the launching of PRONAF in 1995, the amount of funds channelled annually to family farmers increased substantially. Fresh impetus to this assistance was given in 2003 under the current Lula government, which declared support of the poor rural population to be one of its priorities.

Finally, hyperinflation and the debt crisis led agricultural producers and agribusiness to look for alternative types of credit for agriculture. This process was largely facilitated by economic liberalisation and, in particular, by the fact that Brazilian agricultural producers obtained freer access to export markets. The 1990s were marked by a growth in credit to agriculture originating from traders, processors and input manufacturers. Most of this credit was directed to the more modern and export-oriented elements of Brazilian agriculture. This process was to a certain extent supported by the government, which created a new credit instrument, the *Cédula de Produto Rural (CPR*), a Rural Product Note. The CPR enabled agricultural producers to receive cash or inputs in advance from the buyer, through forward sale of their output. The success of CPRs in attracting private finance to agriculture was based on the fact that they were legal enforceable documents. Currently, six new credit titles are being developed by the government, with the intention as for CPRs, of attracting agribusiness finance into agriculture. These new credit arrangements are to have simplified circulation procedures and taxation rules.

Any assessment of the relative scale of government-supported credit within the overall borrowings of the agricultural sector can be only approximate, as comprehensive information on the credit resources flowing into the sector, both from bank and non-bank lenders, is difficult to obtain. As far as bank credit is concerned, only lending through the

Figure 2.6. **Share of the SNCR credit in the estimated aggregate borrowings of the agricultural sector in 2003**

Per cent



Source: MAPA estimate.

official rural credit system is subjected to obligatory registration.[7] However, it can be assumed that the official system accounts for the lion's share of bank credit to agriculture. According to an unofficial estimate of the Ministry of Agriculture, the "credit needs" of the sector were around BRL 110 billion in 2003, of which approximately BRL 31 billion, or 28% was provided through the official rural credit system (Figure 2.6). The remaining 72% would therefore have comprised non-bank private credit offered by domestic agro-business and international lenders.

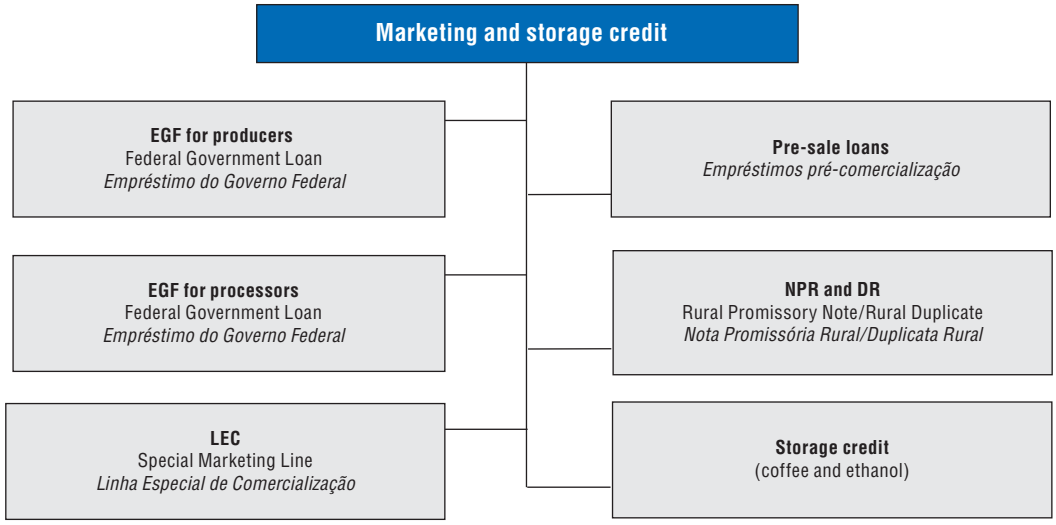
Current system

The national rural credit system, SNCR, provides three categories of credit: *i*) marketing and storage credit; *ii*) working capital; and *iii*) investment credit.

Marketing and storage credit (Chart 2.2). The *Empréstimo do Governo Federal* (EGF) is a *federal government loan* for agricultural producers that has existed since the 1960s. It provides short-term preferential credit to agricultural producers (or their co-operatives), enabling them to withhold the sale of a product for a certain period in anticipation of a higher market price. Under such a loan, the harvested crop or livestock product serves as collateral. Previously, EGF borrowers had the choice to cede the pledged product in repayment of the loan (*i.e.* the EGF with a sell option, or EGF-COV[8]). However, following the experience of the mid-1990s, when the government carried large stocks as a result of massive commodity forfeits, the EGF-COV is no longer applied. The EGF with no sale option – or EGF-SOV[9] – is the currently applied instrument under which borrowers settle the loan only in cash. EGF loans are available for products covered by government purchase programmes, and also for some other commodities. The loan size is determined on the basis of the amount of product pledged times the respective minimum price. A typical loan term is 180 days, but it can vary from a minimum of 90 days to a maximum of 240 days.

The *Federal Government Loan for processors* (the processor EGF) is a modality similar to the producer EGF, but destined for downstream agents. This loan can be given to commercial or co-operative processors of commodities for which minimum support prices

Chart 2.2. **Marketing and storage credit programmes**



are set. Another important feature is that processors are eligible only if they pay producer-suppliers a price equal to or above the established minimum guaranteed price. The loan can cover up to 50% of the processing capacity of the borrower, while for co-operative processors the rate is set at 100%.

The *Special Marketing Line* (LEC) is a new programme launched in 2003. Its purpose is to support producers of second harvest crops of maize and sorghum. The LEC functions in the same way as the regular EGF, but has more flexible conditions. The programme also offers a larger credit than the EGF, as the size of the loan is calculated on the basis of prices which exceed the minimum guaranteed prices.

The pre-sale loan, *Crédito de Pré-Comercialização*, is a slight variation on the producer EGF. The difference is that the pre-sale loan can be issued before harvesting (up to 60 days), while the EGF is provided only if the crop is harvested and put in storage. The pre-sale loan is therefore for a longer term than the EGF, and its purpose is to provide the borrower with liquidity also during the harvesting period. As under the EGF, harvested and stored crops represent collateral for the pre-sale loan.

The *Rural Promissory Note* (NPR – *Nota Promissória Rural*) and *Rural Duplicate* (DR – *Duplicata Rural*) are, respectively, a written obligation of the downstream agent to buy a specified amount of agricultural product, and a written obligation of the agricultural producer to supply it**.** NPRs and DRs are therefore purchase contracts, and the party representing a buyer can use this document as collateral for receiving short-term bank loans for execution of these contracts within 30 days. This is therefore another instrument of preferential downstream credit, in addition to the processor EGF, designed to facilitate the purchase of agricultural products.

Table 2.4 and Figure 2.7 present a summary of marketing loans between 1995 and 2004. EGF and pre-sale loans accounted for over two-thirds of the total value of annual marketing loan allocations during this period. As with government purchase programmes, marketing credit is concentrated on grains (wheat, maize and rice) and cotton. However,

Table 2.4. **Marketing loans to agricultural producers and processors in 1995-2004**

Annual allocations

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total EGF,[1] BRL 1 000	718 480	490 292	821 522	945 985	1 066 200	1 527 694	2 213 630	2 399 037	2 577 979	3 305 868
of which in per cent:										
Wheat	0	3	13	11	10	8	10	11	13	17
Maize	46	10	20	22	24	24	22	25	23	24
Rice	6	9	11	7	13	14	14	11	13	13
Soybeans	4	3	12	9	3	2	3	3	3	2
Cotton	21	0	12	18	21	32	33	29	24	16
Pre-sale loans, BRL 1 000	22 377	14 323	58 588	124 118	133 386	160 661	140 551	130 829	146 019	273 736
of which in per cent:										
Wheat	1	3	2	2	2	0	1	1	6	5
Maize	10	11	1	3	1	2	2	2	14	6
Rice	0	4	0	2	0	0	1	1	0	3
Soybeans	4	1	2	10	6	14	13	13	33	24
Sugar cane	4	1	8	16	4	16	16	3	2	0
Coffee	24	12	12	18	29	25	16	39	21	17
Pigmeat	0	5	1	4	4	3	1	1	0	0
Slaughter cattle	46	46	46	20	35	25	22	32	8	4
NPR and DR, BRL 1 000	–	–	–	173 436	567 221	799 440	1 142 143	1 236 690	962 269	. .
of which in per cent:										
Wheat	–	–	–	0	4	3	1	2	4	. .
Maize	–	–	–	1	3	5	3	2	2	. .
Rice	–	–	–	0	1	0	0	1	4	. .
Soybeans	–	–	–	19	14	15	11	8	7	. .
Cotton	–	–	–	8	1	0	1	2	5	. .
Coffee	–	–	–	2	1	2	2	3	9	. .
Sugar cane	–	–	–	33	13	19	17	25	44	. .
Oranges	–	–	–	16	1	5	12	6	11	. .
Slaughter cattle	–	–	–	78	29	20	15	16	31	. .
Fluid milk	–	–	–	69	15	0	25	21	36	. .

– not applicable.
. . not available.
1. Includes producer and processor EGF.

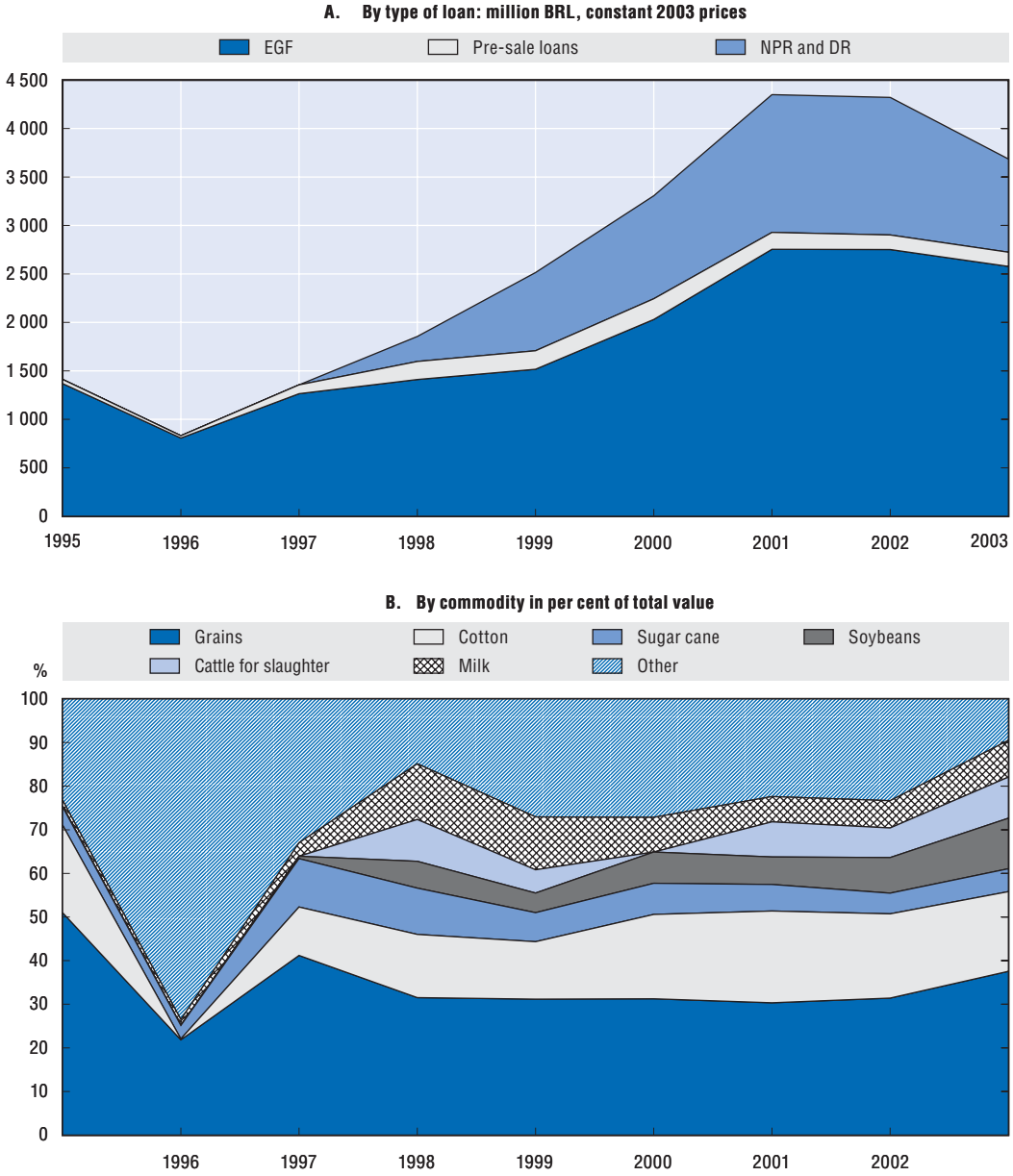
Source: BACEN.

Brazil's export and commercially oriented sectors, including coffee, soybeans, and sugar, also benefit from this type of support. Pre-sale loans and NPR/DRs, are also used for livestock products, with 36% of all NPR/DR loans in 2003 provided to milk processors, and 31% to meat processors.

The shares of production covered by the EGF and pre-sale loans provide an indication of the scale of this type of support. Figure 2.8 shows that in 1999-2004 marketing loans were most widely applied for cotton, covering up to 46% of total production, while recourse to this instrument in the grain sector was less pronounced, covering up to 17% of output. In the soybean sector the EGF was used rarely. Only 3% of total production was put into the programme, reflecting the reliance of this sector on commercial price risk hedging.

Marketing credit interacts closely with purchase programmes. As borrowers of EGF and pre-sale loans do not currently have the option of settling debt through ceding the pledged product, they may have an incentive to enrol simultaneously in purchase

Figure 2.7. **Marketing loans allocations in 1995-2003**

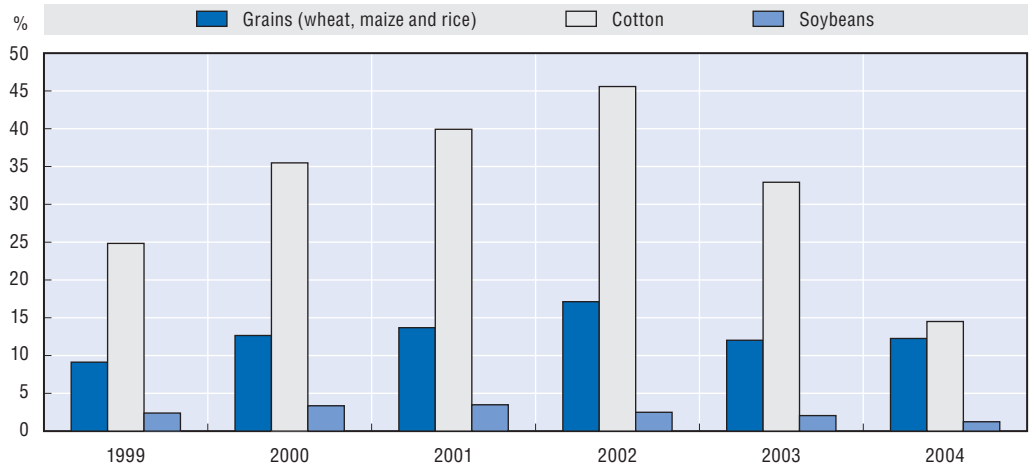


Source: BACEN.

programmes such as the sell option or the PEP. With dual enrolment, the borrower is guaranteed to receive at least the minimum price, and to be able to repay the marketing loan. This practice, in particular a combination of the EGF and the PEP, is typical of the cotton sector, which may explain why in recent years both modalities covered roughly equal shares of production of this commodity.

Storage credit for specific commodities – two special storage credit programmes are currently offered for coffee and ethanol. A loan to coffee producers is designed to cover producers' liquidity needs at the stages of harvesting, after-harvest handling and storage.

Figure 2.8. **Production shares of selected crops covered by EGF and pre-sale loans**



Source: CONAB.

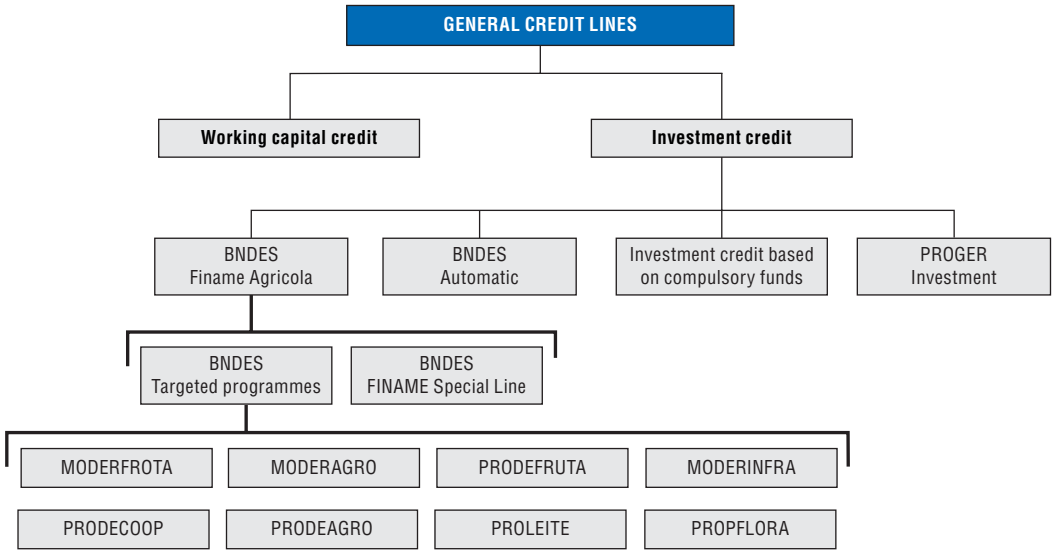
This credit is given for 6 to 7 months depending on the region, at a preferential interest rate of 9.5% per year. Coffee storage credit is financed from FUNCAFÉ[10] – a fund currently formed from contributions by the coffee industry. The ethanol storage loan was introduced as assistance to sugar cane producers, as ethanol is regarded as a derivative of the primary agricultural product. Ethanol storage loans are offered to private and co-operative distillers for five months at a preferential rate of 11.5% per year.

Working and investment credit. Provision of working and investment credit is differentiated by two broad groups of beneficiaries: *i)* medium and large-scale producers and their co-operatives, forming what is called here the general system; and *ii)* small agricultural producers – beneficiaries of PRONAF.

Chart 2.3 presents the main credit programmes implemented under the *general system*. Short term (working capital) loans are granted for planting or harvesting, with the repayment schedule differentiated by crop, and a unified fixed interest rate. Investment credit is provided through a variety of credit programmes, with most of them implemented by the BNDES. The largest of these programmes is MODERFROTA, which finances acquisitions of tractors and agricultural machinery. Other programmes are targeted to support investments in specific industries, such as fruit, milk and meat production, or investments in soil improvement and infrastructure. The BNDES/Automatic programme finances not only investments in agricultural production, but also in the processing industry, and is more flexible in the scope of activities financed. The PROGER Investment programme is available for small scale producers who are not eligible for PRONAF credit. Table 2.A2.1 of Annex 2.A2 presents details of each programme.

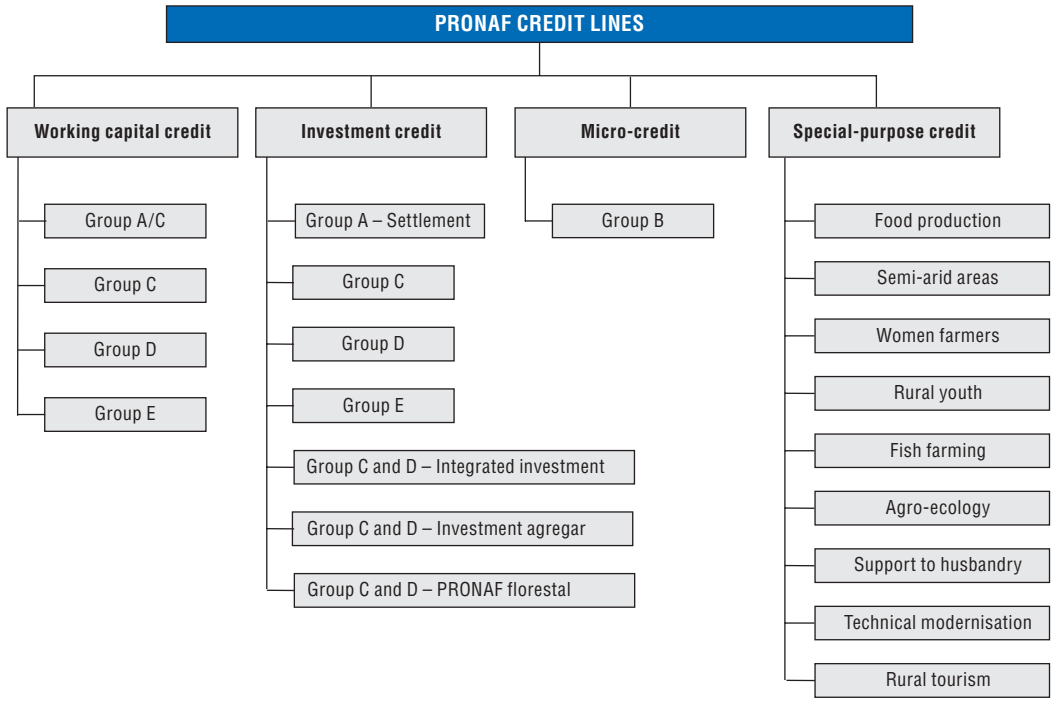
PRONAF/Credit is targeted to the beneficiaries of agrarian reform and small producers complying with the criteria of family farms. Box 2.4 presents the PRONAF compliance criteria, while Chart 2.4 and Table 2.A2.2 of Annex 2.A2 show the main credit lines offered to family farms. Credit eligibility and conditions are strongly differentiated by the beneficiary group. Group A includes the agrarian reform settlers who receive investment credit to support land improvement, construction of production facilities and

Chart 2.3. **General working and investment credit programmes**



Source: MAPA.

Chart 2.4. **PRONAF: credit lines for family farms**



Source: MDA.

infrastructure, acquisition of machinery, livestock, planting of permanent crops, and various other activities involved in productive exploitation of new lands. Those agrarian reform settlers who have already received investment loans can also obtain working

Box 2.4. **PRONAF eligibility criteria and beneficiary groups**

PRONAF/Credit is provided to agrarian reform settlers (Group A) and other farmers (Groups B to E) meeting the following criteria:

	Group A	Group B	Group C	Group D	Group E
Agrarian reform settlers	Exploit part of land as owner, squatter, renter, or sharecropper				
	Posess in any capacity land areas not exceeding 4 fiscal modules				
	Live on farm or neighbouring urban or rural settlements				
	Obtain at least 30% of family income from agricultural production or other activities carried out on the farm	Obtain at least 60% of family income from agricultural production or other activities carried out on the farm	Obtain at least 70% of family income from agricultural production or other activities carried out on the farm	Obtain at least 80% of the family income from agricultural production or other activities carried out on the farm	
	Farm exploitation is based on family labour	Farm exploitation is based predominantly on family labour and only seasonal use of hired labour	Farm exploitation is based predominantly on family labour, hired seasonal labour permitted and not more than 2 hired permanent workers		
	Gross annual family income BRL 2 000 or less, excluding social security benefits linked to rural activities	Gross annual family income over BRL 2 000 but not exceeding BRL 14 000, excluding social security benefits linked to rural activities	Gross annual family income over BRL 14 000 but not exceeding BRL 40 000, excluding social security benefits linked to rural activities	Gross annual family income over BRL 40 000 but not exceeding BRL 60 000, excluding social security benefits linked to rural activities	

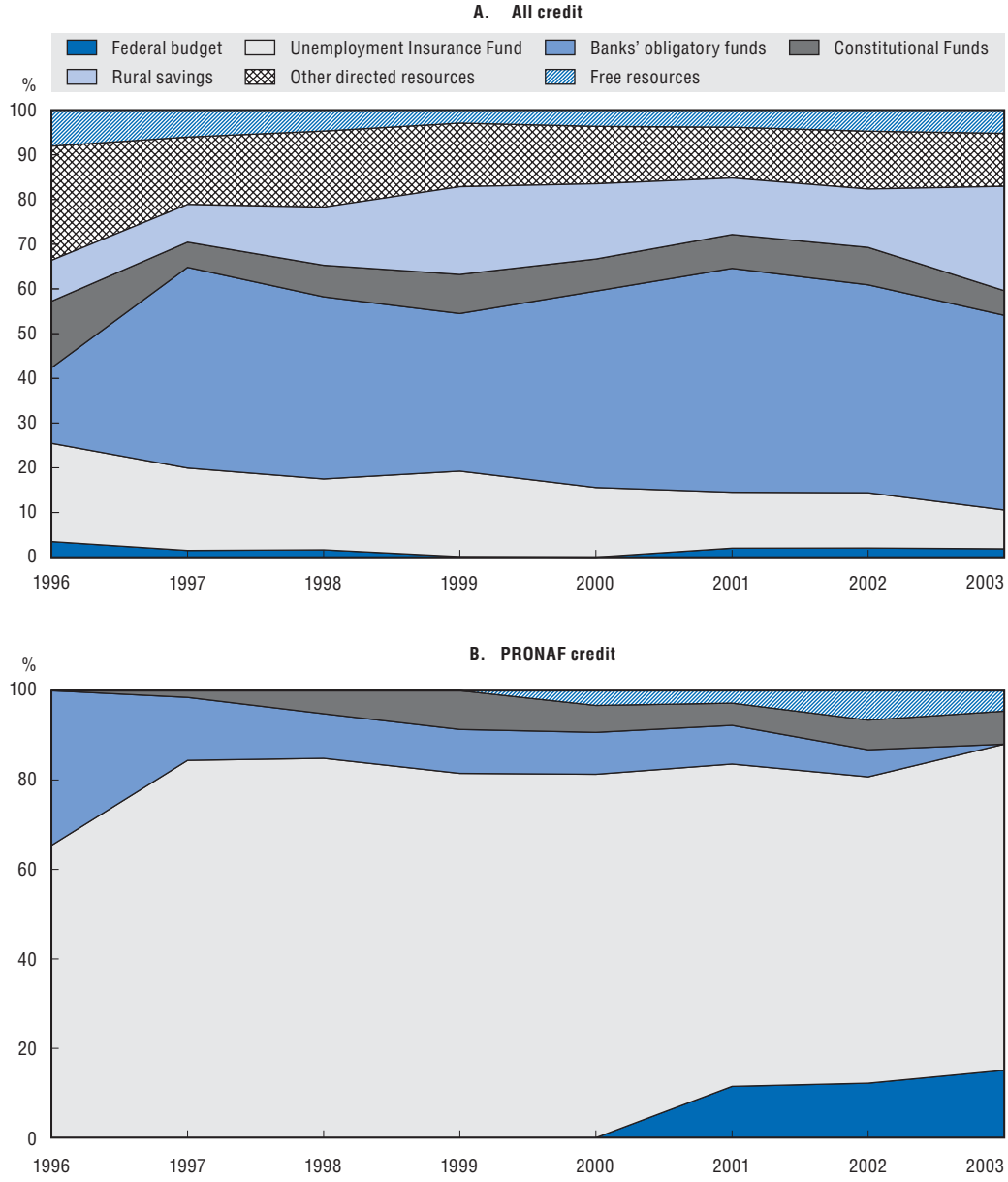
Group A emerged in 1998 as a result of the integration of the previously separate PROCERA programme (Special Credit Programme for Agrarian Reform) into PRONAF, and Group E was added in the programme in 2003, when the upper PRONAF income eligibility limit was raised from BRL 40 000 to BRL 60 000 (from around USD 13 000 to USD 20 000). As the goal of PRONAF is to transform small household agriculture into commercially sustainable "family farms", the tight restrictions on eligibility are designed to keep the focus on small farms and to avoid fraud. Farmers are eligible for a limited number of loans in each category, after which they are required to step up a group.

Source: MDA; and OECD (2001).

capital credit (becoming Group A/C). Group B consists of the smallest subsistence producers eligible for micro credit. Credit to this group is destined to fight rural poverty by supporting income generating activity undertaken by borrowers. Groups C to E represent family farms of increasing size and degree of commercialisation. As in the general system, these borrowers can obtain both working capital and investment loans. A credit line for "Integrated Investment" is reserved for co-operatives or other associations formed exclusively of family farmers. "Investment Agregar" finances small scale value adding activities, such as marketing and processing. PRONAF/Credit also incorporates a spectrum of "special purpose" programmes aimed at broader rural development objectives.

Credit sources and lending conditions. As noted, rural credit programmes are based on directed funds, whose main sources are: *i)* the federal budget; *ii)* banks' obligatory funds; *iii)* Unemployment Insurance Fund (FAT); *iv)* rural savings accounts of co-operative banks; and *v)* Constitutional Funds for Regional Financing. Free resources comprise only a small portion of credit resources in the SNCR. Figure 2.9 shows the relative importance of the

Figure 2.9. **Sources of SNCR credit, 1996-2004**



Source: BACEN.

various sources. SNCR credit as a whole draws mostly on banks' obligatory funds, whereas the part provided under PRONAF is based predominantly on contributions from the Unemployment Insurance Fund. The distinction is important because the conditions of credit depend on the source. As Table 2.5 shows, all loans based on directed sources are provided at "controlled" interest rates, which are administratively fixed in all cases except for lending under the BNDES/Automatic programme. Compensation of interest foregone, or interest rate "equalisation" applies to credit drawing on contributions from FAT, rural savings banks and partly, from the BNDES. In contrast, loans based on federal budget

Table 2.5. **Conditions of SNCR lending by credit source**

	Interest rate control	Interest rate level[1]	Interest equalisation
Federal budget	Yes	Fixed	No
Banks' obligatory funds	Yes	Fixed	No
Constitutional funds	Yes	Fixed	No
Rural savings	Yes	Fixed	Yes
Unemployment Insurance Fund	Yes	Fixed	Yes
BNDES/Targeted programmes	Yes	Fixed	Yes
BNDES/ Automatic	Yes	Variable	No
Free resources	No	Variable	No

1. Fixed interest rate levels vary by credit source, programme and category of beneficiary.

Source: MAPA.

resources, banks' obligatory funds and Constitutional Funds are not eligible for interest rate equalisation.

Figure 2.10 compares the interest rates applied in the SNCR system and the rates considered to represent a minimum cost level for this credit (Box 2.5). This comparison provides an indication of the extent of subsidy involved in preferential rural credit.

Panel A plots the SNCR interest on marketing and working capital loans and the SELIC rate. The preferential interest rate in both general and PRONAF systems was relatively constant over the period considered, at approximately half or less the SELIC rate.

Box 2.5. **The Brazilian credit markets and opportunity cost of rural credit**

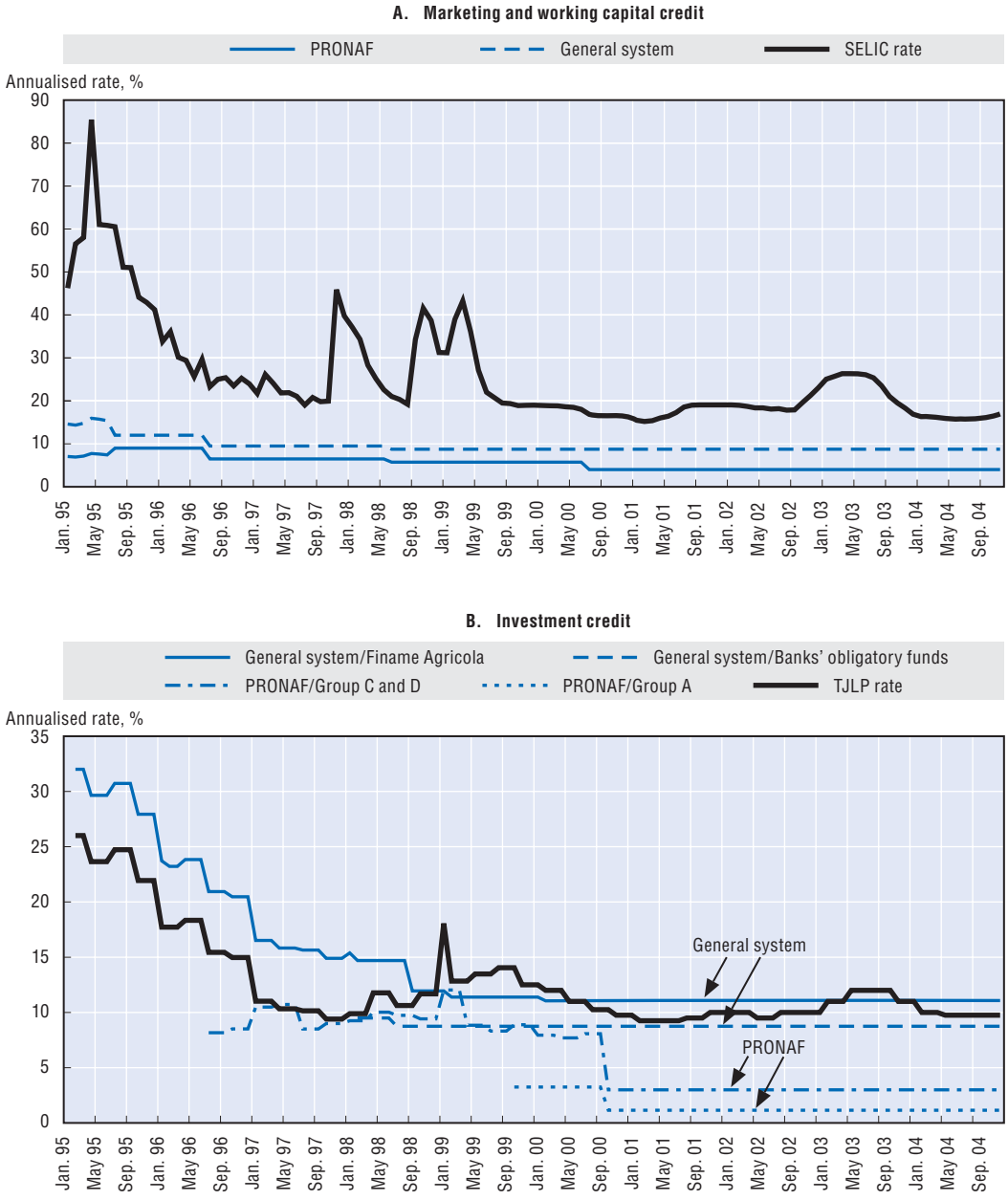
Interest rates on rural marketing and working capital loans are compared with the SELIC rate.[1] The latter is the reference rate for short-term government securities, and is commonly accepted as an average rate on loans between commercial banks. Interest rates for rural investment credit are compared with TJLP[2] – a long-term interest rate set by the National Monetary Council and used as a base rate for BNDES investment loans.

Both the SELIC rate and the TJLP represent the minimum cost of borrowings and cannot be considered as "free market interest" rates in a strict sense. In using the SELIC and TJLP rates as "market" references for the SNCR credit it needs to be recognised that bank lending to the private sector is relatively undeveloped in Brazil. The market for medium and long term credit – the type of credit most relevant for agricultural borrowings – is particularly narrow. Traditionally, private banks have restricted their private sector lending to short-term, self-liquidating commercial transactions. Medium and long-term loans have mainly been provided by specialised federally owned institutions and development funds. More active medium and long-term bank lending was impeded by an uncertain macroeconomic environment, notably high and volatile real interest rates and crowding out by the public sector's financial needs. Although, real interest rates have fallen with the macroeconomic stabilisation, banking spreads continue to be high and constrain lending to the private sector. The resilience of high banking spreads is largely explained by structural factors, such as the high reserve requirements imposed by the Central Bank; the system of taxation of credit operations; the lack of effective bankruptcy procedures and secured credits; and high administrative costs of operating credit lines.

1. SELIC – Special System for Settlement and Custody (*Sistema Especial de Liquidação e de Custódia*).
2. TJLP – Long Term Interest Rate (*Taxa de Juros de Longo Prazo*).

Source: OECD (2001), OECD (2005).

Figure 2.10. **SNCR and reference interest rates, 1995-2004**



Source: MAPA; MDA; BACEN; and Marques (2004).

Panel B juxtaposes the interest rates on investment loans and the TJLP rate. The picture of investment credit preferences is more diverse. First, there is a marked difference in the conditions of the general system and PRONAF. Interest rates applied in the general system tend to be closer to the minimum reference levels (the TJLP rate), while under PRONAF they are far below that level. In addition, the credit costs differ within the systems themselves, depending on the specific credit line. Thus, within the general system, one of the major credit lines, Finame Agricola,[11] is offered at conditions closer to the minimum reference level. In contrast, other credit programmes apply rates below the TJLP, such as,

for example, the investment credit based on banks' obligatory funds. As for PRONAF, credit conditions under this programme are differentiated by the group of beneficiaries, with the cost of credit rising from Group A to Group E borrowers.

Besides preferential interest, SNCR programmes allow other types of concessions, such as grace periods of different lengths, and in the case of the PRONAF investment loans, 25% to 50% interest rate discounts for repayments on time.

It is important to note that there are official upper limits on the size of preferential loan which can be given to one borrower. These limits vary by product, and in the case of investment credit, by activity financed.[12] Ultimately, the decision on the actual loan size is made by the bank, which bears the risk of lending. Thus, in addition to official loan limits, the actual size of borrowing is also determined by the borrower's creditworthiness and other criteria applied by the banks. In many cases, banks apply a so-called reciprocity practice, unofficially imposing additional services on borrowers as a condition of access to reduced-interest rural loans. These may include, for example, a requirement to open a savings deposit, or to buy an insurance package, or to maintain a certain sight deposit balance in the crediting bank. Most likely, such practices result in the erosion of preferences accorded formally under the SNCR credit.

Credit scale and structure. After a decline in the first half of the 1990s, allocations of production credit through the SNCR system tended to rise in absolute and relative terms (Table 2.6). The size of SNCR credit allocations rose from 13% of GAO in 1995 to 21% in 2004. There has been a marked increase in real value of credit allocations since 2000, largely reflecting strong agricultural growth during this period and the resulting growth in the underlying demand for credit (Figure 2.11). It is important to note that credit allocations through PRONAF, following a substantial rise in 1997, remained relatively constant in real terms until 2003-04 when they picked up again.

Table 2.6. **Annual credit allocations in the SNCR, 1995-2004**

Million BRL, current values

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total SNCR credit	6 482	6 296	10 226	11 282	12 005	14 523	18 941	23 939	31 005	38 032
Marketing	1 060	388	889	1 519	1 771	2 526	3 636	4 019	5 038	7 263
Working capital	4 016	4 397	6 945	7 461	7 989	8 919	10 596	13 574	18 951	20 784
Investment[1]	1 405	1 512	2 392	2 302	2 245	3 079	4 709	6 346	7 016	9 985
Total SNCR credit as % of GAO	13	12	18	18	16	17	19	18	18	21
Of total SNCR credit:										
PROCERA credit	109	203	204	308	–	–	–	–	–	–
PRONAF credit	90	559	1 746	1 793	1 832	2 189	2 153	2 405	3 807	5 630
Working capital	89	548	993	1 165	1 246	1 392	1 445	1 420	2 365	3 478
Investment	1	11	753	629	586	797	709	985	1 442	2 152
PROCERA and PRONAF credit as % of total SNCR credit	3	12	19	19	15	15	11	10	12	15

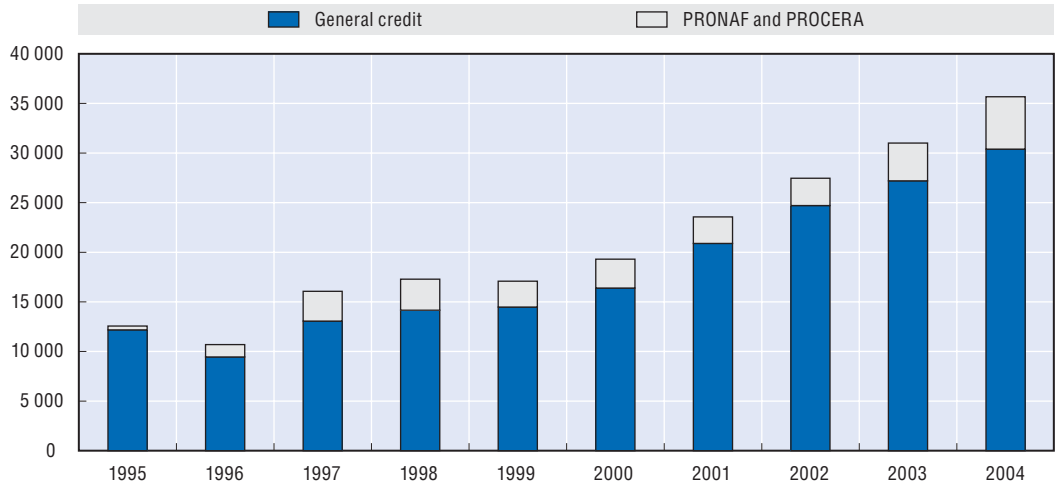
– not applicable.

1. Includes the BNDES investment loans not registered in the RECOR system.

Source: BACEN; MDA; MAPA; BNDES; and Marques (2004).

Figure 2.11. **Annual loan allocations of SNCR credit**

Constant 2003 prices, million BRL



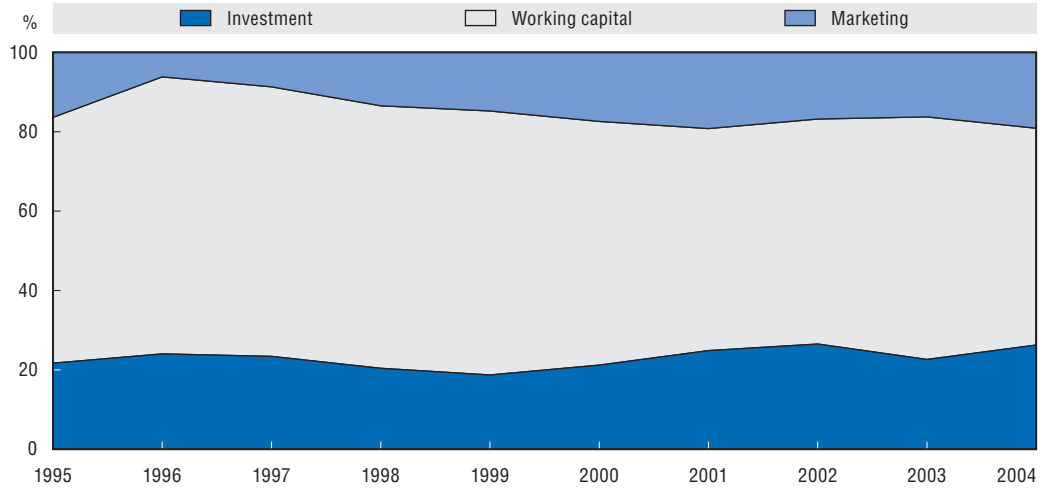
Source: BACEN; MDA; MAPA; BNDES; and Marques (2004).

The expansion of SNCR credit was supported mainly through increased inflows into the system of banks' obligatory funds, reflecting the accumulation of demand deposits in the banking system. In 2004 the government also decided to replenish the SNCR with additional contributions from the rural savings system by raising the share of time deposits which should be allocated for rural credit.

Working capital loans dominate SNCR credit, accounting for about 60% of the total in 1995-2004 (Figure 2.12). The main borrowers of working loans are soybean, poultry and maize producers, who received nearly 53% of this type of credit (Figure 2.13).

Figure 2.12. **Structure of SNCR credit by type of credit**

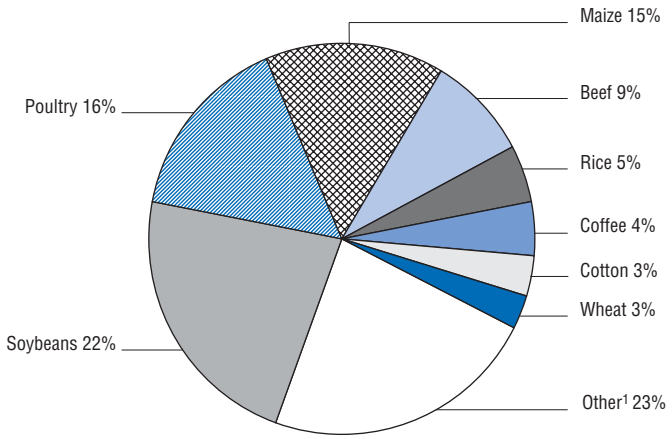
Per cent



Source: BACEN and BNDES.

Figure 2.13. **Distribution of the working capital credit by commodities, 2000-04 average**

Per cent



1. "Other" includes commodities with a share below 3% each of the total.

Source: BACEN.

Although investment credit constitutes a smaller share of overall SNCR credit, its importance has increased in recent years – a development which can be attributed to the favourable performance of the sector in the current decade. Agricultural investment credit in Brazil is almost exclusively provided within the SNCR and mostly by BNDES. The absolute scale of investment programmes grew markedly in the end of the 1990s when BNDES opened new investment credit lines and the government permitted the allocation of some part of the banks' obligatory funds for this type of loan (before 1998, obligatory funds could only be used for working credit). Brandão and Rezende (2004) note that investment credit programmes, in particular MODERFROTA, the largest one, have played a significant role in agricultural mechanisation in Brazil since the mid-1990s. Between 1995 and 2002 domestic sales of wheel tractors nearly doubled, while sales of combines quadrupled.

Government insurance programmes

Brazilian farmers can benefit from several government insurance programmes. These programmes include payments to farmers who suffer income loss as a result of natural disasters and disease outbreaks. Government-supported farmer insurance has been traditionally linked to rural credit, providing for partial redemption of producers' debt on bank loans related to the damaged output. With the emergence of new insurance programmes in recent years, the forms of assistance have been diversified to include income support payments and insurance premium subsidies.

PROAGRO is a traditional general insurance programme that has been in place since 1973. It offers eligible farmers partial compensation of the bank debt on working capital loans used in production of the damaged crop. A recently adopted Rural Insurance Premium programme (*Subvenção ao Prêmio do Seguro Rural*) grants an insurance premium subsidy to producers who conclude contracts with the insurance companies listed by the government. The programme is expected to start in 2005.

In addition to these general programmes, two instruments targeted specifically to family farms have emerged recently. One is the Family Farm Insurance programme (*Seguro da Agricultural Familiar*), introduced in 2004 as a sub-programme of PROAGRO and alternatively denoted as PROAGRO-More. Compared to the general PROAGRO, which guarantees only partial redemption of producer's liability on bank loans, PROAGRO-More provides for full redemption of the farmer's bank liability in respect of lost output and also a partial compensation of lost revenue (equalling to 65% of farmer's anticipated cash receipts). PROAGRO-More covers family farms which are borrowers of working capital loans under PRONAF. Another targeted insurance programme is the Crop Guarantee (*Garantia-Safra*), effective since 2002. It is available to family farms located in Brazil's arid areas, including the whole of the North East region and northern parts of the states of Minas Gerais and Espírito Santo. The beneficiaries are family farms producing non-irrigated staple crops and cotton who have lost at least half of their anticipated output through natural calamity. These farmers become eligible for income payments for a period of up to six months.

Tax policies[13]

The Brazilian tax system incorporates more than 30 federal, state and municipal taxes. The principal ones in terms of their participation in the economy's gross tax burden and the relative weights in relation to GDP are presented in Box 2.6. Taxes on goods and services contribute almost one half to the overall tax burden in Brazil (2002), with about one-half of this contribution due to ICMS (Tax on goods and services transactions), a state-level value added tax. The latter is thus the most important tax in the Brazilian economy in general, and in the agro-food sector in particular.

ICMS rates charged on food products across Brazilian states are shown in Table 2.7. In Brazil, ICMS is levied at the origin of production rather than the destination where the product or service is consumed. This mechanism creates a situation whereby more industrially advanced states capture most of the tax revenues.[14] This problem has been counteracted by the introduction of a tax-sharing mechanism, under which ICMS rates are differentiated by intra- and inter-state transactions. The former are set by states, the latter by the federal senate, with the inter-state rates lower than intra-state rates. The state of origin collects its inter-state ICMS ("export rate"), while the state of destination collects the difference between the state of origin "export rate" and its own intra-state rate.[15] Although the dual-rate ICMS system has to some extent helped reduce differences in tax revenues between the states, it has not principally resolved the problem of inter-state revenue redistribution, and imposes significant compliance and administration costs. Problems arise from the differentiation of tax rates, the existence of various region-specific exemptions and credits, and a lack of uniformity in tax rules among states. Altogether, the system suffers from co-ordination problems and creates strong incentives to re-direct trade or misreport movements in order to evade tax (OECD, 2001).

The current ICMS regime incorporates several preferences related to agricultural commodities and inputs. One is the exemption of raw materials and "semi-processed products" destined for export, which effectively applies to the bulk of the Brazilian agricultural exports. This provision was introduced in 1996 by the Kandir Law (exported industrial goods were exempted from ICMS much earlier, by the 1988 Constitution). The exemption from ICMS was one of the factors contributing to expansion of Brazilian agro-food exports since the mid-1990s.

Box 2.6. **Main taxes of the Brazilian tax system**

Taxes on goods and services	Payroll contributions	Taxes on income	Taxes on property	Tax on foreign trade
IPI (1.6)	Pension contributions general regime (4.7)	IRPF (0.3)	IPTR (0.02)	ICE (0.8)
IOF (0.5)	Civil servants contributions (0.3)	IRPJ (1.3)	IPTU (0.4)	
ICMS (6.7)	FGTS (1.7)	IRRF (3.9)	IPVA (0.4)	
ISS (0.5)	"Contribuições econômicas" (0.1)	ITCD (0.03)		
Cofins (3.1)	"Salário de educação" (0.2)	ITBI (0.08)		
PIS/Pasep (0.9)	Sistema "S" (0.3)	CSLL (0.7)		
CPMF (0.8)				

Cofins	*Contribuição Social para Financiamento da Seguridade Social*	Social contribution for social security financing
CPMF	*Contribuição Provisória sobre Movimentação Financeira*	Temporary tax on financial transactions
CSLL	*Contribuição sobre Lucro Líquido*	Social contribution on corporate profits
FGTS	*Fundo de Garantia por Tempo de Serviço*	Workers layoff insurance fund
ICMS	*Imposto Sobre a Circulação de Mercadorias e Serviços*	Tax on goods and services transactions
ICE	*Imposto sobre o Comércio Exterior*	Import and export tax
IOF	*Imposto sobre Operações Financeiras*	Tax on financial operations
IPI	*Imposto sobre Produtos Industrializados*	Industrialized products tax
IPTR	*Imposto sobre a Propriedade Territoral Rural*	Tax on rural property
IPTU	*Imposto sobre a Propriedade Territoral Urbana*	Tax on urban property
IPVA	*Imposto sobre a Propriedade de Veículos Automotores*	Tax on ownership of automotive vehicles
IRPF	*Imposto sobre a Renda das Pessoas Físicas*	Individual income tax
IRPJ	*Imposto sobre a Renda das Pessoas Jurídicas*	Corporate income tax
IRRF	*Imposto sobre a Renda Retido na Fonte*	Withholding income tax
ISS	*Imposto Sobre Serviços de Qualquer Natureza*	Tax on services
ITBI	*Imposto sobre a Transmissão de Bens Inter-vivos*	Property transfers tax
ITCD	*Imposto sobre Transmissão Causa-Mortis e Doação*	Heritage and endowment tax
PIS/Pasep	*Plano de Integração Social/Programa de Assistência ao Servidor Público*	Social integration programme/civil servants assistance programme

Note: In brackets is the size of each tax in per cent to GDP.
Source: OECD (2001).

ICMS preferences are also granted on sales of agricultural inputs. Thus, various reductions in the ICMS taxable base apply for inter-state trade in agricultural inputs.[16] Federal legislation also empowers states to adopt similar preferences for transactions within the states. In addition, in states where agricultural inputs are produced from local raw materials, local sales of these inputs may be exempted from the ICMS tax (G&S Assessoria e Análise Econômica, 2005).

Brazil's *income tax* regime foresees different forms of tax payment: one is based on real income, and the other on calculated (presumed) income. The latter does not require cost accounting, but allows for imputation of taxable income as a fixed percentage of gross revenue. Agricultural producers also have the right to write off losses incurred in the previous year from the current year taxable income, as well as to apply, in certain cases, accelerated depreciation schemes.

The *social security system* is financed through a general regime of social security payments, based on levies on sales and payroll, and a number of special social taxes, such as PIS/Pasep (Social Integration Programme tax) and COFINS (Social Security Contribution)

Table 2.7. **Spread of effective ICMS tax rates on agro-food products across Brazilian regions**

	ICMS rate, %	
	Highest	Lowest
Sugar	13.91	13.29
Rice	13.29	6.54
Banana	Exempt	Exempt
Biscuits	18.00	13.29
Coffee	13.91	13.29
Beef	13.29	6.54
Pork	13.29	Zero
Cassava flour	13.91	Zero
Wheat flour	17.00	10.03
Beans	13.29	Zero
Chickens	13.29	Zero
Yoghurt	18.00	14.53
Oranges	13.29	Zero
Pasteurised milk	13.91	Zero
Powder milk	18.00	13.29
Noodles	17.00	6.54
Cassava	Exempt	Exempt
Margarine	18.00	13.29
Soybean oil	17.00	6.54
Eggs	13.29	Zero
French loaf	17.00	6.54
Ham	18.00	10.71
Cheeses	18.00	13.29
Sausages	17.00	7.00

Source: CONFAZ.

(see Box 2.6). PIS/Pasep and COFINS are levied on company sales at rates of 1.65% and 7.6% respectively.[17] The PIS/COFINS regime incorporates various preferences relevant for the agro-food sector. First, exports, including agro-food exports, are free from these taxes. In 2004, PIS/COFINS rates were set at zero also on imported agricultural inputs (fertilisers, agricultural chemicals, seeds, etc.) and on some imported agro-food products (rice, beans, grains and milk). PIS/COFINS taxation is suspended for sales of some domestically produced primary agricultural products supplied for processing (coffee, cereals, soybeans, cocoa and raw milk), as well as inputs sold to agricultural companies and co-operatives.

Summing up, the Brazilian agro-food sector benefits from a number of general and specific tax preferences. Notably, there are general ICMS and social tax preferences for exporters, which favour the agro-food sector as it's one of the principal exporting sectors in the Brazilian economy. Sector-specific tax preferences apply to sales of agricultural inputs, both domestically produced and imported. Agricultural producers also enjoy certain preferences under the income tax regime.

Structural policies: Agrarian reform

Brazil has one of the world's most unequal land distributions with a Gini coefficient for land ownership at 0.81 in 2000. Land reform has been a sensitive political issue since the late 1950s, but progress was effectively on hold until the country returned to civilian rule

in 1985. The incoming president, José Sarney, announced an ambitious reform programme, which involved settling 1.4 million families in five years. By the end of his term in 1989, however, the government had settled 90 000 families, or 7% of the targeted total. There was a further slowing of reform between 1990 and 1994 under the Collor government, and the (effectively caretaker) Franco government. This lack of progress led to the rise of the landless movement, spearheaded by the Movement of Landless Rural Workers (MST – *Movimento dos Trabalhadores Rurais Sem Terra*).

Land reform was not an early priority of the Cardoso government when it was elected in 1995, but the issue assumed increased prominence due to a confluence of factors. One was pressure from the landless movement; another was publicised repression against protesters in 1995 and 1996, which resulted in a number of deaths, and brought the issue into the limelight. In addition, the government sought to establish a more socially progressive policy in the context of the orthodox economic policies being used to establish macroeconomic stability (Ondetti, 2004).

As a result, land reform initiatives accelerated from 1997 (INCRA, 2002). The overall aim of these programmes was to integrate peasant farm households into the general process of economic development. This involved combining the economic objective of creating increased opportunities in rural areas with the social objective of redressing the country's unequal land ownership.

Agrarian reforms sought to rebalance ownership and the use of land through the following main mechanisms, which are still operative:

Land settlement. Policies included settlement on lands confiscated, purchased or reclaimed by the government.

Land credit (under the National Land Credit Programme).[18] Provision of low-interest loans to acquire land that cannot be expropriated for social and land reform purposes and to fund community and infrastructure-related investments. The programme is targeted to three groups of beneficiaries: the poorest rural workers, in particular from semi-arid areas of the North East; youths between 18 and 24; and small family farmers wishing to expand their land holdings.

Subsidised investment and input credit. The PRONAF programme provides loans to the recipients of land (and other small farmers) at a subsidised interest rate to finance variable costs (planting or harvesting) as well as for investments in machinery, infrastructure and off-farm activities (*e.g.* crafts, rural tourism).

Land tax. The tax rates levied rise progressively with the size of landholding, to a maximum of 20% on properties larger than 5 000 ha with less than 30% of land utilised.

By 2001, the Cardoso government claimed to have settled more than 600 000 families in seven years – more than all its predecessors combined. According to INCRA, the Gini coefficient for land ownership dropped from 0.86 in 1995 to 0.81 in 2000. An estimated 7.6% of the agricultural population received land, while 5.6% of all available agricultural land was distributed.

These official figures have been contested. For example, Sparovek (2004) estimates that official figures exaggerate the number of settlements by 30% and the number of settled families by 66%, while the amount of land redistributed is overestimated by 13%. IPEA found, using official INCRA data, that the number of settlements was 14% lower than reported. There are also criticisms of the quality of land distributed, in terms of soil quality,

climatic conditions and access to markets. Many of the new settlements lacked infrastructure and services: only 26% of families received electrical power, 25% had access to clean water, and 35% had roads constructed around their settlement.

Nevertheless, 91% of settlers reported being better off than before they received land. Among survey respondents, 79% said they had better housing, 70% said the education available to their children was better, 66% said they were eating better, and 62% said they had more purchasing power (Heredia *et al*., 2002). Compared to other land reforms in Latin America, the Cardoso reform was among the larger episodes of private farmland redistribution executed under democratic conditions that was not subsequently reversed by a counter-reform program (Ondetti, 2004).

The Cardoso reforms have been followed by a new even more ambitious land reform, launched by the Lula government in November 2003. This plan aims to settle 400 000 families by 2006; provide 130 000 families with access to land via land credit; and ensure security of tenure for another 500 000 families by regularising their legal status. In total, the plan aims to benefit one million families. As with the Cardoso reforms, land reform has both economic and social objectives and is complemented with other initiatives designed to make operations on redistributed land commercially sustainable.

It would be premature to evaluate the success of land reform in Brazil. Policy effort, and the effects on equity, can be measured in terms of the number of families settled and the amount of land redistributed. Economic sustainability, on the other hand, is more difficult to gauge. In this respect, the number of households which remain on their land, particularly after they are no longer eligible for specific benefits, could be an indication. It is unlikely that commercial success within agriculture is a realisable goal for all land reform recipients.

General services

Agricultural research and extension

Public research has played a fundamental role in Brazil's agricultural development over the past three decades. Since the 1970s, successive Brazilian governments have regarded research as an agricultural policy priority and allocated substantial funding to this area.

The present system of agricultural research and extension emerged as a result of the public research reform in the late 1960s-early 1970s. The Brazilian Corporation for Agricultural Research, *Empresa Brasileira de Pesquisa Agropecuária* (Embrapa) was created in 1974 and became the leading national centre of agricultural research and extension. The Corporation also co-ordinates the National Agricultural Research System, which unites public and private entities involved in agricultural research. Other leading centres of agricultural research in Brazil are the Institute of Agricultural Research (IPA – *Instituto de Pesquisa Agrícola*), Agricultural Economics Institute (IEA – *Instituto de Economia Agrícola*), and the Luiz de Queiroz Higher School of Agronomy (ESALQ – *Escola Superior de Agronomia Luiz de Queiroz*).

Embrapa is the nucleus of Brazilian agricultural research, with a network spread across all Brazilian regions. It comprises 37 research centres, 3 service units and 11 central divisions. The majority of research centres carry out commodity-specific research, others are involved in thematic research (environment, genetic resources and biotechnology, agro biology, cultivation of savannah lands, etc), and some cover regionally specific issues. The corporation also has two overseas laboratories in France and the United States. Embrapa employs 8 800 people, including over 2 000 researchers.

In addition to research, Embrapa is also involved in agricultural extension and training to promote modern agricultural technologies. The importance of these tasks was stressed with the adoption in 2002 of the Programme for Support and Development of New Technology-Based Agricultural Enterprises and Technology Transfer. One example of this activity is the "Training and Visiting" programme carried out in Embrapa's Soybean Centre. This programme offers training for agronomists and other technicians on modern soybean, maize and wheat cultivation technologies, whose role is then to disseminate the know-how to organised groups of rural producers. Embrapa also offers various short-term training courses for agribusiness and agronomists, veterinarians and zoo technicians.

An important feature of agricultural research and extension in Brazil is the existence of special activities targeted to the rural poor, and in particular to small-scale agricultural producers. Targeted research and extension constitute part of the activities implemented within the framework of the agrarian reform programme and PRONAF.

Infrastructural development

As the agricultural production frontier moves further into Brazil's inlands, the level of infrastructural development becomes a key determinant of agricultural growth. One of the strongest limiting factors is Brazil's transportation system, in particular the poorly developed road network, the main means of transportation of agricultural commodities. According to a 1997 survey, the total distance over which agricultural commodities are transported in Brazil is about 29 000 km compared to 9 500 km for industrial products (Caixeta Filho *et al.,* 1998). At the same time, only 10% of all Brazilian roads are paved. With relatively high land productivity and low factor costs, Brazil loses much of its competitiveness due to high transportation costs. Brazil also needs further investment in port facilities, storage networks, and systems governing the quality and technical standards of Brazilian exports.

Public spending on rural infrastructure has declined in real terms since the mid-1990s (Table 2.8). This area of government spending was strongly affected by the process of budgetary consolidation, in particular, given the high share of revenue earmarking and mandated spending (OECD, 2005). In the conditions of strongly limited public funds, the Brazilian government intends to use for example the public-private partnerships (PPP) to mobilise private funds for important infrastructure projects (*i.e.* development of road networks in the Centre West, and the improvement of port facilities).

Irrigation, hydro agriculture, public water reservoirs and electrification of rural areas were the most important areas of public investment in the second half of the 1990s. Unfortunately, the new budget recording system does not provide enough detail on more recent funding priorities. However, it can be seen that over one half of total allocations on infrastructure are currently destined for development and maintenance of the country's irrigation network.

In addition to public financing, part of infrastructural support is delivered through preferential credit to commercial producers and co-operatives. MODERINFRA is one of the SNCR investment credit lines offered for support of infrastructural projects. Under this programme, agricultural producers receive reduced-interest credit for construction of on-farm storage and irrigation systems. Similarly, farmers enrolled in the PRONAF programme are eligible for preferential investment credit which can be used to finance construction of on-farm infrastructure (see section "Credit Policies" of this Chapter).

Table 2.8. **Public spending on rural infrastructure, 1996-2003**

	1996	1997	1998	1999	2000	2001	2002	2003
Total spending on rural infrastructure, BRL 1 000								
Current values	435 677	770,173	715 491	579 811	407 870	565 572	345 661	185 259
In constant 2003 prices	717 233	1 185 774	1 067 465	824 959	542 133	703 619	396 525	185 259
In USD 1 000	433 423	713 983	616 218	319 315	222 941	240 444	117 937	60 316
Of total spending in per cent:								
Construction and maintenace of irrigation systems	13.8	16.6	14.3	10.3	11.2	63.6	39.4	53.3
Development of hydro agriculture	48.7	46.8	42.4	38.5	1.7	0.7	0.6	0.2
Construction and overhaul of public water reservoirs	19.4	22.1	19.1	28.1	. .	. .	. .	. .
Electrification of rural areas	4.7	8.3	12.7	14.4	3.8	6.6	2.1	3.4
Development of local roadways	0.0	0.3	1.2	1.4	. .	. .	. .	. .
Construction, renovation and maintenance of storage system	–	–	–	–	–	0.01	0.02	–
Projects of integrated rural and territorial development	0.2	1.1	0.7	0.0	. .	. .	. .	. .
Social infrastructure for rural settlements	7.0	0.3	1.8	0.0	. .	. .	. .	. .
Soil and water conservation, re-forestation and other environmental measures	6.0	2.0	3.3	1.9	0.2	0.3	0.0	0.0
Non-allocated spending on infrastructural development	0.2	2.6	4.5	5.4	83.0	28.8	57.8	43.1

. . not available.
– not applicable.
Source: MAPA.

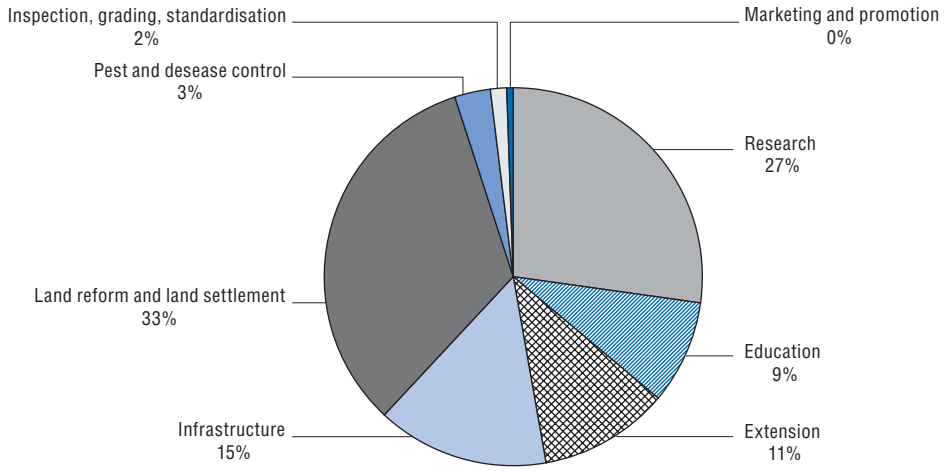
Infrastructural development in Brazil is not only a general determinant of agriculture competitiveness, but also central to the prospects of Brazil's land reform programme and efforts to ensure the sustainability of family agriculture. Infrastructural components are inscribed in both the land reform and broader elements of the PRONAF programmes, which foresee public-financed projects for the creation of basic infrastructure on settled lands, including construction of roads, electricity, water supply, irrigation and storage systems.

Overall public spending on general services

Agricultural research, extension and education together comprise nearly one half of overall spending on general services for agriculture in Brazil. Financing of activities related to agrarian reform and infrastructural development represent the next two largest components accounting for 48% of total spending (Figure 2.14).

Although overall spending on general services has remained relatively stable in nominal terms since the mid-1990s, in real terms it has lost almost one third of its value (Table 2.9). This outcome is mostly due to the fall in real allocations to general services related to land reform and infrastructure, with these relatively large components of overall spending undergoing sharp reductions. At the same time, there has been an increase in real spending on rural extension and marketing and promotion.

Figure 2.14. **Structure of public spending on general services for agriculture, 2000-03 average**



Source: MAPA.

Table 2.9. **Public spending on general services for agriculture, 1995-2003**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average 1995-97	Average 2000-03	2000-03 as % of 1995-97
General services, total												
Current value, BRL million	2 055	2 502	3 286	3 500	2 590	2 166	3 063	2 489	2 141	2 614	2 465	94
USD million	2 239	2 489	3 046	3 014	1 426	1 184	1 302	849	697	2 592	1 008	39
General services in constant 2003 prices, BRL million	3 916	4 119	5 059	5 221	3 685	2 878	3 811	2 856	2 141	4 365	2 921	67
of which:												
Research	742	875	813	762	755	749	778	746	780	810	763	94
Education	282	316	363	389	244	266	220	259	246	321	248	77
Extension	42	290	314	489	480	272	763	279	102	215	354	164
Infrastructure	1 044	721	1 188	1 068	833	542	704	397	185	984	457	46
Land reform and land settlement	1 674	1 733	2 120	2 234	1 202	880	1 184	1 044	723	1 842	958	52
Pest and desease control	66	92	114	90	78	117	104	71	50	91	86	94
Inspection, grading, standardisation	66	92	112	131	51	36	51	48	44	90	45	50
Marketing and promotion	0	0	35	59	41	17	8	12	11	12	12	106

Source: MAPA.

Consumer measures

Food consumer measures constitute part of a broad effort to combat social inequality, hunger and malnutrition in Brazil. The reforms at the beginning of the 1990s resulted in the dismantling of the main federal food and nutrition programmes. However, already in 1993 the National Food Security Council (CONSEA) was created with the objective of strengthening the food security of vulnerable groups of the population. During the 1990s, various food programmes were implemented in Brazil, most of which were consolidated into the Zero Hunger programme (*Fome Zero*) in 2003 under the new government, which declared the eradication of hunger its central social priority.

The Zero Hunger programme targets families with monthly per capita income below the poverty line. It is a highly diversified programme, incorporating numerous areas of action – from various forms of food aid to the support of household food production, as well as many non-agriculture related policies such as the strengthening of social protection, and improvements in education, health care, and housing conditions (Annex 2.A3 presents the main components of the programme).

The following types of food aid are currently provided under the Zero Hunger programme:

- Food-related income transfers, currently integrated into the Family Grant (*Bolsa Familia*),[19] paid to poor and extremely poor families,[20] including:
  - Food Cards (*Cartão Alimentação*) for families in semi-arid areas and the Northern region;
  - Food Grant *(Bolsa Alimentação)*.
- Free school meals.
- Free food distribution to people in camps (land settlers without permanent lodging), descendants of former runaway slaves (*quilombola)*, and indigenous communities.
- Popular restaurants and community kitchens – about 27 outlets function currently, offering meals at BRL 1.00-2.80 (USD 0.3-0.8).
- Food Bank – formation of staple food stocks for free distribution.
- Direct government purchases of staple food products from family farms[21] – products are purchased at market prices and subsequently distributed to families eligible for food aid, as well as to those living in urban and rural locations with "unfavourable" living conditions.
- Milk distribution programme – direct purchases of milk from family farms and its distribution to eligible persons.

Table 2.10 shows recent expenditures on some forms of food assistance. In 2001, the Food Grant was introduced, with allocations increasing each year. This was complemented by the issue of Food Cards in 2003, which more than doubled the amount of food-related social payments. Food aid was also boosted by direct purchases from family farms under the Zero Hunger programme and the expansion of food distribution through free school catering, emergency food distribution and local restaurants/canteens.

Table 2.10. **Selected components of food aid spending in 2001-03**

End of year, current BRL 1 000

	2001	2002	2003
Food-related social assistance payments:			
Food Grant	393	118 812	264 420
Food Cards	–	–	290 134
Purchases of staple products from family farms	–	–	224 169
Emergency food distribution to families in drought-affected areas	2 528	2 991	0

Source: MDS.

2.3. Agricultural trade policies

Brazil undertook radical trade reforms in the late 1980s and early 1990s. Tariff reductions, and the liberalisation of domestic markets, coupled with important technological and structural shifts in the agro-food sector, created a new incentive structure in Brazilian agriculture. This section focuses on the key developments in Brazil's agricultural trade policies which have occurred since the beginning of the 1990s.

Before and during the reforms of the 1990s

Brazilian trade remained under substantial control until the end of the 1980s, in conformance with the prevailing ISI policy. Trade interventionism was also perpetuated by the government's perception of trade as a lever for macroeconomic adjustment. Trade controls were constantly applied to relax current account pressures and constituted a component of macro-economic stabilisation plans before the 1990s.

Trade was controlled through a wide range of interventions. Agro-food imports were subjected to high tariffs, quantitative restrictions, importer advance deposits (replaced later by an import transaction tax), licensing and import authorisation requirements. High import tariffs and a "rule of similars"[22] were applied to imported agricultural inputs competing with domestic production. At the same time, "priority" sectors, such as soybean or ethanol industries, could benefit from tax exemptions or other preferential terms on imported inputs. Agro-food exports were at times restrained, at times encouraged, depending on the particular economic and political context. In some periods Brazilian agro-food exporters faced export duties and quantitative restrictions, in others they enjoyed export credits and tax benefits. Finally, considerable exchange rate distortions affected trade. After the fixed exchange rate was abolished in the mid-1960s, the domestic currency remained on a crawling peg for more than two decades, with several substantial devaluations over this period. Overall, Brazil's pre-1990s trade policies created a wide range of allocative distortions within and outside agriculture, and isolated the sector from international markets and investments.

The first steps to reform the trade regime were taken in the late 1980s, in an attempt to mitigate the adverse impacts of macroeconomic instability on the agricultural sector. Abandonment of the ISI strategy at the beginning of the 1990s involved a major reversal of Brazil's trade policies. Within the first two years of Collor's administration, 1990 and 1991, most trade controls were lifted. In 1994 the *Real Plan* was adopted, creating a less distortive and more stable macroeconomic framework for trade, and in 1995 Brazil opened up for free trade within Mercosur. The main landmarks of agricultural trade liberalisation in Brazil were:

- ***1987:*** abolition of export licensing.
- ***1989:*** elimination of quantitative restrictions on exports of soybeans, soybean oil and meal, maize and cotton.
- ***1990-92:*** removal of the main non-tariff barriers to trade under Collor's macroeconomic stabilisation plans, including those related to agricultural commodities and agricultural inputs. Adoption of a new transparent and simplified tariff schedule providing for phased reduction in border protection. Abolition of the state monopoly on wheat marketing and trade.
- ***1994:*** introduction of the *real* and exchange rate peg under the *Real Plan*.

- **1995:** adoption of URAA disciplines on market access, export competition and domestic support and coming into force of the Mercosur Customs Union with about one half of Brazil's agro-food imports falling under free trade within the Mercosur area. Elimination of sugar export controls.
- **1996:** adoption of the Kandir Law exempting raw materials and "semi-manufactured" products destined for export from ICMS taxes.
- **1997-99:** removal of state monopoly on ethanol trade.

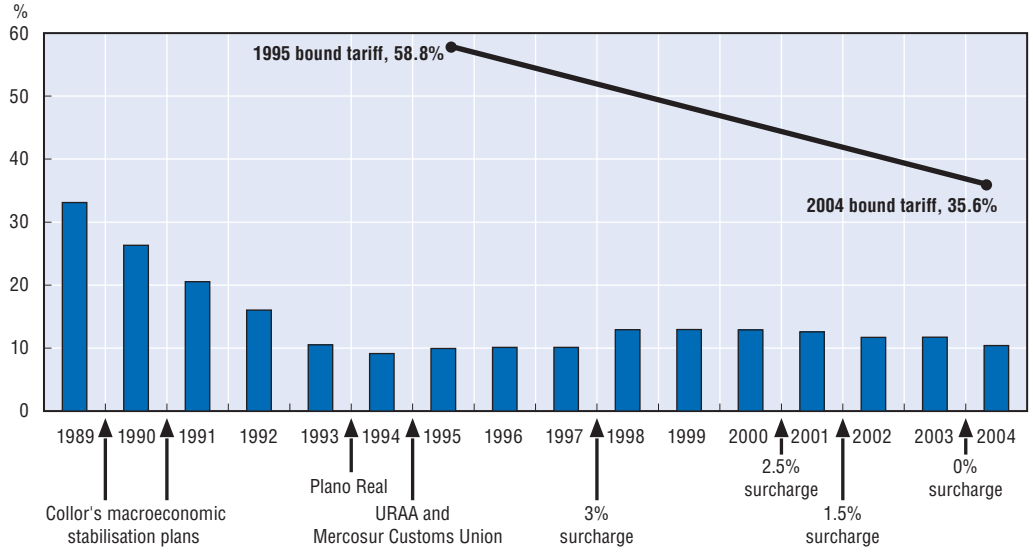
These reforms of the 1990s have shaped Brazil's current agricultural trade regime which is reviewed below.

Current trade regime

Import measures

Agricultural and food commodities imported to Brazil are subject to *ad valorem* tariffs, and no specific tariffs, tariff-rate quotas, or special safeguards are imposed. As indicated by the most-favoured-nation (MFN) rates, Brazil's tariff protection was cut radically in the first years of reform (Figure 2.15 and Annex 2.A4, Table 2.A4.1). A slight increase in tariffs at the

Figure 2.15. **Brazil's average applied MFN tariff for agricultural products, 1989-2004**



Note: Applied MFN tariff is the simple average of applied MFN tariffs for agricultural products as defined in Annex 1 to the URAA.

Source: WITS database; ICONE.

end of the 1990s reflects the introduction of a temporary tariff surcharge. This measure was requested by Argentina, which was experiencing balance-of-payments difficulties at the time. Brazil, in common with other Mercosur members, raised its tariffs for most goods, including agro-food products, by 3%. This surcharge was reduced to 2.5% in 2001, then to 1.5% in 2002, and finally removed in 2004.

The Mercosur Common External Tariff (CET) constitutes the core of Brazil's import tariff structure. The CET incorporates 959 agricultural tariff lines with tariff rates ranging from 0% to 20%. Each Mercosur member country has a list of exceptions to the CET.[23] For Brazil, this list contains 23 agricultural tariff lines.[24] Sugar has been excluded from the Mercosur agreement and is therefore not covered by the CET.

The simple average applied MFN tariff rate for agricultural goods was 10.4% in 2004 (Table 2.11 and Annex 2.A4, Table 2.A4.1). Relatively high tariffs are applied to beverages and spirits (20.0%), dairy products (16.7%), and sugar (16.7%), while relatively low tariffs apply to live animals (2.2%), cut flowers and plants (2.9%), and oilseeds (4.7%).

Table 2.11. **Brazilian average import tariffs for agricultural commodities**

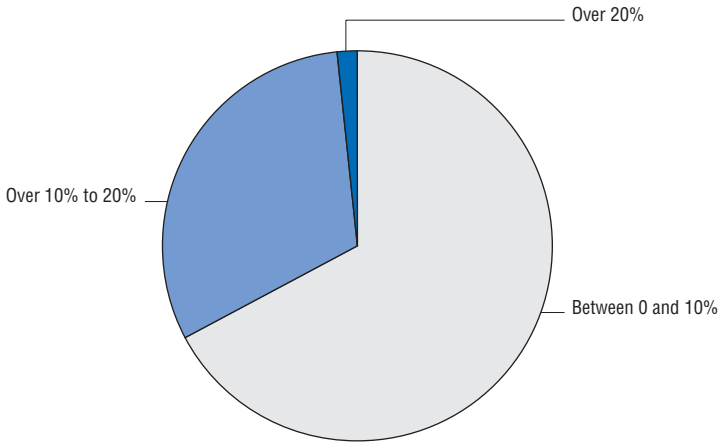
Per cent

	Applied tariff, 2004	Bound tariff, 2004
Mean tariff	10.4	35.6
Median tariff	10.0	35.0
Minimum tariff	0.0	0.0
Maximum tariff	55.0	55.0
Standard deviation	6.0	11.2
Coefficient of variation	0.58	0.31

Source: WITS database; ICONE.

The minimum and maximum applied tariff rates are respectively 0% and 55%, however over two thirds of Brazilian agricultural tariff lines fall into a 0-10% bracket (Figure 2.16). All tariff lines subject to rates above 20% are exceptions to the CET, including 3 tariff lines set at the maximum tariff rate of 55% (coconuts and prepared peaches), one tariff line set at 36% (sorbitol), and 12 tariff lines set at 27% (dairy products and wine).

Figure 2.16. **Distribution of Brazil's MFN import tariffs on agricultural goods by tariff rate levels, 2004**



Source: ICONE.

Brazil's simple average WTO *bound tariff rate* for 2004 (final year of the implementation period for developing countries) was at 35.6%. As Table 2.11 shows, Brazil's average bound tariff rate for agricultural goods is more than three times the average MFN rate. The minimum and maximum bound tariff rates coincide with the minimum and maximum applied MFN rates. However, while over 250 tariff lines were bound at the maximum of 55%, only three are actually fixed at this level. This apparent "tariff overhang" is largely due to the existence of the Mercosur CET which sets the effective border protection at levels much below the country's URAA bindings. At the time WTO was created, Brazil had two agricultural *tariff-rate quotas* (TRQ): one for apples and pears and another for wheat. A 10 000 metric tonne quota for apples and pears was opened but not applied, whereas the wheat TRQ was eliminated in 2004. Brazil did not reserve the right to apply *special safeguards* (SSG) for agricultural goods. In overall terms, WTO market access commitments do not constrain Brazil's effective tariff protection, which is largely determined within the Mercosur framework.

Brazil applies a range of non-tariff measures, including sanitary and phytosanitary (SPS) requirements, standards and technical (TBT) regulations, non-automatic import licensing, certification, and customs valuation.

Export measures

Brazil is one of 26 WTO countries that have reserved the right to subsidise agricultural exports under the URAA. Table 2.A4.2 of Annex 2.A4 lists 16 products for which Brazil has agricultural *export subsidy commitments* representing the maximum amount of subsidy permitted in a given year. However, since the signing of the URAA in 1995, the Brazilian government has granted no export subsidies on agricultural products.

Brazil does not have specific agricultural *export credit* programmes. However, agro-food traders can benefit from three general programmes: *i)* Export Financing Programme; *ii)* BNDES ExIm credit; and *iii)* Export Guarantee Fund.

The Export Financing Programme *(Programa de Financiamento à Exportação – PROEX)*, initiated in 1991, aims at providing Brazilian exporters with financing conditions equivalent to those offered in the international market. The loans are given under two modalities:

- PROEX Financing (*PROEX Financiamento*): the Bank of Brazil provides financing to the exporter (supplier credit) or directly to the importer (buyer credit) for payment to the exporter. Maturity periods can be of up to ten years, according to the product's added value. In the case of agriculture, the maximum maturity is six months (flowers, fruit, fruit and vegetable preparations, meat preparations, cigars, and some beverages and spirits), and the minimum is two months (vegetables, tea, spices, cereals, peanuts, among others). Maturity can be defined based on the unit value of the merchandise. For maturity periods below two years, up to 100% of the export value can be financed; and for periods above two years, up to 85%. The maximum value share eligible for financing is contingent on local-content requirements. Interest rates are based on international market levels (LIBOR as a minimum);
- PROEX Equalisation (*PROEX Equalização*) provides interest rate subsidies to exporters and importers of Brazilian goods that have taken loans from domestic or foreign lenders. The financing conditions are negotiated directly with the financial institution. The PROEX Equalization is applied for the same products as PROEX Financing, and the maturity

periods are the same as in PROEX Financing. A subsidy can apply to up to 85% of the export value.

BNDES ExIm credit is offered by the BNDES. It applies to a wide range of goods and services, including agricultural products.[25] Financing is contingent on the requirement that local content comprises at least 60% of the value of the exported product. There are four credit lines, the first three available to exporters in Brazil, and the fourth to importers abroad:

- Pre-shipment credit with a maximum maturity period of 18 months: up to 100% of the export value can be financed, with the interest rate varying according to the size of the company (LIBOR as a minimum).
- Short-term pre-shipment credit with a maximum maturity period of six months: up to 100% of the export value can be financed, with the interest rate varying according to the size of the company (LIBOR as a minimum).
- Special pre-shipment credit with a maximum maturity period of 12 months (with possible extension to 30 months): up to 100% of the export value can be financed for small and medium enterprises and 75% for large enterprises; the interest rate varies according to the size of the company (LIBOR as a minimum).
- Post-shipment credit with a maximum maturity period of 12 months: up to 100% of the exported product value is financed, at the LIBOR rate.

An Export Guarantee Fund (*Fundo de Garantia à Exportação S.A – FGE*) was created in 1999. It covers political, extraordinary, and commercial risks insured by the Brazilian Export Credit Insurance Company (*Seguradora Brasileira de Crédito à Exportação* – SBCE)[26] and guaranteed by the Reinsurance Institute of Brazil (*Instituto de Resseguros do Brasil S.A.* – IRB).[27] In the case of political and extraordinary risk, the FGE covers both short-term (less than two years) and medium- and long-term (over two years) operations. Export credit coverage is limited to a maximum of 95%. In the case of commercial risk, only medium- and long-term operations are covered by the FGE. Export credit coverage is limited to a maximum of 90%. For short-term operations, the SBCE utilises private funds.

Article 153 of the Brazilian Federal Constitution stipulates an *export tax* (*Imposto de Exportação* – IE). According to Law 9.716 (1998), a tax of 30% can be imposed on any Brazilian export (including agricultural products), and be reduced to 0% or increased up to 150% at the discretion of the federal government. Coffee,[28] sugar and alcohol are explicitly exempted from the export tax. Explicit exemption also applies to subsistence items exported from municipalities located along the Brazilian terrestrial border. For other agricultural commodities a 0% rate is currently applied. In only a few cases this tax has been set at above-zero rate. One recent case is tobacco (HS 2401 and 2403), for which a 150% tax on exports to Paraguay and Uruguay was imposed in 2000.[29] Another case is leather and hides, which were subjected to a 9% export tax rate in 2001 in order to increase sales of these products to domestic processors.[30]

Trade agreements

Brazil is a developing country member of the *World Trade Organisation* (WTO), which it joined in 1995 as an original participant of the GATT. As a member of the Organisation, Brazil is under the market access, domestic support and export competition disciplines of the Uruguay Round Agreement on Agriculture (URAA). The country has been actively promoting agricultural trade liberalisation within the WTO framework by participating in the Cairns Group of large agricultural exporters. In the Doha WTO Round, Brazil was an

initiator of the G-20, a group of developing countries arguing for substantial progress in agricultural trade reform.

Brazil actively pursues Latin American and the Caribbean trade integration. Together with Argentina, Brazil was an initiator of a major regional agreement, the Southern Common Market (*Mercosur*).[31] As a member of Mercosur, Brazil extends preferential tariff treatment to other Mercosur members, to its associate members, Bolivia and Chile, as well as to other members of the Latin American Integration Association (ALADI).[32] Mercosur has recently signed economic co-operation agreements with Mexico (July 2002), the Andean Community (December 2003), and Peru (August 2003). On the bilateral front, Brazil has signed agreements with Cuba (December 1999) and Mexico (July 2002).[33]

Brazil is one of 34 Western Hemisphere countries participating in the Free Trade Area of the Americas (FTAA) initiative. There are nine negotiating groups within the FTAA, one of which deals with agriculture. Since the Miami Summit (November 2003), Brazil and other Mercosur countries have taken a common position in FTAA negotiations.

As a member of Mercosur, Brazil is in the process of negotiating an Interregional Association Agreement with the European Union. The Agreement foresees the liberalisation of trade between the parties with a view to establishing a free trade agreement, including in agricultural goods. As far as agricultural goods are concerned, the current talks cover mainly bilateral tariff concessions, EU quota offers to Mercosur and protection of geographical indications.

Mercosur, and Brazil as a member, has signed a preferential trade agreement with India (January 2004) and is also in the process of negotiating trade agreement with the South African Customs Union (SACU), which unites Botswana, Lesotho, Namibia, South Africa, and Swaziland.

Brazil is a member of the *Global System of Trade Preferences among Developing Countries* (GSTP). Together with Argentina, Paraguay, and Uruguay, it exchanged joint Mercosur tariff concessions with participants of the GSTP in the second round of negotiations.

2.4. Evaluation of support to Brazilian agriculture

This section concludes the overview of Brazilian agricultural and trade policies with a quantitative evaluation of support provided to the sector through these policies. The evaluation is based on the indicators of agricultural support developed by the OECD, including the Producer Support Estimate (PSE), Consumer Support Estimate (CSE), Total Support Estimate (TSE) and General Services Support Estimate (GSSE) (see Box 2.7 for definitions).

Evaluation of support to Brazilian agriculture is done for the period of 1995-2004[34] on the basis of 12 commodities which account for about 78% of the total value of agricultural output in Brazil.[35]

Aggregate results

Producer Support Estimate

As measured by the aggregate percentage PSE, producer support in Brazil fluctuated within a band of minus 1% to 6% of the gross farm receipts in 1995-2004, indicating a low overall degree of policy interventions at the agricultural producer level (Table 2.12 and Annex 2.A5, Table 2.A5.1 and Table 2.A5.2).

Box 2.7. **OECD Indicators of support to agriculture: definitions**

Producer Support Estimate (PSE): An indicator of the annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at farm gate level, arising from policy measures, regardless of their nature, objectives or impacts on farm production or income. The PSE measures support arising from policies targeted to agriculture relative to a situation without such policies – *i.e.* when producers are subject only to general policies (including economic, social, environmental and tax policies) of the country. The PSE is a **gross** notion implying that any costs associated with those policies and incurred by individual producers are not deducted. It is also a **nominal assistance** notion meaning that increased costs associated with import duties on inputs are not deducted. But it is an indicator **net** of producer contributions to help finance the policy measure (*e.g.* producer levies) providing a given transfer to producers. The PSE includes implicit and explicit transfers. The **%PSE** is the ratio of the PSE to the value of total gross farm receipts, measured by the value of total production (at farm gate prices), plus budgetary support.

Producer Nominal Assistance Coefficient (NACp): An indicator of the nominal rate of assistance to producers measuring the ratio between the value of gross farm receipts including support and gross farm receipts valued at world market prices without support.

Producer Nominal Protection Coefficient (NPCp): An indicator of the nominal rate of protection for producers measuring the ratio between the average price received by producers (at farm gate), including payments per ton of current output, and the border price (measured at farm gate level).

Consumer Support Estimate (CSE): An indicator of the annual monetary value of gross transfers to (from) consumers of agricultural commodities, measured at the farm gate (first consumer) level, arising from policy measures which support agriculture, regardless of their nature, objectives or impact on consumption of farm products. The CSE includes explicit and implicit transfers from consumers associated with: market price support on domestically produced consumption (transfers to producers from consumers); transfers to the budget and/or importers on the share of consumption that is imported (other transfers from consumers). It is **net** of any payment to consumers to compensate them for their contribution to market price support of a specific commodity (consumer subsidy from taxpayers); and the producer contribution (as consumers of domestically produced crops) to the market price support on crops used in animal feed (***excess feed cost***). When negative, transfers from consumers measure the implicit tax on consumption associated with policies to the agricultural sector. Although consumption expenditure is increased/reduced by the amount of the implicit tax/subsidy, this indicator is not in itself an estimate of the impacts on consumption expenditure. The **%CSE** is the ratio of the CSE to the total value of consumption expenditure on commodities domestically produced, measured by the value of total consumption (at farm gate prices) minus budgetary support to consumers (consumer subsidies).

Consumer Nominal Assistance Coefficient (NACc): an indicator of the nominal rate of assistance to consumers measuring the ratio between the value of consumption expenditure on agricultural commodities domestically produced including support to producers and that valued at world market prices without support to consumers.

Consumer Nominal Protection Coefficient (NPCc): an indicator of the nominal rate of protection for consumers measuring the ratio between the average price paid by consumers (at farm gate) and the border price (measured at farm gate level).

Box 2.7. **OECD Indicators of support to agriculture: definitions** *(cont.)*

General Services Support Estimate (GSSE): An indicator of the annual monetary value of gross transfers to services provided collectively to agriculture and arising from policy measures which support agriculture, regardless of their nature, objectives and impacts on farm production, income, or consumption of farm products. It includes taxpayer transfers to: improve agricultural production (research and development); agricultural training and education (agricultural schools); control of quality and safety of food, agricultural inputs, and the environment (inspection services); improving off-farm collective infrastructures, including downstream and upstream industry (infrastructures); assist marketing and promotion (marketing and promotion); meet the costs of depreciation and disposal of public storage of agricultural products (public stockholding); and other general services that cannot be disaggregated and allocated to the above categories due, for example, to a lack of information (miscellaneous). Unlike the *PSE* and *CSE* transfers, these transfers are not received by producers or consumers individually and do not affect farm receipts (revenue) or consumption expenditure by their amount, although they may affect production and consumption of agricultural commodities. The **%GSSE** is the ratio of the GSSE to the *Total Support Estimate*.

Total Support Estimate (TSE): An indicator of the annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures which support agriculture, net of the associated budgetary receipts, regardless of their objectives and impact on farm production and income, or consumption of farm products. The TSE is the sum of the explicit and implicit gross transfers from consumers of agricultural commodities to agricultural producers net of producer financial contributions (in *MPS* and *CSE*); the gross transfers from taxpayers to agricultural producers (in *PSE*); the gross transfers from taxpayers to general services provided to agriculture (*GSSE*); and the gross transfers from taxpayers to consumers of agricultural commodities (in *CSE*). As the transfers from consumers to producers are included in the *MPS*, the TSE is also the sum of the *PSE*, the *GSSE*, and the transfers from taxpayers to consumers (in *CSE*). The TSE measures the overall transfers associated with agricultural support, financed by consumers (transfers from consumers) and taxpayers (transfers from taxpayers) net of import receipts (budget revenues). The **%TSE** is the ratio of the TSE to GDP.

Table 2.12. **Aggregate percentage PSEs and CSEs for Brazil**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004p	Average 2002-04
Percentage PSE	–1	1	1	6	1	4	3	3	4	3	3
Percentage CSE	1	2	3	–3	2	–2	0	–1	–2	–1	–1

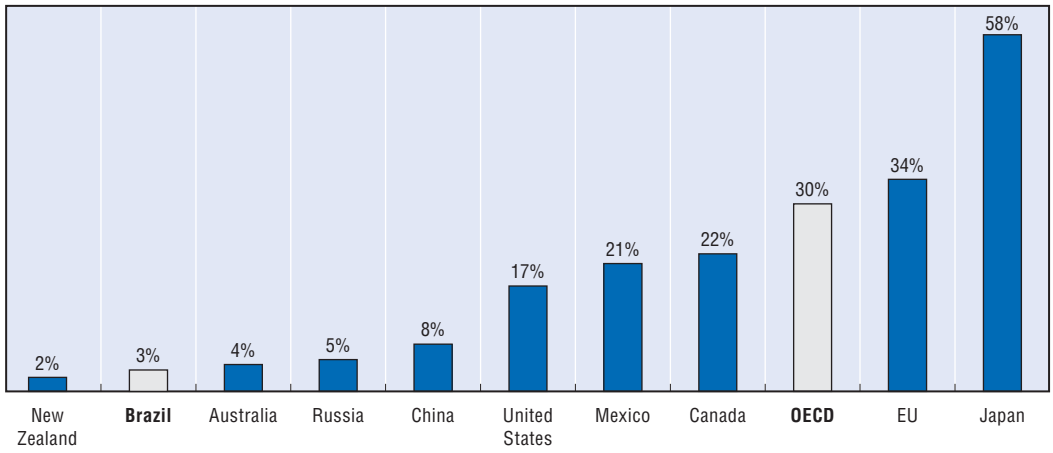
p: preliminary.

Source: OECD PSE/CSE databases 2005.

A comparison of producer support for Brazil and the principal world agricultural players shows that Brazil is a country with one of the lowest producer support levels (Figure 2.17). The percentage PSE in Brazil, at 3% in 2002-04, is comparable with that of New Zealand (2%) and Australia (4%) and is far below the OECD average (30%) (see also Annex 2.A5, Table 2.A5.3).

Figure 2.17. **PSE by country, EU and OECD averages in 2002-04**

As per cent of gross farm receipts



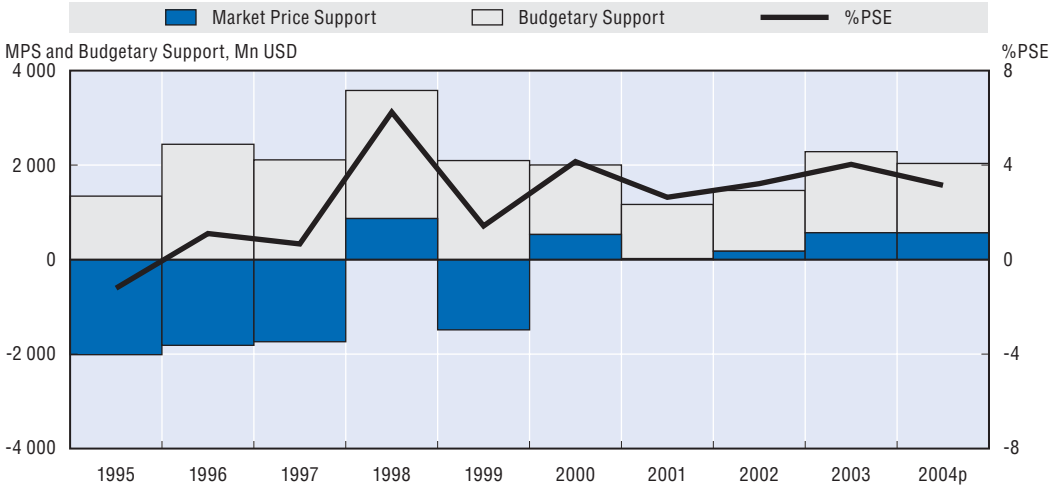
Note: 2002-03 averages for China and Russia.

Source: OECD PSE/CSE databases 2005.

The level of producer support tended to rise between 1995 and 2004 (Figure 2.18). In 1995, the first year after the implementation of the *Real Plan* and the removal of tariffs on imports from the Mercosur, the government accorded relatively high price guarantees to producers and increased spending on marketing credit. However, price and budgetary support was absorbed by strong taxation in the sugar cane/ethanol sector which still remained under price and trade controls. On balance, this resulted in a slightly negative percentage PSE. In the following two years, producers continued to be subjected to implicit price taxation. The agricultural intervention system was reformed and downsized during

Figure 2.18. **Composition of Producer Support Estimate, 1995-2004**

Million USD



Source: OECD PSE/CSE databases 2005.

this period. The effect of reduced market interventions for staple commodities was complemented by price taxation in the sugar cane/ethanol sector. However, the overall market price tax facing Brazilian agriculture was more than offset by an implicit subsidy which accrued to producers from rural debt restructuring.

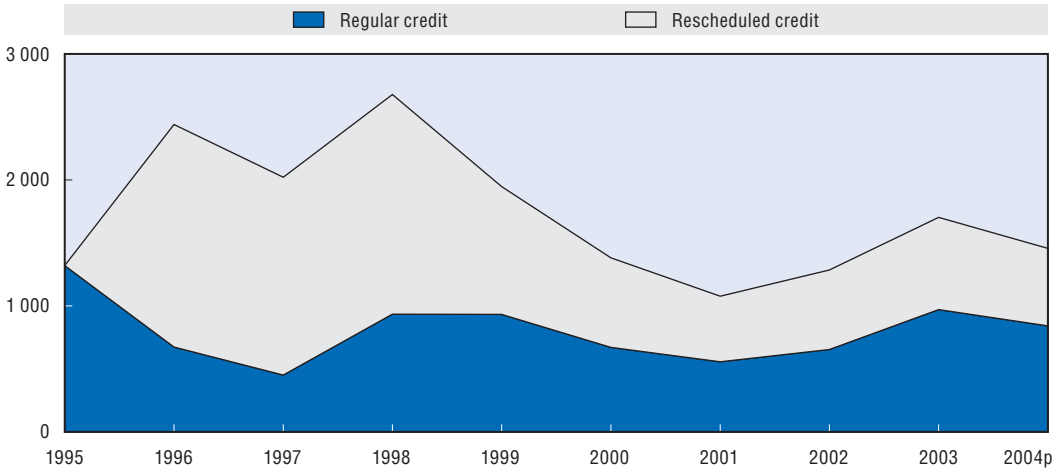
A subsequent rise in support in 1998 reflected the benefit to producers from positive market price support, which now complemented relatively constant budgetary transfers. The switch from price taxation to price support was due to the progressive deregulation of the sugar cane/ethanol sector and temporary strengthening of prices on grain markets. However, in 1999 devaluation of the *real* dampened domestic prices relative to world levels, MPS declined, and overall support fell. The support level rose in the following year as domestic prices strengthened in response to the currency depreciation. A further weakening of the *real* in 2001 reproduced the situation of 1999, and the percentage PSE declined again. In 2002 and 2004, the level of support recovered, reflecting the gradual alignment of domestic prices to external market levels and some increases in implicit credit preferences.

Composition of the PSE

As is seen from Figure 2.18, the contribution of Market Price Support (MPS) to the aggregate producer support in Brazil varies from around zero to very modest positive to negative values. This implies that price and border interventions create only small price distortions in Brazilian agricultural markets.[36] Producer support in Brazil is delivered predominantly through taxpayer transfers. These transfers consist firstly of subsidies accruing to producers from reduced (controlled) interest rates on credit provided through the National Rural Credit System.[37] A second element, accounting for approximately one half of the overall producer benefit from credit support, stems from the restructuring of large farmers' debt accumulated over the period of macroeconomic instability in the late 1980s to mid-1990s (see Box 2.3). Figure 2.19 illustrates the importance of regular and rescheduled credit subsidies in the overall budgetary component of the Brazilian PSE.

Figure 2.19. **Composition of budgetary transfers to Brazilian producers, 1995-2004**

Million USD



Source: OECD PSE/CSE databases 2005.

Consumer Support Estimate

The Consumer Support Estimate (CSE) is an indicator which measures the cost of producer support to consumers of agricultural products. In the OECD PSE methodology the consumer is understood as the first stage buyer of these products. An overall low degree of agricultural price distortions in Brazil means that agricultural support places a marginal burden on consumers. In 1995-2004, the Brazilian percentage CSE fluctuated between minus 3% and 3%, indicating a minor impact of producer support on Brazilian consumers (Table 2.12 and Annex 2.A5, Table 2.A5.4).

Total Support Estimate

The Total Support Estimate (TSE) is the broadest indicator of support, representing the sum of transfers to agricultural producers (the PSE), expenditure for general services (the GSSE), and direct budgetary transfers to consumers.

The General Services Support Estimate (GSSE) encompasses all types of public provision of common and shared support to the agricultural sector. This collective as opposed to individual provision of assistance is what distinguishes the general services support from that measured by the PSE. The GSSE includes public expenditures on agricultural research, education, infrastructural development, crop and veterinary inspection, marketing and promotion, etc. Direct budgetary transfers to consumers represent the subsidy destined to reduce the effect of agricultural price support on prices paid by consumers. For Brazil, this category includes the premiums paid to private downstream agents under the PEP programme.[38]

The aggregate TSE in Brazil reached BRL 8.2 billion (USD 2.7 billion) per year in 2002-04 (Table 2.13). In 2002-04 the Brazilian percentage TSE remained relatively stable at an average level of 0.5%. The cost of support to the overall economy is low relative to most OECD countries, and is roughly comparable to that in Australia (0.3%) and New Zealand (0.4%) (Figure 2.20).

Table 2.13. **Total support to Brazilian agriculture**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004p	Average 2000-04
Total Support Estimate (TSE) in million BRL:	1 855	3 660	4 093	7 726	3 959	5 962	6 109	6 930	9 172	8 522	8 208
Producer Support Estimate (PSE)	–615	630	401	4 157	1 106	3 665	2 748	4 285	7 013	5 952	5 750
General Services Support Estimate (GSSE)	2 470	3 026	3 650	3 500	2 845	2 240	3 232	2 621	2 159	2 537	2 439
Transfers to consumers from taxpayers	0	4	42	69	8	57	129	23	0	33	19
Total Support Estimate (TSE) in:											
Million USD	2 021	3 641	3 795	6 654	2 180	3 259	2 597	2 364	2 986	2 913	2 754
Million euro	1 545	2 872	3 346	5 941	2 047	3 537	2 902	2 512	2 643	2 352	2 502
TSE as share of GDP, %	0.3	0.5	0.5	0.8	0.4	0.5	0.5	0.5	0.6	0.5	0.5

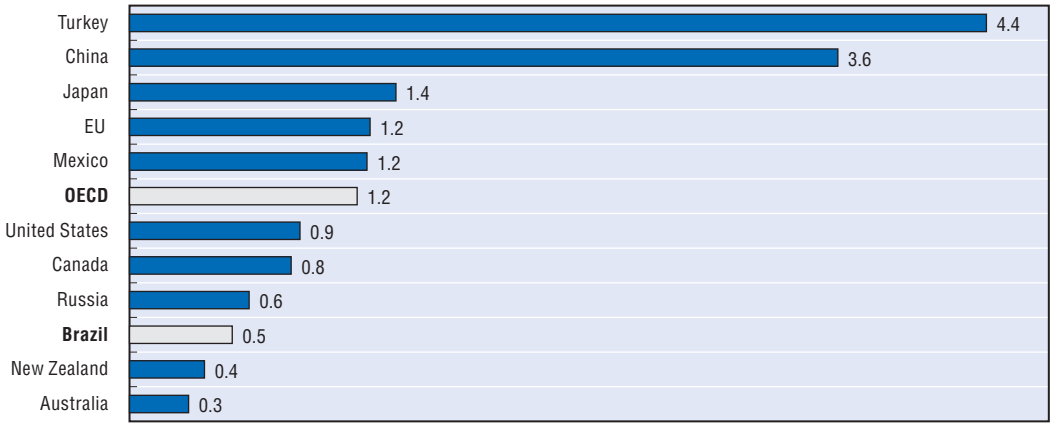
p: preliminary.

Source: OECD PSE/CSE databases 2005.

Figure 2.21 illustrates the relative importance of each component – the PSE, the GSSE and transfers to consumers – in Brazil's TSE. The PSE comprised around three quarters of total support to agriculture in 2002-04. The remaining assistance was delivered almost entirely through general services, with consumer transfers having only marginal importance.

Figure 2.20. **Total Support Estimate in Brazil and selected countries, 2002-04 average**

As per cent of GDP

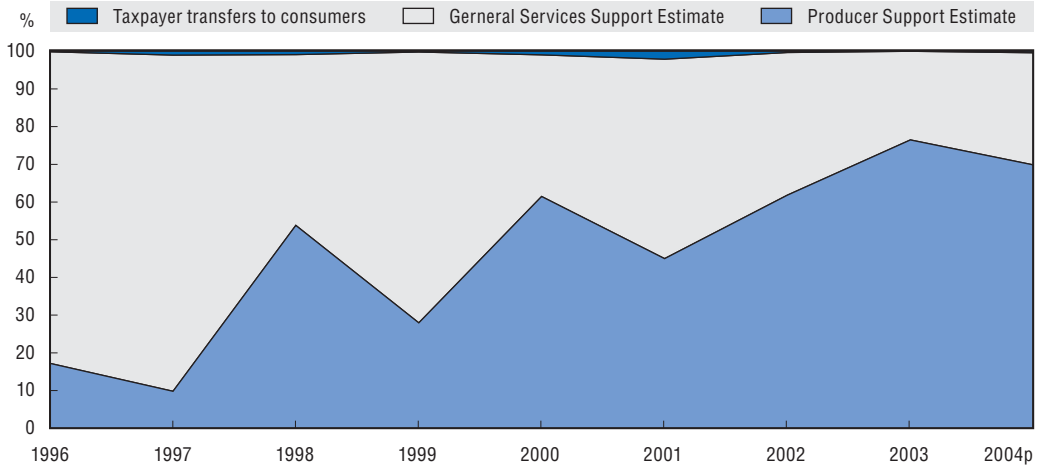


Note: 2002-03 averages for China and Russia.

Source: OECD PSE/CSE databases 2005.

Figure 2.21. **Composition of the Total Support Estimate in Brazil**

Per cent



Source: OECD PSE/CSE databases 2005.

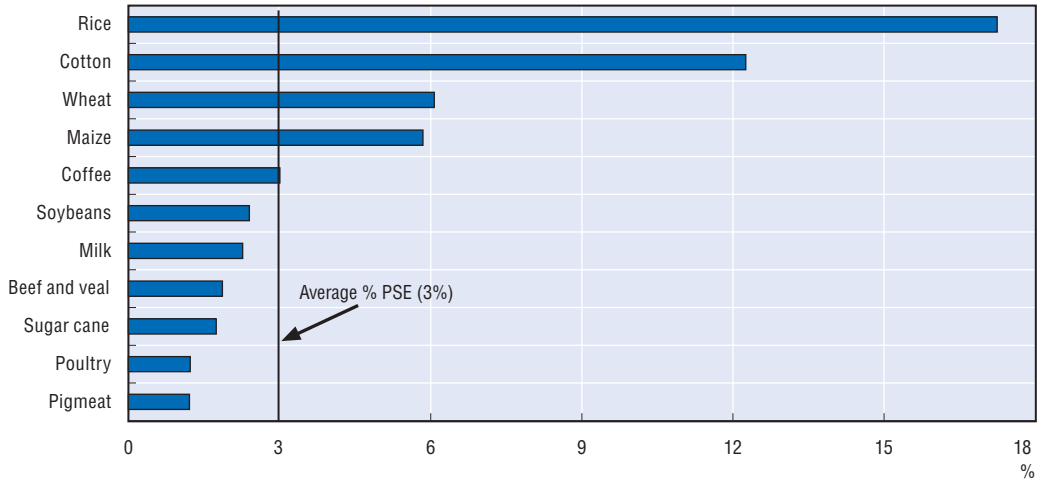
Commodity profile of producer support

Level of producer support by commodities

There is a clear distinction between the levels of support for importable and exportable products (Figure 2.22).[39] For exportables like soybeans, sugar, coffee and meats, producer support varies within the range of 1 to 3%. In contrast, for the principal importables such as wheat, rice, as well as maize and cotton (which have become exports in recent years but were imported through most of the 1990s), support varied between 6%

Figure 2.22. **Brazilian PSEs by commodity, 2002-04 average**

As per cent of gross farm receipts



Source: OECD PSE/CSE databases 2005; WITS.

and 17%. The only exception in the importable group is milk. In the second half of the 1990s, this commodity received a support comparable to other importables (13%), but in the current decade this level dropped to 2%. Domestic milk production has expanded in Brazil – by 2002-04 milk imports had become very small and the sector even produced marginal exportable surpluses. In contrast to maize and cotton, which went through a similar transformation in the current decade, milk receives a relatively small share of the government's support.

A comparison of the Producer Nominal Assistance Coefficients (the NACp) for grains and cotton with Brazil's MFN tariff rates set for extra-Mercosur trade shows that the NACs for these commodities are roughly equal or exceed the Mercosur Common External Tariff (Table 2.14). Given that the effective border protection for these commodities is minimal, as the lion's share of imports enters Brazil duty free from the Mercosur zone, this suggests that support through credit programmes effectively compensates Brazilian producers for having to compete with Mercosur partners.

Table 2.14. **Brazil's nominal assistance coefficients and MFN import tariffs for principal importables**

1995-2004 average

	NAC, %	MFN tariff, %
Wheat	13	6
Maize	14	10
Rice	17	13
Cotton	15	7

Note: Tariff line for wheat is 100190; maize – 100580; MFN tariff for rice is the trade weighted average of tariffs lines 100610, 100620 and 100630; and for cotton – 520100.

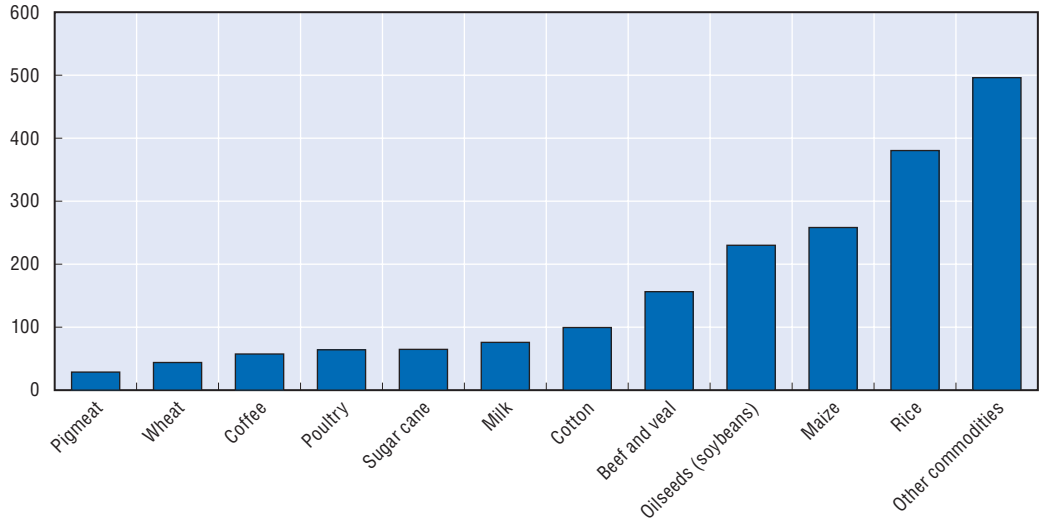
Source: OECD PSE/CSE databases 2005; WITS.

Distribution of total producer support across commodities

The distribution of overall producer support across commodities reflects not only the relative levels of domestic and external prices and the scale of budgetary assistance to specific commodities, but also the relative importance of these commodities to overall agricultural production. In 2002-04, approximately one half of the aggregate producer support in Brazil went to four crops: soybean, maize, rice and cotton (Figure 2.23). In the livestock sector, beef producers were the largest recipients, receiving 8% of the all producer support.

Figure 2.23. **Distribution of total producer support by commodity, 2002-04 average**

Million USD



Source: OECD PSE/CSE databases 2005.

The analysis of agricultural support in Brazil leads to the following general conclusions:

- The level of producer support, as measured by the percentage PSE, indicates a relatively low degree of policy interventions in Brazilian agricultural markets. However, the recorded level of producer support tended to rise slightly between 1995 and 2004.
- Fluctuations in support reflected primarily macroeconomic impacts on the relative levels of domestic and world market prices.
- Producer support is provided mostly through transfers from taxpayers arising from preferential credit to the sector. Approximately one half of this support stems from the restructuring of farm debt accumulated over the period of macroeconomic instability in the late 1980s to mid-1990s.
- The highest support levels are for import-competing staple crops and cotton. These commodities receive minimal border protection, but producers obtain credit support, which effectively compensates them for having to compete with other Mercosur partners.
- Producer support (the PSE) dominates total support to the agricultural sector (the TSE), with the relative importance of general services falling significantly over the analysed period.

- Brazil provides little support to its agricultural sector, yet that support has become more distorting and less oriented towards long-term development. The share of support provided to producers, mostly in the form of credit subsidies, is increasing, while expenditures on general services are becoming relatively less important. However, the latter category includes important long-term investments for Brazil, in areas such as research and extension, training, and the development of rural infrastructure.

2.5. Summary and conclusions

Brazilian agricultural policies were broadly liberalised in the 1990s. However, there continues to be a wide array of policy interventions. Many policy measures are targeted at specific constituencies and the overall scale of support to the sector is low relative to the size of the sector, and in comparison with other countries.

There are several mechanisms to support producer prices, but overall these do not result in broad, sector-wide price distortions. Rather, Brazilian agricultural price support provides a limited subsidy to producers who are considered to be at a disadvantage, either because their costs are raised by underdevelopment of infrastructure, or because of low incomes. These policies could keep farmers afloat until they become profitable, for example as infrastructural development catches up, or as investments to improve semi-subsistence farmers' competitiveness take hold. In that sense they have the potential to correct market failures. On the other hand, they also have the potential to retard adjustment among farmers whose best prospects lie ultimately outside agriculture.

Brazil has historically accorded substantial credit preferences to the agricultural sector. In the 1990s, the benefits of this credit were overridden by the adverse effects of hyperinflation, as agricultural prices adjusted more slowly than other prices. This led to a severe rural debt crisis by the mid-1990s. Debt rescheduling was unavoidable given the need to resolve the lending deadlock and open the flow of liquidity into the sector. However, successive rescheduling has created "moral hazard" and led to defaults that are likely to continue in anticipation of further concessions. This may impede fresh lending. Also, to the extent that debt rescheduling involves budgetary support, it may crowd out more productive public spending (*e.g.* for infrastructure development).

Macroeconomic stabilisation substantially reduced the economic risks involved in rural lending. The debt crisis also led the banking system to adopt stricter lending practices, and a multitude of private non-banking credit mechanisms developed in parallel, with the government playing a stimulating role in this process. All this has improved the allocation of resources in the sector.

The Brazilian rural credit system nevertheless continues to be based on special treatment of the agricultural sector, through the administrative allocation of credit resources into the sector and controlled interest rates. In recent years the scale of directed credit has increased substantially, mostly on the basis of an accumulation of demand deposits in the banking sector, a portion of which is allocated to rural lending. Since the abandonment of import substitution, the system has been justified by the need to offset high interest rates which are a legacy of macroeconomic uncertainty. A further rationale for special treatment of the sector emanates from social goals, with affordability of production credit seen as a crucial element of supporting income generation among the rural poor. However, preferential lending addresses the symptoms rather than the causes of economic difficulties faced by agricultural producers and may increase distortions in the

allocation of resources rather than reduce them. The dominance of a few banks in delivering preferential rural credit in Brazil could also crowd out other lenders and impede the development of commercial bank credit for agriculture.

Brazil undertook a sweeping liberalisation of its trade policies at the beginning of the 1990s. Within a few years all major non-tariff trade controls were abolished and tariff protection reduced drastically. Further reforms have followed since the conclusion of the URAA and the establishment of the Mercosur Customs Union.

Trade liberalisation was carried out together with a substantial deregulation of domestic agricultural markets. These parallel reforms helped to establish an incentive structure in agriculture which was more compatible with the country's comparative advantage. The sector has adjusted rapidly to new incentives, with responses in the scale and composition of production and trade.

The direction of trade has also changed. Although OECD country markets are still very important (notably the European Union), the fastest export growth is with countries outside the OECD area (in particular China and Russia). For this reason, Brazil attaches considerable importance to bilateral and regional trade deals, as well as multilateral reform.

In the short to mid-term, improved access to external markets will no doubt be an important determinant of the sector's growth. In the longer term, the degree to which Brazil will be able to exploit its agricultural export potential will hinge increasingly upon domestic factors. In this regard, macroeconomic stability is important, as is continued progress in addressing structural weaknesses. With respect to the latter, priority areas are likely to be the development of physical infrastructure, in particular transportation networks, and the improvement of credit, tax, risk management and income insurance systems in the agro-food system.

Agricultural export growth should also be viewed from the perspective of its environmental and social impacts. As far as the social impacts are concerned, an important issue is the extent to which increasing agricultural exports help or hinder the reduction in poverty and income inequality. These linkages and their policy implications are discussed in Chapter 3.

Notes

1. The National Wheat Purchase Commission, the Brazilian Coffee Institute, and the Institute of Sugar and Alcohol.
2. The economic clauses of the International Coffee Agreement provided for a cartel-type regulation of international coffee trade.
3. Non-government sugar exports were only permitted from the North East region.
4. According to Brazilian legislation, food security stocks, comprising a number of basic foodstuffs, should be maintained at a level equal to one month's consumption of these products.
5. The adjustment of trade price prices involves netting them of costs incurred between the farm gate and the border, where trade prices are registered. Such costs include transportation, handling, and processing necessary to bring the farm gate product into a tradable form and to a trade location.
6. Constitutional Funds of Regional Financing (*Fundos Constitucionais de Financiamento Regional*) for the North, North East and Centre West are the special extra-budgetary funds for support of economic and social development of these three regions. These funds are formed through accumulation of a fixed percentage of federal income tax and a federal tax on industrial products.

7. Loans based on directed credit resources are subject to registration in the Common Register of Rural Operations (RECOR – *Registro Comum das Operações Rurais*).

8. EGF-COV – *Empréstimo do Governo Federal com Opção de Venda*.

9. EGF-SOV – *Empréstimo do Governo Federal sem Opção de Venda*.

10. Fund for the Coffee Sector Support (*Fundo de Defesa da Economia Cafeeira*).

11. The Finame interest rate is the weighted average of individual programme interest rates within the Finame group.

12. For marketing and working capital credit, the maximum loan varies from BRL 60 000 to BRL 500 000 per borrower (around USD 17 000 and USD 143 000) depending on a product. For investment credit, maximum limits vary by programme – from BRL 56 000 (around USD 19 000) under PROGER to BRL 600 000 (around USD 205 000) under MODERINFRA. Investment loans for co-operatives under PRODECOOP are limited to BRL 20 million (around USD 7 million). No upper limit on loan size, except investments in the coffee sector, is applied only under MODERFROTA.

13. *OECD Economic Surveys of Brazil* (OECD, 2001 and OECD, 2005) contain a comprehensive overview of the Brazilian tax and social security systems. This section focuses on general and specific preferences applying to the agricultural sector under the current Brazilian tax system.

14. Due to a substantial development gap between the industrial South and South East and less industrially developed North and North East, this problem becomes particularly relevant in the conditions of Brazil. Notably, the more industrialised South and South East capture more revenue than the less developed North and North East.

15. For example, production in the state of São Paulo is levied an inter-state ICMS of 7%. If it is delivered to the state of Ceará, where the intra-state ICMS is 17%, the producer has to pay the difference of 10% to the state of Ceará. This mechanism in effect represents a transfer of tax revenues between the state of São Paulo and the state of Ceará (OECD, 2001).

16. A 60% reduction in ICMS taxable base applies in the cases of inter-state transactions with pesticides, raw materials for fertilisers, lime stone, seeds, feeds and raw materials for feeds; and 30% reduction applies to inter-state transactions with maize, soybeans, rapeseed cake and fertilisers.

17. These rates apply if the company practices the non-cumulative system of payment of these taxes, which is the case of agricultural companies. For companies, who are under the cumulative system, the rates are set at 0.65% (PIS/Pasep) and 3% (COFINS).

18. The programme originates from the World Bank pilot project *Cèdula da Terra* (Land Bond), initiated in 1998. In 1999 it was transformed into the Land Bank programme, and after the revision of implementation rules in 2003, was renewed as the Land Credit programme.

19. In addition to Food Cards and Food Grant, the Family Grant has incorporated the School Grant (*Bolsa Escola*) and the Gaz Grant (*Auxilio-Gás*). These social transfers are conditional on school attendance and natal and primary health care.

20. Assistance through the *Bolsa Família* is provided to two groups of beneficiaries: families in extreme poverty with a monthly per capita income not exceeding BRL 50 (USD 18 at March 2005 exchange rate); and poor families and extremely poor families with children up to 16 years of age, and monthly per capita income not exceeding BRL 100 (UDS 37). The programme covers approximately 59% of poor families in Brazil (PNAD, 2001/IBGE).

21. Targeted purchases from family farms obtained a formal programme status in 2003 when they became part of the integrated Zero Hunger programme. At least six sub-programmes are currently in effect, of which *Direct Purchases from Family Farms* (the CDAF – *Compra Direta da Agricultura Familiar*) is the most important. In addition to CDAF, this group includes the following programmes: Forward Purchases from Family Farms (the CAAF – *Compra Antecipada da Agricultura Familiar*); Special Forward Purchases from Family Farms (the CAEAF – *Compra Antecipada Especial da Agricultura Familiar*); Guarantee Certificate of Purchase from Family Farms (the CGAF – *Certificado de Garantia de Compra da Agricultura Familiar*); Milk Production and Consumption Incentive Programme (the PAA-Leite – *Programa de Incentivo à Produção e ao Consumo de Leite no Semi-Árido do Nordeste*); and Local Purchases (the PAA-CL – *Compra Local*).

22. The "rule of similars" prohibited the use of incentives, exemptions or official credit lines to import products that could be produced locally.

23. Common Market Council (CMC) Decision 31/03 authorized Mercosur member countries to maintain individual lists of exceptions to the CET until 31 December 2005. Each list may contain up to 100 tariff lines, and can be modified every 6 months for up to 20% of the tariff lines.

24. Including barley, coconuts, cotton, dairy products, garlic, prepared peaches, rice, sorbitol, and wine.

25. Among agricultural products eligible for BNDES ExIm are meats and meat preparations, dairy and other products of animal origin, live plants, vegetables, fruit, tea, spices, vegetable saps and extracts, vegetable oils, margarine, glycerol, vegetable waxes, invert sugar and other sugar and sugar syrups blends, molasses, sugar confectionary, cocoa preparations, cereal preparations, preserved mushrooms, fruit and vegetables preserves, jams, fruit juices other than orange juice, beverages, spirits, and vinegar.

26. The SBCE is composed of the Banco do Brasil, BNDES, la Compagnie Française d'Assurance pour le Commerce Extérieur (COFACE), and four Brazilian private insurance companies.

27. The IRB is a mixed-economy state enterprise controlled by the Brazilian federal government.

28. Government Decree 4.543 (2002).

29. Government Decree 3.646 of October 2000. As of October 2004, this rate was still in effect.

30. Government Decree 3.684 of December 2000, revoked in May 2001.

31. Mercosur is the customs union of Argentina, Brazil, Paraguay and Uruguay, which provides for a free movement of goods, services and factors of production between the participating countries with no duties, non-tariff restrictions or other equivalent measures imposed. Mercosur members apply a common external tariff and a common trade policy. The agreement was implemented in 1995 when after a five-year transition period all major tariff and non-tariff barriers to trade between the three countries were eliminated. However, a complete harmonisation of common external tariff is foreseen by 2006.

32. The Latin American Integration Association (ALADI) is an inter-governmental organisation that continues the process started by the Latin American Free Trade Association (ALALC) in 1960 by promoting the integration of the region. Its current members are Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela.

33. In the agreement with Cuba, Brazil granted concession for live animals, honey, potatoes, citrus fruit, coffee, meat preparations, sugar, cocoa, pastry, fruit preparations, ethyl alcohol, tobacco, and essential oils. The agreement with Mexico included tariff concessions for fruit, oilseeds, vegetable and animal oils, fruit and vegetable preparations, essential oils, among others.

34. Estimations prior to 1995 were not feasible due to difficulties in obtaining reliable information on budgetary transfers (mostly due to hyperinflation and currency denomination).

35. The complete data series on PSE/CSEs, the reference prices, the exchange rates used and a complete documentation of definitions and sources are available at the following Internet address: *www.oecd.org/agr/* (click on "Statistics", then click on "Producer and Consumer Support Estimates, OECD Database 1986-2004", and finally select "Brazil").

36. See section "Domestic Price Support" of this chapter for a discussion of Brazilian domestic and world price trends in 1990-2004.

37. See section "Credit Policies" of this chapter for an overview of government-supported credit programmes for agricultural producers.

38. See section "Domestic Price Support" of this chapter.

39. Detailed results for individual commodities are presented in Annex 2.A5, Tables 2.A5.1 to 2.A5.4 and Figures 2.A5.1 to 2.A5.11.

ANNEX 2.A1

Brazilian Minimum Crop Prices in 2004/05

Table 2.A1.1. **Basic minimum prices for 2004/05 crop year**

AGF and EGF: Summer crops and regional products – 2004/2005; North and North East – 2005

Products/Regions	Unit	Price per unit, BRL	Effective from
Cotton lint			
South, South East, Centre West and South of Bahia	15 kg	44.60	Feb. 05
North and North East (except South of Bahia)	15 kg	44.60	June 05
Paddy rice			
Long fine			
South, South East, North East and Centre West (except Mato Grosso)	50 kg	20.00	Feb. 05
North and Mato Grosso	50 kg	20.70	Feb. 05
Long			
South, South East, North East and Centre West (except Mato Grosso)	60 kg	11.30	Feb. 05
Mato Grosso and Tocantins	60 kg	10.75	Mar. 05
North except Tocantins	60 kg	10.12	Feb. 05
Carnaúba wax (North East)	15 kg	2.90	Aug. 04
Manioc flour			
South, South East and Centre West	50 kg	15.00	Jan. 05
North and North East	50 kg	17.00	Feb. 05
Manioc starch (South, South East and Centre West)	1 kg	0.44	Jan. 05
Gum/Polvilho (Noth and North East)	1 kg	0.44	Feb. 05
Beans			
South, South East, Centre West and South of Bahia	60 kg	47.00	Nov. 04
North, North East (except South of Bahia)	60 kg	47.00	Jan. 05
Maçacar beans (North and North East)	60 kg	30.00	Jan. 05
Jute/Mallow			
Dry, not compressed – Brazil	1 kg	0.85	Feb. 05
Compressed – Brazil	1 kg	1.00	Feb. 05
Mamona seeds			
North, North East, Goiás, Mato Grosso, Mato Grosso do Sul and São Paulo	60 kg	30.30	July 04
Maize			
South, South East, South of Bahia, South of Maranhão and Piauí	60 kg	13.50	Feb. 05
Goiás, Mato Grosso do Sul and Federal District	60 kg	13.00	Feb. 05
Mato Grosso, Acre and Rondônia	60 kg	11.00	Feb. 05
North except Acre and Rondônia, and North East (except South of Bahia), South of South of Maranhão and Piauí	60 kg	16.00	June 05
Sesame seeds			
Bahia, Paraíba and Rio Grande do Norte	1 kg	0.85	Aug. 04
Sorghum			
South, South East, Centre West, and South of Bahia	60 kg	9.45	Feb. 05
North and North East except South of Bahia	60 kg	11.20	June 05

Source: MAPA.

Table 2.A1.1. **Basic minimum prices for 2004/05 crop year** *(cont.)*

EGF: Summer crops and regional products – 2004/2005; North and North East – 2005

Products/Regions	Unit	Price per unit, BRL	Effective from
Cotton (bolls)			
South, South East, Centre West and South of Bahia	15 kg	13.40	Feb. 05
North and North East (except South of Bahia)	15 kg	13.40	June 05
Cotton seed			
South, South East, Centre West and South of Bahia	15 kg	2.37	Feb. 05
North and North East (except South of Bahia)	15 kg	2.37	June 05
Garlic			
South, South East, Centre West and North East	1 kg	1.76	Aug. 04
Peanuts			
South, South East, Centre West and North East	25 kg	16.10	Dec. 04
Natural rubber – Brazil	1 kg	1.00	Feb. 05
Cashew nut			
North and North East	1 kg	0.92	July 04
Silk cocoon			
Paraná and São Paulo	1 kg	3.80	Sept. 04
Castanha-do-Pará, in shell			
North	1 hl	36.00	Jan. 05
Castanha-do-Pará, processed			
North	1 kg	1.90	Jan. 05
Sunflower			
South, South East, Centre West	60 kg	17.61	Nov. 04
Guaraná			
North, North East and Centre West	1 kg	5.00	Aug. 04
Milk			
South and South East	1 l	0.38	Oct. 04
Federal District, Mato Grosso do Sul and Goiás	1 l	0.36	Oct. 04
North and Mato Grosso	1 l	0.33	Dec. 04
North East	1 l	0.38	Mar. 05
Popcorn maize			
South, South East, Centre West and South of Bahia	1 kg	0.44	Feb. 05
Cerrífero powder			
North East	1 kg	2.90	Aug. 04
Manioc			
Root – South, South East and Centre West	1 t	54.00	Jan. 05
Root – North and North East	1 t	60.00	Feb. 05
Soybeans			
South, South East, Centre West and Rondônia	60 kg	14.00	Feb. 05
North and North East (except Rondônia)	60 kg	13.00	Feb. 05

Source: MAPA.

ANNEX 2.A2

Preferential Credit Programmes for Agriculture in 2004/05

Table 2.A2.1. **Main SNCR investment credit lines in 2004/05 crop year**

Program	Sub-programme	Credit limit per contract, BRL 1 000	Interest rate, % p.a.	Maximum term, years	Main investment activities financed
Prodefruta	Profruta, Prodevinho, Procaju and Procacau	200	8.75	8	Improvement of fruit tree varieties
Moderagro	Prososlo, Propasto and Sisvárzea	200	8.75	5	Soil correction, green fertilisation, soil conservation, pasture recuperation and várzea (flat fertile soil) classification
Prodeagro	Prodecap, Prodemel, Prodeflor e Aquicultura	150	8.75	5	Flower, egg, goat, fish, bee, suine, poultry milk and silk production
Moderinfra[1]	Proazem and Proirriga	Up to 400	8.75	8	Irrigation, construction and modernization of farm storages
		From 400 to 600	10.75		
Prodecoop	Prodecoop	20 000[2]	10.75	12	Investments in cooperatives for development of value added operations
Propflora	Propflora	150	8.75	12	Commercial forestry and replanting of reserve areas
Proleite	Proleite	Incorporated in Prodeagro			Machinery and equipment for the dairy industry
Moderfrota	Moderfrota	No limit[3]	9.75[4]	5	Agricultural tractors, harvesting machines and equipment for coffee processing
			12.75	6	
PROGER-Invest.	Proger-Invest.	56	7.25	8	Investments for small producers
Special Agricultural Finame	Special Agricultural Finame	300 for some sectors, no limit for other sectors	12.75	5	Machinery and equipment for cotton, seed production, fruit and fish processing, except items financed under Moderfrota

1. In the case of collective borrowing the maximum loan is BRL 1.8 million and the interest rate is defined based on individual limits.
2. The maximum loan may be increased by up to 100%.
3. Except coffee, for which the maximum loan is BRL 20 000.
4. Annual gross income up to BRL 150 000.

Source: MAPA; MF and BNDES.

Table 2.A2.2. **PRONAF credit lines and conditions**

	Types of credit	Maximum loan size	Interest rate per annum	Discounts for due repayments	Maximum term	Grace period
Group A	Investment	BRL 13 500 and technical assistance grant of BRL 15 000	1.15%	46% of the principal	10 years	Up to 1 year
Group B	Micro-credit	BRL 1 000	1.00%	25% on the principal	1 year	Up to 1 year
Group A/C	Working capital	BRL 2 500	2.00%	Lump sum of BRL 200	2 years	–
Group C	Working capital	BRL 3 000	4%	Lump sum of BRL 200	2 years	–
	Investment	BRL 6 000	4%, with 25% rebate for due repayments	Lump sum of BRL 700 collective credit with at least 3 participants	8 years	Up to 5 years
Group D	Working capital	BRL 6 000	4%	–	2 years	–
	Investment	BRL 18 000	4%, with 25% rebate for due repayments	–	8 years	5 years
Groups C and D	Investment Agregrar	Individuals: up to BRL 15 000 Group: up to BRL 600 000	4%, with 25% rebate for due repayments	–	8 years	5 years
	Integrated Collective Investment	Up to BRL 200 000 (BRL 5 000 per beneficiary)	4%, with 25% rebate for due repayments	–	8 years	5 years
	Pronaf Florestal	Group C: BRL 6 000 Group D: BRL 4 000	4%, with 25% rebate for due repayments	–	12 years	Up to 8 years
Group E	Working capital	BRL 28 000	7.25%	–	2 years	–
	Investment	BRL 36 000	7.25%	–	8 years	3 years

Source: MDA; Marques (2004).

ANNEX 2.A3

Zero Hunger Programme

Table 2.A3.1. **Components of Zero Hunger programme, 2004**

Activity/Programme	Ministries responsible
Income transfers	
Income transfers with conditionality	MDS, MS, ME
Health care	
Basic health care	MS
Health care for strategic population groups and unfavourable situations	MS
Permanent education and professional qualification in the unified health system	MS
Hospital and clinical care in the unified health system	MS
Formation of food stocks purchases of from family farms	
Agricultural food supplies	MDS, MAPA
Adult literacy and school meals	
Brazil at school	ME
Literate Brazil	ME, MDA
Democratisation of learning systems management	ME
Education in early childhood	ME
Agrarian reform	
Sustainable settlements for rural workers	MDA
Credit to land settlers	MDA
Sustainable development in the agrarian reform	MDA
Regularisation and management of land structure	MDA
Agricultural and agro-industrial research and development for Social inclusion	MAPA
Peace in the countryside	MDA
Management of agrarian development activities	MDA
Housing, basic sanitation and environment	
Basic urban sanitation	MS, MCID
Urbanisation, regularisation and integration of precarious settlements	MCID
Basic rural sanitation	MS
Urban solid waste	MDS, MS, MMA, MCID, MTE
Housing of social interest	MCID
Employment and income	
First job	MTE, MIN
Coherence of public employment, labour and income policies	MTE
Social and professional qualification	MTE
Development of micro, small and medium enterprises	MDIC
Solidarity economy in development	MDS, MTE
Productive organisation of poor communities – PRONAGER	MIN
Aquaculture and fisheries of Brazil	SEAP
Brazilian handicraft	MDIC
Democratising access to professional, technological and university education	ME
Network of labour protection	MTE
Attention to vulnerable groups	
Social protection for childhood, adolescence and youth	MDS
Social protection for the handicapped	MDS
Social protection for the elderly	MDS
Social protection for adults in situation of vulnerability	MDS
Support to local development	
Citizen energy	MME
Sustainable development of the Amazon region	MMA
Economic promotion and insertion of sub-eegions – PROMOVER	MIN
E-government	MCOM
Universal availability of telecommunication services	MCOM

Table 2.A3.1. **Components of Zero Hunger programme, 2004** *(cont.)*

Activity/Programme	Ministries responsible
Promotion of sustainability of sub-regional spaces – PROMESO	MIN
Sustainable development of rural territories	MDA
Local productive arrangements	MDIC
Digital certification	PR
Specific food security actions	
Access to food	MDS
Management of food security policies and nutrition	MDS
Education for healthy food	MDS
Solidarity network of popular restaurants	MDS
Food bank	MDS
Healthy food	MS
Policies for specific population groups	
Ethnic identity and cultural heritage of indigenous peoples	ME, MJ, MS, MDA
Protection of indigenous lands, territory management and ethnic development	MJ, MMA
Traditional communities	MMA
Afro-Brazilian culture	ME, MINC
Support to family farming	
Family farming – PRONAF	MDA
Human rights, citizenship and social inclusion through sports	
Eradication of child labour	MDS, MTE, SEDH
Struggle against the sexual abuse and exploitation of children and adolescents	ME, MDS, SEDH
Second half	MES
Culture, identity and citizenship	MINC
Social inclusion through production of sport material	MES
Management of policies for promotion of racial equality	SEPPIR, MDS
Eradication of slave labour	SEDH, MTE
Gender equality in labour relations	SEPM
Human rights, the rights of all	SEDH
Science and technology for social inclusion	MCT
Living in semi-arid areas	
Integrated and sustainable development of semi-arid areas – CONVIVER	MIN, MDA, MMA, MCID
Struggle against desertification	MMA

Acronyms: MDA – Ministry of Agrarian Development; MAPA – Ministry of Agriculture and Food; ME – Ministry of Education; MS – Ministry of Health; MCID – Ministry of Cities; MDS – Ministry of Social Development and Struggle Against Hunger; MMA – Ministry of Environment; MTE – Ministry of Labour and Employment, MIN – Ministry of National Integration; MDIC – Ministry of Development, Industry and Foreign Trade; MEM – Ministry of Mines and Energy; MJ – Ministry of Justice; MCT – Ministry of Sciences and Technology; MCOM – Ministry of Communication; MES – Ministry of Sports; SEAP – Special Secretariat for Aquaculture and Fisheries; SEDH – Special Secretariat for Human Rights; SEPPIR – Special Secretariat for Promotion of Racial Equality Policies; SEPM – Special Secretariat for Women Policies.

ANNEX 2.A4

Brazilian Import Tariff and Export Subsidy Data

Table 2.A4.1. **Brazil average MFN import tariff on agricultural commodities, per cent, 1989-2003**

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Wheat and meslin															
100190 Common wheat	25.0	25.0	20.0	15.0	5.0	10.0	5.0	5.0	5.0	6.5	6.5	6.5	6.3	5.8	5.0
Maize															
100590 Maize other than for seed	15.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	11.0	11.0	11.0	10.5	9.5	9.5	9.5
Rice															
100610 Rice in the husk (paddy or rough)	20.0	15.0	0.0	10.0	10.0	6.7	6.7	6.7	8.7	8.7	8.7	8.3	8.5	7.7	7.7
100620 Husked (brown) rice	20.0	15.0	0.0	10.0	10.0	10.0	16.0	15.0	17.0	13.0	13.0	12.5	13.8	11.5	11.5
100630 Rice semi-milled or wholly milled	20.0	15.0	0.0	10.0	10.0	11.0	13.5	13.0	15.5	14.0	14.0	13.5	17.0	15.9	15.9
Soybeans															
120100 Soya beans, whether or not broken	0.0	10.0	10.0	10.0	10.0	8.0	4.0	4.0	4.0	5.5	5.5	5.5	5.3	4.8	4.8
Tomatoes															
070200 Tomatoes, fresh or chilled	25.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Onions															
070310 Onions and shallots fresh or chilled	25.0	25.0	20.0	15.0	10.0	10.0	5.0	5.0	5.0	6.5	6.5	6.5	6.3	5.8	5.8
Vegetables preserved															
071120 Olives	23.3	16.7	13.3	11.7	10.0	2.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Dried leguminous vegetables															
071331 Beans of the species Vigna mungo or Vigna radiata	25.0	15.0	10.0	10.0	10.0	10.0	5.0	5.0	5.0	6.5	6.5	6.5	6.3	5.8	5.8
071332 Small red beans	25.0	15.0	10.0	10.0	10.0	0.0	5.0	5.0	5.0	6.5	6.5	6.5	6.3	5.8	5.8
071333 Kidney beans, including white pea beans	25.0	0.0	0.0	0.0	10.0	0.0	5.0	5.0	5.0	6.5	6.5	6.5	6.3	5.8	5.8
Bananas															
080300 Bananas, including plantains, fresh or dried	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Dates, figs, pineapples, avocados, guavas, mangoes															
080430 Pineapples	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
080440 Avocados	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Citrus fruit															
080510 Fresh oranges	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Grapes															
080610 Fresh grapes	30.0	30.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Melons															
080711 Melons and watermelons, fresh	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Apples, pears and quinces, fresh															
080810 Apples	32.0	32.0	30.0	25.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
080820 Pears and quinces	33.5	33.5	30.0	25.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Table 2.A4.1. **Brazil average MFN import tariff on agricultural commodities, per cent, 1989-2003** *(cont.)*

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Fruit juices															
200911 Orange juice, frozen	55.0	40.0	0.0	0.0	0.0	0.0	14.0	14.0	14.0	17.0	17.0	17.0	16.5	15.5	15.5
Coffee, whether or not roasted or decaffeinated															
090111 Not decaffeinated	27.5	22.5	12.5	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
090112 Decaffeinated	30.0	25.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Cane or beet sugar															
170111 Cane sugar	25.0	25.0	20.0	20.0	20.0	2.0	16.0	16.0	16.0	19.0	19.0	19.0	18.5	17.5	17.5
170112 Beet sugar	25.0	25.0	20.0	20.0	20.0	2.0	16.0	16.0	16.0	19.0	19.0	19.0	18.5	17.5	17.5
Undenatured ethyl alcohol															
220720 Ethyl alcohol and other spirits, denatured, of any strength	20.0	20.0	13.3	13.3	6.7	6.7	11.5	10.0	20.0	29.0	26.5	24.0	22.5	21.5	21.5
Tobacco															
240110 Tobacco, not stemmed/stripped	68.8	68.8	60.0	51.3	17.5	13.0	14.0	13.2	13.2	16.2	16.2	16.2	15.7	14.7	14.7
Cotton															
520100 Cotton, not carded or combed	10.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	3.0	6.0	8.0	8.0	8.5	9.2	9.2
Milk powder															
040210 Milk in powder, granules or other solid forms, of a fat content not exceeding 1.5%	38.3	30.0	25.0	20.0	20.0	35.0	32.0	30.0	27.0	27.0	30.0	27.0	27.0	27.0	27.0
Butter and other fats and oils derived from milk															
040510 Butter	40.0	30.0	25.0	20.0	20.0	20.0	16.0	16.0	16.0	19.0	19.0	19.0	18.5	17.5	17.5
Meat of bovine animals															
020110 Carcasses and halfcarcasses, fresh or chilled	30.0	0.0	15.0	0.0	10.0	0.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
020130 Boneless meat, fresh or chilled	30.0	0.0	15.0	10.0	10.0	0.0	12.0	12.0	12.0	15.0	15.0	15.0	14.5	13.5	13.5
020210 Carcasses and halfcarcasses, frozen	30.0	0.0	15.0	0.0	10.0	0.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
020230 Boneless meat, frozen	30.0	0.0	15.0	10.0	10.0	0.0	12.0	12.0	12.0	15.0	15.0	15.0	14.5	13.5	13.5
Meat of swine, fresh, chilled or frozen															
020311 Carcasses and halfcarcasses	30.0	20.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
020321 Carcasses and halfcarcasses	30.0	20.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Meat and edible offal of the poultry															
020711 Poultry not cut in pieces, fresh or chilled	30.0	20.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
020712 Poultry not cut in pieces, frozen	30.0	20.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Birds' eggs															
040700 Birds' eggs, in shell, fresh, preserved or cooked	24.0	18.0	15.0	12.0	12.0	12.0	2.7	2.7	2.7	3.7	3.7	3.7	3.5	3.2	3.2

Table 2.A4.1. **Brazil average MFN import tariff on agricultural commodities, per cent, 1989-2003** *(cont.)*

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Simple average tariff rate	33.1	26.3	20.5	16.0	10.5	9.1	9.9	10.1	10.1	12.9	13.0	12.9	12.6	11.7	11.7
Median tariff rate	30.0	20.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	13.0	13.0	13.0	12.5	11.5	11.5
Minimum tariff rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum tariff rate	85.0	85.0	75.0	65.0	30.0	35.0	32.0	40.0	36.0	36.0	31.0	27.0	55.0	55.0	55.0
Standard deviation	18.5	18.3	16.4	13.6	6.0	5.9	4.8	5.1	5.0	5.3	5.3	5.1	5.4	5.3	5.3
Coefficient of variation	0.6	0.7	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5

Source: WITS database; ICONE.

Table 2.A4.2. **Brazil export subsidy commitments under the URAA**

USD million

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Beverages, spirits, and vinegar	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bovine meat	5.6	5.4	5.3	5.2	5.0	4.9	4.8	4.6	4.5	4.3
Coarse grains	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Cocoa	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Cotton	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Flowers	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fresh fruit and vegetables	2.5	2.4	2.4	2.3	2.3	2.2	2.1	2.1	2.0	1.9
Processed fruits and vegetables	19.5	19.0	18.5	18.0	17.5	17.1	16.6	16.1	15.6	15.2
Oil cakes	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Other milk products	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Poultry meat	4.8	4.7	4.6	4.5	4.3	4.2	4.1	4.0	3.9	3.7
Preparations (cereals, milk flour, pastry)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sugar	54.1	52.8	51.5	50.1	48.8	47.5	46.2	44.8	43.5	42.2
Tobacco	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vegetable oils	5.7	5.5	5.4	5.3	5.1	5.0	4.8	4.7	4.6	4.4
Wine	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total	93.9	91.6	89.3	87.0	84.7	82.4	80.0	77.7	75.4	73.1

Source: WTO.

ANNEX 2.A5

Estimates of Support to Brazilian Agriculture

Table 2.A5.1. **Total Estimate of Support to Brazilian agriculture**

Million BRL

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004p
I.	**Total value of production (at farm gate)**	**49 569**	**54 567**	**58 402**	**63 457**	**73 915**	**85 660**	**101 459**	**129 581**	**168 779**	**184 782**
	Of which: share of MPS commodities (%)	72	74	73	72	75	77	76	76	80	78
II.	**Total value of consumption (at farm gate)**	**47 642**	**53 879**	**52 912**	**57 072**	**65 345**	**75 134**	**83 588**	**105 995**	**128 795**	**140 129**
III.1	**Producer Support Estimate (PSE)**	**– 615**	**630**	**401**	**4 157**	**1 106**	**3 665**	**2 748**	**4 285**	**7 013**	**5 952**
	A. Market price support	–1 848	–1 823	–1 876	1 009	–2 701	973	51	518	1 743	1 656
	Of which MPS commodities	–1 337	–1 351	–1 367	728	–2 023	747	38	394	1 394	1 288
	B. Payments based on output	153	19	47	68	107	70	92	110	195	114
	C. Payments based on area planted/animal numbers	0	0	0	0	0	0	0	0	0	0
	D. Payments based on historical entitlements	0	0	0	0	0	0	0	0	0	0
	E. Payments based on input use	1 081	2 434	2 230	3 080	3 700	2 623	2 605	3 658	5 035	4 147
	F. Payments based on input constraints	0	0	0	0	0	0	0	0	0	0
	G. Payments based on overall farming income	0	0	0	0	0	0	0	0	40	34
	H. Miscellaneous payments	0	0	0	0	0	0	0	0	0	0
III.2	**Percentage PSE**	**–1**	**1**	**1**	**6**	**1**	**4**	**3**	**3**	**4**	**3**
III.3	**Producer NPC**	**0.97**	**0.97**	**0.97**	**1.03**	**0.97**	**1.03**	**1.00**	**1.00**	**1.01**	**1.01**
III.4	**Producer NAC**	**0.99**	**1.01**	**1.01**	**1.07**	**1.01**	**1.04**	**1.03**	**1.03**	**1.04**	**1.03**
IV.	**General Services Support Estimate (GSSE)**	**2 470**	**3 026**	**3 650**	**3 500**	**2 845**	**2 240**	**3 232**	**2 621**	**2 159**	**2 537**
	I. Research and development	390	531	528	511	531	563	625	650	780	780
	J. Agricultural schools	170	368	440	588	509	404	790	469	348	348
	K. Inspection services	69	112	147	148	91	115	124	104	94	94
	L. Infrastructure	1 426	1 517	2 148	2 213	1 431	1 070	1 517	1 256	908	1 129
	M. Marketing and promotion	0	0	23	40	28	13	7	11	11	11
	N. Public stockholding	414	498	364	0	255	75	169	132	18	175
	O. Miscellaneous	0	0	0	0	0	0	0	0	0	0
GSSE as a share of TSE (%)		**133.1**	**82.7**	**89.2**	**45.3**	**71.9**	**37.6**	**52.9**	**37.8**	**23.5**	**29.8**
V.1	**Consumer Support Estimate (CSE)**	**648**	**1 306**	**1 324**	**–1 467**	**1 591**	**–1 443**	**59**	**–613**	**–1 976**	**–1 769**
	P. Transfers to producers from consumers	937	1 305	1 247	–1 874	1 584	–2 393	–51	–518	–1 821	–1 634
	Q. Other transfers from consumers	–289	–3	–4	–298	–1	–257	–19	–119	–281	–168
	R. Transfers to consumers from taxpayers	0	4	42	69	8	57	129	23	0	33
	S. Excess feed cost	0	0	38	636	0	1 151	0	0	126	0
V.2	**Percentage CSE**	**1**	**2**	**3**	**–3**	**2**	**–2**	**0**	**–1**	**–2**	**–1**
V.3	**Consumer NPC**	**0.99**	**0.98**	**0.98**	**1.04**	**0.98**	**1.04**	**1.00**	**1.01**	**1.02**	**1.01**
V.4	**Consumer NAC**	**0.99**	**0.98**	**0.98**	**1.03**	**0.98**	**1.02**	**1.00**	**1.01**	**1.02**	**1.01**

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Table 2.A5.1. **Total Estimate of Support to Brazilian agriculture** *(cont.)*

Million BRL

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004p
VI. Total Support Estimate (TSE)	**1 855**	**3 660**	**4 093**	**7 726**	**3 959**	**5 962**	**6 109**	**6 930**	**9 172**	**8 522**
T. Transfers from consumers	–648	–1 302	–1 243	2 171	–1 583	2 650	70	636	2 102	1 802
U. Transfers from taxpayers	2 792	4 965	5 341	5 852	5 543	3 569	6 058	6 412	7 351	6 888
V. Budget revenues (–)	–289	–3	–4	–298	–1	–257	–19	–119	–281	–168
Percentage TSE (expressed as a share of GDP)	**0.3**	**0.5**	**0.5**	**0.8**	**0.4**	**0.5**	**0.5**	**0.5**	**0.6**	**0.5**

p: preliminary.

Source: OECD PSE/CSE databases 2005.

Table 2.A5.2. **Producer Support Estimate by commodity**

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004p
Wheat	PSE (BRL mn)	16	79	61	110	82	56	57	88	148	156
	Percentage PSE	7	11	14	26	15	14	6	7	5	6
	Producer NPC	1.00	1.00	1.01	1.12	1.02	1.02	1.01	1.01	1.01	1.02
	Producer NAC	1.07	1.13	1.16	1.35	1.17	1.16	1.07	1.08	1.05	1.06
Maize	PSE (BRL mn)	286	497	455	1 292	590	1 786	379	596	1 034	686
	Percentage PSE	7	10	10	27	10	26	5	6	6	5
	Producer NPC	1.02	1.00	1.01	1.22	1.00	1.27	1.00	1.00	1.01	1.00
	Producer NAC	1.07	1.11	1.11	1.37	1.11	1.35	1.06	1.06	1.07	1.05
Rice	PSE (BRL mn)	687	201	171	226	251	399	190	595	1 341	1 466
	Percentage PSE	33	10	8	9	7	14	6	14	21	17
	Producer NPC	1.41	1.00	1.00	1.00	1.00	1.10	1.02	1.10	1.21	1.17
	Producer NAC	1.49	1.11	1.09	1.10	1.08	1.16	1.06	1.16	1.27	1.20
Oilseeds (soybeans)	PSE (BRL mn)	184	426	386	509	537	365	365	600	803	655
	Percentage PSE	4	7	5	7	6	4	3	3	2	2
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Producer NAC	1.04	1.08	1.05	1.07	1.07	1.04	1.03	1.03	1.03	1.02
Sugar cane	PSE (BRL mn)	–2 946	–1 742	–1 750	99	–1 785	281	282	182	215	182
	Percentage PSE	–76	–36	–31	2	–33	4	3	2	2	2
	Producer NPC	0.56	0.72	0.75	0.99	0.70	1.00	1.00	1.00	1.00	1.00
	Producer NAC	0.57	0.74	0.76	1.02	0.75	1.05	1.03	1.02	1.02	1.02
Cotton	PSE (BRL mn)	72	91	89	114	131	104	105	159	536	203
	Percentage PSE	11	15	17	18	15	9	7	11	21	5
	Producer NPC	1.05	1.00	1.01	1.02	1.03	1.02	1.02	1.04	1.19	1.02
	Producer NAC	1.13	1.18	1.20	1.22	1.17	1.09	1.07	1.12	1.27	1.05
Coffee	PSE (BRL mn)	16	123	119	158	228	144	102	171	204	138
	Percentage PSE	1	5	3	4	5	3	3	3	4	2
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Producer NAC	1.01	1.05	1.04	1.04	1.05	1.03	1.03	1.04	1.04	1.02
Milk	PSE (BRL mn)	1 139	571	571	597	255	145	95	135	291	255
	Percentage PSE	25	11	12	13	5	2	2	2	3	2
	Producer NPC	1.33	1.11	1.12	1.15	1.03	1.04	1.00	1.00	1.00	1.00
	Producer NAC	1.34	1.13	1.14	1.14	1.05	1.02	1.02	1.02	1.03	1.02
Beef and veal	PSE (BRL mn)	76	151	150	16	249	–97	215	321	608	473
	Percentage PSE	1	2	2	0	2	–1	1	1	2	2
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Producer NAC	1.01	1.02	1.02	1.00	1.02	0.99	1.01	1.02	1.02	1.02
Pigmeat	PSE (BRL mn)	23	36	36	–48	70	–187	61	97	89	71
	Percentage PSE	1	2	2	–2	2	–4	1	2	1	1
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Producer NAC	1.01	1.02	1.02	0.98	1.03	0.96	1.01	1.02	1.01	1.01
Poultry	PSE (BRL mn)	29	63	60	–118	208	–207	147	207	264	104
	Percentage PSE	1	1	1	–2	3	–3	2	2	1	1
	Producer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Producer NAC	1.01	1.01	1.01	0.98	1.03	0.98	1.02	1.02	1.02	1.01
All commodities	PSE (BRL mn)	–615	630	401	4 157	1 106	3 665	2 748	4 285	7 013	5 952
	Percentage PSE	–1	1	1	6	1	4	3	3	4	3
	Producer NPC	0.97	0.97	0.97	1.03	0.97	1.03	1.00	1.00	1.01	1.01
	Producer NAC	0.99	1.01	1.01	1.07	1.01	1.04	1.03	1.03	1.04	1.03

p: preliminary.

Source: OECD PSE/CSE databases 2005.

Table 2.A5.3. **Estimates of support to agriculture in selected non-OECD and OECD countries**

	Units	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Australia											
PSE	mn AUD	1 636	1 740	1 811	1 828	1 982	1 317	1 578	1 948	1 639	1 479
	mn USD	1 212	1 362	1 343	1 148	1 279	763	815	1 058	1 063	1 085
GSSE	mn USD	579	591	564	490	1 100	457	442	469	582	668
TSE	mn USD	1 791	1 953	1 907	1 637	2 379	1 098	1 148	1 412	1 505	1 595
	% GDP	0.50	0.48	0.47	0.45	0.61	0.29	0.32	0.35	0.30	0.26
Percentage PSE	**%**	**6**	**6**	**6**	**6**	**6**	**4**	**3**	**5**	**4**	**4**
Producer NPC		**1.03**	**1.03**	**1.03**	**1.03**	**1.03**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Producer NAC		**1.06**	**1.06**	**1.07**	**1.06**	**1.07**	**1.04**	**1.04**	**1.06**	**1.04**	**1.04**
Brazil											
PSE	mn BRL	–615	630	401	4 157	1 106	3 665	2 748	4 285	7 013	5 952
	mn USD	–670	626	372	3 580	609	2 003	1 168	1 462	2 283	2 034
GSSE	mn USD	2 691	3 010	3 384	3 014	1 567	1 224	1 374	894	703	867
TSE	mn USD	2 021	3 641	3 795	6 654	2 180	3 259	2 597	2 364	2 986	2 913
	% GDP	0.29	0.47	0.47	0.85	0.41	0.54	0.51	0.51	0.59	0.48
Percentage PSE	**%**	**–1**	**1**	**1**	**6**	**1**	**4**	**3**	**3**	**4**	**3**
Producer NPC		**0.97**	**0.97**	**0.97**	**1.03**	**0.97**	**1.03**	**1.00**	**1.00**	**1.01**	**1.01**
Producer NAC		**0.99**	**1.01**	**1.01**	**1.07**	**1.01**	**1.04**	**1.03**	**1.03**	**1.04**	**1.03**
Canada											
PSE	mn CAD	5 702	4 808	4 410	5 092	5 540	6 618	5 668	7 533	8 488	7 428
	mn USD	4 155	3 525	3 184	3 433	3 729	4 456	3 660	4 798	6 051	5 714
GSSE	mn USD	1 355	1 511	1 312	1 327	1 297	1 329	1 416	1 462	1 617	1 776
TSE	mn USD	5 510	5 050	4 497	4 759	5 026	5 785	5 076	6 261	7 729	7 490
	% GDP	0.93	0.82	0.71	0.77	0.76	0.80	0.71	0.85	0.89	0.75
Percentage PSE	**%**	**20**	**16**	**15**	**17**	**18**	**20**	**16**	**21**	**25**	**21**
Producer NPC		**1.12**	**1.11**	**1.12**	**1.14**	**1.14**	**1.13**	**1.11**	**1.12**	**1.16**	**1.13**
Producer NAC		**1.24**	**1.18**	**1.17**	**1.20**	**1.22**	**1.25**	**1.19**	**1.26**	**1.34**	**1.27**
China											
PSE	mn CNY	109 426	27 535	30 490	15 880	–60 928	65 411	121 142	168 965	208 392	n.c.
	mn USD	13 103	3 312	3 678	1 918	–7 360	7 901	14 636	20 414	25 177	n.c.
GSSE	mn USD	10 467	11 160	12 917	17 098	17 741	21 112	24 237	25 341	26 469	n.c.
TSE	mn USD	23 860	14 713	16 821	19 229	10 703	29 296	38 956	45 828	51 718	n.c.
	% GDP	3.4	1.8	1.9	2.0	1.1	2.7	3.3	3.6	3.7	n.c.
Percentage PSE	**%**	**6**	**1**	**1**	**1**	**–3**	**3**	**5**	**7**	**8**	**n.c.**
Producer NPC		**1.07**	**0.97**	**0.99**	**0.98**	**0.95**	**1.02**	**1.04**	**1.06**	**1.08**	**n.c.**
Producer NAC		**1.06**	**1.01**	**1.01**	**1.01**	**0.97**	**1.03**	**1.06**	**1.08**	**1.09**	**n.c.**
Japan											
PSE	bn JPY	6 891	6 288	5 659	6 050	5 978	5 799	5 430	5 532	5 553	5 283
	mn USD	73 253	57 786	46 768	46 223	52 490	53 772	44 699	44 162	47 874	48 737
GSSE	mn USD	24 605	18 561	15 175	16 337	12 945	13 463	11 801	11 280	12 393	12 074
TSE	mn USD	98 135	76 582	62 151	62 663	65 515	67 293	56 551	55 489	60 304	60 850
	% GDP	1.85	1.63	1.44	1.59	1.46	1.42	1.36	1.39	1.40	1.30
Percentage PSE	**%**	**61**	**57**	**53**	**57**	**59**	**60**	**57**	**58**	**59**	**56**
Producer NPC		**2.48**	**2.23**	**2.06**	**2.26**	**2.36**	**2.38**	**2.24**	**2.29**	**2.33**	**2.20**
Producer NAC		**2.57**	**2.32**	**2.15**	**2.35**	**2.46**	**2.48**	**2.34**	**2.39**	**2.43**	**2.28**
Mexico											
PSE	mn MXN	–7 212	10 259	34 652	47 795	52 780	71 360	64 780	86 564	71 868	61 638
	mn USD	–1 123	1 350	4 373	5 222	5 525	7 549	6 933	8 961	6 661	5 452
GSSE	mn USD	551	356	370	417	508	628	649	629	878	799
TSE	mn USD	290	3 107	6 116	6 725	6 720	8 848	7 730	9 685	7 573	6 287
	% GDP	0.10	0.93	1.52	1.60	1.40	1.52	1.24	1.49	1.21	0.95
Percentage PSE	**%**	**–5**	**5**	**15**	**18**	**18**	**24**	**19**	**26**	**19**	**17**
Producer NPC		**0.89**	**0.97**	**1.11**	**1.16**	**1.17**	**1.25**	**1.16**	**1.27**	**1.14**	**1.09**
Producer NAC		**0.95**	**1.05**	**1.17**	**1.22**	**1.22**	**1.31**	**1.24**	**1.35**	**1.24**	**1.20**

Table 2.A5.3. **Estimates of support to agriculture in selected non-OECD and OECD countries** *(cont.)*

	Units	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
New Zealand											
PSE	mn NZD	240	191	214	158	172	133	95	223	342	390
	mn USD	158	132	142	84	91	61	40	103	198	257
GSSE	mn USD	98	112	114	91	90	87	69	91	122	141
TSE	mn USD	256	244	256	175	181	148	108	194	320	398
	% GDP	0.43	0.37	0.39	0.32	0.32	0.29	0.21	0.33	0.41	0.42
Percentage PSE	**%**	**3**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**2**	**3**
Producer NPC		**1.02**	**1.01**	**1.02**	**1.01**	**1.01**	**1.01**	**1.00**	**1.01**	**1.02**	**1.02**
Producer NAC		**1.03**	**1.02**	**1.02**	**1.02**	**1.02**	**1.01**	**1.01**	**1.02**	**1.03**	**1.03**
Russia											
PSE	mn RUR	23 038	58 775	89 670	62 861	46 303	35 542	74 280	89 573	8 460	n.c.
	mn USD	5 059	11 470	15 501	6 475	1 881	1 264	2 546	2 857	276	n.c.
GSSE	mn USD	788	762	3 987	471	444	498	438	611	694	n.c.
TSE	mn USD	5 847	12 232	19 488	6 946	2 325	1 762	2 984	3 468	970	n.c.
	% GDP	1.7	2.8	4.4	2.5	1.2	0.7	1.0	1.0	0.2	n.c.
Percentage PSE	**%**	**13**	**24**	**34**	**23**	**8**	**5**	**9**	**9**	**1**	**n.c.**
Producer NPC		**0.96**	**1.16**	**1.42**	**1.21**	**1.01**	**0.97**	**1.00**	**0.96**	**0.90**	**n.c.**
Producer NAC		**1.15**	**1.31**	**1.53**	**1.31**	**1.09**	**1.05**	**1.10**	**1.10**	**1.01**	**n.c.**
United States											
PSE	mn USD	20 180	28 963	29 768	46 144	55 942	53 670	51 838	39 105	35 618	46 504
	mn USD	20 180	28 963	29 768	46 144	55 942	53 670	51 838	39 105	35 618	46 504
GSSE	mn USD	26 459	25 757	24 739	22 840	23 328	22 902	25 126	26 953	30 803	34 149
TSE	mn USD	67 792	76 358	76 178	89 824	100 328	97 513	98 610	90 020	92 199	108 696
	% GDP	0.92	0.98	0.92	1.02	1.08	0.99	0.97	0.86	0.84	0.93
Percentage PSE	**%**	**10**	**13**	**13**	**21**	**26**	**24**	**22**	**18**	**15**	**18**
Producer NPC		**1.05**	**1.08**	**1.08**	**1.15**	**1.20**	**1.17**	**1.16**	**1.10**	**1.07**	**1.11**
Producer NAC		**1.11**	**1.15**	**1.16**	**1.27**	**1.35**	**1.31**	**1.29**	**1.22**	**1.18**	**1.22**
European Union (15)											
PSE	mn EUR	96 779	93 199	95 318	100 917	107 173	93 338	93 061	96 989	104 474	107 686
	mn USD	126 517	118 305	108 023	112 867	114 192	86 018	83 343	91 407	118 028	133 386
GSSE	mn USD	8 797	11 207	13 125	10 036	10 222	7 879	8 206	8 801	9 997	12 748
TSE	mn USD	140 769	133 943	125 910	127 322	128 650	97 508	94 841	103 643	132 431	150 568
	% GDP	1.65	1.55	1.52	1.49	1.50	1.23	1.19	1.20	1.26	1.25
Percentage PSE	**%**	**36**	**33**	**34**	**37**	**39**	**33**	**32**	**34**	**36**	**33**
Producer NPC		**1.38**	**1.30**	**1.32**	**1.41**	**1.48**	**1.32**	**1.27**	**1.31**	**1.34**	**1.29**
Producer NAC		**1.56**	**1.49**	**1.51**	**1.58**	**1.65**	**1.49**	**1.46**	**1.52**	**1.56**	**1.49**
OECD											
PSE	mn USD	267 257	254 561	234 373	253 583	272 853	242 971	219 500	226 451	256 752	279 527
GSSE	mn USD	68 564	64 774	63 114	59 332	57 519	54 280	54 471	55 946	62 028	65 834
TSE	mn USD	364 908	348 223	326 524	340 404	357 020	322 712	299 306	310 130	349 421	377 938
	% GDP	1.53	1.45	1.37	1.42	1.42	1.26	1.18	1.17	1.18	1.16
Percentage PSE	**%**	**31**	**29**	**29**	**33**	**35**	**32**	**29**	**31**	**30**	**30**
Producer NPC		**1.34**	**1.29**	**1.29**	**1.36**	**1.42**	**1.35**	**1.28**	**1.30**	**1.29**	**1.28**
Producer NAC		**1.45**	**1.41**	**1.40**	**1.48**	**1.55**	**1.48**	**1.42**	**1.44**	**1.44**	**1.43**

n.c.: not calculated.

Source: OECD PSE/CSE databases 2005.

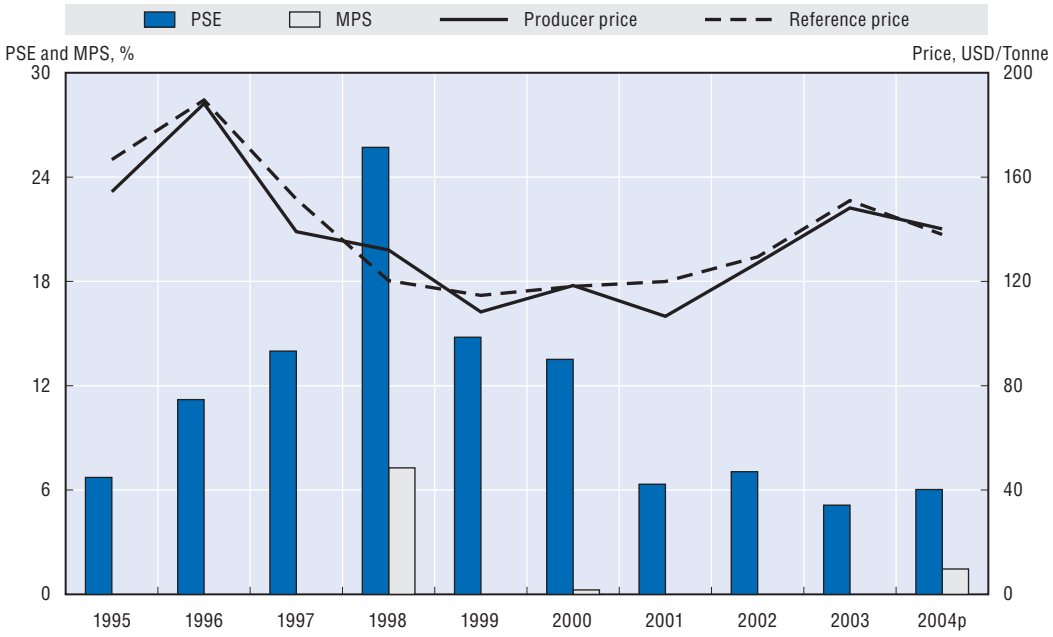
Table 2.A5.4. **Consumer Support Estimate by commodity**

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004p
Wheat	CSE (BRL mn)	0	4	29	–85	0	–6	0	0	0	–46
	Percentage CSE	0	0	3	–7	0	0	0	0	0	–1
	Consumer NPC	1.00	1.00	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.02
	Consumer NAC	1.00	1.00	0.97	1.07	1.00	1.00	1.00	1.00	1.00	1.01
Maize	CSE (BRL mn)	0	0	8	–237	8	–319	47	0	–8	9
	Percentage CSE	0	0	0	–5	0	–5	1	0	0	0
	Consumer NPC	1.00	1.00	1.01	1.22	1.00	1.27	1.00	1.00	1.01	1.00
	Consumer NAC	1.00	1.00	1.00	1.05	1.00	1.05	0.99	1.00	1.00	1.00
Rice	CSE (BRL mn)	–777	0	0	0	0	–307	–53	–462	–1 247	–1 304
	Percentage CSE	–29	0	0	0	0	–9	–1	–9	–17	–14
	Consumer NPC	1.40	1.00	1.00	1.00	1.00	1.09	1.01	1.10	1.20	1.17
	Consumer NAC	1.40	1.00	1.00	1.00	1.00	1.09	1.01	1.10	1.20	1.17
Oilseeds (soybeans)	CSE (BRL mn)	0	0	0	0	0	0	0	0	0	0
	Percentage CSE	0	0	0	0	0	0	0	0	0	0
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NAC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sugar cane	CSE (BRL mn)	2 355	1 446	1 437	43	1 319	0	0	0	0	0
	Percentage CSE	79	38	34	1	43	0	0	0	0	0
	Consumer NPC	0.56	0.72	0.75	0.99	0.70	1.00	1.00	1.00	1.00	1.00
	Consumer NAC	0.56	0.72	0.75	0.99	0.70	1.00	1.00	1.00	1.00	1.00
Cotton	CSE (BRL mn)	0	0	0	31	0	57	82	1	–300	–28
	Percentage CSE	0	0	0	3	0	4	7	0	–14	–1
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.16	1.01
	Consumer NAC	1.00	1.00	1.00	0.97	1.00	0.96	0.94	1.00	1.16	1.01
Coffee	CSE (BRL mn)	0	0	0	0	0	0	0	0	0	0
	Percentage CSE	0	0	0	0	0	0	0	0	0	0
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NAC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Milk	CSE (BRL mn)	–1 110	–481	–487	–614	–133	–252	0	0	0	0
	Percentage CSE	–25	–10	–10	–13	–3	–4	0	0	0	0
	Consumer NPC	1.33	1.11	1.12	1.15	1.03	1.04	1.00	1.00	1.00	1.00
	Consumer NAC	1.33	1.11	1.12	1.15	1.03	1.04	1.00	1.00	1.00	1.00
Beef and veal	CSE (BRL mn)	0	0	0	0	0	0	0	0	0	0
	Percentage CSE	0	0	0	0	0	0	0	0	0	0
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NAC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Pigmeat	CSE (BRL mn)	0	0	0	0	0	0	0	0	0	0
	Percentage CSE	0	0	0	0	0	0	0	0	0	0
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NAC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Poultry	CSE (BRL mn)	0	0	0	0	0	0	0	0	0	0
	Percentage CSE	0	0	0	0	0	0	0	0	0	0
	Consumer NPC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Consumer NAC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
All commodities	CSE (BRL mn)	648	1 306	1 324	–1 467	1 591	–1 443	59	–613	–1 976	–1 769
	Percentage CSE	1	2	3	–3	2	–2	0	–1	–2	–1
	Consumer NPC	0.99	0.98	0.98	1.04	0.98	1.04	1.00	1.01	1.02	1.01
	Consumer NAC	0.99	0.98	0.98	1.03	0.98	1.02	1.00	1.01	1.02	1.01

p: preliminary.

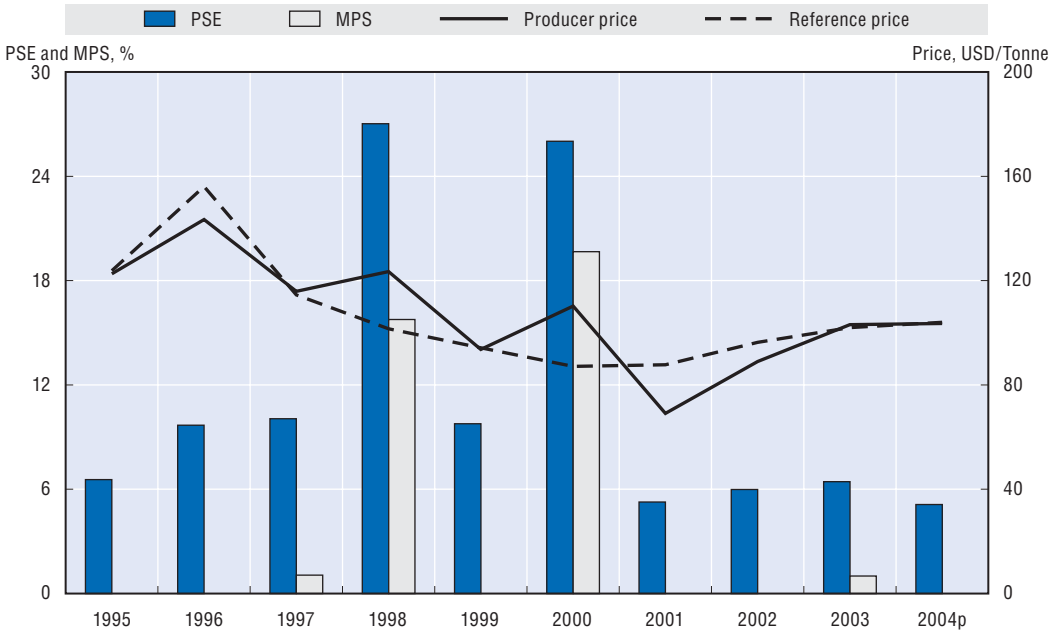
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.1. **WHEAT: percentage PSEs, producer and reference prices**



Source: OECD PSE/CSE databases 2005.

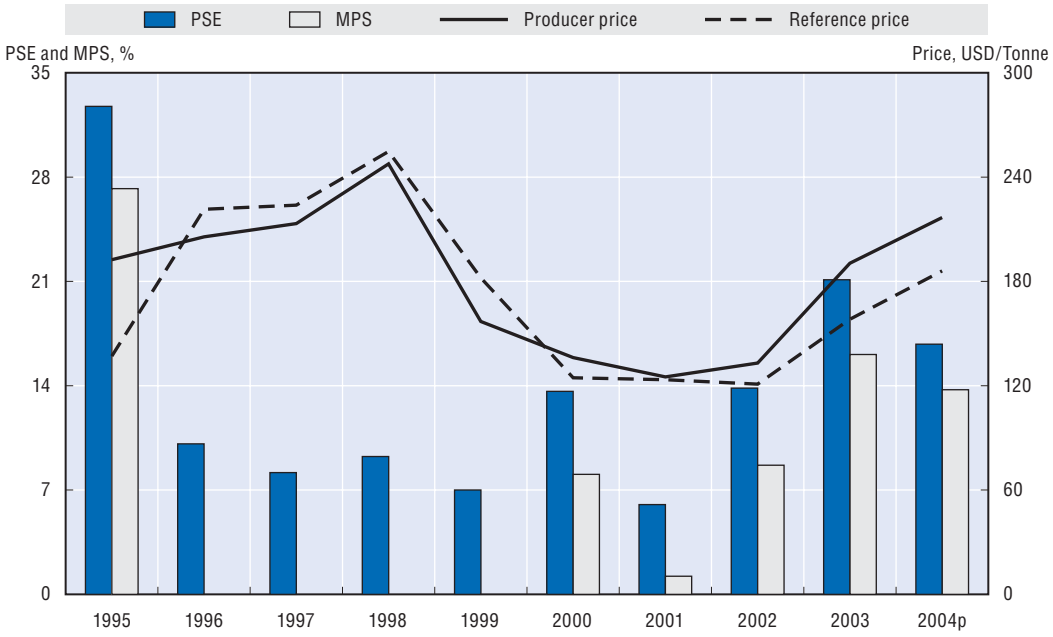
Figure 2.A5.2. **MAIZE: percentage PSEs, producer and reference prices**



Source: OECD PSE/CSE databases 2005.

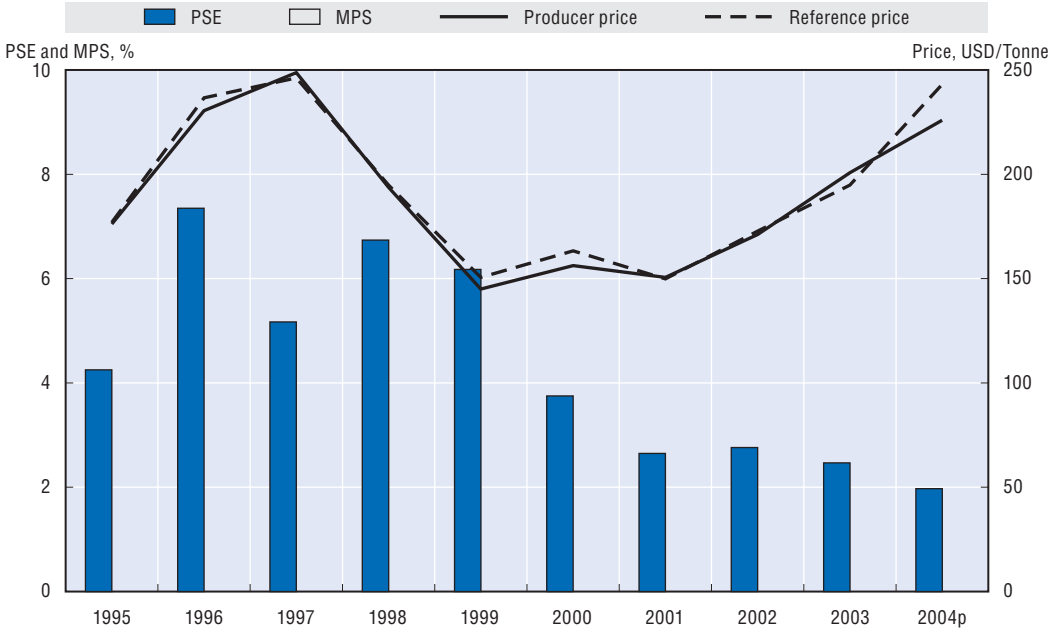
OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Figure 2.A5.3. **RICE: percentage PSEs, producer and reference prices**



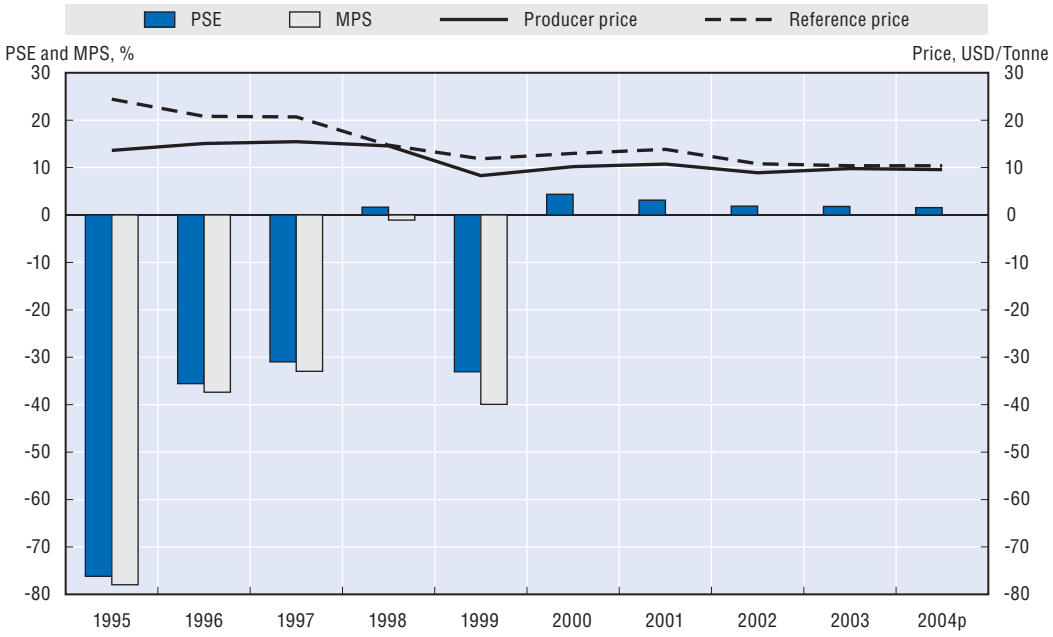
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.4. **OILSEEDS (soybeans): percentage PSEs, producer and reference prices**



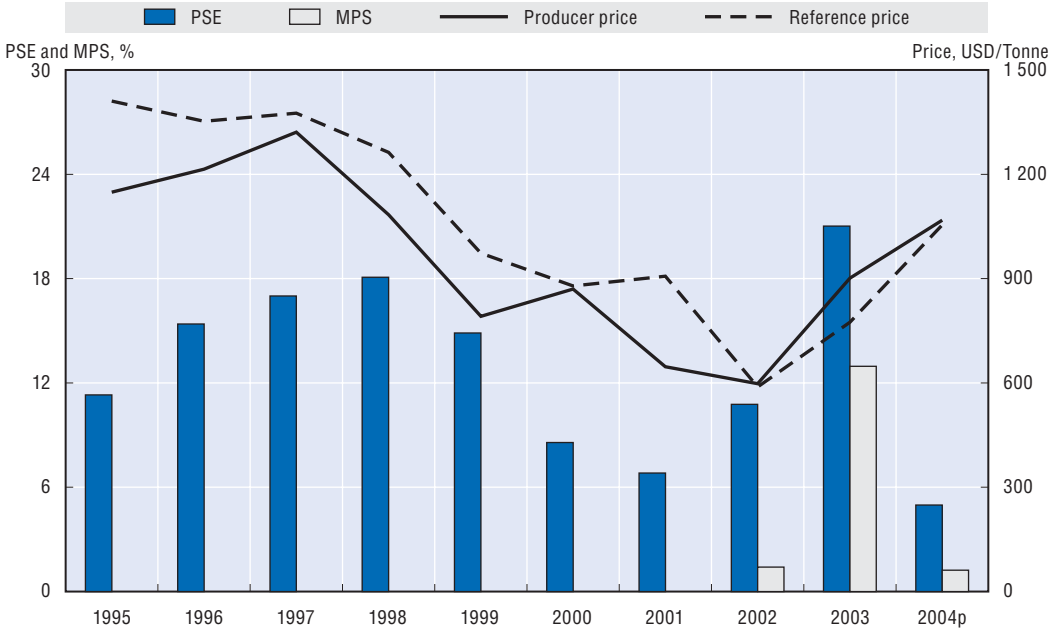
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.5. **SUGAR CANE: percentage PSEs, producer and reference prices**



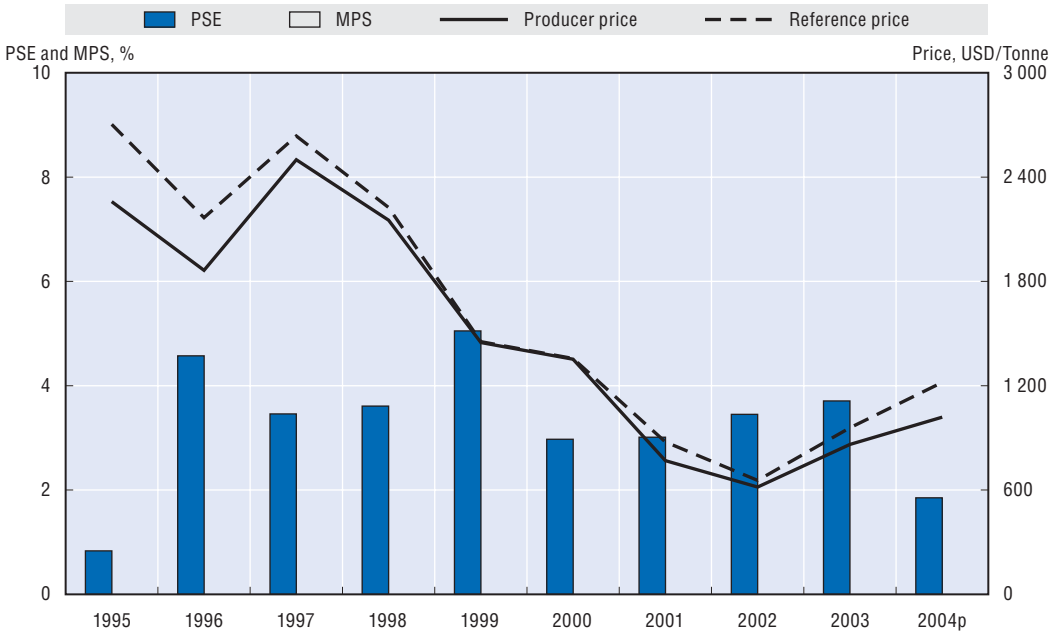
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.6. **COTTON: percentage PSEs, producer and reference prices**



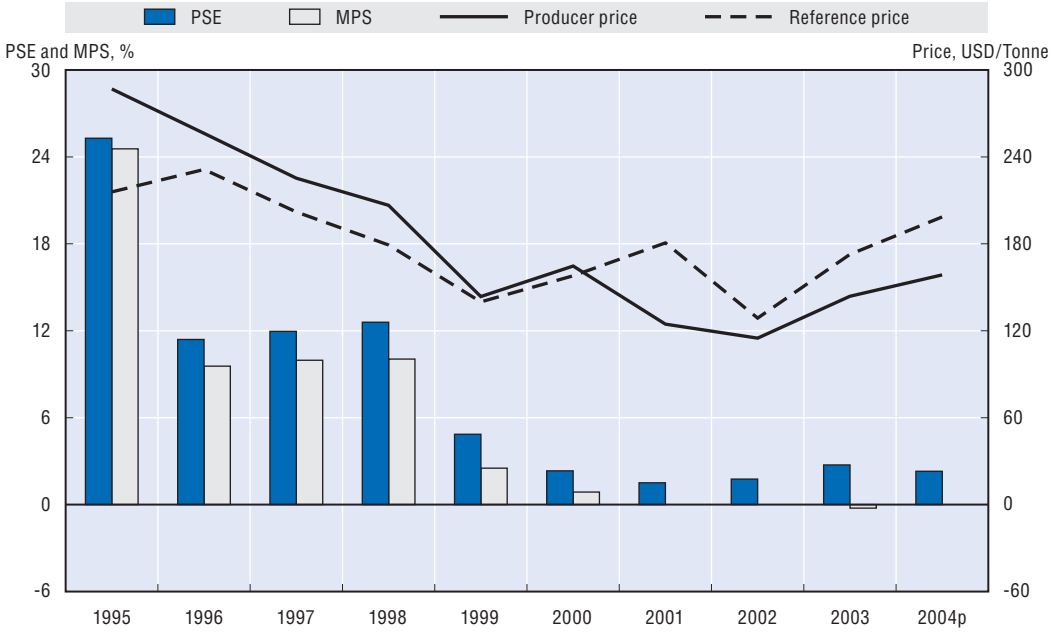
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.7. **COFFEE: percentage PSEs, producer and reference prices**



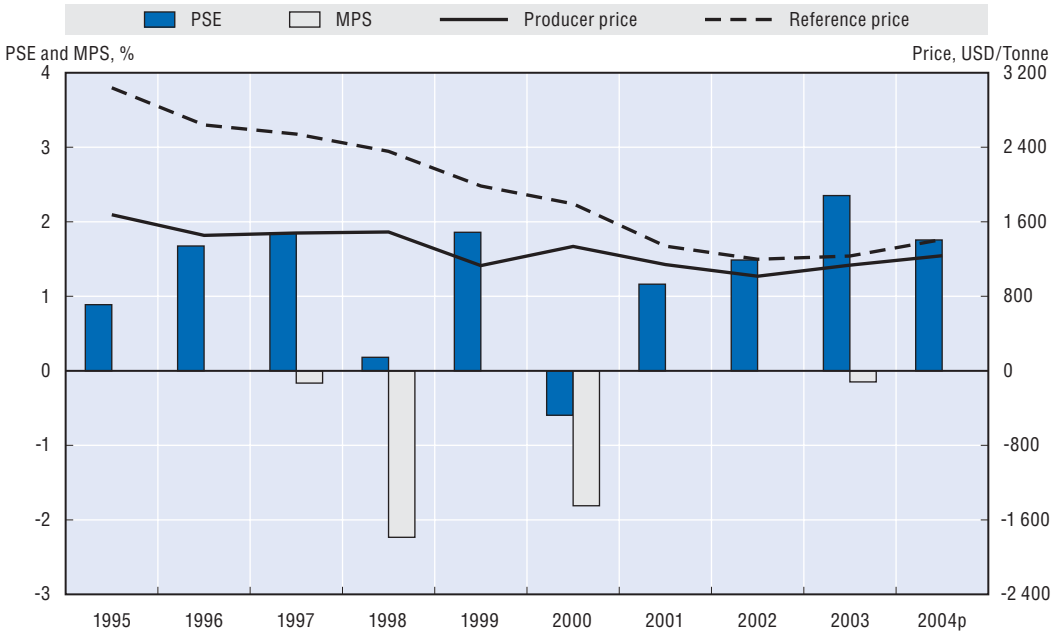
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.8. **MILK: percentage PSEs, producer and reference prices**



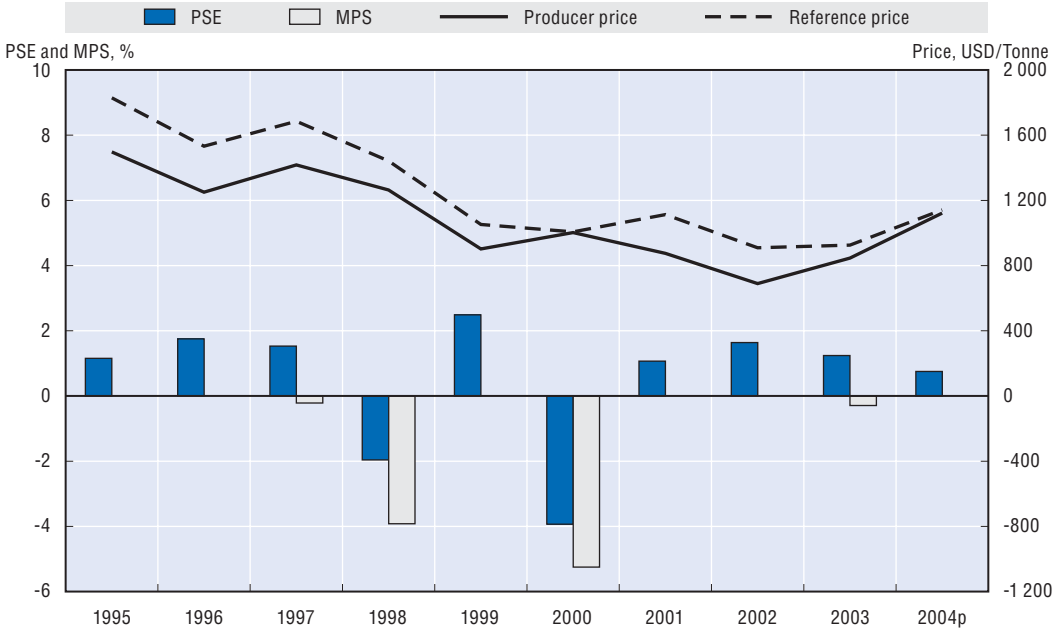
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.9. **BEEF and VEAL: percentage PSEs, producer and reference prices**



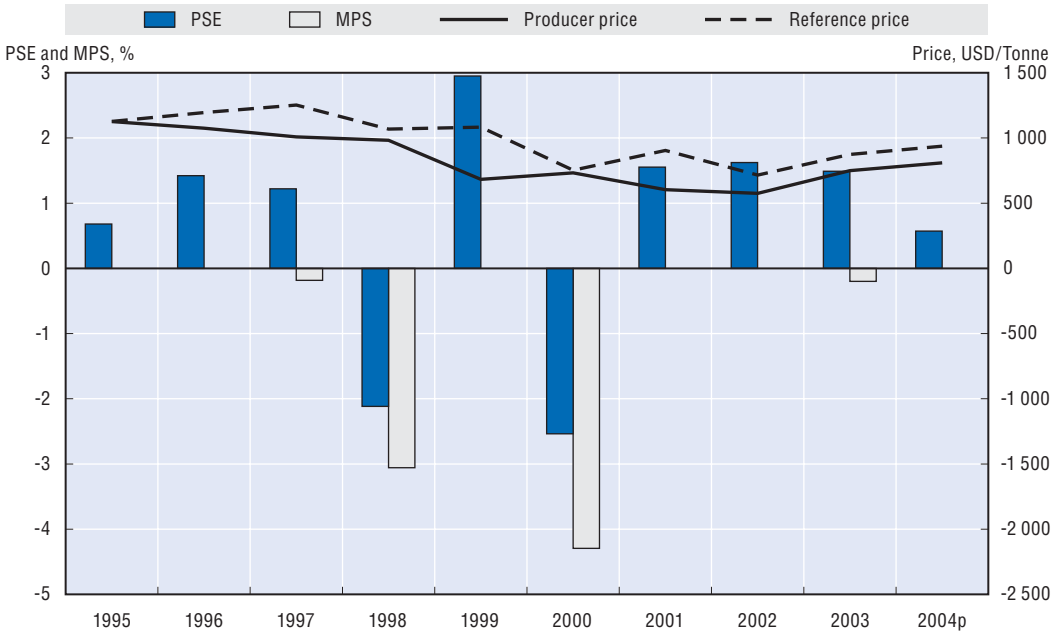
Source: OECD PSE/CSE databases 2005.

Figure 2.A5.10. **PIGMEAT: percentage PSEs, producer and reference prices**



Source: OECD PSE/CSE databases 2005.

Figure 2.A5.11. **POULTRY: percentage PSEs, producer and reference prices**



Source: OECD PSE/CSE databases 2005.

ISBN 92-64-01254-0
OECD Review of Agricultural Policies
Brazil

Chapter 3

Policy Effects

This chapter focuses on two agricultural policy issues of importance to Brazil. One is the market access barriers confronted by Brazilian exporters, including tariffs and non-tariff barriers applied by both OECD countries and in other markets; the other issue is the size and distribution of the prospective gains from the removal of those barriers in the context of multilateral trade reform. Section 3.1 quantifies and describes the main market access impediments facing Brazil. Section 3.2 investigates the origins and size of the sectoral and economy-wide gains to Brazil from agricultural trade liberalisation more generally, i.e. including multilateral reforms in the areas of market access, export subsidies and domestic support, while Section 3.3 explores how those gains are likely to be distributed among different types of farm and non-farm household. Finally, Section 3.4 provides a wider examination of what happened to poverty and inequality in the 1990s. The aim here is to place agricultural policy issues in the context of broader adjustment pressures that exist in rural Brazil.

3.1. Market access barriers to Brazilian agricultural exports

Brazil has a comparative advantage in a sector that is highly distorted at the global level. Applied agricultural tariffs average 27% in OECD countries and 18% in non-OECD countries, compared with average tariffs on manufactures of 3% in both groups of countries (GTAPEM). Such protectionism has impeded Brazil's market access directly and, to the extent that policies in protected countries have stimulated production, undermined its competitiveness in third markets.

As a competitive exporter, Brazil has a vital interest in the terms of its access to international markets. The key market access issues for its exporters are: *i)* the levels of tariffs in key markets; *ii)* tariff escalation, *i.e.* the tendency for higher tariffs to be levied on products incorporating value added; *iii)* losing out to other higher cost suppliers through discriminatory import regimes (including administratively set TRQ allocation systems); and *iv)* non-tariff measures such as sanitary and phyto-sanitary regulations that, irrespective of their legitimacy, impede market access. This section summarises the extent to which Brazilian exporters are affected by such policies for the country's principal export commodities. The supporting figures show *ad valorem* equivalent tariffs paid by Brazil into its five most important overall markets, while more comprehensive tables are provided in Annex 3.A1.[1]

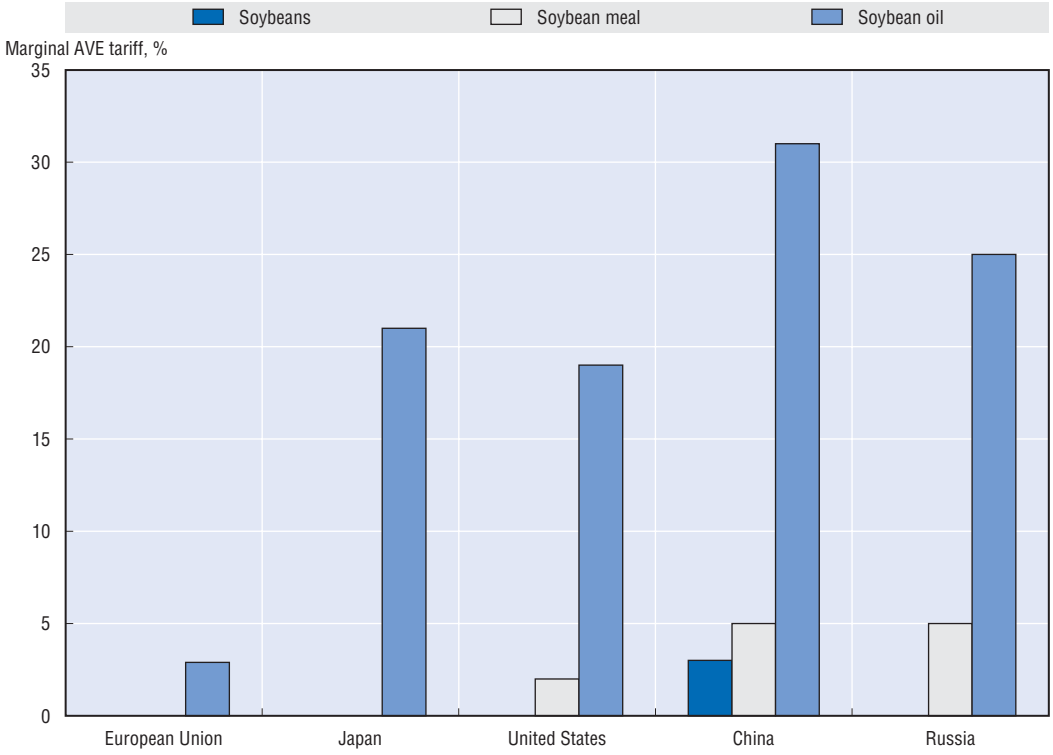
Soybeans and soybean products

Total exports from the soybean sector have been increasing rapidly in recent years (averaging approximately USD 6 billion in 2000-03 and approaching USD 8 billion in 2003). The value of Brazil's exports of uncrushed soybeans exceeds the value of oil and meal exports, partly for domestic reasons, including less productive crushing facilities than in Argentina and incentives that result from ICMS tax system (see Chapter 2), and partly because of tariff escalation in major markets (Figure 3.1). Uncrushed beans enter the three principal OECD country markets – the European Union, Japan and the United States – duty free, while soybean meal (which accounts for more than two-thirds of the value of the products) enters duty free in the European Union and Japan, but at a tariff of USD 4.5 per tonne (approximately 1.9%) in the United States (Table 3.A1.1). By contrast, soybean oil incurs a tariff of 2.9% in the EU (compared with an MFN rate of 6.4%), JPY 13.2 per kg (approximately 21%) in Japan and 19% in the United States (where soybean producers receive significant support). The most dynamic markets are outside the OECD area, notably China, which operates a TRQ regime on imports of soybean oil, applying an in-quota tariff of 9% and an over-quota rate of 31%. From 2006 this TRQ will be replaced by a tariff of 9%.

Sugar

Brazil is the world's lowest cost producer of sugar. However, sugar is among the most distorted of sectors, with high support in OECD countries preventing Brazilian producers from exploiting their comparative advantage. The biggest problem for Brazilian exporters is high levels of support provided to producers in the EU and the United States, where

Figure 3.1. **Applied tariffs on Brazilian exports of soybeans and soybean products, 2004**



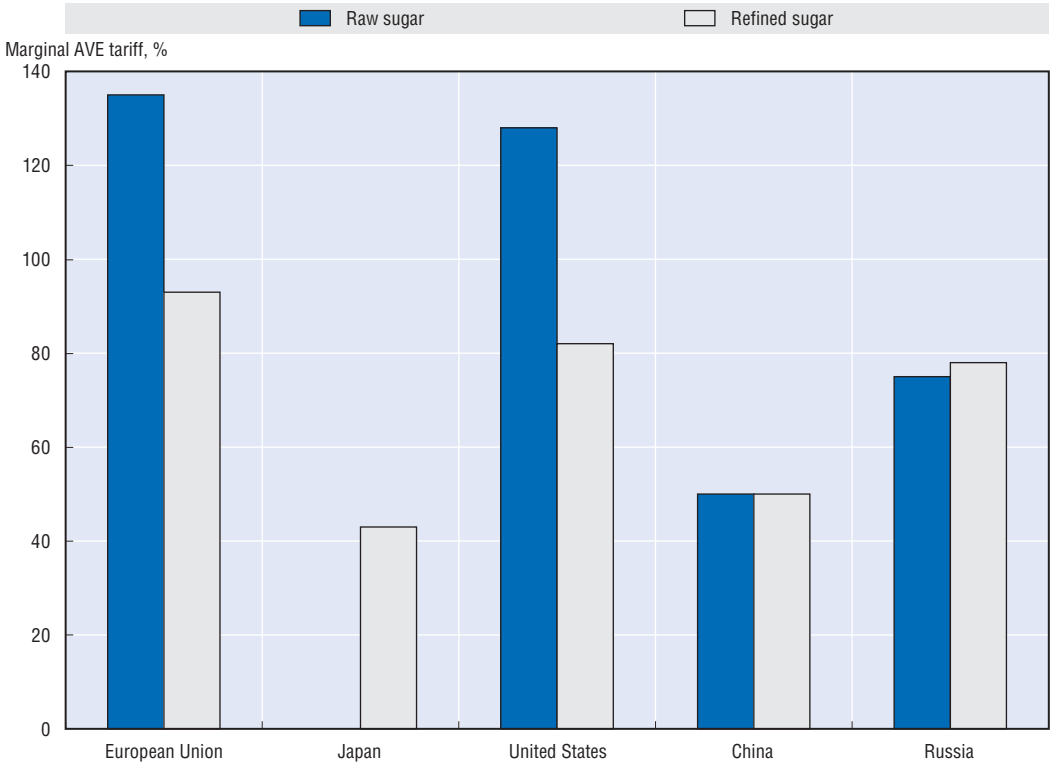
Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

domestic prices are two to three times world market levels. In the case of the European Union, these supports have transformed the region into a large net exporter.

Exports of raw sugar are higher than exports of refined sugar (USD 1.16 billion *versus* USD 772 million). Nearly half of these exports go to Russia, which operates a specific tariff varying between USD 140 per tonne and USD 270 per tonne, depending on the average monthly price at the New York Board of Trade (NYBOT). In 2004, the average tariff was USD 200 per tonne, which corresponded to an *ad valorem* equivalent of 75% (Figure 3.2 and Table 3.A1.2).

The European Union applies four tariff quota lines for raw sugar. Brazil obtains 28% of the first quota line of 85 000 tonnes, but nothing under the remaining lines, which total 1.646 million tonnes. The latter are reserved for India, ACP countries and beneficiaries of the Everything but Arms (EBA) initiative.[2] The in-quota tariff rate is EUR 98 per tonne, while the average over-quota rate is EUR 373 per tonne (corresponding to an AVE of 135%). In addition, special safeguards (SSG) are levied when the "representative price" (*i.e.* the c.i.f. import price excluding the fixed duty) falls below a "trigger price" of EUR 418/t which is well above the world price. The representative price is close to the world price and therefore well below the trigger price. For 2004-05, the additional SSG duty was set at EUR 75.6 per tonne, which resulted in a total duty of EUR 449 per tonne on over-quota exports (implying an AVE of 162%).

Figure 3.2. **Applied tariffs on Brazilian sugar exports, 2004**



Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

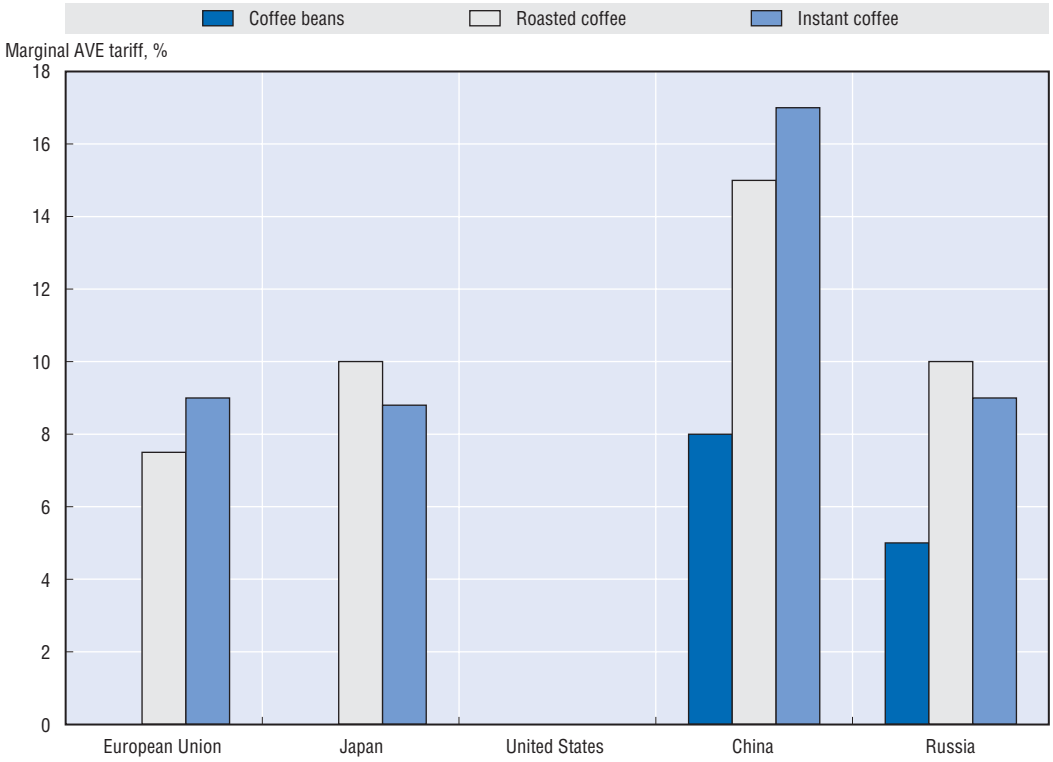
The United States market accounts for just 2% of Brazil's exports of raw sugar. The total quota allocation in 2005 was 1 117 million tonnes, of which 13.7% was allocated to Brazil. Brazil does not benefit from GSP status and is levied an in-quota tariff of USD 14.6 per tonne, and an over-quota tariff rate of USD 338 per tonne on additional exports (of which there are none). In addition, a special safeguard is applied, which may reach up to USD 129 per tonne, bringing the total duty to USD 467 per tonne.

Nearly all of Brazil's refined sugar exports, which averaged USD 722 million in 2000-03, go to developing countries.[3] China is a potentially important market that applies a TRQ regime under which 70% of the quota is administered by a state trading enterprise. The total quota allocation of 1 945 thousand tonnes has a fill rate of 67% (thus accounting for about 15% of national consumption). The in-quota tariff is 15% and there are no over-quota imports. Brazil currently has a negligible share of the Chinese market. As with raw sugar, the European Union and the United States apply varying specific tariffs and tariff-rate quota systems to white sugar, with the result that Brazilian exports into these markets are minimal.

Coffee

Brazil is the world's biggest supplier of coffee, accounting for around a quarter of the global market. Tariffs on coffee exports are generally low, but there is a significant amount of tariff escalation, with higher rates on roasted coffee than on beans, and some countries applying high rates on instant coffee (Figure 3.3 and Table 3.A1.3). The three main markets

Figure 3.3. **Applied tariffs on Brazilian coffee exports, 2004**



Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

are the European Union, the United States and Japan. Unroasted beans enter these markets duty free, but roasted coffee pays a 7.5% tariff into the European Union – which contrasts with 0% for ACP countries and 2% for GSP countries – and 10% (the GSP rate) into Japan. Exports into the United States are exempt from tariffs, but their volume is nevertheless reduced by the benefits provided to farmers in Ecuador, Colombia and Peru under the United States' anti-drugs initiative. Under a similar programme, Canada exempts Colombia, Ecuador and Mexico from tariffs.

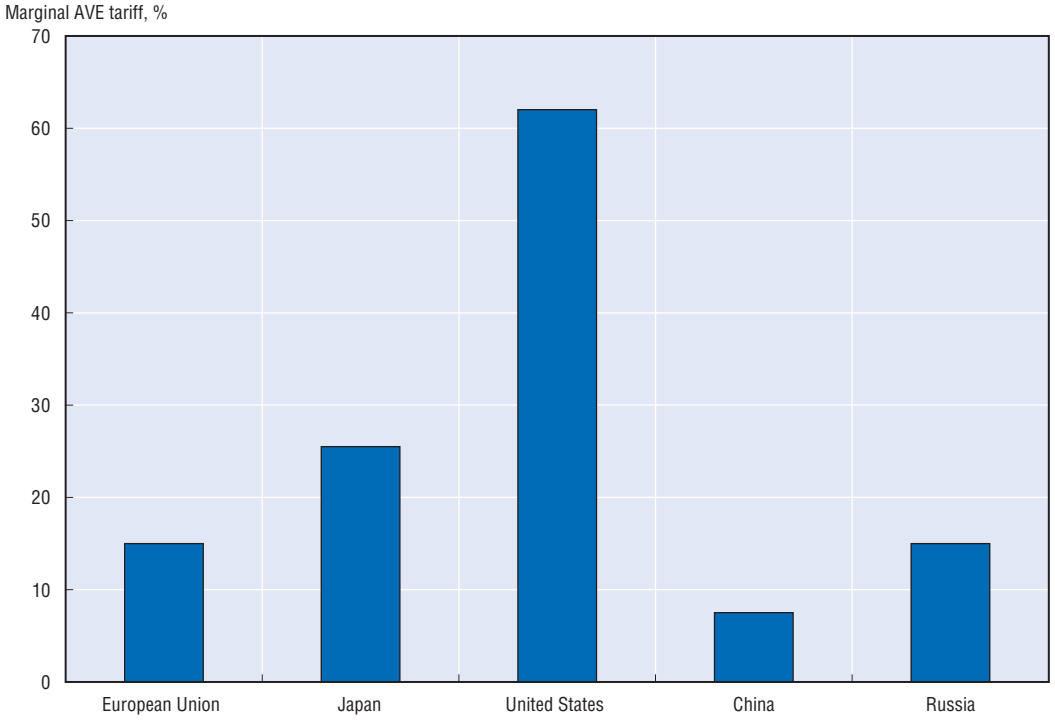
Orange juice

Two-thirds of Brazil's exports of orange juice go to the European Union, incurring an over-quota tariff of 15% (Figure 3.4 and Table 3.A1.4). Exports to the United States would be much higher were it not for the protection afforded to producers in Florida (approximately USD 0.08 per litre, giving an AVE of 62%). The composition of trade is also affected, with the United States charging prohibitive tariffs on imports of fresh oranges. In response to these policies, Brazilian companies have invested heavily in Florida, owning an estimated 40% of the state's processing capacity. There is considerable potential for domestic demand growth, which may offset some of the pressure imposed by high protection.

Meat

In the meat sector, the biggest impediment to export growth is not typically formal trade barriers or subsidies to other competitors (PSEs for OECD countries are generally low

Figure 3.4. **Applied tariffs on Brazilian frozen orange juice exports, 2004**



Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

relative to other commodities) but rather non-tariff barriers in the form of sanitary restrictions. Thus, imports of beef from Brazil are banned in Japan and the United States due to the presence (or alleged presence) of foot and mouth disease.[4] The same is true for pigmeat from Brazil, with the additional claim of swine fever. Brazilian poultry is banned from the United States due to alleged contamination with Newcastle Disease (a claim which Brazil refutes). Aside from NTMs, a further issue is tariff escalation in the beef sector, with processed products (such as corned beef) and by-products (leather) incurring higher tariffs.

In the case of poultry, the biggest sub-category is frozen chicken cuts, with the European Union and Japan the most important markets. The former employs a TRQ regime through which Brazil has access at multiple tariff rates; the latter applies *ad valorem* tariffs of 9% or 12% (depending on the cut). Most exports of uncut chicken go to non-OECD countries, with the Middle East the main destination, and Saudi Arabia the biggest single importer (Table 3.A1.5). Protection tends to be low in the Middle East, as there are few domestic producers.

Despite a rapid export boom, the vast majority of Brazilian beef (over 80%) is destined for the domestic market.[5] Most exports of fresh beef go either to Chile, which charges a tariff of 6%, or the European Union, which levies a mixed tariff that translates into an AVE of 87% (Table 3.A1.6). For Hilton beef, there is a TRQ allocation of 69 100 tonnes, of which Brazil obtains a 7% allocation. The main markets for frozen beef are the European Union, Egypt and Russia. The European Union and Russia operate TRQ systems that result in over-quota AVEs of 146% and 60% respectively. A range of Middle Eastern countries are also important, most charging low tariffs. The bulk of processed meat goes to the European

Union or the United States, where tariffs are 17% and 0.7%. There are relatively high tariffs in potential markets such as China, Japan and Russia.

Virtually all exports of carcass pigmeat go to Russia, which operates a TRQ system under which Brazilian exporters pay an over-quota AVE of 89% (Table 3.A1.7). Russia is also the main market for non-carcass pigmeat, with a TRQ system which in this case translates into an *ad valorem* equivalent tariff of 80% at the margin. Few tariffs are imposed by other non-OECD countries, but SPS regulations are still an impediment to exports in some cases.

Tobacco

Approximately one half of Brazil's tobacco exports go to the European Union and the United States. The European Union charges an *ad valorem* tariff, but with upper and lower bounds set in specific terms (Table 3.A1.8). The United States operates a TRQ system under which Brazil obtains a quota of 80 200 tonnes (just over half the total quota volume). There are few additional exports, given an over-quota tariff rate of 350%.

Cotton

Cotton is not one of Brazil's biggest agricultural exports, but expanded opportunities for cotton growing in the Centre West make trade protection in this sector an increasing concern. Brazil pays no tariffs on cotton exports to its principal two markets, the European Union and Argentina (Table 3.A1.9). A four-tier tariff rate quota system is applied in the United States, with Brazil obtaining 280 tonnes of a total allocation of 20 200 tonnes under the first line, and nothing under the remaining three lines, which total a further 53 000 tonnes. Exports to India incur a tariff of 10%, while all exports to China pay the over-quota rate of 40%, which contrasts with an in-quota rate of 1%.

To summarise, Brazilian exporters stand to gain substantially from reductions in the above market access restrictions. The size of the prospective gains is evaluated in the following section, in the context of a multilateral liberalisation package that also includes reductions in export subsidies and domestic support.

3.2. Welfare impacts of trade and agricultural policy reforms

The effects on the Brazilian economy of multilateral trade reforms and reforms to domestic farm programmes are calculated using GTAPEM, a modified version of the standard GTAP model developed by the OECD. GTAP is a global general equilibrium trade model that is widely used in applied agricultural and trade policy analysis.[6] Its key strengths are its global scope, its coverage of all sectors of the economy, and its depiction of the way in which scarce resources are allocated across different sectors. In GTAPEM, the standard GTAP model is modified to provide a more realistic representation of the structure of the agricultural sector (notably in the allocation of land between alternative uses), and to accommodate a representation of policy interventions that is accurate and consistent with the way in which support is classified and measured for the PSE. In addition, the data used in this analysis take account of the trade preference schemes operated by a number of countries. These schemes are particularly important in the case of Brazil, which rarely benefits from preferential tariffs and therefore stands to gain from tariff reforms that reduce their significance.[7]

GTAPEM is used to simulate the effects of a 50% reduction in tariffs for all countries and all sectors, a 50% cut in agricultural export subsidies for all countries, and a 50%

reduction in domestic farm support in OECD countries plus Brazil and China. The results are comparative static, *i.e.* they show the one-off gains from a change in policies, and are based on data for 2001. Accordingly, recent policy changes, including the US farm bill and the introduction of the single farm payment in the European Union, are not considered. Policy changes as a result of China's WTO accession are also excluded, with the exception of tariff reductions made on grains and oilseeds.

The results for Brazil depend, among other things, on the structure of its existing trade relationships, and on the extent of protection in export and import markets. Table 3.1 summarises the average tariffs levied and faced by Brazil, and compares those rates with the average tariffs levied and faced by OECD countries and by non-OECD countries.

Table 3.1. **Tariffs levied and faced: comparative data**

	Tariffs levied (%)			Tariffs faced (%)		
	Brazil	OECD	Non-OECD	Brazil	OECD	Non-OECD
Paddy rice	0	190	5	23	72	58
Vegetables/fruit	4	14	16	6	8	12
Plant fibres/other crops	8	5	10	9	5	7
Wheat	0	30	11	1	24	16
Coarse grains	1	63	10	99	30	44
Oilseeds	0	44	8	7	7	18
Dairy products	6	47	16	11	23	11
Processed rice	0	130	14	9	64	23
Processed sugar	14	60	22	26	31	48
Ruminant meat	1	21	14	62	20	26
Non-ruminant meat	11	32	19	16	26	13
Other processed food	10	9	22	14	11	10
Manufacturing	10	2	10	4	3	3
Textiles, wearing apparel, leather	15	8	18	7	7	11
Services	0	0	0	0	0	0
Simple average						
Agriculture	5	54	14	23	27	24
Primary	2	36	7	17	19	17
Processed	7	50	18	23	29	22

Note: For each country, the trade-weighted tariff levied and faced is calculated for each product based on bilateral data. The OECD and non-OECD averages are then a simple average across relevant countries in the database.
Source: GTAP database, version 6.

On the import side, Brazil's average tariffs are relatively low, at 2% for primary agricultural products, 7% for processed agricultural products, and 10% for manufactures. Brazil is one of the few countries in the world for which agricultural tariffs are lower than non-agricultural tariffs.

The tariffs that Brazil faces on its agricultural exports are considerably higher than those it levies, at 17% for primary products and 23% for processed products. Brazil encounters approximately the same degree of tariff escalation as other developing countries, and tends to levy higher tariffs on non-agricultural products than it faces, which is also the case in most developing countries.

Primary and processed agriculture account for 13% of the value of production, with 16% of this total exported. In the base year, agriculture is not more export-oriented than the manufacturing or textile sectors (where the shares of exports in production are almost identical). Thus the benefits from improved agricultural market access are not, in this analysis, attributable to any relatively outward orientation (tradability) of this sector.

On the import side, agricultural tariffs are very low on average, partly because a large share of Brazil's imports enters duty free from Mercosur countries. Given also that imports account for just 4% of consumption, the welfare impacts from liberalisation are expected to be small.

Non-agricultural sectors account for the majority of output, with manufactures accounting for 30%, and services 58%. On the export side, tariffs faced on manufactures are much lower than for agricultural products, so the gains are expected to be relatively less important. As imports of manufactures exceed exports, and Brazil's tariffs are higher than for other sectors, a larger share of the efficiency gains from reform would be expected to derive from lower domestic prices, as Brazil reduces its own tariffs. The net effect, however, also depends on terms-of-trade effects, and would be dampened to the extent that import prices rise.

The welfare impacts of the 50% reform scenario described above are summarised in Table 3.2. In overall terms, OECD countries reap about three-quarters of the global welfare gains. About half of these gains come from liberalising their own agricultural policies, the rest from lower tariffs on manufactures in non-OECD and OECD countries. Agricultural policy reforms in non-OECD countries are relatively less important. For non-OECD countries, the biggest gains come from lower OECD country tariffs on manufactures. There are also significant gains from reforms to agricultural policies in both OECD and non-OECD countries.

Table 3.2. **Welfare effects of multilateral trade reform, equivalent variation**

USD million

	Total welfare	OECD agriculture	Non-OECD agriculture	OECD manufacturing	Non-OECD manufacturing
World	44 268	23 361	3 124	6 694	11 357
OECD	33 459	21 407	1 871	–248	10 680
Non-OECD	10 809	1 954	1 253	6 943	677
Brazil	1 730	1 178	94	367	96
China	3 739	–73	–199	3 373	635
India	1 723	72	544	378	735
South Africa	253	69	25	23	137

Source: GTAPEM.

Agricultural trade reform is particularly important to Brazil, accounting for two-thirds of the country's total welfare gains of USD 1.7 billion. Most of these benefits derive from agricultural policy reforms in OECD countries. Indeed, Brazil accounts for a large share of the gains to all developing countries deriving from reforms to agricultural policies in OECD countries.

The specific results for Brazil differ from the overall pattern for developing countries. Policies governing so-called "south-south" agricultural trade are less important than for most developing countries. In addition, the benefits deriving from reforms in the

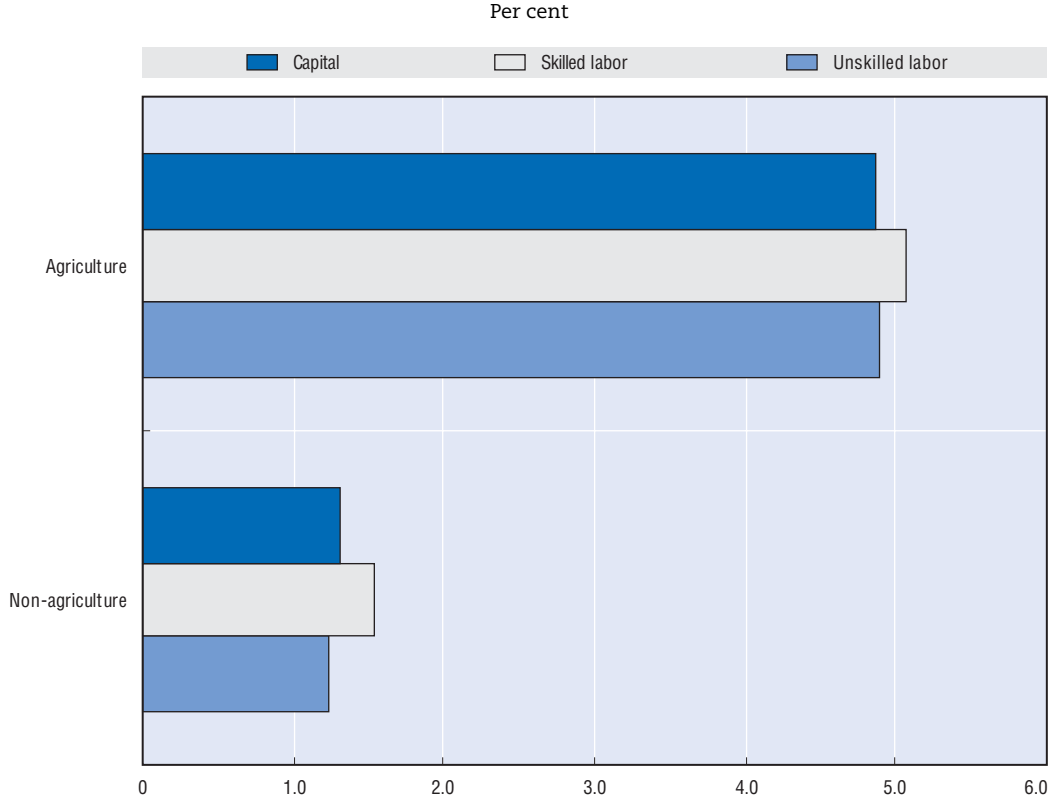
manufacturing sector are much less important in relative terms (just 27% of the total gains), with most of the USD 460 million gain coming from reforms in OECD countries. The efficiency gains to Brazil from lowering its own tariffs on manufactures are to a large extent offset by rising import prices.

The results contrast markedly with those for China, India and South Africa. In the case of China, most of the benefits come from lower tariffs on manufactures in OECD countries, while for India and South Africa, it is tariffs on manufactures in non-OECD countries that matter most.

Within agriculture, world price changes are expected to be modest for most commodities, with prices for the lowest cost exporting country expected to increase by between 2% and 6%. For Brazil, the major sectors benefiting are beef, non-ruminant meats, oilseeds and other crops (including coffee, cotton and tobacco), as well as the processed food sector. The benefits to the sugar industry are relatively small, due to modest changes in world prices (2%).

Figure 3.5 indicates that the simulated policy reforms would boost returns to labour and capital in both agricultural and non-agricultural sectors. The returns to factors employed in agriculture increase much more than the returns to factors employed in other sectors, causing more factors to be retained in agriculture than would otherwise be the case. On the other hand, there is little difference in the returns to capital and (skilled or unskilled) labour in either the agriculture or non-agriculture sub-sector. This suggests that

Figure 3.5. **Changes in factor returns in agricultural and non-agricultural sectors**



Source: GTAPEM.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

the distributional effects of reform depend more on the shift of resources between sectors than on changes in relative factor returns within any sector. The distribution of these inter-sectoral changes throughout the Brazilian economy is assessed in the following section.

3.3. Household impacts of trade and agricultural policy reforms

Brazil has a large and heterogeneous agriculture with a commercial export-oriented sector co-existing with a family farm sector that includes many subsistence and semi-subsistence households. It is also a highly urbanised country, with large numbers of poor consumers whose real incomes are dependent on the price of food. Given this structural diversity, it is important to understand how agricultural policy reforms, and trade liberalisation, will affect the incomes of different constituencies. This section uses a Social Accounting Matrix (SAM) and an associated Computable General Equilibrium (CGE) model to address such questions.

The SAM describes the generation and distribution of income in the economy in a consistent manner. It comprises six types of accounts: activities; commodities; the current accounts of domestic institutions, divided into households, firms and governments; the capital accounts; and the rest of the world account. The key attribute of the SAM developed here is its rich sectoral and household level detail. Thus there are 30 activities, of which 9 are in primary agriculture and 15 are in agribusiness; and 40 products, of which 17 are agricultural and 19 of the remaining 23 are agribusiness or strongly agriculture related. There are 10 household accounts, comprising four categories of family farm household, ordered by economic size; one category of "commercial" farm households; one category of wage-earning agricultural employees; and four categories of urban household, ordered by income quartile. In addition, factor payments (land, labour and capital) are identified for each household according to the activities from which they derive. With government, trade and tax accounts, the end result is a large matrix (183 × 183). All totals match the national income accounts of 1999.[8] Important elements of the SAM are presented in Annex 3.A2.

In order to provide this level of detail and complete the economy-wide picture, several datasets had to be combined. In particular, information on the income sources and expenditure patterns of the different household types had to be compiled from a variety of sources. A key decision concerned the appropriate choice of household groupings. For agricultural households, the choice of categories follows that of a FAO/INCRA study (2000, based on 1995/96 Agricultural Census data).[9] This breakdown facilitated the combining of data from various sources on the basis of common information, thus permitting a fairly rich representation of the characteristics of smaller (and relatively poor) households. Table 3.3 provides summary information for the different categories of household at the time of the 1995/96 Census.

Overall, family farms accounted for 85% of all farms in Brazil in 1995/96, but were responsible for just 38% of production. Commercial farms operate on a much larger scale, with an average size seven times that of the largest group of family farms. The commercial average of 430 ha conceals wide heterogeneity, with farms of over 10 000 ha no longer uncommon in the Centre West. Commercial farms accounted for nearly 20% of agricultural employment, due to the important (albeit declining) use of wage labour.

Table 3.4 shows how incomes and expenditures vary across the different household groups. Family farming accounts for 14.4% of the total population, while commercial farming accounts for just 1.7%. Among the overall category of family farms, a minority of

Table 3.3. **Structural characteristics of Brazilian farms, 1995/96**

	Number of farms		Area			Production value		Employment	
	1 000	%	1 000 ha	%	Average size	BRL million	%	1 000	%
Family farms	4 139	85.2	107 768	30.5	26.0	18 118	37.9	13 780	76.9
Type 1	1 916	39.4	31 599	8.9	16.5	1 943	4.1	5 569	31.1
Type 2	823	16.9	18 218	5.2	22.1	1 707	3.6	2 785	15.5
Type 3	994	20.4	33 810	9.6	34.0	5 311	11.1	3 683	20.5
Type 4	407	8.4	24 141	6.8	59.4	9 156	19.2	1 743	9.7
Commercial	554	11.4	240 042	67.9	432.9	29 140	61.0	3 557	19.8
TOTAL[1]	4 860	100.0	353 611	100.0	72.8	47 796	100.0	17 931	100.0

1. Total includes other cases, such as churches and government offices.

Source: FAO/INCRA (2000).

the population corresponding to Type 4 – approximately equal to those in the commercial group – have relatively high incomes and are similar in their consumption patterns to those in commercial farm households. The main difference is that these households obtain one-third of their income from off-farm sources. A comparison of Table 3.3 and Table 3.4 suggests that there are alternative paths to achieving the same standard of living within agriculture. One possibility is large-scale agricultural operations; in other circumstances, smaller-scale enterprises with diversified income sources may be equally viable.

The two poorest categories of farm household obtain more than half their income from sources other than farm production, and spend an even greater share on food and agricultural products. Hence, when examining the impacts of reform on these groups it is crucial to consider cost-of-living impacts, as well as the effects on revenues. Commercial farms and the richest category of family farms have per capita incomes that place them between the third and fourth quartile of urban households. Although agricultural incomes are unevenly distributed, these farmers generate an average income that is less than half that received by the richest 25% of the urban population.

In terms of total income, the poorest quartile of the urban population has an average income between that of the poorest and second poorest family farm group. However, this group accounts for 19% of the total population, compared with 9% of the population for the two poorest categories of farm households. Thus the impacts of agricultural policy reform may be widespread across poor urban households, even though the impacts may be less acute than for poor farmers.

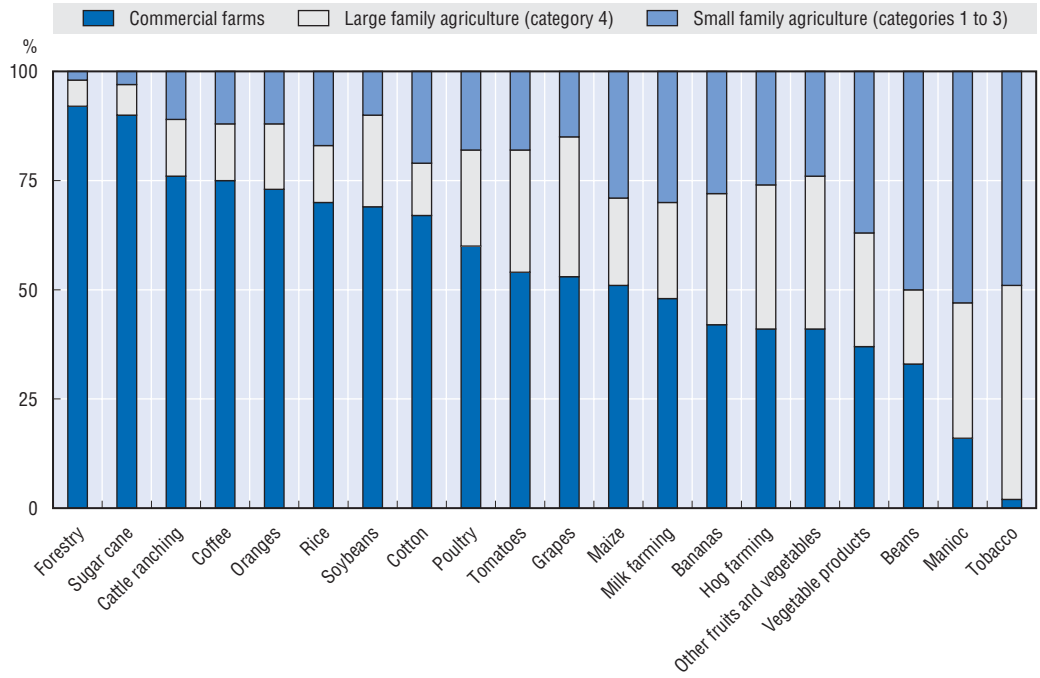
It is important to note that there is considerable regional heterogeneity within the farm sector. In the richer South and South East regions, 90.5% of establishments are considered family farms. These farms account for 43.8% of total area and 43.3% of loans and are responsible for 57.1% of agricultural production value in the region (FIPE, 2004). In the poorer North East region, family-farming accounts for a similarly high proportion of total farms (88.3%) and occupies a similar share of total area (43.8%). However, its share in the value of regional production is much lower at 43%, and it receives only 26.8% of regional loans. These differences are reflected in farm incomes, which average BRL 5 152 in the South and South East, compared with BRL 1 159 in the North East.

Table 3.4. **Income and expenditure patterns of Brazilian households**

	Number of households 1 000	Share of households %	Number of persons	Share of population %	Average income BRL/month	% of income from				% of expenditure on			
						Raw agricultural products	Processed food products	All food products	Other activities	Raw agricultural products	Processed food products	All food products	Other activities
Family agriculture 1	1 997	4.3	10 443	6.3	38.4	45.4	1.3	46.8	53.2	20.7	44.0	64.8	35.2
Family agriculture 2	1 053	2.3	4 686	2.8	86.9	48.1	1.8	49.9	50.1	18.0	41.5	59.5	40.5
Family agriculture 3	1 693	3.7	6 002	3.6	159.6	63.0	1.3	64.3	35.7		37.0	37.0	47.9
Family agriculture 4	968	2.1	2 883	1.7	438.5	65.4	0.7	66.1	33.9	6.0	17.7	23.8	76.2
Commercial farms	740	1.6	2 882	1.7	489.3	100.0		100.0		8.2	17.9	26.1	73.9
Agricultural employees	2 661	5.7	10 927	6.6	118.2	100.0		100.0		9.6	32.3	41.9	58.1
Urban household 1	7 430	16.0	32 232	19.3	62.7		3.5	3.5	96.5	9.6	29.7	39.3	60.7
Urban household 2	8 744	18.9	32 231	19.3	151.7		4.6	4.6	95.4	6.7	23.9	30.6	69.4
Urban household 3	9 824	21.2	32 233	19.3	284.3		4.6	4.6	95.4	5.3	17.7	23.0	77.0
Urban household 4	11 239	24.2	32 234	19.3	1 021.0		3.4	3.4	96.6	2.7	8.5	11.2	88.8
All households	46 349	100	166 753	100	328.13	7.95	3.43	11.38	88.62	4.85	15.07	19.91	80.09

Source: USP SAM.

Figure 3.6. **The composition of production value, by farm type**



Source: USP SAM.

Table 3.A2.1 shows the share of each type of agricultural household in the value of production by sector. These data are summarised in Figure 3.6. Commercial farms dominate most product categories, but tend to be more important in the sectors that dominate production and exports. Family farms account for the majority of production of tobacco, manioc, beans, vegetables, pigs, bananas and milk. Moreover, it is important to recognise that some family farms obtain a substantial share of their income from activities dominated by commercial farms. Table 3.A2.2 recasts the same information in terms of the share of income that comes from each sector, for each household type. The figures naturally obscure the fact that individual households tend to be specialised in fewer products; but they do suggest that higher prices for dairy products, hogs, and staples such as beans and manioc will have a much bigger direct impact on the incomes of low-income farmers than higher prices for soybeans, sugar or cattle.

On the expenditure side, most food products account for a progressively smaller share of budgets as incomes increase (Table 3.A2.3). Nevertheless, food accounts for more than 40% of expenditures of the two poorest categories of farm household, and for at least 40% of the expenditures of half the urban population. Non-monetary food expenditures are particularly important for poor rural families. The share of income spent on housing increases as income rises, but, other things equal, housing expenditures are more important for urban households. More generally, richer households have more diversified consumption structures, and spend relatively more on health and education.

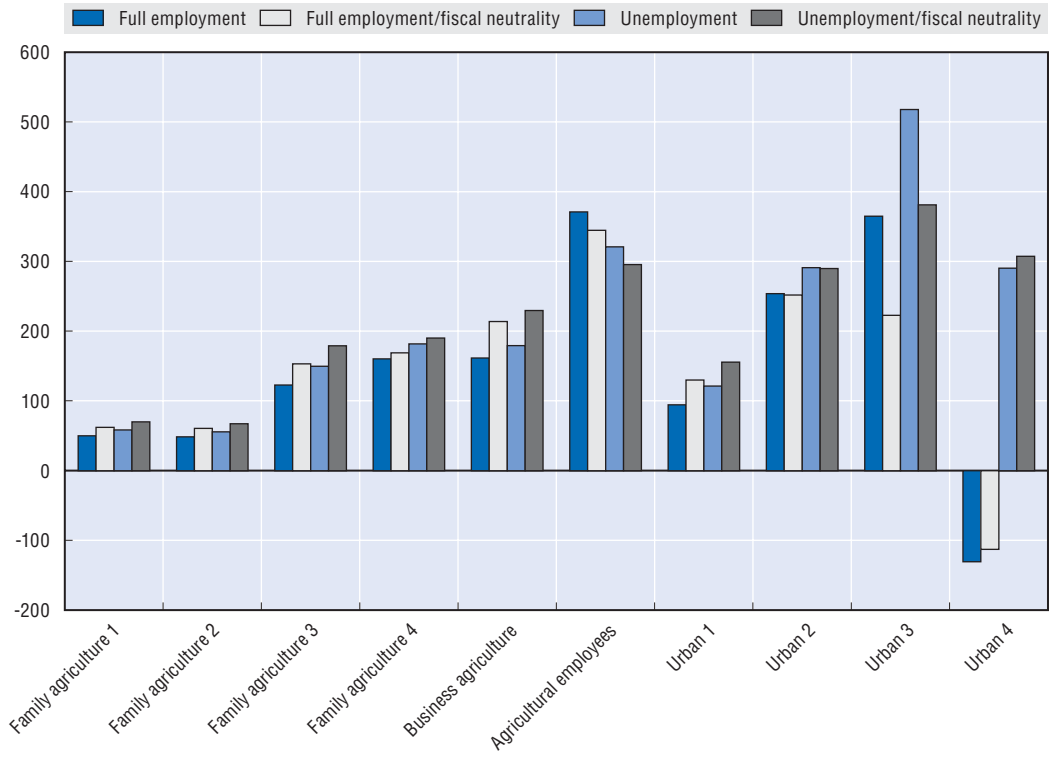
Model results

The SAM for Brazil underpins a CGE model that is used to estimate the distributional impacts of the multilateral trade reforms described in Section 3.2. The analysis in this section takes the import and export price changes from the preceding GTAPEM simulation

and imposes these as exogenous shocks to the model. At the same time, Brazil undertakes the same amount of reform itself, cutting all tariffs by 50% and reducing its agricultural subsidies by 50%.[10] The results are reported under alternative assumptions regarding the closure of the model. Specifically, the assumption of full employment was relaxed by assuming that a perfectly elastic supply of unskilled labour was available at the prevailing wage rate, while fiscal neutrality was accommodated by fixing the government budget deficit/surplus and allowing tax rates to vary. The aggregate benefits from reform under four different closure rules are shown in Figure 3.7.[11]

Figure 3.7. **Equivalent variation in household welfare**

USD million

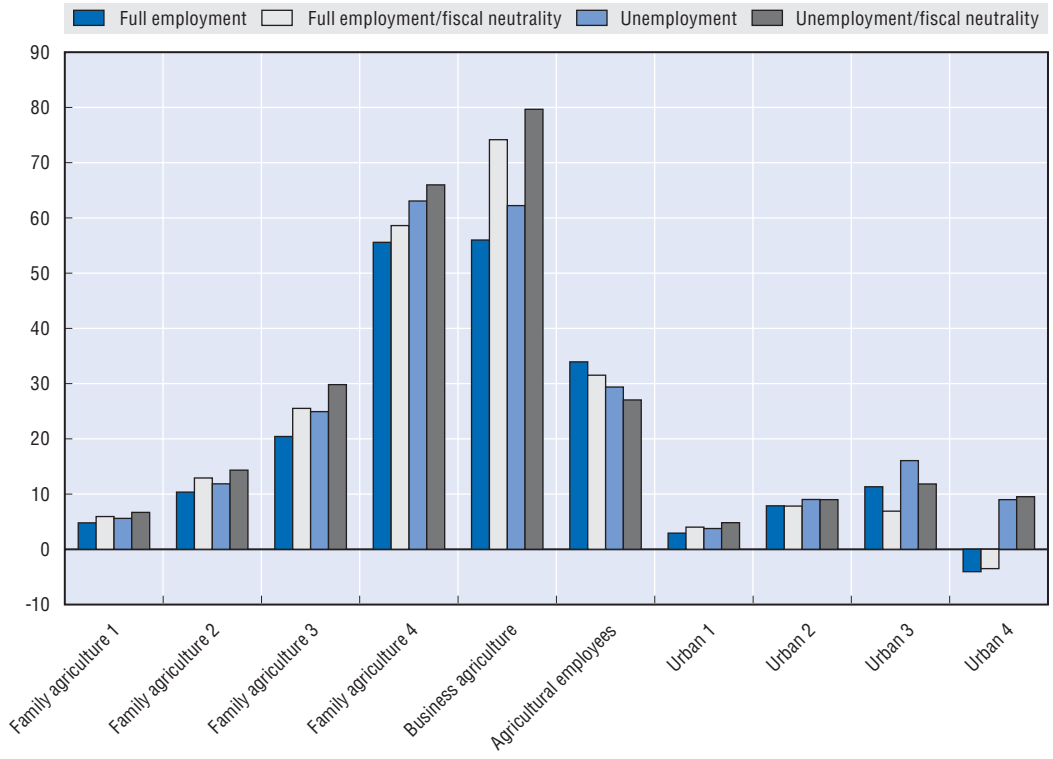


Source: Simulation results.

- In general, the welfare gains are widespread across household types. With the poorer categories of urban and rural household better off, the incidence of poverty falls.
- Inequality among agricultural producer households increases, with larger (and richer) family farm households gaining more than smaller ones.
- At the same time, the total gains to agricultural employees are more than for any other type of agricultural household. Because this group is relatively poor, this counteracts the increase in inequality among agricultural producers.
- Urban households also gain, and their benefits generally increase with income level. The exception is the richest quartile, whose gains are less than those of the second richest

Figure 3.8. **Annual changes in welfare per person**

USD



Source: Simulation results.

group, and in fact loses when there is full employment (because they end up paying more for goods that use unskilled labour).

- The burden of fiscal neutrality is borne disproportionately by the third urban quartile. This reflects a relatively flat income tax structure for the richest 50% of urban households and greater cost of living increases for the second richest group.
- As a result of these welfare changes, there is expected to be little overall impact on income inequality.

Given that the above categories contain different numbers of households and persons, further insight can be obtained from the annual changes in welfare per "person" that are reported in Figure 3.8. These estimates confirm that, for agricultural households, the welfare gains increase with income, and that the benefits to agricultural households are generally greater than for urban households.[12]

In order to understand the origins of these welfare gains, it is helpful to examine the underlying changes in factor incomes (which reflect supply responses to changing output prices) and expenditures (resulting from changes in purchaser prices and consumption patterns).

With regard to factor incomes, it is clear that agricultural labour and capital gain proportionally more than non-agricultural labour and capital (Table 3.A2.4). At the same time, there is a less pronounced tendency for labour and capital income in both

agricultural and non-agricultural sectors to increase with the household's income level.[13] Overall, the reallocation of factor income between agricultural and non-agricultural sectors exceeds the reallocation within each sector.

The changes in household income are shown in Table 3.A2.5. The reason that richer agricultural households gain more in both relative and absolute terms from increases in land and capital income is that production (and exports) expand more rapidly for those products produced by richer farm households. However, they also gain more from increases in labour income, because the activities that expand most following liberalisation are those using skilled labour.

For urban households the proportionate changes in household income are much more even, with the only outlier being the highest income group. The primary reason for this is the relatively high proportion (15%) of this household's income that comes from transfers by the government. However this is also a very large household group that is likely to contain substantial heterogeneity and consequently the within group variations are likely to be considerable.

Factor income changes provide only a partial explanation for the observed welfare effects. The other element comes from the changes in purchaser prices (see Table 3.A2.6) and the expenditure patterns of households (see Table 3.A2.7). In the main, agricultural prices rise, with the notable exceptions of rice, wheat, soybeans and milk.[14] Processed food prices show mixed effects, while the prices of manufactures and services decline. With lower income households spending relatively more on agricultural products than richer households, and agricultural households similarly spending more than urban households (independent of income), this dampens the overall tendency for welfare to increase more for agricultural households, and to increase with income.

The expansion of exports (see Table 3.A2.8) is greater in percentage terms for agricultural commodities, although the absolute change in volumes from manufactures and services dominate. On the import side, the proportionate changes in volumes are more dispersed (see Table 3.A2.9), although again the absolute changes for manufacturing and services are largest. The combined effects of these changes are incentives to reallocate factors to agricultural activities (see Table 3.A2.10). The returns to factors employed in agriculture rise by around 3% to 4%, while for other activities returns increase by slightly over 1%.

Qualifications

It is important to note that improvements in the average incomes of each household category could mask some adverse impacts on individual households within the poorer family farm categories. Specifically, some households could be net consumers of individual products and cost of living increases could outweigh any gains from products for which they have a surplus. The results may also hide important regional differences. Regional disaggregation would tend to increase the output specialisation of the different categories, but have a more modest impact on the patterns of consumption. This may lead to more varied results, depending on the regional output mix.

The model results are, to some extent, dependent on the assumption that product and input markets function smoothly. In particular, small farmers are assumed to receive the same prices as large ones, and to exhibit the same output response. The sensitivity of the results to this assumption was partially examined by considering a scenario under which the full increase in export supply came from commercial producers. Under these

conditions, family farmers were excluded from the direct benefits of reform, but nevertheless gained indirectly through higher domestic prices. But if smaller farmers are not linked into national markets, they could receive no benefit from higher prices, and could in fact lose from factor market impacts, for example if an expansion in commercial production led to higher land rental rates. How likely is this? Analysis of domestic market integration (González-Rivera and Helfand, 2001) suggests that some rural markets are effectively isolated, but most are not. Therefore this is likely to be a local impact rather than one which invalidates the overall conclusion that poorer households will share in the gains from reform.

A further question concerns the links between policy reform and the dynamics of adjustment. If policy reform, by opening new export markets, induces structural change that favours large-scale commercial businesses, then this could accelerate the adjustment pressure on family farm agriculture. Whether this is good or bad for small farmers will depend on whether they own or rent land. A final consideration is that agro-food exports are crucial to Brazil's balance of payments situation, and hence to macroeconomic stability. The application here abstracts from these issues, but if a decline in commercial exports were to weaken the current account sufficiently to undermine macroeconomic stability, then that could lead to adverse effects on all incomes.

To summarise, this application suggests that multilateral trade reform is likely to lead to widespread benefits in Brazil. There are three main reasons for this. First, both commercial and family farms are on balance net sellers of exported products whose prices will rise. Second, the potential losses to farms in import-competing sectors have in fact already been incurred by opening up trade within Mercosur, so no domestic price declines are expected. Third, non-agricultural households will on balance gain from higher agricultural prices, as the effects of higher profits and wages in the agro-food sector will outweigh the impacts of higher food prices. These gains are reinforced by non-agricultural liberalisation at the global level. But these results do not alter the fact that small-scale family farms in Brazil face significant adjustment pressures. In order to examine these pressures, it is helpful to focus more sharply on what has happened at the household level. The following section looks at the development of rural incomes and employment over time in Brazil, in order to identify adjustment pressures and suggest possible policy solutions.

3.4. Changes in rural poverty and inequality in Brazil

The section starts with a descriptive profile of poverty in Brazil, including the extent of poverty in rural *versus* urban areas, the incidence of poverty among different types of rural households, and regional differences more generally.[15] It also considers how poverty has evolved over time, how households have changed their sources of income, and the way in which poverty figures have been affected by out-migration from rural areas. This information provides context for the preceding analysis, for example in describing how the average effects of reform on different types of household are likely to conceal variations across regions and sectoral specialisations, and helps shed light on agriculture's role in the process of poverty reduction and economic development.

National poverty and inequality

According to the Demographic Census, 32% of Brazil's population were living in poverty in 2000.[16] The incidence of rural poverty was 61%, compared with an urban incidence of 25%. However, 80% of the population live in urban areas, so the number of

Table 3.5. **Income, poverty and inequality: total, urban and rural, 1991 and 2000**

	Income per capita			Inequality			Poverty[1]			Extreme poverty[2]		
	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change
	BRL of January 2002			Gini			Headcount			Headcount		
Brazil	255	330	29	0.63	0.65	2	0.40	0.32	–21	0.20	0.15	–23
Urban	308	379	23	0.61	0.63	3	0.30	0.25	–17	0.12	0.11	–14
Rural	90	119	32	0.58	0.62	7	0.72	0.61	–16	0.45	0.36	–19

Note: Roraima has been excluded from the Northern and national statistics due to data problems.
1. Income not exceeding 50% of minimum wage level per person.
2. Income not exceeding 25% of minimum wage level per person.
Source: Helfand and Levine (2004a), based on micro data from the demographic censuses.

urban poor exceeds the number of rural poor. The same pattern is observed for extreme poverty, with the national average of 15% corresponding to urban and rural incidences of 11% and 36% respectively (Table 3.5).

These poverty rates are considerably lower than those observed at the beginning of the 1990s. In 1991, the proportion of the population living in poverty was 40%, with rural poverty at 70% and urban poverty of 30%. Both poverty and extreme poverty fell by over 20% between 1991 and 2000, although there was little change in the kernel of extreme urban poverty, which remains above 10%.

Despite these reductions in poverty, income inequality worsened slightly over the 1990s. The overall Gini coefficient rose from 0.63 to 0.65, which is among the highest rates in the world. A closer inspection of the underlying income data also reveals that the incomes of the bottom two deciles fell (Table 3.6).[17] However, because 72% of the rural

Table 3.6. **Monthly income by decile in Brazilian rural areas**
BRL of January 2002

	Decile									
	1	2	3	4	5	6	7	8	9	10
1991	9	19	26	33	42	53	68	92	134	426
2000	0	14	27	39	54	72	94	127	184	581
% change	–96	–24	6	18	27	35	37	39	37	37

Note: Roraima has been excluded from the Northern and national statistics due to data problems.
Source: Helfand and Levine (2004a), based on micro data from the demographic censuses.

population was counted as poor in 1991, what determined the number of people below the recorded poverty line was income growth in the 6th and 7th deciles of the distribution. Income growth for these deciles was impressive in the 1990s. Similarly, with 45% of the rural population below the extreme poverty line in 1991, what mattered for the reduction of extreme poverty in the 1990s was income growth in the 4th and 5th deciles.

Rural income in Brazil rose faster than urban income in this period (32% *versus* 23%), but at the same time rural areas experience a larger increase in inequality (Table 3.5). The

Gini coefficient for rural areas rose by 7%, while that for urban areas increased by 3%.[18] As a result, poverty fell by about the same percentage in both urban and rural areas of Brazil (around 16%). It is notable that the reduction in urban poverty coincided with a 24% increase in the urban population. Similarly, the decline in rural poverty was most likely aided by the migration out of rural areas. Income growth had a larger impact on extreme poverty in rural areas, with the headcount ratio falling by 19% in rural areas, compared with a drop of 14% in urban areas.

Regional and sub-regional variations

Brazil's success in reducing rural poverty has varied considerably between regions (Table 3.7). For example, extreme poverty in rural areas was still above 40% in the North and North East regions of the country in 2000, while it had fallen to below 20% in the Centre South (which includes the South East, South, and Centre West regions). Moreover, rural poverty fell more sharply in those regions where poverty was already lower, registering declines of between 25% and 37% in the three regions of the Centre South, compared with a decline of only 10% in the North East, and a slight increase in the North. Thus, the rural poor are concentrated increasingly in the latter two regions.

Table 3.7. **Rural income, poverty and inequality, by macro region, 1991 and 2000**

	Income per capita			Inequality			Poverty[1]			Extreme poverty[2]		
	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change
	BRL of January 2002			Gini			Headcount			Headcount		
Brazil	90	119	32	0.58	0.62	7	0.72	0.61	–16	0.45	0.36	–19
North	98	95	–3	0.57	0.63	11	0.69	0.70	1	0.40	0.44	10
North East	57	64	13	0.53	0.57	8	0.85	0.77	–10	0.60	0.51	–14
South East	120	177	47	0.57	0.58	2	0.61	0.42	–30	0.32	0.19	–40
South	127	201	57	0.55	0.55	0	0.56	0.35	–37	0.28	0.15	–47
Centre West	136	200	48	0.58	0.63	10	0.57	0.43	–25	0.27	0.19	–29

Note: Roraima has been excluded from the Northern and national statistics due to data problems.
1. Income not exceeding 50% of minimum wage level per person.
2. Income not exceeding 25% of minimum wage level per person.
Source: Helfand and Levine (2004a), based on micro data from the demographic censuses.

Even within the macro regions there have been considerable variations in the extent of poverty reduction. Focusing on the two poorest regions, the North and North East, it is apparent that in the North, for example, there were substantial increases in poverty in the western half of the region that were mostly offset by reductions in eastern and southern areas. This contrasts with less heterogeneity in the North East, where poverty declined by between 0% and 28% in most municipalities. The most successful municipalities in the Centre West were located in the central and eastern portions of the macro-region, while the least successful municipalities were mostly in the northern part of the region, in the state of Mato Grosso. Figures 3.C.1 to 3.C.5 in Annex 3.A3 show reductions in poverty at the municipal level for the five macro regions.

Changes in the rural population

Brazil has been going through a rapid demographic transformation in recent years. Whereas the national population grew by 35% between 1950 and 1960, the increase between 1991 and 2000 was only 15.6%. The rural population has been falling in absolute terms since 1970 when, according to the Census of that year, there were 41.1 million people living in rural areas. Since then, the rural population has experienced an accelerating rate of decline, falling by 6.1% in the 1970s, 7.1% in the 1980s, and 11.1% in the 1990s. By 2000, the Census reported 31.8 million people living in rural areas.

There was considerable spatial heterogeneity in the process of rural population decline in the 1990s (Table 3.8). The rural population fell most rapidly in the South (–16.4%), where many small and medium sized farms experienced significant competitive pressures from imports. By contrast, the rural population in the North fell by only 5.4%. This is also the region in which the urban and total populations grew fastest. Heterogeneity among regions is matched by wide diversity within them. In the North, the rural population grew by more than 17% in two states, while in one state it fell by 23.7%. Similarly, in the South East, the rural population of São Paulo state rose by over 7% at the same time as the rural population of Minas Gerais fell by 18.6%.

Table 3.8. **Brazilian population, 1991 and 2000**

Millions

	Total			Urban			Rural		
	1991	2000	% change	1991	2000	% change	1991	2000	% change
Brazil	146.8	169.8	15.6	111.0	138.0	24.3	35.8	31.8	– 11.1
North	10.0	12.9	28.6	5.9	9.0	52.2	4.1	3.9	– 5.4
North East	42.5	47.7	12.3	25.8	33.0	27.9	16.7	14.8	– 11.7
South East	62.7	72.4	15.4	55.2	65.5	18.7	7.5	6.9	– 8.7
South	22.1	25.1	13.5	16.4	20.3	23.9	5.7	4.8	– 16.4
Centre West	9.4	11.6	23.4	7.7	10.1	31.7	1.8	1.5	– 12.5

Source: Atlas of Human Development, 2003.

Municipal level data have been used to investigate the impact of changes in the rural population on changes in poverty, income and inequality (Helfand and Levine, 2004a). These data indicate that those municipalities with greater out-migration had larger reductions in rural poverty, due to both greater per-capita income growth and smaller increases in income inequality. This result suggests that out-migration occurs disproportionately from poor households, and not from households with above-average per capita incomes. The reduction in poverty associated with out-migration is likely the result of a number of factors, including: 1) a simple composition effect of removing poorer individuals from the population; 2) the removal of "surplus labour" from the rural population, so that that income declines less than the number of people who share it; 3) disproportionate migration of persons not of working age; and 4) a flow of remittances from migrants to their families who remain in rural areas.

Changes in agricultural employment[19]

Agricultural employment fell by 13.8% from 18.4 million to 15.8 million in the period 1992/93 through 2001/02 (Table 3.A3.1). The decline in employment was sharpest in the South East (–24%) and Centre West (–23%), and weakest in the North East (–5.6%).[20]

Two trends stand out when the employment data are analysed by principal occupation. First, employment of non-remunerated family members fell proportionately more than the self-employment (24% *versus* 7%), suggesting that low productivity (surplus) labour was being expelled from the sector. Second, employers fell proportionately more than employees (17% *versus* 13%), indicating, perhaps surprisingly, that the labour intensity of establishments was likely increasing.

Table 3.A3.1 also shows how changes in the type of employment vary by region. In the North East, what is most striking is the 12.2% increase in subsistence workers, (138 000 people). It is likely that many of these people simply shifted from the category "non-remunerated" family labour, which experienced a decline of 377 000 people. In the South East and Centre West, the number of employers fell substantially more than the number of employees. In the South, in contrast, unpaid family labour and employees lost proportionately more employment in the sector than employers.

Gender differences

An analysis of the structure and evolution of employment by gender also revealed several important findings (Table 3.A3.2). Over 80% of women were classified as unpaid family labour or subsistence workers in 1991 (compared with 28% of men). Although female employers account for less than 1% of female employment in agriculture, their numbers rose by 14%, while the number of male employers fell by 19% over the same period. As a result, by 2001/02 women accounted for almost 10% of the employers in Brazilian agriculture. The only type of employment that grew for men was subsistence agriculture. Perhaps as a result of the land reform program in the 1990s, or the retreat from the market in poorer areas, there was a 30% increase in the number of men engaged in subsistence agriculture. This appears to have taken place largely in the North East.

Changes in income sources

The drivers of changes in poverty and income inequality can be understood more fully by examining what happened to the different sources of household incomes. Earned income, from agricultural and non-agricultural sources, accounted for the majority of total income in both 1991 and 2000, although the share of these two components fell from 86% to 76% (Table 3.9). Non-agricultural income per capita grew by 38% over this period, whereas agricultural income grew by just 2%. Income from social security payments increased by 199%, as a result of which its share in total income rose from 8% to 18%. This made social security payments the biggest contributor to income growth in the 1990s.

At the same time, agricultural incomes became increasingly concentrated. Overall, the increase in the concentration of agricultural income accounts for virtually all the increase in rural income inequality nationwide, although agricultural income remains less concentrated than other sources of private income. The combination of sluggish income growth and an increased concentration of that income at the national level means that agriculture has made little contribution to poverty reduction.

Table 3.9. **Components of rural per capita income in Brazil**[1]

	1991	2000	Difference	% change
Income per capita (BRL of January 2002)	90.2	119.3	29.1	32.2
Agricultural earned income[2]				
Average	48.7	49.9	1.2	2.5
Share of total	0.5	0.4	–0.1	–22.5
Contribution to change in income (%)	–	–	4.2	–
Non-agricultural earned income[2]				
Average	29.3	40.4	11.0	37.7
Share of total	0.3	0.3	0.0	4.1
Contribution to change in income (%)	–	–	38.0	–
Income from secondary occupations				
Average	2.4	2.0	–0.4	–15.4
Share of total	0.0	0.0	0.0	–36.0
Contribution to change in income (%)	–	–	–1.2	–
Income from social security				
Average	7.0	20.9	13.9	198.8
Share of total	0.1	0.2	0.1	126.0
Contribution to change in income (%)	–	–	47.9	–
Other income				
Average	2.8	6.1	3.2	113.7
Share of total	0.0	0.1	0.0	61.7
Contribution to change in income (%)	–	–	11.1	–

Note: All measures refer exclusively to income per household member in rural areas.
1. Excludes Roraima.
2. Income from principal occupation only.

Source: Helfand and Levine (2004a) based on micro data from the demographic censuses.

The differences in poverty reduction across regions correspond to large variations in income sources across regions, and in the growth rates of each of those income sources (Table 3.A3.3). In the rural North, total income fell by 2.5%, with non-agricultural income falling more sharply (23%) and agricultural income stagnant (–1%). Poverty increased from 69% to 70%, a larger increase only being averted by a 117% increase in social security payments. In the North East, poverty fell by 10%, but only thanks to a 186% increase in social security payments. Here, agricultural income fell by 28%, while non-agricultural income rose by 10%.

In both the North and North East, the increasing concentration of agricultural income was a main contributor to rising inequality (Table 3.A3.4). However, this effect was smaller in the North East, and substantially offset by a reduced concentration of non-agricultural earnings. On the other hand, an increase in both the importance and concentration of social security payments contributed significantly to the increase in inequality, as these payments failed to reach the very poorest.

All three regions of the Centre South, in contrast, had substantial reductions in poverty, with the poverty headcount falling by 30% in the South East, 37% in the South and 25% in the Centre West. Relatively rapid income growth was attributable to both non-agricultural earnings and social security, as well as strong agricultural performance in two of the three regions (the South and Centre West). In the South and South East, poverty

reduction was achieved without any increase in income inequality. In the Centre West, on the other hand, the increasing concentration of (rising) agricultural income accounts for most of the increase in inequality, although growth here was still strong enough for poverty to fall significantly.

The important conclusion is that national averages can disguise important developments at the regional level. Agricultural incomes declined in the North and North East, and became more concentrated, with poverty increasing in the North and only being prevented from worsening in the North East thanks to increased social security payments. On the other hand, agriculture made an important contribution to overall income growth and poverty reduction in the South and Centre West. The South East followed a slightly different path to poverty reduction, involving rapid non-agricultural income growth and very little increase in inequality. These subtleties are linked to the structural transformation of Brazilian agriculture described in Chapter 1.

Changes in income by household type

Given such wide regional difference in income changes, it is useful to reflect on the practical value of national level modelling results, as provided in Sections 3.2 and 3.3, even if those results are relatively rich in terms of sectoral and household-level detail. Accordingly, the Demographic Census data are used to construct a database showing income growth between 1991 and 2000 for six types of household (designed to approximate those constructed in the SAM/CGE model described in Section 3.3) engaged in 13 activities, and five regions. The data show that income grew three to four times faster for agricultural employers than it did for agricultural workers and the poorest self-employed farmers (Table 3.A3.5). These differences were considerably more substantial than differences in income growth across regions and activities. Furthermore, a decomposition of variance analysis finds that household type is the most important variable in explaining income growth over this period, accounting for about a quarter of the variation in income. Activity and region add just ten more percentage points (thus lending support for the household classification in the SAM). Given that these three variables still leave the majority of income growth unexplained, it is clear that there is wide heterogeneity in the performance of a given household type engaged in a particular activity in a specific region. This underlines the probable importance of socio-economic determinants of income growth, such as education and training, research and extension, and age of the farm operator. The relative unimportance of region most likely reflects the fact that this variable is linked to other explanatory factors, including the "type" of household and its activity specialisation.

3.5. Summary and conclusions

Brazil stands to gain substantially from agricultural and multi-sectoral trade liberalisation. Because it has largely reformed its own agricultural policies, most of the benefits from reform to this sector are expected to come from the removal of protectionist measures in other countries.

The biggest gains to Brazil come from multilateral agricultural policy reforms, and the majority of those gains derive from agricultural policy reforms in OECD countries. There are two reasons for this: first, a large share of Brazil's agricultural exports go to OECD countries (notably the European Union), and protection in these markets is relatively high; and second, OECD countries account for the majority of support that undermines Brazil's competitiveness in third country markets. That said, a rising proportion of Brazil's exports

are going to non-OECD country destinations, notably China and Russia, which makes policies in these countries of increasing importance.

Brazil faces a range of difficulties in gaining effective access to foreign agricultural markets, especially among OECD countries. These include:

- **High tariffs** in key markets (notably sugar, poultry, orange juice, beef, pigmeat and tobacco).
- **Tariff escalation** according to the degree of processing (notably in the soybean sector, and for processed food products and coffee).
- **Discriminatory import regimes**, such as country-specific TRQ allocations, and preference schemes, which typically do not favour Brazil. These mechanisms for controlling imports tend to be relatively important in the sugar, beef and cotton sectors and are applied most by those countries which represent Brazil's biggest markets, *i.e.* the European Union, the United States, China and Russia.
- **Non-tariff measures**, such as sanitary and phyto-sanitary regulations, which, irrespective of their legitimacy, impede market access. These are a particular problem for meat products, where several countries do not accept Brazil's contention that specific regions should be considered as free from foot-and-mouth disease, even if this is not the case for the country as a whole.

Reforms in these areas, and an accompanying reduction in domestic support promise substantial gains to Brazil. It is estimated that a 50% cut in tariffs and export subsidies globally, together with a 50% reduction of domestic support to agriculture in OECD countries would provide a welfare gain to Brazil of USD 1.7 billion. But who will reap these gains?

In general, the gains are expected to be widespread.

- **Commercial agricultural producers** with links to foreign markets are expected to reap most of the benefits that derive from higher international prices. Potential losses to import-competing sectors are less of a threat, since these sectors have already been opened up to imports from Mercosur members.
- **Non-commercial "family" farms** are also expected to benefit, to the extent that they are integrated with markets. This does not rule out the possibility that some households will lose, for example because they are net consumers of agricultural products, or because land rental payments are force up by more than any increase in farm receipts. But on balance this is not expected to be the case – even for the poorest farm households.
- **Non-agricultural households** are also expected to gain from multilateral reforms, with the benefits from higher profits and wage payments in the agro-food sector and elsewhere exceeding the losses to consumers from higher food prices.
- **Wage-earning agricultural employees** should be a major beneficiary from the expansion in commercial production and exports; most likely from an increase in employment (*i.e.* a brake on the structural decline) rather than higher wages, given the high rate of unemployment (and underemployment) in Brazil.

The absolute size of these gains is expected to be small – in the case of the reform scenario described above, incomes are expected to increase by 3% to 4% for agricultural households, and by about 1% for urban households. These income gains lead to modest improvements in economic welfare.

The prospect of widespread income gains means that poverty should decline, albeit slightly. Because commercial farmers gain more than family farmers, inequality within the agricultural sector is expected to increase. But the wider gains to agricultural employees and urban households imply that there is likely to be little overall effect on income inequality.

These distributional impacts need to be seen in the context of ongoing structural adjustment in Brazilian agriculture. Indeed, it is important that the pressures facing small-scale family farmers are not confused with the more limited impacts of multilateral reforms.

Rural incomes grew by 32% between 1991 and 2000. This enabled the incidence of rural poverty to decline from 72% to 61%. There were similar improvements in the incidence of extreme poverty, which declined from 45% to 36%. At the same time, rural inequality increased, with the rural Gini coefficient rising from 0.58 to 0.62. The story is somewhat different for urban households. In this case, poverty came down by a similar amount, but was associated with slower income growth and little change in inequality. These relative movements are similar to what the CGE model predicts would result from policy reform, although a much more complex set of forces were at work over this period.

With such a large share of the population still living in poverty, what happens to the recorded level of poverty, and even extreme poverty, depends on changes to incomes that are considerably higher than those at the bottom of the scale. A more detailed inspection of the income data reveals that the situation for the poorest of the rural poor has actually deteriorated, and that there has been a wide variation in income growth, not just between states, but within them. Poverty has fallen more slowly in the North East, and has risen in the North (where the rural population has actually grown), meaning that absolute poverty is increasingly concentrated in these two regions.

All these changes point to huge adjustment pressures in Brazilian agriculture. Incomes are growing rapidly for some, but the benefits for others are being eroded by their lack of competitiveness. The basic problem for many poor households is that they are not, and have few prospects of becoming, competitive within agriculture. Hence, it has tended to be the poorest households who have migrated to urban areas, rather than those higher up the income scale moving on to better salaries.

The situation for poor households would have been even worse had it not been for sharp increases in government transfers. Yet many of these payments (notably pensions) have historically failed to reach the very poorest, and in some areas have actually tended to exacerbate income inequality.

The general policy need is to ensure that social programmes are effectively targeted at the poor, and that stop-gap measures are ultimately replaced by long-term measures that enable poorer households to adjust. This is in fact the aim of several programmes introduced under the auspices of the Zero Hunger initiative. It is notable that poor households spend a smaller share of their incomes on health and education expenditures. Public investments in these areas could have a strong impact on poverty and inequality, and would enhance Brazil's scope for reaping the aggregate gains that multilateral policy reform offers.

Notes

1. Over the 2000-03 period those five markets were, in order of importance, the European Union, China, the United States, Russia and Japan. The tables in Annex 3.A1 present, for each product, tariffs paid into the most important export destinations, up to a threshold where 80% of exports are accounted for. In addition, tariffs applied in Brazil's five most important overall markets are

reported, irrespective of whether they fall within that threshold. In cases where a specific tariff is applied, the AVE is calculated relative to the average world import price in 2002-04. If a TRQ system is applied and Brazil receives a quota allocation, the over-quota rate is shown in the figure, while both in-quota and over-quota rates are reported in the accompanying tables.

2. The second quota line is distributed between ACP countries (1.295 million tonnes) and India (10 000 tonnes). The in-quota tariff for these countries is zero. The third quota line, known as the "SPS (Special Preferential Sugar) quota", includes additional quantities of duty free sugar for refining, also allocated to ACP countries and India. This quota will decrease as the fourth line, the "EBA quota", expands. The initial EBA quota of 74 185 tonnes is to increase by 15% each year, while the SPS quota is reduced by the same amount. Customs duties will be reduced by 20% in mid-2006, 50% in mid-2007 and 80% in mid-2008. They will be completely suspended from 1 July 2009.
3. The "reverse" tariff escalation in the European Union and the United States (see Figure 3.2) reflects differences in the over-quota tariffs on raw and refined sugar.
4. Brazil argues that different FMD status should be granted to geographically distinct regions rather than the country as a whole. Japan does not accept this argument in principle, while the United States has in practice not accepted that distinct regions in Brazil are in fact FMD-free.
5. This share was over 90% as recently as 2000.
6. GTAP refers to the Global Trade Analysis Project. GTAPEM is the name given to the modified version of the GTAP model that draws on the OECD's Policy Evaluation Model (PEM).
7. The GTAPEM model is described at length in the OECD paper "Market and Welfare Impacts of Agricultural and Non-Agricultural Reform" (OECD, 2005). This paper also contains a full description of the specific modelling assumptions made in this particular analysis, and contains the same set of overall results as are reported in this chapter. This chapter provides more detail on the results for Brazil.
8. The full SAM is available on the OECD Web site (*www.oecd.org/agr/ete*).
9. In order for a farm to qualify as a "family farm", the following criteria must be met: *i)* the owner manages the farm; *ii)* the use of family labour exceeds that of hired labour; and *iii)* farm area is smaller than a regionally defined maximum size. Family farms are then grouped according to net income, defined as the difference between revenue (including monetary and self-consumption) and expenditures. The four groups are ordered according to the regional value of the daily payment to a hired rural worker (augmented by 20%), which is considered as the regional opportunity cost. For category 1, net farm income is less than half opportunity cost; for category 2 it is between ½ and full opportunity cost; for category 3 between opportunity cost and 3 times opportunity cost; and for category 4 it is greater than 3 times opportunity cost. Some secondary criteria were also employed, such as the share of the main product in total revenue, sales revenue as a proportion of total production value, and the intensity of use of hired labour.
10. Note that the GTAPEM analysis takes account of reforms undertaken by Brazil, but for this analysis it is still necessary to account for the effect that reforms will have on domestic prices.
11. The model is described in McDonald (2005). In general, the results are similar to those found in other general equilibrium studies incorporating household data, notably Hertel *et al.* (2003) and Bento and Horridge (2005). The main substantive difference concerns the results for non-agricultural households, where the latter studies find that, for some urban households, the adverse effects of price increases can outweigh the benefits deriving from higher profits and wage earnings in the agro-food and non-agricultural sectors.
12. The number of members per household tends to decline as income increases. Hence the tendency for richer individuals to gain more than poorer ones (in both rural and urban categories) is more pronounced than the tendency for richer households to benefit more than poorer households.
13. The exception is urban labour income, where the gains are lowest for the richest quartile.
14. The apparently perverse results of negative percentage changes in purchaser prices for sugar and soybean is a consequence of the large supply responses by these activities in response to increased export prices and demand.
15. Data sources and methodology are discussed in a paper prepared for the OECD by Helfand and Levine (2004).
16. The analysis here adopts the same poverty lines as the recently released Atlas of Human Development (2003). The poverty and extreme poverty lines were set at 1/2 and 1/4 respectively of

the August 2000 minimum monthly wage per person (BRL 151). At the contemporaneous nominal exchange rate, this translated into a poverty line of approximately USD 1.33 per person per day.

17. Because the Demographic Census does not measure non-monetary income, incomes at the lower end of the distribution are likely to be underestimated in both absolute and relative terms; while declines in real income may be somewhat exaggerated.

18. The fact that overall inequality rose by less than either urban or rural inequality can be explained as follows. First, income inequality between rural and urban areas declined because incomes rose faster in rural areas. Second, the urban population grew by 24% while the rural population fell by 11% (Table 3.6). This means that more people were shifting from low-income rural jobs to higher income urban jobs, and that less weight was attached to the larger increase in rural inequality in the 1990s.

19. Employment data are obtained from PNAD.

20. Data for the North are excluded due to their unreliability. However, the rural population is known to have risen in this region.

ANNEX 3.A1

Protection of Agricultural Commodities in Brazilian Export Markets

Table 3.A1.1. **Protection of soybean sector in Brazilian export markets**

Product/ Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004, %	Tariff type	TRQ	NTM
Soybeans: HS-120100						
USD 3.06 billion	European Union	59%	0%	–	–	–
15.8 million tonnes	China	24%	3%	*Ad valorem*	–	–
(2000-2003 average)	Japan	4%	0%	–	–	–
	Russia	0%	0%	–	–	–
	United States	0%	0%	–	–	–
Soybean oil: HS-150710						
USD 608 million	Iran	37%	4%	*Ad valorem*	–	–
1.5 million tonnes	India	20%	45%	*Ad valorem*	–	–
(2000-2003 average)	China[1]	14%	9%/31%	*Ad valorem*	Yes	STE quota
	Bangladesh	7%	8%	*Ad valorem*	–	–
	Egypt	5%	1%	*Ad valorem*	–	–
	European Union[2]	1%	3%	*Ad valorem*	–	–
	Russia[3]	0%	25%	*Mixed*	–	–
	United States	0%	19%	*Ad valorem*	–	–
	Japan[4]	0%	21%	*Specific*	–	–
Soybean meal: HS-230400						
USD 2.13 billion	European Union	76%	0%	–	–	–
11.7 million tonnes	South Korea	5%	2%	*Ad valorem*	–	–
(2000-2003 average)	Japan	1%	0%	–	–	–
	United States[5]	0%	2%	*Specific*	–	–
	China	0%	5%	*Ad valorem*	–	–
	Russia	0%	5%	*Ad valorem*	–	–

1. The over-quota tariff is 30.7%, while the in-quota tariff is 9%. In 2006, the TRQ will be eliminated and replaced by a tariff of 9%. In 2003, China's soybean oil TRQ was of 2 818 000 tonnes, of which only 1 880 000 tonnes (66.7%) were filled. In 2002, the fill rate was 34.6%. 18% of the quota is reserved to STEs.
2. Brazil pays a tariff of 2.9% under a special incentive arrangement for the protection of labour rights.
3. 15.0%, but not less than EUR 0.14/kg (an AVE of 25%).
4. JPY 13.2/kg (JPY 10.9/kg if acid value exceeds 0.6).
5. Specific tariff is USD 4.50/t.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

Table 3.A1.2. **Protection of sugar sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Raw sugar: HS-170111						
USD 1.16 billion	Russia[1]	48%	75%	*Specific*	–	–
6.9 million tonnes	Canada[2]	7%	0%	*Specific*	–	–
(2000-2003 average)	Romania	4%	60%	*Ad valorem*	–	–
	Morocco	4%	35%	*Ad valorem*	–	–
	Saudi Arabia	4%	–	–	–	–
	Egypt	4%	2%	*Ad valorem*	–	–
	Nigeria	3%	40%	*Ad valorem*	–	–
	United States[3]	2%	6%/128%	*Specific*	Yes	SSG
	Algeria	2%	5%	*Ad valorem*	–	–
	Bulgaria[4]	2%	5%/50%	*Ad valorem*	Yes	–
	European Union[5]	1%	35%/135%	*Specific*	Yes	SSG
	China[6]	0%	15%/50%	*Ad avalorem*	Yes	STE quota
	Japan	0%	–	–	–	–

Table 3.A1.2. **Protection of sugar sector in Brazilian export markets** *(cont.)*

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Refined sugar: HS-170199	Nigeria	18%	40%	*Ad valorem*	–	–
USD 772 million	United Arab Emirates	14%	. .	. .	. .	. .
4.1 million tonnes	Egypt	9%	12%	*Ad valorem*	–	–
(2000-2003 average)	Yemen	7%	. .	. .	. .	. .
	Morocco	6%	25%	*Ad valorem*	–	–
	Ghana	4%	10%	*Ad valorem*	–	–
	Angola	3%	. .	. .	. .	. .
	Somalia	3%	. .	. .	. .	. .
	Syria	3%	15%	*Ad valorem*	–	–
	Algeria	3%	30%	*Ad valorem*	–	–
	Iraq	3%	. .	. .	. .	. .
	Gambia	2%	. .	. .	. .	. .
	Georgia	2%	12%	*Ad valorem*	–	–
	Sri Lanka[7]	2%	13%	*Mixed*	–	–
	Bagladesh	2%	25%	*Ad valorem*	–	–
	Russia	2%	78%	*Specific*	–	–
	European Union[8]	1%	93%	*Specific*	Yes	SSG
	China[9]	0%	15%/50%	*Ad valorem*	Yes	STE quota
	United States[10]	0%	9%/82%	*Specific*	Yes	SSG
	Japan[11]	0%	43%	*Specific*	–	–

. . not available.

1. The specific tariff varies between USD 140/t and USD 270/t, depending on the average monthly price at the New York Board of Trade (NBYOT). In 2004 the average tariff equalled USD 200, corresponding to an AVE of 75%.
2. The MFN tariff on raw sugar varies from CAD 22.05/t to CAD 24.69/t, but Brazilian exports obtain a preferential rate of 0%.
3. The over-quota tariff is USD 338.7/t (an AVE of 128%) and in-quota tariff is USD 14.606/t (an AVE of 6%). The TRQ is 1 117 195 tonnes (FY 2005). Of this total, Brazil has a quota of 152 691 tonnes and since it does not receive GSP treatment for raw sugar in the United States it is required to pay the in-quota tariff. The SSG is applied as follows: *a)* if valued less than USD 50/t: additional duty of USD 129/t; *b)* if valued USD 50-100/t: USD 87/t; *c)* if valued USD 100-150/t: USD 55/t; *d)* if valued USD 150-200/t: USD 30/t; *e)* if valued USD 200-250/t: USD 15/t; *f)* if valued more than USD 250/t: no additional duty; *g)* if based upon quantity: USD 113/t.
4. The over-quota tariff is 50.0% and the in-quota tariff 5.0%. The total TRQ allocation is 250 000 tonnes and had a fill rate of 100% in 2003.
5. For refining sugar, the over-quota tariff is EUR 339/t and the in-quota tariff is EUR 98/t (an AVE of 35%). For sugar that is not for refining, the tariff is EUR 419/t. The trade-weighted average over-quota tariff faced by Brazil is EUR 373.2/t (an AVE of 135%). There are four TRQ lines: TRQ-I ("CXL quota") of 85 463 t; TRQ-II ("ACP/India quota") of 1 304 700 t; TRQ-III ["SPS (Special Preferential Sugar) quota"] is 229 000 tonnes; and TRQ-IV ["EBA (Everything But Arms) quota"] is 112 826 t. Brazil receives an allocation of 23 930 tonnes under the first quota, but nothing under the remaining three. The SSG applies as soon as the "representative price" (c.i.f. import price excluding the fixed duty) falls below the "trigger price" of EUR 418/t. The representative price is close to the world price and therefore well below the trigger price. For MY 2004-05, the additional SSG duty was set at EUR 75.6/t, which resulted in total protection of EUR 373.2/t + 75.6/t = EUR 448.8/t (an AVE of 162%).
6. The over-quota tariff is 50.0% and in-quota tariff is 15.0%. The total TRQ allocation is 1 945 000 t. There were no over-quota imports in either 2003 or 2002, and 70% of the quota is reserved to a STE. China's TRQ applies to imports of both raw and refined sugar.
7. The specific tariff for white crystalline sugar is LKR 4 500/t (an AVE of 13%); for other sugar the tariff is 27.5%.
8. The specific tariff is EUR 419/t (an AVE of 93%). The TRQ allocation is 1 304 700 tonnes of which 1 294 700 tonnes are allocated to ACP countries and 10 000 tonnes to India. Brazil receives no allocation. The in-quota tariff for India and ACP countries is zero. For 2004-05, an additional SSG duty was set at EUR 96.7/t, resulting in total protection of EUR 419/t + EUR 96.7/t = EUR 515.7/t (an AVE of 114%).
9. See footnote 6.
10. The over-quota tariff is USD 357.4/t and the in-quota tariff USD 36.6/t. The total TRQ allocation is 43 000 tonnes (raw value). Of this, 22 656 tonnes have been reserved for specialty sugars and may be supplied by any country. In FY 2004, the United States imported 9 390 tonnes of specialty sugar from Brazil (50.4% of the quota for specialty sugars) and 4 432 tonnes of refined sugar from Brazil (62.3% of the non-NAFTA refined sugar TRQ volume). The SSG is applied as follows: *a)* if valued < USD 0.05/kg: additional duty of USD 0.216/kg; *b)* if valued USD 0.05-0.10/kg: USD 0.171/kg; *c)* if valued USD 0.10-0.15/kg: USD 0.131/kg; *d)* if valued USD 0.15-0.20/kg: USD 0.096/kg; *e)* if valued USD 0.20-USD 0.25/kg: USD 0.071/kg; *f)* if valued USD 0.25-0.30/kg: USD 0.046/kg; *g)* if valued USD 0.30-0.35/kg: USD 0.031/kg; *h)* if valued > USD 0.35/kg: no additional duty; i) if based upon quantity: USD 0.119/kg.
11. The specific tariff is JPY 21 500/t.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, US data from USITC, all others from MAD-ATD.

Table 3.A1.3. **Protection of coffee sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Coffee beans: HS-090111						
USD 1.32 billion	European Union	51%	0%	–	–	–
1.3 million tonnes	United States	18%	0%	–	–	–
(2000-2003 average)	Japan	9%	0%	–	–	–
	China	< 0.04%	8%	*Ad valorem*	–	–
	Russia	< 0.04%	5%	*Ad valorem*	–	–
Roasted coffee: HS-090121						
USD 6.2 million	United States	–	0%	–	–	–
3.6 thousand tonnes	European Union	–	8%	*Ad valorem*	–	–
(2000-2003 average)	Japan	–	10%	*Ad valorem*	–	–
	Russia	–	10%	*Ad valorem*	–	–
	China	–	15%	*Ad valorem*	–	–
Instant coffee: HS-210111						
USD 192 million	European Union[1]	19%	0%/9%	*Ad valorem*	Yes	–
55 thousand tonnes	United States	11%	0%	–	–	–
(2000-2003 average)	Russia[2]	21%	10%	*Mixed*	–	–
	Ukraine[3]	16%	57%	*Specific*	–	–
	Japan	12%	9%	*Ad valorem*	–	–
	Argentina[4]	3%	0%	–	–	–
	China	0%	17%	*Ad valorem*	–	–

1. The over-quota tariff is 9% and the in-quota tariff is zero. The total TRQ in 2004 was 14 000 tonnes, of which 87.4% was allocated to Brazil. Since Brazil has not exported over the quota since the EU TRQ for instant coffee was opened in 2002, the applied tariff actually faced has been the in-quota rate of zero.
2. The *ad valorem* tariff is 10%, but tariff value must not be less than EUR 500/t.
3. The specific tariff is EUR 3 000/t.
4. This is the preferential tariff under Mercosur. The MFN tariff is 16%.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

Table 3.A1.4. **Protection of orange juice sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Frozen orange juice: HS-200911						
USD 903 million	European Union[1]	66%	13%/15%	*Ad valorem*	Yes	–
1.1 million tonnes	United States[2]	17%	62%	*Specific*	–	–
(2000-2003 average)	Japan[3]	7%	21% or 26%	*Ad valorem*	–	–
	China	1%	8%	*Ad valorem*	–	–
	Russia[4]	0%	5% or 15%	*Ad valorem or mixed*	–	–

1. Over-quota tariff is 15.2% and in-quota 13.0%. Brazil obtains 13% of TRQ allocation.
2. Specific tariff is USD 0.0785/L for single-strength equivalent frozen orange juice.
3. *Ad valorem* tariff is 25.5% if juice contains more than 10% by weight of sucrose and 21.3% if juice contains less than 10% by weight of sucrose. In 2000-03 over 95% of all orange juice imported qualified for the higher rate.
4. *Ad valorem* tariff is 5% or 15% but not less than EUR 0.07/L depending on the juice strength, type of container and sugar content.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

Table 3.A1.5. **Protection of poultry sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Frozen chicken (not cut): HS-020712						
USD 483 million	Saudi Arabia[1]	38%	20%	*Mixed*	–	–
630 thousand tonnes	Russia[2]	11%	25%	*Mixed*	–	Import quota, SPS
(2000-2003 average)	United Arab Emirates	9%	5%	*Ad valorem*	–	–
	Kuwait	7%	5%	*Ad valorem*	–	–
	Yemen	7%	. .	. .	. .	. .
	Oman	4%	5%	*Ad valorem*	–	–
	Qatar	3%	5%	*Ad valorem*	–	–
	European Union[3]	2%	15%/30%	*Specific*	Yes	SSG
	China[4]	0%	15%	*Specific*	–	–
	United States[5]	0%	8%	*Specific*	–	–
	Japan	0%	12%	*Ad valorem*	–	–
Frozen chicken (cut): HS-020714						
USD 802 million	European Union[6]	28%	0%/51%	*Specific*	Yes	SSG
789 thousand tonnes	Japan[7]	18%	9% or 12%	*Ad valorem*	–	–
(2000-2003 average)	Hong Kong	18%	0%	–	–	–
	Russia[8]	11%	25%	*Mixed*	–	Import quota, SPS
	China[9]	2%	12%	*Specific*	–	–
	United States[10]	0%	17%	*Specific*	–	SPS

. . not available.

1. *Ad valorem* tariff is 20.0% but tariff value must not be less than SAR 100/t.
2. There is a general quota for imports of poultry meat to Russia of 1 050 million tonnes, of which 93% was allocated to the United States and the European Union in 2005. Imports over the quota are prohibited. The *ad valorem* tariff is 25.0% but tariff value must not be less than EUR 200/t.
3. Specific over-quota tariff is EUR 325/t and in-quota tariff is EUR 162/t. TRQ is 6 200 tonnes for chicken carcasses (fresh, chilled or frozen).
4. Specific tariff is CNY 1 300/t.
5. Specific tariff is USD 88/t.
6. There are three TRQ lines. TRQ-I allows for 15 500 tonnes of frozen boneless cuts or frozen breasts in bone and cuts thereof of which 7 100 tonnes is allocated to Brazil; TRQ-II: 700 tonnes of frozen boneless cuts; TRQ-III: 4 000 tonnes of chicken cuts, except frozen boneless cuts and frozen breasts in bone and cuts thereof. About 80% of Brazilian exports of frozen cut chicken to the European Union consist of boneless cuts, which face an over-quota tariff of EUR 1 024/t (an AVE of 51%) and a 0% in-quota tariff. The over-quota tariffs for other types of chicken cuts vary between EUR 187/t and EUR 1 008/t, and in-quota tariffs vary between zero and EUR 231/t.
7. The tariff for legs with bone in is 8.5%, for other cuts it is 11.9%.
8. See footnote 2.
9. Specific tariffs are CNY 600/t (meat with bone); CNY 1 000/t (meat without bone).
10. Specific tariff is USD 176/t. US restricts imports on the alleged basis of Newcastle Disease.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

Table 3.A1.6. **Protection of beef sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Fresh beef: HS-020130						
USD 276 million	Chile[1]	48%	6%	*Ad valorem*	–	–
99.3 thousand tonnes	European Union[2]	41%	20%/87%	*Mixed*	Yes	–
(2000-2003 average)	China	0%	12%	*Ad valorem*	–	–
	United States[3]	0%	up to 10%/26%	*Ad valorem*	Yes	SSG, SPS
	Russia[4]	0%	15%/60%	*Mixed*	Yes	SPS
	Japan[5]	0%	39%	*Ad valorem*	–	SPS
Frozen beef: HS-020230						
USD 517 million	European Union[6]	28%	20%/146%	*Mixed*	Yes	–
302 thousand tonnes	Egypt	15%	5%	*Ad valorem*	–	–
(2000-2003 average)	Russia[7]	10%	15%/60%	*Mixed*	Yes	SPS
	Saudi Arabia	9%	5%	*Ad valorem*	–	–
	Israel	7%	0%	–	–	–
	Iran	6%	50%	*Ad valorem*	–	–
	Hong Kong	5%	0%	*Ad valorem*	–	–
	China	0%	12%	*Ad valorem*	–	–
	United States[8]	0%	up to 10%/26%	*Mixed*	Yes	SPS
	Japan[9]	0%	39%	*Ad valorem*	–	–
Prepared/preserved beef: HS-160250						
USD 286 million	European Union[10]	50%	17%	*Mixed*	–	–
139 thousand tonnes	United States[11]	31%	0.7%	*Ad valorem*	–	–
(2000-2003 average)	China	0%	12%	*Ad valorem*	–	–
	Russia[12]	0%	20%	*Mixed*	–	–
	Japan	0%	20%	*Ad valorem*	–	–

1. Chile has granted preferences to Mercosur countries under the Mercosur-Chile FTA. MFN rates vary by tariff line.
2. The over-quota mixed tariff is 12.8% + EUR 3 034/t, and the in-quota tariff is 20.0%. TRQ is 69 100 tonnes (Hilton beef), of which 5 000 tonnes is allocated to Brazil.
3. The over-quota tariff is 26.4% but the in-quota tariff may vary according to the degree of processing: 4.0% for high quality processed meats, 10.0% for other processed meats, USD 44/t for unprocessed meats. TRQ is 696 621 tonnes, of which 631 816 tonnes is distributed to a list of countries (not including Brazil) and the remaining 64 805 tonnes are available to all other exporting countries. SPS measures prevent Brazil from exporting to the US market, with the United States not accepting the designation of FMD free status on a sub-national basis. The SSG is applied as follows: *a)* if valued less than USD 300/t: additional duty of USD 753/t; *b)* if valued USD 300-500/t: USD 575/t; *c)* if valued USD 500-700/t: USD 435/t; *d)* if valued USD 700-900/t: USD 317/t; *e)* if valued USD 900-1100/t: USD 217/t; *f)* if valued USD 1 100-1 300/t: USD 141/t; *g)* if valued USD 1300-1500/t: USD 81/t; *h)* if valued USD 1500-1700/t: USD21/t; *i)* if valued at USD 1 700 or more: no additional duty; *j)* if based upon quantity: 8.8%.
4. The over quota tariff is 60.0% but not less than EUR 800/t, while the in-quota rate is 15% but not less than EUR 200/t. Russia accepts the regional designation of FMD-free status, but imposes strict SPS requirements.
5. Japan does not accept the regional designation of FMD-free status.
6. About 90% of Brazilian exports of frozen beef to the European Union fall under the over-quota tariff of 12.8% + EUR 3 041/t (an AVE of 146%), and the in-quota tariff of 20.0%. Under TRQ-I 44 000 tonnes are allocated to Brazil and under TRQ-II 28 100 tonnes.
7. The over-quota tariff is 60.0% but not less than EUR 600/t and the in-quota tariff is 15.0% but not less than EUR 200/t.
8. The United States TRQ system applies to both fresh and frozen beef. SPS measures (FMD restrictions) prevent Brazil from exporting to the US market.
9. Japan does not accept the regional designation of FMD-free status.
10. The tariff for cooked meat is 16.6%, while the tariff for uncooked meat is EUR 3 034/t. The EU imported only cooked meat from Brazil in 2000-03.
11. The tariff for corned beef is 1.4%, for other meat it is 0.0%. The average tariff faced by Brazil is 0.73%. Traditionally, Brazil sold corned beef to the United States. Brazil is excluded from GSP (duty-free) treatment for this product.
12. The tariff is 20.0% but not less than EUR 500/t.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

Table 3.A1.7. **Protection of pigmeat sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Carcass: HS-020321						
USD 90.3 million	Russia[1]	98%	17%/89%	*Mixed*	Yes	–
101 thousand tonnes	European Union[2]	0%	23%/45%	*Specific*	Yes	SPS
(2000-2003 average)	China	0%	12%	*Ad valorem*	–	–
	United States[3]	0%	0%	–	–	SPS
	Japan[4]	0%	278%	–	–	SSG, SPS
Other: HS-020329						
USD 266 million	Russia[5]	48%	15%/80%	*Mixed*	Yes	–
196 thousand tonnes	Hong Kong	21%	0%	–	–	–
(2000-2003 average)	Argentina[6]	12%	0%	–	–	
	European Union[7]	5%	0%-18%/19%-35%	*Specific*	Yes	SPS
	China	0%	12%	*Ad valorem*	–	–
	United States[8]	0%	0%	–	–	SPS
	Japan[9]	0%	176%	–	–	SSG, SPS

1. The over-quota tariff is 80.0% but not less than EUR 1 060/t (an AVE of 89%), while the in-quota tariff is 15.0% but not be less than EUR 200/t (an AVE of 17%).
2. The over-quota tariff is EUR 536/t and the in-quota rate EUR 268/t. The TRQ allocation is 15 000 tonnes for tariff lines 0203.11.10 (fresh/chilled meat) and 0203.21.00 (frozen meat). Since Brazil is considered a risk zone for swine diseases, such as classical swine fever, exports of pork meat are currently restricted. EU adopts stricter sanitary standards than those established by the IOE, and does not accept the regional designation of FMD-free status.
3. The United States does not accept the regional designation of FMD-free status.
4. The MFN tariff is JPY 361 000/t. Japan has reserved the right to apply SSG to products from HS 0203.21. SPS measures prevent Brazil from exporting to the Japanese market. Japan does not accept the regional designation of FMD-free status.
5. The over-quota tariff is 80.0% but not less than EUR 1 060/t, while the in-quota tariff is 15.0% but not less than EUR 250/t.
6. Brazilian exports enter duty free under Mercosur; the MFN rate is 10%.
7. The over-quota tariff varies from EUR 467/t to 869/t and the in-quota rate varies from zero to EUR 434/t depending on the type of cut. There are 4 TRQ lines. TRQ-I is 5 500 tonnes for 14 tariff lines that cover swine meat cuts (excluding tenderloin); TRQ-II is 5 000 tonnes for tenderloins; TRQ-III is 34 000 tonnes for boneless loins and hams; TRQ-IV: 7 000 tonnes for bellies and cuts thereof and for loins with bone in. Since Brazil is considered a risk zone for pork diseases, such as classical swine fever, exports of pigmeat are currently restricted. EU adopts stricter sanitary standards than those established by the IOE and does not accept the regional designation of FMD-free status.
8. The United States does not accept the regional designation of FMD-free status.
9. Japan has reserved the right to apply SSG to products from HS 0203.29 and does not accept the regional designation of FMD-free status.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

Table 3.A1.8. **Protection of Virginia-type tobacco sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Tobacco: HS-240120						
USD 698 million	European Union[1]	36%	18%	*Mixed*	–	–
253 thousand tonnes	United States[2]	13%	9%/350%	*Mixed*	Yes	–
(2000-2003 average)	China	7%	10%	*Ad valorem*	–	–
	Japan	4%	0%	–	–	–
	Russia	6%	5%	*Ad valorem*	–	–
	Philippines	4%	7%	*Ad valorem*	–	–
	South Africa[3]	3%	15%	*Mixed*	–	–
	Mexico	2%	45%	*Ad valorem*	–	–
	South Korea	2%	20%	*Ad valorem*	–	–
	Ukraine[4]	2%	0.2%	*Specific*	–	–
	Turkey	1%	25%	*Ad valorem*	–	–

1. The MFN tariff is 18.4% with a minimum tariff of EUR 220/t and maximum of EUR 240/t.
2. The in-quota tariff is USD 375/t and over-quota tariff is 350.0%. The TRQ allocation is 150 700 tonnes, of which 80 200 tonnes is allocated to Brazil (53.2%). There are no over-quota exports from Brazil.
3. Tariff of 15.0%, or ZAR 8 600/t less 85.0%; whichever is greater, is applied.
4. The specific tariff is EUR 10/t.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, US data from USITC, all others from MAD-ATD.

Table 3.A1.9. **Protection of cotton sector in Brazilian export markets**

Product/Brazilian exports	Country	Share of exports (2000-03)	Applied tariff 2004	Tariff type	TRQ	NTM
Cotton: HS-520100						
USD 117 million	European Union	23%	0%	–	–	–
115 thousand tonnes	Argentina[1]	16%	0%	–	–	–
(2000-2003 average)	India	11%	10%	*Ad valorem*	–	–
	Indonesia	9%	0%	–	–	–
	Japan	5%	0%	–	–	–
	China[2]	4%	1%/40%	*Ad valorem*	Yes	STE quota
	Thailand	4%	0%	–	–	–
	Colombia[3]	4%	8%	–	–	–
	Pakistan	3%	0%	–	–	–
	United States[4]	1%	up to 3%/24%	*Specific*	Yes	–
	Russia	–	0%	–	–	–

1. Brazilian exports enter duty free under Mercosur; the MFN rate is 6%.
2. The over-quota tariff is 40% and the in-quota tariff is 1%.The total TRQ for 2004 is 894 000 tonnes, and there were no over-quota imports in either 2003 or 2002. 33% of the quota is reserved to an STE.
3. Brazil obtains a preferential rate of 8% compared with an MFN rate of 10%.
4. The over-quota tariff is USD 314/t while the in quota tariff depends on the tariff line: For tariff line 5201.00.14 the in-quota tariff is zero; for tariff lines 5201.00.24 and 5201.00.34 the in-quota tariff is USD 44/t and for tariff line 5201.00.60 the in-quota tariff is USD 15/t.

Source: ICONE and OECD Secretariat; EU protection data from TARIC, all others from MAD-ATD.

ANNEX 3.A2

SAM Data and CGE Model Results

Table 3.A2.1. **Share of household type in agricultural production value, by sector**

Per cent

	Share in total production value	Composition of production value					
		Family agriculture					Commercial farms
		1	2	3	4	Total	
Cattle ranching	16	2	2	7	13	24	76
Sugar cane	12	1	0	2	7	10	90
Poultry	11	6	3	9	22	40	60
Milk farming	10	5	6	19	22	52	48
Soybeans	10	2	1	7	21	31	69
Maize	7	8	6	15	20	49	51
Coffee	6	2	2	8	13	25	75
Hog farming	4	7	4	15	33	59	41
Rice	4	5	4	8	13	30	70
Manioc	3	9	11	33	31	84	16
Forestry	2	0	0	2	6	8	92
Beans	2	15	12	23	17	67	33
Other fruits and vegetables	2	5	4	15	35	59	41
Oranges	2	3	2	7	15	27	73
Tobacco	2	2	5	42	49	98	2
Vegetable products	2	8	10	19	26	63	37
Bananas	1	4	6	18	30	58	42
Tomatoes	1	5	3	10	28	46	54
Cotton	1	6	5	10	12	33	67
Grapes	1	2	2	11	32	47	53
Other products	3	4	3	10	20	37	63
Total	100	4	3	11	19	37	63

Source: USP SAM.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Table 3.A2.2. **Share of farm income from each sector by household type**

Per cent

	Share in total production value	Product share of farm income for the farm type				Commercial farms
		Family agriculture				
		1	2	3	4	
Cattle ranching	16	8	10	10	11	20
Sugar cane	12	2	2	2	4	17
Poultry	11	15	9	9	13	10
Milk farming	10	13	16	18	12	8
Soybeans	10	4	4	6	11	10
Maize	7	14	12	10	8	6
Coffee	6	3	4	4	4	7
Hog farming	4	7	5	5	7	3
Rice	4	4	4	3	3	4
Manioc	3	6	9	8	4	0
Forestry	2	0	0	0	1	4
Beans	2	8	8	5	2	1
Other fruits and vegetables	2	3	3	3	4	1
Oranges	2	2	1	1	2	3
Tobacco	2	1	2	7	5	0
Vegetable products	2	3	5	3	2	1
Bananas	1	1	2	2	2	1
Tomatoes	1	1	1	1	1	1
Cotton	1	1	1	1	1	1
Grapes	1	0	0	1	1	1
Other products	1	4	2	1	2	1
Total	100	100	100	100	100	100

Source: USP SAM.

Table 3.A2.3. **Household expenditure patterns, 1996**

	Total expenditure (BRL/month)	As a percentage of total current expenditures								
		Food		Housing	Clothing	Transport-ation	Health	Education	Other consump-tion	Other current
		Monetary	Non-monetary							
Family agriculture 1	45.7	44	24	9	5	5	6	1	6	1
Family agriculture 2	58.0	42	19	13	5	3	8	1	7	1
Family agriculture 3	73.6	36	18	14	6	5	9	2	8	3
Family agriculture 4	170.9	24	6	22	5	11	8	4	11	9
Business agriculture	209.4	24	8	22	5	10	10	4	8	7
Agricultural employees	77.4	37	9	19	5	5	7	2	9	7
Urban household 1	78.9	40	3	24	4	4	7	5	8	4
Urban household 2	110.4	39	2	27	5	4	7	4	9	4
Urban household 3	184.2	31	1	26	6	8	7	5	9	7
Urban household 4	500.2	19	0	30	4	9	8	9	9	12

Source: PPV 1996 microdata.

Table 3.A2.4. **Baseline factor incomes**

	Baseline USD million	Full employment	Full employment/ fiscal neutrality	Unemployment	Unemployment/ fiscal neutrality
		Change (%)			
Capital family agriculture 1	911	3.67	3.71	3.74	3.64
Capital family agriculture 2	866	3.66	3.67	3.69	3.64
Capital family agriculture 3	2 579	3.84	3.88	3.90	3.82
Capital family agriculture 4	4 019	4.33	4.47	4.49	4.31
Capital business agriculture	8 925	4.76	4.95	4.97	4.74
Capital urban 1	8 114	1.05	1.30	1.30	1.05
Capital urban 2	17 125	0.96	1.19	1.19	0.96
Capital urban 3	31 277	0.93	1.16	1.16	0.93
Capital urban 4	18 249	0.96	1.20	1.20	0.96
Labor family agriculture 1	2 254	1.57	1.47	1.47	1.58
Labor family agriculture 2	1 946	1.63	1.49	1.49	1.63
Labor family agriculture 3	3 539	1.93	2.17	2.17	1.93
Labor family agriculture 4	5 173	2.16	2.43	2.43	2.16
Labor agriculture employees	9 351	4.44	3.69	3.70	4.42
Labor urban 1	9 248	1.25	1.23	1.22	1.26
Labor urban 2	23 286	1.28	1.24	1.24	1.29
Labor urban 3	43 938	1.30	1.57	1.57	1.30
Labor urban 4	11 292	1.23	1.50	1.50	1.23
Land family agriculture 1	456	3.67	3.71	3.74	3.64
Land family agriculture 2	433	3.66	3.67	3.69	3.64
Land family agriculture 3	1 288	3.84	3.88	3.90	3.82
Land family agriculture 4	2 007	4.33	4.47	4.49	4.31
Land business agriculture	4 451	4.76	4.96	4.97	4.74

Source: Simulation results.

Table 3.A2.5. **Household incomes**

	Baseline USD million	Full employment	Full employment/ fiscal neutrality	Unemployment	Unemployment/ fiscal neutrality
		Change (%)			
Family agriculture 1	3 501	1.72	2.09	1.70	2.07
Family agriculture 2	3 568	1.54	1.89	1.52	1.86
Family agriculture 3	8 488	1.62	2.07	1.79	2.22
Family agriculture 4	11 561	1.91	2.42	2.11	2.60
Business agriculture	8 697	2.80	4.29	3.03	4.46
Agricultural employees	10 440	3.96	3.98	3.30	3.32
Urban household 1	16 267	0.62	1.09	0.69	1.14
Urban household 2	39 361	0.68	1.08	0.73	1.13
Urban household 3	73 802	0.69	1.09	0.93	1.31
Urban household 4	26 526	0.39	1.04	0.63	1.26

Source: Simulation results.

Table 3.A2.6. **Changes in purchaser prices**

Per cent

	Full employment	Full employment/ fiscal neutrality	Unemployment	Unemployment/ fiscal neutrality
Coffee	5.28	5.28	4.98	4.97
Sugar cane	2.85	2.87	2.23	2.23
Rice	–2.65	–2.66	–1.67	–1.68
Wheat	–0.44	–0.44	–0.41	–0.41
Soybean	–0.58	–0.56	–1.34	–1.33
Maize	1.49	1.50	0.98	0.99
Beans	5.34	5.35	5.72	5.73
Cassava	4.31	4.30	4.60	4.60
Oranges	2.65	2.66	1.60	1.60
Other fruits and vegetables	3.10	3.12	2.51	2.52
Cotton	11.15	11.10	11.95	11.90
Other crops	3.15	3.18	1.69	1.71
Poultry and egg production	1.66	1.67	1.05	1.06
Cattle ranching and farming	4.20	4.21	3.54	3.54
Hog and pig farming	2.13	2.14	1.51	1.51
Milk farming	0.07	0.10	–0.90	–0.87
Other animal production	2.63	2.64	1.87	1.88
Coffee products	2.69	2.68	2.48	2.47
Alcohol	0.85	0.85	0.70	0.70
Sugar	–3.94	–3.93	–4.32	–4.31
Rice products	–3.93	–3.87	–4.23	–4.18
Wheat flour	1.21	1.18	1.20	1.17
Vegetable oil	–2.70	–2.69	–3.13	–3.13
Other vegetables	0.01	0.02	–0.14	–0.13
Poultry products	–0.65	–0.64	–1.05	–1.04
Beef products	2.02	2.02	1.55	1.55
Other meat products	0.84	0.84	0.41	0.42
Dairy products	–0.15	–0.14	–0.57	–0.56
Animal feed	–0.49	–0.49	–0.55	–0.55
Other food products	–0.81	–0.81	–0.96	–0.96
Beverage	–1.03	–1.03	–1.02	–1.02
Textiles	1.96	1.96	1.97	1.97
Tractors products	–3.63	–3.64	–3.47	–3.47
Fertilisers products	–0.27	–0.27	–0.17	–0.17
Agricultural defensives products	0.04	0.05	–0.10	–0.09
Resource oriented products	–0.83	–0.83	–0.69	–0.69
Other industrial products	–1.45	–1.45	–1.32	–1.32
Trade	0.26	0.26	0.33	0.32
Transport	–0.50	–0.51	–0.35	–0.35
Services and government	0.63	0.63	0.72	0.72

Source: Simulation results.

OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Table 3.A2.7. **Household consumption expenditure shares by broad commodity group**

Per cent

	Agriculture	Food	Manufacturing	Services
Family agriculture 1	20	43	21	16
Family agriculture 2	17	41	26	16
Family agriculture 3	14	36	30	20
Family agriculture 4	6	17	28	49
Business agriculture	8	17	32	43
Agricultural employees	9	31	30	30
Urban household 1	9	29	27	35
Urban household 2	6	23	29	41
Urban household 3	5	17	29	49
Urban household 4	3	8	22	67

Source: USP SAM.

Table 3.A2.8. **Changes in Brazilian exports**

Per cent

	Full employment	Full employment/ fiscal neutrality	Unemployment	Unemployment/ fiscal neutrality
Soybean	27.52	27.49	30.86	30.84
Maize	12.55	12.56	13.71	13.72
Beans	–0.33	–0.33	–0.78	–0.78
Oranges	8.21	8.2	10.8	10.8
Other fruits and vegetables	7.07	7.04	8.6	8.58
Other crops	8.34	8.29	11.81	11.77
Poultry and egg production	12.29	12.28	14.11	14.1
Cattle ranching and farming	13.62	13.61	15.47	15.48
Other animal production	11.54	11.53	13.53	13.53
Coffee products	3.31	3.32	4.12	4.12
Alcohol	16.07	16.05	16.73	16.72
Sugar	29.98	29.97	31.72	31.72
Rice products	25.89	25.75	27.21	27.08
Wheat flour	5.55	5.63	5.93	6.01
Vegetable oil	25.57	25.56	27.31	27.31
Other vegetables	12.57	12.57	13.24	13.25
Poultry products	21.62	21.62	22.93	22.93
Beef products	17.37	17.37	18.86	18.87
Other meat products	18.7	18.73	20.11	20.14
Dairy products	9.05	9.03	10.51	10.49
Animal feed	18.41	18.43	18.52	18.54
Other food products	15.27	15.28	15.96	15.97
Beverage	12.71	12.73	13.05	13.06
Textiles	5.26	5.28	5.57	5.59
Tractors products	12.19	12.19	11.8	11.81
Fertilizers products	20.24	20.26	19.65	19.68
Agricultural defensives products	9.93	9.93	10.14	10.13
Resource oriented products	11.32	11.33	11.13	11.13
Other industrial products	10.53	10.53	10.44	10.44
Trade	12.54	12.54	12.72	12.72
Transport	14.28	14.28	14.24	14.24
Services and government	9.71	9.71	9.83	9.82

Source: Simulation results.

Table 3.A2.9. **Changes in Brazilian imports**

Per cent

	Full employment	Full employment/ fiscal neutrality	Unemployment	Unemployment/ fiscal neutrality
Rice	–0.15	–0.15	2.04	2.04
Wheat	3.27	3.29	3.24	3.26
Soybean	3.10	3.13	2.30	2.32
Maize	4.58	4.62	3.28	3.32
Beans	17.30	17.33	18.25	18.28
Cassava	14.81	14.80	15.55	15.55
Oranges	9.96	9.98	7.75	7.76
Other fruits and vegetables	10.97	11.02	9.71	9.76
Other crops	12.37	12.45	9.21	9.28
Poultry and egg production	4.67	4.70	3.65	3.67
Cattle ranching and farming	4.99	5.00	3.82	3.83
Hog and pig farming	4.47	4.54	3.65	3.72
Other animal production	8.55	8.60	6.99	7.03
Coffee products	6.73	6.73	6.48	6.48
Alcohol	4.95	4.95	4.73	4.73
Sugar	–7.76	–7.74	–8.18	–8.16
Rice products	–1.00	–0.85	–1.56	–1.42
Wheat flour	5.26	5.21	5.40	5.36
Vegetable oil	3.57	3.61	2.87	2.90
Other vegetables	21.37	21.40	21.07	21.10
Poultry products	228.35	228.45	225.90	225.98
Beef products	5.17	5.19	4.34	4.35
Other meat products	4.59	4.64	3.82	3.87
Dairy products	3.61	3.65	2.88	2.92
Animal feed	14.02	14.03	13.60	13.61
Other food products	12.80	12.81	12.50	12.51
Beverages	35.97	35.97	36.17	36.17
Textiles	10.46	10.45	10.60	10.59
Tractors products	7.97	7.97	8.51	8.51
Fertilisers products	12.38	12.41	12.09	12.11
Agricultural defensives products	25.18	25.23	24.23	24.27
Resource oriented products	7.13	7.13	7.48	7.49
Other industrial products	13.95	13.95	14.31	14.31
Trade	2.02	2.02	2.25	2.25
Services and government	5.90	5.89	6.17	6.16

Source: Simulation results.

Table 3.A2.10. **Price of value added**

Per cent changes

	Full employment	Full employment/ fiscal neutrality	Unemployment	Unemployment/ fiscal neutrality
Sugar cane	4.41	4.43	3.48	3.49
Soybean	4.29	4.31	3.14	3.16
Maize	4.14	4.16	2.82	2.83
Fruits	4.28	4.29	3.35	3.36
Other crops	4.22	4.24	3.30	3.31
Poultry and egg production	4.24	4.26	3.14	3.15
Cattle ranching and farming	4.26	4.28	3.22	3.24
Hog and pig farming	4.17	4.19	3.09	3.11
Other animal production	4.13	4.15	3.04	3.06
Coffee industries	1.02	1.02	1.19	1.19
Alcohol	1.01	1.01	1.23	1.23
Sugar	1.17	1.17	1.17	1.17
Vegetable oil processing	1.00	1.00	1.19	1.19
Vegetable products processing	1.06	1.05	1.18	1.18
Poultry industries	1.06	1.06	1.18	1.18
Beef industries	1.10	1.10	1.18	1.18
Other meat industries	1.14	1.14	1.18	1.17
Dairy industries	1.06	1.05	1.18	1.18
Animal feed	1.08	1.08	1.18	1.18
Other food products	1.11	1.10	1.18	1.18
Beverages	1.08	1.08	1.27	1.27
Textiles	1.11	1.11	1.14	1.13
Agricultural machinery industries	1.16	1.15	1.38	1.38
Fertilisers	1.17	1.16	1.34	1.33
Other chemical elements	1.06	1.05	1.26	1.26
Resource oriented industries	1.02	1.01	1.22	1.22
Other industries	1.05	1.05	1.21	1.21
Trade	1.14	1.14	1.20	1.20
Transport	1.15	1.14	1.33	1.33
Services and government	1.14	1.14	1.24	1.24

Source: Simulation results.

ANNEX 3.A3

Brazilian Agricultural Employment and Rural Income Data

Table 3.A3.1. **Employment in agriculture by region and principal occupation**
Thousands

	1992-93	2001-02	% change
Brazil (excluding North)	18 377	15 838	–14
Employees	5 000	4 337	–13
Self-employed	4 472	4 153	–7
Employers	554	459	–17
Non-remunerated	5 146	3 898	–24
Subsistence	3 205	2 990	–7
North East	8 091	7 638	–6
Employees	1 789	1 713	–4
Self-employed	2 469	2 338	–5
Employers	166	161	–3
Non-remunerated	2 541	2 164	–15
Subsistence	1 125	1 263	12
South East	4 690	3 543	–24
Employees	1 958	1 557	–20
Self-employed	711	584	–18
Employers	201	141	–30
Non-remunerated	822	504	–39
Subsistence	999	758	–24
South	3 831	3 148	–18
Employees	649	489	–25
Self-employed	939	879	–6
Employers	97	84	–13
Non-remunerated	1 451	1 007	–31
Subsistence	695	688	–1
Centre West	1 287	989	–23
Employees	479	421	–12
Self-employed	226	209	–7
Employers	73	48	–34
Non-remunerated	243	149	–39
Subsistence	266	162	–39

Source: PNAD.

Table 3.A3.2. **Employment in agriculture by gender and principal occupation**
Thousands

	1992-93	2001-02	% change
Total	18 377	15 838	–14
Employees	5 000	4 337	–13
Self-employed	4 472	4 153	–7
Employers	554	459	–17
Non-remunerated	5 146	3 898	–24
Subsistence	3 205	2 990	–7
Men	12 120	10 689	–12
Employees	4 407	3 868	–12
Self-employed	3 852	3 636	–6
Employers	519	419	–19
Non-remunerated	2 671	1 893	–29
Subsistence	670	871	30
Women	6 257	5 149	–18
Employees	593	468	–21
Self-employed	620	517	–17
Employers	35	39	14
Non-remunerated	2 474	2 005	–19
Subsistence	2 535	2 119	–16

Source: PNAD.

Table 3.A3.3. **Components of rural household income per capita by region**

BRL of January 2002

	Brazil[1]			North[1]			North East			South East			South			Centre West		
	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change
Income per capita	90.21	119.27	32.21	97.96	95.43	–2.58	57.10	64.26	12.53	120.27	176.65	46.88	127.42	200.62	57.44	135.53	200.14	47.67
Agricultural earned income[2]	48.71	49.92	2.49	45.95	45.37	–1.26	30.06	21.65	–27.99	63.08	67.60	7.16	74.21	97.10	30.85	86.50	108.62	25.58
Non-agricultural earned income[2]	29.31	40.36	37.69	42.51	32.56	–23.42	17.21	18.96	10.17	41.58	72.80	75.06	36.90	60.24	63.23	36.36	59.48	63.59
Income from secondary occupations	2.35	1.99	–15.42	2.11	1.38	–34.37	1.81	0.91	–50.00	2.52	2.70	6.92	3.54	4.76	34.56	3.42	2.16	–36.82
Income from social security	7.01	20.94	198.77	5.00	10.86	117.21	6.57	18.82	186.48	8.59	24.70	187.44	8.11	31.12	283.78	5.32	17.78	234.54
Other Income	2.84	6.07	113.72	2.39	5.26	120.26	1.45	3.93	171.00	4.49	8.85	97.28	4.67	7.40	58.51	3.93	12.09	207.40

Note: : All measures refer exclusively to income per household member in rural areas.

1. Excludes Roraima.
2. Income from principal occupation only.

Source: Helfand and Levine (2004a) based on micro data from the demographic censuses.

Table 3.A3.4. **Components of rural household income per capita and their contribution to rural inequality**

	Brazil[1]			North[1]			North East			South East			South			Centre West		
	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change	1991	2000	% change
Gini	0.58	0.62	7.27	0.57	0.63	10.54	0.53	0.57	7.73	0.57	0.58	1.68	0.55	0.55	–0.39	0.58	0.63	9.96
Headcount poverty ratio[2]	0.72	0.61	–15.88	0.69	0.70	0.65	0.85	0.77	–9.63	0.61	0.42	–30.42	0.56	0.35	–37.30	0.57	0.43	–24.72
Agricultural earned income[3]																		
Share of total	0.54	0.42	–22.47	0.47	0.48	1.35	0.53	0.34	–36.01	0.52	0.38	–27.04	0.58	0.48	–16.89	0.64	0.54	–14.96
Concentration ratio	0.48	0.59	23.09	0.38	0.59	54.49	0.38	0.45	19.30	0.47	0.50	7.11	0.49	0.54	10.07	0.51	0.60	16.35
Contribution to Gini (%)[4]	44.56	39.64	–	31.43	44.51	–	37.87	26.84	–	43.50	33.43	–	51.94	47.70	–	56.98	51.27	–10.02
Non-agricultural earned income[3]																		
Share	0.32	0.34	4.15	0.43	0.34	–21.39	0.30	0.30	–2.10	0.35	0.41	19.19	0.29	0.30	3.68	0.27	0.30	10.78
Concentration ratio	0.73	0.69	–6.01	0.76	0.71	–6.75	0.74	0.65	–12.73	0.69	0.64	–7.14	0.66	0.59	–10.98	0.69	0.70	1.44
Contribution to Gini (%)[4]	41.18	37.58	–	57.70	38.26	–	42.49	33.70	–	41.86	45.57	–	34.60	32.06	–	32.02	32.72	2.19
Income from secondary occupations																		
Share	0.03	0.02	–36.02	0.02	0.01	–32.64	0.03	0.01	–55.57	0.02	0.02	–27.21	0.03	0.02	–14.53	0.03	0.01	–57.22
Concentration ratio	0.73	0.84	15.47	0.71	0.81	14.61	0.70	0.82	18.15	0.78	0.85	8.14	0.74	0.77	5.02	0.81	0.82	0.61
Contribution to Gini (%)[4]	3.28	2.26	–	2.68	1.87	–	4.19	2.04	–	2.90	–	–	3.72	3.35	–	3.56	1.39	–60.86
Income from social security																		
Share	0.08	0.18	125.98	0.05	0.11	122.96	0.12	0.29	154.57	0.07	0.14	95.70	0.06	0.16	143.76	0.04	0.09	126.54
Concentration ratio	0.49	0.54	9.83	0.54	0.53	–2.37	0.55	0.61	11.91	0.49	0.52	6.53	0.40	0.45	13.55	0.50	0.57	13.98
Contribution to Gini (%)[4]	6.62	15.31	–	4.83	9.51	–	11.99	31.70	–	6.16	12.64	–	4.58	12.71	–	3.40	7.98	134.82
Other income																		
Share	0.03	0.05	61.66	0.02	0.06	126.09	0.03	0.06	140.81	0.04	0.05	34.31	0.04	0.04	0.68	0.03	0.06	108.16
Concentration ratio	0.80	0.63	–20.63	0.79	0.67	–15.13	0.72	0.53	–26.05	0.85	0.70	–16.91	0.78	0.62	–20.04	0.80	0.69	–13.37
Contribution to Gini (%)[4]	4.35	5.21	0.00	3.36	5.84	0.00	3.46	5.72	0.00	5.57	6.12	0.00	5.17	4.18	0.00	4.04	6.63	0.00

Note: All measures refer exclusively to rural areas. All components represent income per rural household member from the source listed, not income per direct recipient of the income component.

1. Excludes Roraima.
2. Income not exceeding 50% of minimum wage level per person.
3. Income from principal occupation only.
4. (100% x CRj x SHj)/G, where CRj and SHj are the concentration ratio and share of overall income for the income component, and G is the Gini ratio.

Source: Helfand and Levine (2004a) based on micro data from the demographic censuses.

Table 3.A3.5. **Incomes and income growth by region and type of employment**

BRL of January 2002

a. Income levels by region and type of employment: 1991

Type/Region	North	North East	South East	South	Centre West	Brazil
Agricultural workers	106	59	128	116	133	100
Family farm 1	28	25	28	28	30	26
Family farm 2	58	57	58	58	58	58
Family farm 3	97	95	98	98	98	97
Family farm 4	280	283	382	340	388	337
Agricultural employers	473	359	682	776	763	620
Total	109	69	171	167	195	125

b. Income levels by region and type of employment: 2000

Type/Region	North	North East	South East	South	Centre West	Brazil
Agricultural workers	134	81	169	172	184	142
Family farm 1	41	37	46	45	47	40
Family farm 2	102	102	104	104	103	103
Family farm 3	179	178	184	185	182	182
Family farm 4	637	528	721	621	826	659
Agricultural employers	1 000	726	1 888	2 046	2 393	1 681
Total	165	99	253	284	327	203

c. Change in income by region and type of employment: 1991-2000

Type/Region	North	North East	South East	South	Centre West	Brazil
Agricultural workers	27	38	33	49	38	42
Family farm 1	48	46	62	65	59	51
Family farm 2	76	77	79	80	78	78
Family farm 3	85	88	88	88	86	88
Family farm 4	128	86	89	83	113	95
Agricultural employers	111	102	177	164	214	171
Total	52	43	48	70	68	62

Source: Helfand and Levine (2004a) based on micro data from the demographic censuses.

Figure 3.A3.1. **Change in rural poverty, 1991 to 2000**

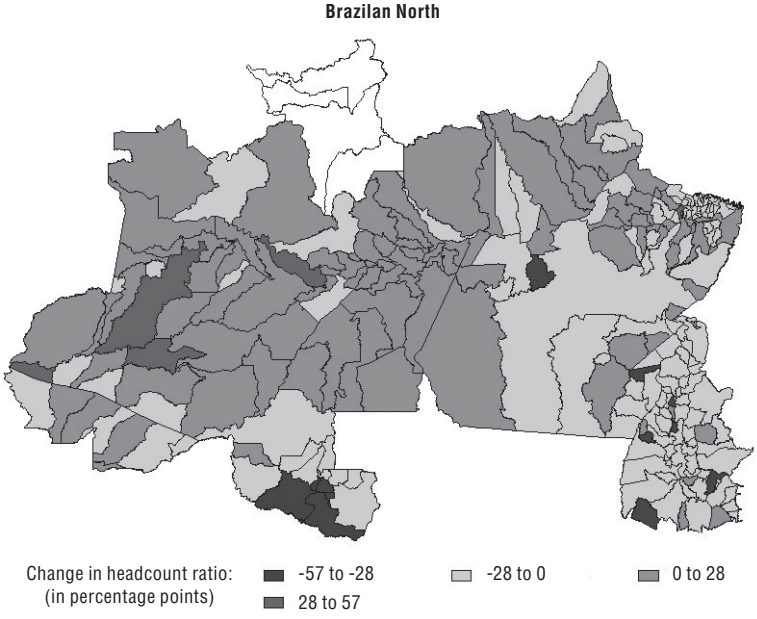
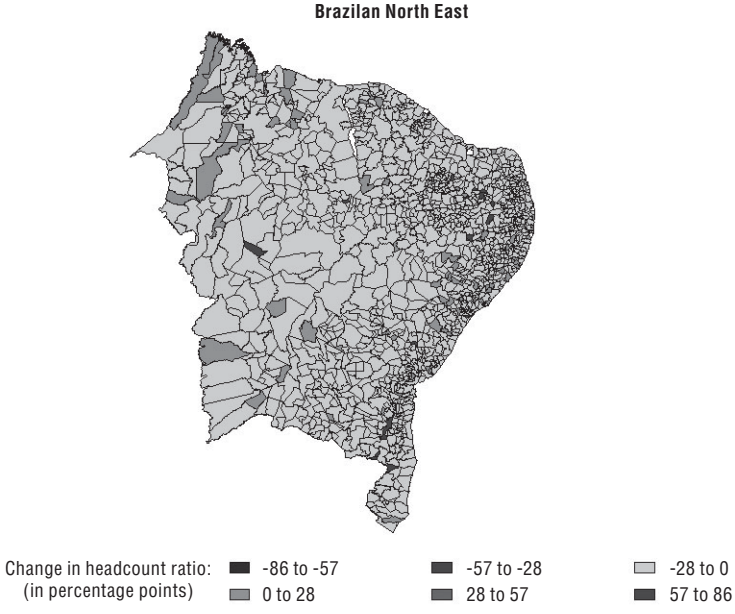


Figure 3.A3.2. **Change in rural poverty, 1991 to 2000**



OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Figure 3.A3.3. **Change in rural poverty, 1991 to 2000**

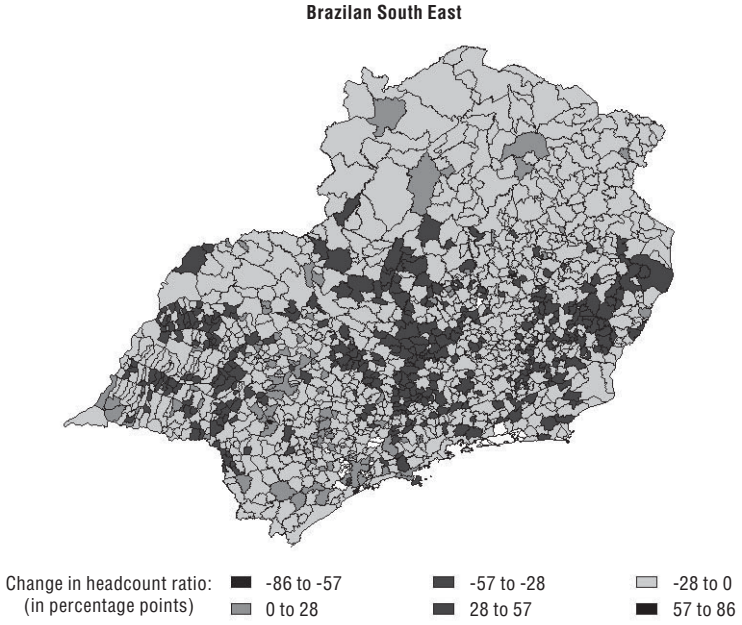


Figure 3.A3.4. **Change in rural poverty, 1991 to 2000**

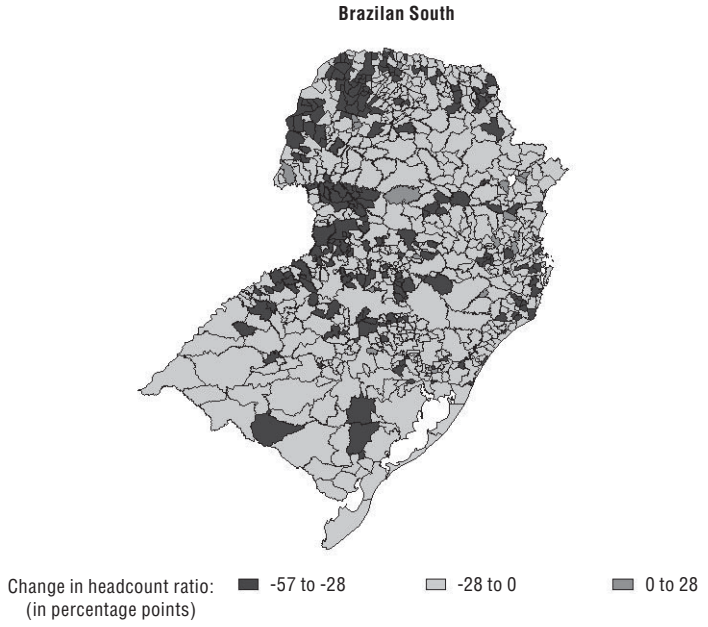
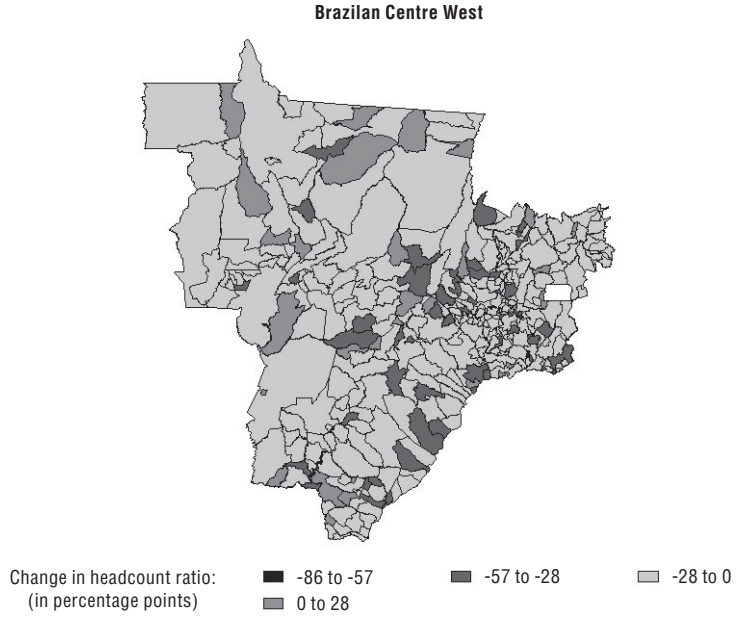


Figure 3.A3.5. **Change in rural poverty, 1991 to 2000**



OECD REVIEW OF AGRICULTURAL POLICIES – BRAZIL – ISBN 92-64-01254-0 – © OECD 2005

Acronyms

ACP	African, Caribbean and Pacific (group of countries)
AGF	Federal Government Purchase (*Aquisição do Governo Federal*)
AVE	*Ad Valorem* Equivalent (tariff)
BACEN	Central Bank of Brazil (*Banco Central do Brasil*)
BNDES	Brazilian National Bank for Economic and Social Development (*Banco Nacional de Desenvolvimento Econômico e Social*)
CDB	Certificate of Bank Deposit (*Certificado de Depósito Bancário*)
CET	Common External Tariff (of Mercosur)
CGE	Computable General Equilibrium (model)
CONFAZ	National Council on Financial Policies
COFINS	Contribution for the Financing of Social Security (*Contribuição para o Financiamento da Seguridade Social*)
CPF	Production Financing Company (*Companhia de Financiamento da Produção*)
CPR	Rural Product Note (*Cédula de Produto Rural*)
CSE	Consumer Support Estimate
EBA	Everything But Arms Initiative
EGF	Federal Government Loan (*Empréstimo do Governo Federal*)
Embrapa	Brazilian Corporation for Agricultural Research (*Empresa Brasileira de Pesquisa Agropecuária*)
FAO	Food and Agriculture Organization of the United Nations
FAT	Unemployment Insurance Fund (*Fundo de Amparo ao Trabalhador*)
FCO	Brazilian Constitutional Fund for Financing the Centre West Region (*Fundo Constitucional de Financiamento do Centro-Oeste*)
FGE	Export Guarantee Fund (*Fundo de Garantia à Exportação* S.A.)
FMD	Foot and Mouth Disease
FNE	Brazilian Constitutional Fund for Financing of the North East Region (*Fundo Constitucional de Financiamento do Nordeste*)
FNO	Brazilian Constitutional Fund for Financing of the North Region (*Fundo Constitucional de Financiamento do Norte*)
FUNCAFÉ	Fund for Protection of Coffee Sector (*Fundo de Defesa da Economia Cafeeira*)
GAO	Gross Agricultural Output
GDP	Gross Domestic Product
GSP	Generalised System of Preferences
GTAP	Global Trade Analysis Project
GTAPEM	Global Trade Analysis Project/Policy Evaluation Model
IAA	Institute of Sugar and Alcohol (*Instituto do Açucar e do Alcool*)
IBC	Brazilian Coffee Institute (*Instituto Brasileiro do Café*)

IBGE	Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*)
ICMS	Tax on Goods and Services Transactions (*Imposto sobre a Circulação de Bens e Serviços*)
ICONE	Institute for International Trade Negotiations (*Instituto de Estudos do Comércio e Negociações Internacionais*)
IE	Export Tax (Imposto de Exportação)
INCRA	National Institute of Colonization and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária*)
INPE	Brazilian Space Research Institute (*Instituto Nacional de Pesquisas Espaciais*)
IPEA	Institute of Applied Economic Research (*Instituto de Pesquisa Econômica Aplicada*)
ISA	Instituto Socioambiental
ISI	Import Substitution Industrialisation
LIBOR	London Interbank Offered Rate
MAD-ATD	Market Access Database – Applied Tariff Database (of the European Commission)
MAPA	Brazilian Ministry of Agriculture and Food (*Ministério da Agricultura, Pecuária e Abastecimento*)
MDA	Brazilian Ministry of Agrarian Development (*Ministério do Desenvolvimento Agrário*)
MDIC	Brazilian Ministry of Development, Industry and Trade (*Ministério do Desenvolvimento, Indústria e Comércio Exterior*)
MDIC-ALICE	Foreign Trade Information Analysis System database of the Brazilian Ministry of Development, Industry, and Foreign Trade.
MDS	Ministry of Social Development and Combat Against Hunger (*Ministério do Desenvolvimento Social e Combate à Fome*)
Mercosur	Common Market of the South
MFN	Most Favoured Nation (status)
NPR	Rural Promissory Note (*Nota Promissória Rural*)
NTM	Non Tariff Measure
OECD	Organisation for Economic Co-operation and Development
PEP	Premium for Commercial Buyers Programme (*Prêmio para Escoamento do Produto*)
PESA	Program of Financial Assets Rehabilitation (*Programa Especial de Saneamento de Ativos*)
PIS/PASEP	Social Integration Programme/Civil Servant's Assistance Programme (*Programa de Integração Social / Programa de Formação do Patrimônio do Servidor Público*)
PNAD	National Sample Household Survey (*Pesquisa Nacional por Amostra de Domicílios*)
PPP	Purchasing Power Parity
PROCERA	Special Credit Programme for Agrarian Reform (*Programa de Crédito Especial para a Reforma Agrária*)
PROEX	Export Financing Programme (*Programa de Financiamento à Exportação*)
PROGER	Brazilian Program for Employment and Revenue Generation (*Programa de Geração de Emprego e Renda*)
PRONAF	National Program for the Strengthening of Family Agriculture (*Programa Nacional de Fortalecimento da Agricultura Familiar*)
PSE	Producer Support Estimate
SAM	Social Accounting Matrix
SELIC	Special System for Settlement and Custody (*Sistema Especial de Liquidação e de Custódia*)
SNCR	National System of Rural Credit (*Sistema Nacional de Crédito Rural*)

SPS	Sanitary and Phytosanitary Measures
STE	State Trading Enterprise
SUNAB	National Supply Administration (*Superintendência Nacional do Abastecimento*)
TARIC	European Community's Integrated Tariff
TJLP	Long Term Interest Rate (*Taxa de Juros de Longo Prazo*)
TRQ	Tariff Rate Quota
URAA	Uruguay Round Agreement on Agriculture
USITC	United States International Trade Commission
USP	University of Sao Paolo (*Universidade de São Paulo*)
WITS	World Integrated Trade Solution
WTO	World Trade Organization
WWF	World Wide Fund for Nature (also: WWF – the Global Conservation Organisation)

ISBN 92-64-01254-0
OECD Review of Agricultural Policies
Brazil

Bibliography

BACEN (Banco Central do Brasil), *Anuário Estatístico do Crédito Rural*, Brasília, various editions.

Brandão, A. and J. Carvalho (1991), "Trade, Exchange Rate, and Agricultural Pricing Policies in Brazil", *The Country Study*, Vol. I, World Bank Comparative Studies, Washington DC.

Brandão, A. and J. Carvalho (2001), "Chapter 3: Brazil" in *The Political Economy of Agricultural Pricing Policy, Latin America*, Vol. I, World Bank Comparative Study, Washington DC.

Brandão, A. (2003), "Sectoral Implications of Agricultural Policy Reform: Highlights from the Milk Sector in Brazil", *Agricultural Trade and Poverty: Making Policy Analysis Count,* OECD, Paris.

Brandão, A. and G.C. de Rezende (2004), "Brazilian Agriculture in the 1990s and Ahead: The Role of Government Programmes to Support Development and Challenges Ahead", background paper prepared for the OECD.

Brandão, A., de Rezende, G.C. and R. da Costa Marques (2005), "Agricultural Growth in the Period 1999-2004, Outburst in Soybean Area and Environmental Impacts in Brazil", Texto Para Discussão No. 1062, Rio de Janeiro.

Brooks, J. (2003), "Overview Paper: Agricultural Trade Reform, Adjustment and Poverty: Mapping the Linkages", *Agricultural Trade and Poverty: Making Policy Analysis Count,* OECD, Paris.

Caixeta Filho, J.V. *et al.* (1998), "Competitividade no Agribusiness: A Questão do Transporte em um Contexto Logístico", USP/ESALQ, São Paolo.

Cattaneo, A. (2001), "Deforestation in the Brazilian Amazon: Comparing the Impacts of Macroeconomic Shocks, Land Tenure and Technological Change", *Land Economics*, Vol. 77, No. 2, pp. 219-240.

Chomitz, K. and T. Thomas (2003), "Determinants of Land Use in Amazônia: A Fine-Scale Spatial Analysis", *American Journal of Agricultural Economics*, Vol. 85, No. 4, pp. 1016-1028.

Dias, G. and C. Amaral (2002), "Structural Change in Brazilian Agriculture, 1980-98", in R. Baumann (ed.), *Brazil in the 1990s: An Economy in Transition*, New York.

EMBRAPA (Brazilian Agricultural Research Corporation/MAPA/FGV) (2001*), Cadeias Produtivas no Brasil: Análise da Competitividade*, Brasília.

FAO – INCRA (2000), "Novo Retrato da Agricultura Familiar: O Brasil Redescoberto", MDA/INCRA, Brasília.

Fearnside, P. (2001), "Land-Tenure Issues as Factors in Environmental Destruction in Brazilian Amazonia: The Case of Southern Pará", *World Development,* Vol. 29, No. 8, pp. 1361-1372.

Ferraz, C. (2001), "Explaining Agriculture Expansion and Deforestation: Evidence from the Brazilian Amazon – 1980/98", Texto Para Discussão No. 828, Rio de Janeiro.

Ferreira Filho, J. And M. Horridge (2005), "The Doha Round, Poverty and Regional Inequality in Brazil", *Putting Development Back into the Doha Agenda: Poverty Impacts of a WTO,* Hertel T. and A. Winters (eds.), the World Bank, Washington D.C.

FGV (1998), *Efeito das Políticas Públicas sobre a Competitividade das Agroindústrias Brasileiras,* FGV/IPEA, São Paulo.

FGV (2001), *Agenda para a Competitividade do Agribusiness Brasileiro: Base Estatística 2001/02*, Rio de Janeiro, ABAG, São Paulo.

FIPE (2004), "The Distributional Effects of Agricultural Policy Reform: The Case of Brazil", report prepared for OECD, 2004, São Paulo.

G. and S. Assessoria e Análise Econômica (2005), "Incidência Tributária na Agricultura e nos Produtos Alimentares: Impactos da Desoneração sobre Preços ao Consumidor e na sua Renda", Relatório Final, 10/03/05.

Gasques, J. and J.P.R. da Conçeicão (2000), "Transformações Estruturais da Agricultura e Produtividade Total dos Factores", *Documentos para discussão* No. 768, IPEA, Brasilia.

González-Rivera, G. and S.M. Helfand (2001), "The Extent, Pattern, and Degree of Market Integration: A Multivariate Approach for the Brazilian Rice Market", *American Journal of Agricultural Economics*, Vol. 83(3), pp. 576-592.

Guimarães, M. (1999), "Brazil: Agricultural Finance and Institutional Reforms", *Agricultural Finance and Credit Infrastructure in Transition Economies*, OECD, Paris.

Helfand, S.M. (2003), "The Impact of Agricultural Policy Reforms on the Agricultural Sector in Brazil in the 1990s: Implications for Pro-Poor Agricultural Policies", paper prepared for the OECD Global Forum on Agriculture, 10-11 December 2003, Paris.

Helfand, S.M. and L.P. Brumstein (2001), "The Changing Structure of the Brazilian Agricultural Sector and the Limitations of the 1995/96 Agricultural Census", *Revista de Economia e Sociologica Rural*, 39(3), 179-203.

Helfand, S.M. and E. Levine (2004a), The Evolution of Poverty, Inequality, and Related Variables in Rural Brazil: 1991-2000, report prepared for OECD, 2004.

Helfand, S.M. and E. Levine (2004b), Changes in Brazilian Rural Poverty from 1991 to 2000: A Preliminary Analysis of Determinants, and an Assessment of Alternative Levels of Household Aggregation, report prepared for OECD, 2004.

Helfand, S.M. and E. Levine (2004c), "The Impact of Policy Reforms on Rural Poverty in Brazil: Preliminary Evidence from the 1990s", paper prepared for presentation at the conference "Egalitarian Development in the Era of Globalization: A Conference in Honor of Professor Keith Griffin", University of Massachusetts, Amherst, 22-24 April 2004.

Helfand, S.M. and G.C. de Rezende (2001), "Brazilian Agriculture in the 1990s: Impact of the Policy Reforms", IPEA, Rio de Janeiro.

Helfand, S.M. and G.C. de Rezende (2004), "The Impact of Sector-Specific and Economy-Wide Policy Reforms on the Agricultural Sector in Brazil: 1980-98", *Contemporary Policy*, Vol. 22, pp. 194-212, *www.cep.oupjournals.org/current.shtml*.

Heredia, B. *et al*. (2004), *An Analysis of the Regional Impacts of Land Reform in Brazil*, Agrarian and Rural Development Studies Centre, Brasília.

Heredia, B., L. Medeiros, M. Palmeira, R. Cintrão and S. Leite (2002) "Os Impactos Regionais da Reforma Agrária: Um Estudo Sobre Áreas Selecionadas." Typescript.

Hertel, T.W. *et al*. (2003), "Multilateral Trade Liberalisation and Poverty in Brazil and Chile", *Économie internationale*, Vol. 94-95, pp. 201-233.

INCRA (National Institute for Colonization and Agrarian Reform) (2005), "II National Reform Plan – Brazil", Special Edition to the World Social Forum 2005.

International Monetary Fund (2004), *International Financial Statistics*, Country Notes 2004.

International Monetary Fund (2004), *International Financial Statistics*, Yearbook 2004.

ISA (2005), "Soybeans *vs*. Forest: Understand the Controversy about IPEA's Study", press release, *www.isa.org.br*.

Jales, M., A.J. Meirelles and J.H. Cunha (2004), "Brazilian Agricultural Trade Flows and Trade Policy", Institute for International Trade Negotiations, São Paulo, March.

Jank, M.S., I. Fuchsloch and G. Kutas (2003), "Agricultural Liberalization in Multilateral and Regional Trade Negotiations", Inter-American Development Bank, Washington DC.

Jank, M.S., J.Y. Carfantan, G. Kutas, A.J.M. Neto, A.M. Nassar and J.H. da Cunha Filho (2004), "Fast-Tracking a 'Feasible' EU-Mercosur Agreement: Scenarios for Untying the Agriculture Knot", Working Group on EU-Mercosur Negotiations, Instituto de Estudos do Comércio e Negociações Internacionais (ICONE), 19 April 2004, São Paulo.

Kaimowitz, D., B. Mertens, S. Wunder and P. Pacheco (2004), *Hamburger Connection Fuels Amazon Destruction: Cattle Ranching and Deforestation in Brazil's Amazon*, Center for International Forestry research, *www.cifor.cgiar.org/publications/pdf_files/media/Amazon.pdf*.

MAPA (2003), *Plano Agricola e Pécuario: Safra 2003/2004*, Brasilia.

MAPA (2004), *Plano Agricola e Pécuario: Safra 2004/2005*, Brasilia.

MAPA/CONAB (2004), *Indicadores Agropacuários*, Brasília.

Margulis, S. (2003), *Causes of Deforestation of the Brazilian Amazon*, World Bank Working Paper No. 22, Washington DC.

Marques, V.A. (2004), "Support Policies to Family Farming and Fight Against Hunger in Brazil: Elements for Construction of Indicators", background paper prepared for OECD.

McDonald, S. (2005), "Global Trade Liberalisation and Brazil; A Single Country Computable General Equilibrium Analysis", background paper prepared for OECD, 2005.

MDA (2004), *Plano Safra 2004/2005*, Brasília.

Medaets, J.-P., K. Pettan and M. Takagi (2003), "Family Farming and Food Security in Brazil", paper prepared for the OECD Global Forum on Agriculture, 10-11 December 2003, Paris.

Melyukhina, O. (2002), "The Measurement of the Level of Support in Selected Non-OECD Countries", *Agricultural Policies in China after WTO Accession*, OECD, Paris.

Mertens, B., R. Poccard-Chapuis, M.G. Piketty, A.E. Lacques and A. Venturieri (2002), "Crossing Spatial Analyses and Livestock Economics to Understand Deforestation Processes in the Brazilian Amazon: The Case of São Félix do Xingú in South Pará", *Agricultural Economics*, Vol. 27, No. 3, pp. 269-264.

Melyukhina, O. (2003), "Policy and Non-Policy Sources of Agricultural Price Distortions: Evidence from the Measurement of Support in Selected Transition Economies", *Agricultural Trade and Poverty: Making Policy Analysis Count,* OECD, Paris.

MDS (2004), "Análise Comparativa de Programas de Proteção Social, 1995 a 2003", April, Brasilia.

MDA, *Plano Safra – 2004/2005*, "7 Bilhões de Reais Para a Agricultura Familiar", Brasil.

Nepstad, D., G. Carvalho, A.C. Barros, A. Alencar, J.P. Capobianco, J. Bishop, P. Moutinho, P. Lefebvre, U. Lopes Silva Jr. and E. Prins (2001), "Road Paving, Fire Regime Feedbacks, and the Future of Amazon Forests", in *Forest Ecology and Management,* Vol. 154, pp. 395-407.

Norton, G. and J. Alwang (2003), "Measuring the Benefits of Policy-Orientated Social Science Research: Evidence from Two Developing Countries" in Pardey, P. and V. Smith (eds.), *What's Economics Worth?*, John Hopkins University Press, Washington DC.

OECD (2000), *Agricultural Policies in Emerging and Transition Economies: Agriculture and Food*, OECD, Paris.

OECD (2001), *OECD Economic Surveys: Brazil*, OECD, Paris.

OECD (2004), *Trade and Competitiveness in Argentina, Brazil and Chile: Not as Easy as A-B-C*, OECD, Paris.

OECD (2005), *OECD Economic Surveys: Brazil*, OECD, Paris.

OECD – FAO (2005), *OECD – FAO Agricultural Outlook 2005/2014*, OECD, Paris.

Ondetti, G. (2004), "Revolution or Palliative? Assessing the Cardoso Land Reform", paper prepared for the Meeting of the Latin American Studies Association, 7-9 October 2004, Las Vegas NV.

Reardon T. and J.A. Berdegué (2002), "The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development", *Development Policy Review*, 20(4), 371-388.

Reardon T. and E. Farina (2004), "The Rise of Food Quality and Safety Standards: Illustrations from Brazil", *International Food and Agribusiness Management Review*, forthcoming.

de Rezende, G.C. (1993), "Heterodox Stabilisation Plans and Agriculture in Brazil, 1986-91", in I. Goldin (ed.) *Economic Reform, Trade and Agricultural Development,* OECD, Paris.

de Rezende, G.C. (1999), "Programa de Crédito Especial para Reforma Agrária (PROCERA): Institucionalidade, Subsídio e Eficácia", IPEA, Rio de Janeiro.

de Rezende, G.C. (2000), "Política de Preços Mínimos na Década de 90: dos Velhos aos Novos Instrumentos", IPEA, Rio de Janeiro.

de Rezende, G.C. (2002), "Technological Change and Agricultural Growth in the Brazilian Cerrado: A Theoretical Analysis", IPEA, Rio de Janeiro.

de Rezende, G.C. (2003), "Estado, Macroeconomia e Agricultura no Brasil", IPEA, Rio de Janeiro.

Rocha, S. (2000), "Pobreza e Desigualdade no Brasil: O Estogamento dos Efeitos Distributivos do Plano Real", *IPEA Discussion Paper 721*, Brasilia.

Rossi J.L. Jr and P.C. Ferreira (1999), "Evolução da Productividade Industrial Brasileira e Abertura Comercial", TD No. 651, Rio de Janeiro: IPEA.

Schepf, R., E. Dohlman and C. Bolling (2001), "Agriculture in Brazil and Argentina: Developments and Prospects for Major Field Crops", *Agriculture and Trade Report*, Economic Research Service, US Department of Agriculture, Washington DC.

Shean, M. (2004), *The Amazon: Brazil's Final Soybean Region*, Production Estimates and Crop Assessment Division, Foreign Agricultural Service, United States Department of Agriculture.

Valdés, A. (1996), "Surveillance of Agricultural Price and Trade Policy in Latin America Major Policy Reforms", World Bank Discussion Paper, Washington DC.

World Bank (2003), *Rural Poverty Alleviation in Brazil: Toward an Integrated Strategy*, World Bank, Washington DC.

World Bank (2004), *World Development Indicators*.

WWF (2003), *Sustainability Assessment of Export-led Growth in Soy Production in Brazil*, *www.panda.org/downloads/policy/annex02_fg8d.pdf*.

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(51 2005 09 1 P) ISBN 92-64-01254-0 – No. 54249 2005

OECD Review of Agricultural Policies

Brazil

Brazil is endowed with vast natural resources and has an agricultural area that is exceeded only by China, Australia and the United States. It is a major international supplier of sugar, soybeans, coffee, orange juice, tobacco and poultry. It is also among the world's biggest producers of maize, beef and rice. Alongside the country's commercial agriculture exists a large population of smallholders who produce mostly for their own consumption. Over the past 15 years, Brazil has undertaken radical economic reforms that have enabled the commercial sector to grow rapidly yet have also heightened the adjustment stress facing smallholders.

This Review measures the level and composition of support to Brazilian agriculture, and evaluates the effectiveness of current measures in attaining their objectives. The study finds that Brazil provides much lower support to its agricultural sector than most OECD countries. However, a large and increasing share of that support is provided in the form of credit subsidies; support which could be more productively oriented to areas such as research and extension, training, and the development of rural infrastructure. A greater focus on such long-term investments could help Brazil to address the two major challenges confronting its agricultural sector: the need to sustain improvements in international competitiveness, and at the same time draw poor smallholders into the development process. The report finds that, having substantially reformed its own agricultural policies, the main source of future benefits to Brazil will be reforms in other countries, where access to OECD country markets is the most important issue. Yet while trade liberalisation offers important benefits for the majority of households, those gains need to be placed in the context of the broader opportunities and adjustment pressures confronting both commercial farmers and smallholders.

This study provides a valuable reference for policy-makers, businesses and researchers with an interest in understanding Brazil's agricultural policy concerns at the domestic and international level.

www.oecd.org

OECD

OECDPUBLISHING

ISBN 92-64-01254-0
51 2005 09 1

9 789264 012547