

# Brazil in the 1990s

## An Economy in Transition

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*Director*

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# Introduction

The analysis of economic and social transformations requires the identification of the time frame in which they occurred to enable one to associate them with other phenomena. This association often corresponds to the periods defined by the calendar for two reasons: firstly because it facilitates analysis and secondly because data are usually available in that form.

In this respect, it has become a virtual consensus, for example, to consider the Eighties a lost decade for Latin America's economies. They experienced a loss of wealth (transference of real funds to countries outside the region), and many social indicators registered a sharp deterioration in the quality of life within the region throughout the decade.

For many countries in the region, the hallmark of the Nineties has been an endeavour to recover their former standard of living. Changes in the international arena, combined with a *volte-face* in the traditional manner of planning and carrying out economic policy, have ushered in an unprecedented set of circumstances: low inflation rates, greater penetration of imports, and less state intervention, among other salient features.

The Brazilian economy has experienced particularly intense change in the Nineties, and the choice of this decade as the frame of reference for analysis is more than mere chronological coincidence. The Nineties have been the harbinger of a break with the traditional guidelines of Brazil's economic policy, besides marking the advent of a change in the behaviour of a variety of economic agents. The implications of these novelties for the economy's medium- and long-term prospects are as yet unclear.

As this remarkable period draws to a close, it should be stated that, despite some positive results, the general context remains clearly unsatisfactory, especially with regard to Brazil's social indicators and its capacity to compete in an international market operating with new ground rules. In view of this, a systematic analysis of the efforts being made and of the results obtained to date is all the more opportune.

With this in mind, the Economic Commission for Latin America and the Caribbean (ECLAC) has coordinated a large-scale research project on Growth, Employment and Equity in Latin America in the Nineties, the aim being to systematize knowledge about the region in the present decade.

The project is designed to achieve systematic information about economic reforms implemented in the region during the period, producing systematic and new data in addition to identifying common features of national experiences and suggesting possible policy measures.

The study has covered the experience of nine countries (Argentina, Bolivia, Brazil, Chile, Colombia, Jamaica, Mexico, Peru and Venezuela) with regard to five issues: macroeconomic and social reforms; investment and growth; the structure of technical progress and national innovation systems; job generation and income distribution.

This book presents a systematic summary of the main results where Brazil is concerned.

In the first chapter, Baumann presents an overview of the features highlighted by the authors of the other chapters in the book, relating them to the literature on economic reforms in developing countries. He shows that the Brazilian experience in the Nineties has been fairly diversified, and has paid little heed to the traditional recommendations contained in the literature, choosing rather to alter the sequence of the reforms.

Cysne's chapter<sup>1</sup> reviewing the macroeconomic reforms provides a detailed account of the different measures adopted over the period and the main results obtained. He demonstrates that, following the stabilization achieved in 1994, the Brazilian economy replaced 'inflationary taxation' as its prime source of funding by resorting heavily to external savings.

The chapter clearly indicates the need for additional reforms to solve bottlenecks in several sectors (funding of the social security system, regulation of privatized sectors). It also suggests that the process of reform should be extended to other spheres such as the judiciary and the political party system, among others.

In the chapter on social reforms, Draibe examines the evolution of funding for social policies in the second half of the Eighties, early Nineties and in the period following the introduction of the *Real Plan*. There has been a clear change concerning availability of funds, definition of programmes, control criteria and even the involvement of the private sector.

Analysis of the social reforms reveals a major effort to alter the rationale of spending on social programmes, a growing emphasis being placed on decentralization of spending in the different tiers of administration (federal, state and municipal), on the adoption of new parameters for distribution of resources and even of goods and social services.

Bielschowsky and others assess capital formation in the manufacturing, mining, oil and infrastructure sectors. They analyse the results obtained from a variety of original surveys based on interviews, questionnaires filled out by hundreds of businessmen and surveys carried out in a number of sectors of the economy. They show that the Nineties have been a period of intense adjustment for the Brazilian economy. In the case of infrastructure and the production of basic inputs, the adjustment is basically associated with privatization. As far as other manufacturing sectors are concerned, it has to do with the need to meet the challenge of competing with products from abroad.



Their analysis shows that the economy has undergone a process of modernization, though this has not provoked an expansion of productive capacity on a par with growth observed during peaks in the economic cycle. Among other considerations, it is clear that there is a worrying potential limitation of productive activity due to an insufficient supply of certain basic inputs such as energy.

Tigre and others examine Brazil's innovation system. Changes regarding administrative procedures and the availability of resources have altered this system's capacity to respond and to collaborate with the country's industrial park. There are signs that the liberalization of trade and greater freedom to import technology have served to increase the vulnerability of this system which is instrumental in sustaining a resumption of economic growth.

The authors demonstrate that the opening-up of the economy and policies on technology in the Nineties have had differing effects from one sector to another. The chapter provides detailed case studies of traditional sectors (ceramics, iron and steel) where technology is incorporated into the equipment, and of complex sectors (telecommunications and the automobile industry) in which competitiveness is related to product innovation. It appears that the effects in the latter have been negative for local R&D activities whereas the former have benefited from easier access to imported equipment. Both trends affect the country's innovative capacity as a whole.

Dias and Amaral sign the chapter on the agriculture sector. They show that the sector has suffered acutely from the curtailment of government credit lines – a traditional source of funding for agriculture in Brazil – and from the liberalization of trade. The sector's productive profile has gradually shifted toward cultivating crops for supplying the domestic market and away from cash crops for export. At the same time, however, the agriculture sector has become increasingly less dependent on government funding.

As a result, the sector has witnessed a sharp increase in productivity – spurred by easier access to imported inputs – with a consequent reduction in the area under cultivation and of the overall volume of employment. This merely worsens already bleak prospects for employment and job generation.

The next two chapters, by Camargo, Neri and Reis deal with employment and income distribution. The Nineties have been a period of inflection also in the composition of the labour market. By mid-decade, much of the absorption of labour, countering all previous trends, was due to the dynamism of the services sector, combined with a reduction in income-elasticity for jobs in the manufacturing sector. In the closing years of the decade, this dynamism was sapped by adjustment policies, provoking unprecedented levels of open urban unemployment.

Camargo, Neri and Reis show several signs of change in the quality of the type of employment being generated, better qualifications being demanded of the workforce. They draw a number of conclusions for professional training policies and ways to combat unemployment. An attempt is also made to model the main shifts observed in the labour market in this period.

Camargo and Neri are also the authors of the chapter on income distribution. This exercise required considerable effort in preparing original tabulations of data supplied by PNAD and PME so as to make due allowance for the distributive effects produced by characteristics of individuals and as a result of stabilization.

The authors demonstrate that the stabilization in the Nineties has provided undeniable gains for lower-income groups by diminishing the volatility of their earnings. However, gains have been even greater for groups with higher income and/or better qualifications. Analysis based on disaggregated data shows that there has been no improvement in the structure of income distribution. Aggregate indications of improvement reflect reduced volatility of family income, ensuing from price stabilization, rather than an improvement in distribution patterns.

This book provides a large volume of mostly new systematic data (derived from primary tabulations specially prepared for this project) allied to systematic analysis of the reforms adopted. It is our belief that it will help readers obtain a fuller understanding of the Brazilian economy in the Nineties.

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#### Note

1. Chapters 2 to 7 were originally written in Portuguese. English version by Mark Ridd.

# 1

## Brazil in the 1990s: An Economy in Transition

*Renato Baumann\**

### I. Introduction

Social sciences are not pure sciences. The analysis of social movements requires one to identify the period of time in which the movements to be considered have taken place, to ensure control of the influence of other, related phenomena. This identification is often associated with calendar periods for several reasons, among others the very availability of most data.

Analysing the Brazilian economy in the 1990s is, however, far more than a calendar coincidence. This has been an extremely rich period to study, and a number of aspects will continue to be the object of analysis for a long time yet.

To start with, the international scenario at the beginning of the decade was one of increasing movement of capital flows and technological transformation. The difficulties associated with an unstable domestic macroeconomic environment, though, did not allow the Brazilian economy to participate fully in either of these new movements. Also, policy makers were constantly reminded of the success of emerging economies elsewhere, and the road to achieve such a bonanza appeared well paved from the viewpoint of several influential agents abroad.

On the domestic front, mounting inflation after a number of failed stabilization plans made fertile ground for varied attempts at fighting inflation. Furthermore, a new Constitution brought new fiscal and social features into an already complicated economic environment.

The second half of the decade, however, was characterized by a distinctly different context. The achievement of price stabilization combined with relative openness to foreign trade has no precedent in the country's economic history. At the microeconomic level, a number of impressive changes have also taken place, all of which have facilitated access to international capital markets and led to a new pattern of growth.

This chapter aims to discuss these features in the light of the adjustment process that took place during the present decade. A number of aspects

correspond to what the literature of reforms in developing countries would have indicated. But not everything actually turned out as one would have predicted or preferred. It is argued that this might have been due to various factors, ranging from the design of the policies to economic agents' actual perception of the market signals.

This chapter is divided into five sections. The next section presents a brief survey of the literature on reforms, in particular suggestions regarding their timing and sequencing. This is followed by a rather lengthy account of the key features of the Brazilian reforms in the 1990s. In the fourth section I discuss some of the outcomes which did not exactly correspond to expectations and attempt to identify their causes. The fifth section lists some lessons derived from the recent Brazilian experience.

## **II. The need to reform and the basic recipes**

Latin American policy makers in general were exposed to a multiple set of pressures during the Seventies and Eighties. Economic and social distortions and inefficiencies, combined with external constraints aggravated by intense movements in the international commodities market and by financial difficulties consolidated the need to promote substantial reforms in these economies.

Individual countries in the region have experienced different approaches over time<sup>1</sup> but on the whole the design of such reforms was strongly influenced by an orthodox reading of the outcomes of the successful experiences of the emerging economies in Southeast Asia.

According to this view, reforming was to be an immediate task, because the sooner the adjustment process was undertaken the lower the costs involved. In the words of a World Bank authority, 'adjustment postponed [is] pain compounded'.<sup>2</sup>

Market-oriented policy reforms were recommended on the basis of four basic arguments:<sup>3</sup> (a) economic liberalization reduces static inefficiencies arising from resource misallocation and waste; (b) economic liberalization enhances learning; (c) outward-oriented economies are better able to cope with adverse external shocks; (d) market-based economic systems are less prone to wasteful rent-seeking activities.

Reforming should thus comprise fiscal rectitude, ensure sustained free trade conditions and reduce to a minimum existing market price distortions. Restructuring economies should be afforded financial assistance during the transition period, so as to reduce the adjustment costs associated with micro reforms: adjustment includes reforms of policies and institutions, in the belief that 'these changes can improve resource allocation, increase economic efficiency, expand growth potential and increase resilience in response to future shocks'.<sup>4</sup>

Financing agencies and the academic mainstream were in apparent agreement that the measures typically called for at the beginning of the process comprised<sup>5</sup> what came to be known as the Washington Consensus: fiscal discipline, redirection of public expenditure priorities towards health, education and infrastructure, tax reform (broadening the tax base and cutting marginal tax rates), providing competitive exchange rates, securing property rights, deregulation, trade liberalization, privatization, elimination of barriers to foreign investment and financial liberalization.

Such mapping of the ideal path to an undistorted system gives little guidance, however, on how to deal with crucial aspects such as<sup>6</sup> minimizing the adjustment costs, coping with the implications of differential rates of adjustment between sectors, the appropriate macro-policy during the reforms (and, more specifically, management of the exchange rate), and how to minimise the welfare consequences of leaving one sector controlled while freeing another from state intervention.

In an ideal world a reformer, say, of trade policies would not have to be concerned with these intermediate steps since an optimal policy would consist of an immediate switch to free trade, unless specific market distortions exist.<sup>7</sup>

In practice, however, a correct designing of the reform process is essential not only for the sake of academic evaluations or even to secure the political support for the reforms. Credibility is an essential aspect to be considered.<sup>8</sup> Lack of confidence that a reform will last introduces distortions which may be self-fulfilling: the reversal of a reform may come about simply by the belief that it will have a short life.

A simple way to illustrate this is with a trade reform expected to be temporary. This might lead economic agents to perceive imported goods to be cheaper only temporarily, and hence incur debt above the level they would otherwise contract, merely for reasons of intertemporal substitution in consumption. If economic agents have little past experience upon which to draw with regard to a more open environment, they have to infer from the experiences of other countries. If they are able to borrow against their perceived higher permanent income through an open capital account, present consumption will increase.<sup>9</sup> Current account imbalance stemming from such a procedure may lead to renewed trade barriers, thus reversing the initial movement.

The need for a recommended path has given birth to a literature on policy reforms dealing with the timing and sequencing of reforms, as well as the importance of eliminating uncertainty about government intentions.

Most of the debate has concentrated on the question of whether trade liberalization should precede or follow capital-account liberalization.<sup>10</sup> Experience has shown, however, that sharp macroeconomic imbalance at the beginning of the reform period might affect the outcome. An additional, more specific discussion therefore relates such sequencing to an

initial economic environment of high inflation, and deals with the synchronization between the process of price stabilization and the reforms.<sup>11</sup>

Another, related aspect of the discussion about reforms<sup>12</sup> is the relation between reforming the domestic financial sector and liberalizing the Capital Account of the Balance of Payments. In countries where inflation is high, fiscal deficit and intervention in the domestic financial market often lead to artificially low domestic interest rates. Controls imposed on international capital should therefore only be relaxed after the domestic financial market has been reformed, the fiscal deficit is under tight control and real interest rates have been raised, so as to avoid large, destabilizing capital flows.

If the opening of the capital account takes place when domestic interest rates are maintained below their equilibrium level, there will be a massive outflow of resources. Alternatively, with fiscal deficit under control a reformed domestic financial market will operate at equilibrium interest rates. Reducing constraints on capital movements will stimulate arbitrage movements, leading to an inflow of foreign capital.

There hence seems to be little dispute as to the sequencing between the reform of the domestic financial market and the liberalization of capital movements: impediments to capital movements should not be relaxed before the domestic financial sector is liberalized.<sup>13</sup>

Several authors have also advocated that the Capital Account liberalization should take place only after trade and other sector distortions have been dismantled.<sup>14</sup> The relaxation of capital controls bringing about substantial inflows of capital will induce an increase in the level of aggregate expenditure on both tradable and non-tradable goods, generating real exchange rate appreciation (so less protection for the producers of tradable goods), hence precluding or even frustrating the liberalization of the external trade sector.<sup>15</sup>

While the opening of the Capital Account often generates a real appreciation of the exchange rate, it follows both from theory as well as from experience<sup>16</sup> in various trade policy reform episodes that successful trade liberalization generally requires real devaluation of the domestic currency.

In principle therefore, trade reform should come before the dismantling of controls on foreign capital flows. But this conclusion still leaves room for two other questions.

First, it is not quite clear from this debate whether a gradual reform is more desirable than an abrupt one. What is at stake is the outcome itself and the sustainability of the process. As Edwards (1990) puts it, it is possible that gradualism has characteristics that may either enhance or compromise the credibility of the reforms, depending on the actual conditions in each country: by reducing unemployment and allowing for a fiscal equilibrium, a gradual reform will tend to be more credible; but at the same time a slow reform might allow the groups negatively affected by the new policies to organize and lobby against those policies.

A second aspect is the relation between reforms and disinflation. Economic theory provides little guidance in this regard. But experience would suggest<sup>17</sup> that in economies with glaring macroeconomic problems reforms should be initiated only when sufficient progress has been made to reduce such imbalances: instability reduces the benefits of reforms aimed at improving the allocation of resources via changes in relative prices.

Where trade liberalization – the first step in the proposed reform scheme – is concerned, there are three arguments to postponing it until inflation has been controlled.<sup>18</sup> First, the above mentioned relative-price variability affecting the transmission of efficiency benefits. Second, trade liberalization might negatively affect fiscal revenues should the reduction or elimination of taxes on trade surpass tax revenue accruing from the improved trade activity. Third, liberalization requires a compensatory exchange-rate devaluation to protect the Current Account, just as domestic price stabilization would benefit from cheaper imports favoured by an appreciated exchange rate.

It is the exchange-rate argument that warrants detailed consideration here. From the theoretical viewpoint, this is the one that might impose the most serious constraint on trade liberalization.<sup>19</sup> Furthermore, for the present purposes it is directly related to understanding the Brazilian experience since 1994.

The debate about reforming in a context of stabilization policies has focused on whether reforms can assist the disinflation process: trade liberalization may help disinflation by forcing convergence between domestic and external price variation in tradable goods; however, whereas trade liberalization calls for a compensatory exchange-rate depreciation (in view of the downward rigidity of wages) domestic price stabilization, on the contrary, requires that devaluation of the exchange rate be avoided. The exchange rate can thus be used either as an instrument to achieve a real target (in which case it follows the price and wage-setting process) or as a nominal anchor for the domestic price level (in which case it commands that process).

Furthermore, if coupled to financial liberalization<sup>20</sup> the real appreciation of the exchange rate will: (a) tend to compromise the credibility of the liberalization episode and (b) after an initial overshooting of capital inflow, expectations of a real depreciation will lead to higher real interest rates, at a time when the real side is going through the costly adjustment that follows the liberalization of trade restrictions.<sup>21</sup>

This exchange-rate dilemma may be illusory, however, if exchange rate overvaluation is considered as a price to be paid to secure the credibility of the process.<sup>22</sup> If the inflationary process has strong inertia linked to the indexation or accommodation of key nominal variables<sup>23</sup> to the lagged variations in the price level, a credible commitment should not only take care of inflation, but also remove the nominal rigidities that require the use of devaluation for purposes of competitiveness.

From this perspective an overvaluation of the exchange rate may be viewed as not being an independent source of risk. To a public which has seen many disinflation plans fail for the lack of political will, an ambitious package that attacks all inflationary sources may signal the presence of a government with clear decisions and well-defined policies. This also makes a reversal less likely in the event of temporary setbacks. Hence<sup>24</sup> the use of the exchange rate as a nominal anchor may not necessarily conflict with trade liberalization, because if the anchor works, nominal wage rigidity will eventually disappear, improving the likelihood of sustained competitiveness.

Two final observations regarding reforms have to do with the facts that (a) open policies generate their own constituencies<sup>25</sup> – as new profit opportunities appear, the entrepreneurs that benefit from the post-reform scenario will fight against any attempted reversal; (b) a reformed system does not necessarily mean the elimination of rent-seeking activities – as long as governments implement policies, individuals will try to obtain benefits for themselves.<sup>26</sup>

### III. The Brazilian economy in the 1990s: an overview

The 1990s are considered 'the decade of reforms' in Brazil. Although some tentative action took place in the late Eighties – as is the case, for instance, with foreign trade liberalization and early privatization – clearly the most significant steps were taken after 1990.

This decade has been a turning point in the economic history of the country. Having been a closed economy in the previous four decades with major presence of the State as producer of goods and services and after a long record of indexed high inflation, by the end of the Nineties Brazil has become an economy open to trade in goods and capital, with the simultaneous reduction of the role of the State as a direct producer.

Furthermore, the economy has also achieved unprecedented price stabilization that has lasted for five years now: the consumer price index increased a record 2,489% in 1993, but has gradually been reduced to single digit figures since 1996, having varied only 2.6% in 1998.

The reforms and their effects cannot be understood without taking into consideration the massive impact of such price stabilization: (a) it provided a 'wealth effect' that affected both consumers and producers, (b) the stable macroeconomic scenario created a political environment favourable to reforms and (c) induced confidence among domestic and foreign investors, at the same time that (d) it eliminated the impressive inflationary gains accruing to the government and the banking sector, with important consequences for monetary and fiscal policies, as well as for the design of stringent new regulations for the financial sector as a whole.



The literature on policy reforms often adopts a taxonomic approach, identifying several levels of reforms. According to this view, Brazil is about to complete its first-generation reforms, starting with trade policy reform and the privatization of State firms in the late 1980s, but intensifying the whole process since the early 1990s. It has also taken several steps towards second-generation reforms, such as social security reform, administrative reform of the public sector, and tax policy reform.

Other policy changes have taken place in the same period with important consequences for the economy. Social programmes have been significantly redesigned to cope with new universal rights assured by the 1988 Constitution, to circumvent fiscal difficulties and to redistribute the burden of service provision between the federal government, local states and municipalities.

In the social sphere, as in other areas (for instance science and technology) there has been an increasing (though insufficient) involvement of the private sector in the financing of several activities. Recent fiscal results and the forecasts for the coming years would suggest that this is a feature that may become more salient in the future.

This is not to say that reforms necessarily went in the right direction, that they were well implemented and even less that they are now complete. But there is no denying how substantially the whole productive environment has changed in recent years as a result of these reforms.

One might ask why there was such concentration of reforms in this particular period. The answer has to do with the increasing perception by domestic economic agents – government officials, the business community and academic analysts – of the need to change. The international economic environment is certainly also part of the answer. The conjunction of the final stages of multilateral negotiations, renewed access to financing by other Latin American countries and fiscal policies elsewhere<sup>27</sup> have acted as additional stimuli to reformers.

Reforming (privatization and social security reforms in particular) required major changes to be made to the Constitution. It thus demanded political will and power that could only be achieved on the basis of the consensus among economic agents mentioned above.

Table 1.1 shows the sequencing of the major reforms. The process started with trade policy reform and in the early 1990s some sporadic, tentative movement to privatize public assets, followed by the opening of the capital account of the Balance of Payments. Second-generation reforms began only in the second half of the decade with social security and administrative reforms, as well as the regulation of the financial sector and a series of changes in a number of social programmes, comprising education, health and poverty alleviation.

Table 1.1 Brazil: A Decade of Reforms

	1988 and before	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Trade Reform	*	*	*	*	*	*	*	*			
Opening to external financial capital				*			*	*			
Privatization	*		*				*	*		*	
Regulation of the financial sector								*	*	*	*
Social Security Reform									*	*	*
Administrative Reform											*
Reform of Social Programmes:											
• Education								*	*	*	*
• Health								*	*	*	*

*Note:* Asterisks indicate the approximate date of the main measures regulating each reform, not the moment of highest intensity of changes. This is important to bear in mind, for instance, in the case of privatization, far more intense in 1998 in terms of the value actually transacted than at any time before.

Trade liberalization started in 1987, with the first change in 30 years of the nominal tariff structure, and a phasing-down of tariff rates which had been accelerating since 1990.<sup>28</sup> The average simple (non-weighted) nominal tariff rate was as follows:

1988–1990	33.4%
1991–1993	17.8%
1994–1996	12.9%
1997–1998	13.9%

There were two moments when the process of tariff reduction was accelerated – in 1990 and again in late 1994. In both cases one of the major arguments for doing so was to provoke a shock of competitiveness on domestic producers, breaking down monopolistic positions and using trade policy as a supplementary tool for the price-stabilization process.<sup>29</sup> Trade reform in 1990 was broadened so as to comprise also the elimination of non-tariff barriers and a number of incentives to export, as well as a significant reform of the institutional framework dealing with foreign trade policy. The 1994 reform led to a partial anticipation<sup>30</sup> of Mercosur's Common External Tariff, which would otherwise enter operation in January 1995.

Analysis of the impact of trade reform on the trade balance is therefore not straightforward because (a) given the peculiarities of the large domestic market that had been closed for so many years, it took some time for imports to attain a significant value; (b) export growth was the outcome of

two simultaneous processes: multilateral tariff reduction and regional preferences within Mercosur; (c) price stabilization after 1994 provoked a 'wealth effect', which affected domestic demand for imported goods; (d) the exchange-rate policy maintained a good deal of overvaluation throughout the period, affecting foreign trade.

Having made these preliminary remarks, suffice it to note that trade surpluses which averaged US\$ 13 billions in 1992–94 turned into trade deficits averaging US\$ 6 billions in 1995–98.<sup>31</sup> The imports coefficient<sup>32</sup> went up from 5.5% in 1990–93 to 7.2% in 1995–97 (Figure 1.1). The most intensely demanded imported items were raw materials and intermediate products, capital goods and automobiles. The importance of this import structure for the domestic investment cycle and for some productive sectors will be discussed later on.

Trade reform was significant and did help to (i) increase the import component of domestic production,<sup>33</sup> which (ii) fostered labour productivity – Bonelli (1998) estimates that labour productivity in the manufacturing sector has increased at an annual rate of 8.7% in 1991–97, as compared to 0.3% on average in 1981–89 and to 5.6% in the early Seventies – and (iii) increased consumer surplus (total imports of consumer goods increased from US\$ 2.6 billions in 1990 to US\$ 11 billions in 1998), but its impact on exports was surpassed by the overvaluation of the exchange rate<sup>34</sup> and the increase in (mostly manufacturing) wages.<sup>35</sup>

The early 1990s also witnessed a major concern of policy makers to create the conditions for the Brazilian economy to take advantage of the then increasing facilities in the access to international capital markets.

Brazil had since the 1950s been among the developing countries with the highest participation of foreign capital in its productive structure.<sup>36</sup> Until the end of the 1970s it was one of the greatest absorbers of foreign investment. That changed during the crisis of the Eighties, and there was a widespread perception that the economy missed the opportunities created by financial globalization, more intense during that decade than in any other period.<sup>37</sup>

This led to a number of specific policy measures creating favourable conditions to attract portfolio investment, starting in 1991. As a result,

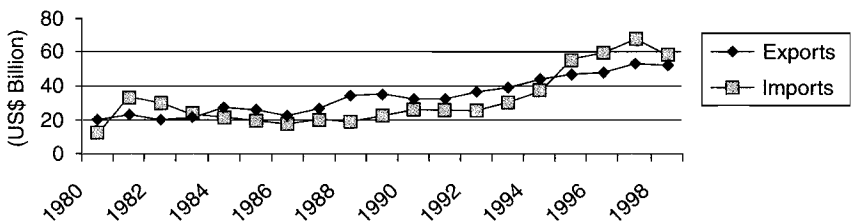


Figure 1.1 Brazil: Trade Balance 1980–98

portfolio investment flows – less than US\$ 800 millions until 1992 – already in 1993 came close to US\$ 7 billions. The capital account of the Balance of Payments changed the systematic deficits experienced in 1985–91<sup>38</sup> into a surplus of US\$ 25 billions in 1992.

It is worth noting that this was a period of rather limited economic activity: GDP growth rates in 1991 and 1992 were respectively 1% and –0.3%, reaching 4.5% in 1993. The inflow of resources was thus largely the outcome of changes in domestic legislation,<sup>39</sup> and of the relatively low prices of stocks of Brazilian companies, after several years of inflation and low growth.

Recovery of domestic economic activity,<sup>40</sup> combined with the opportunities created by privatization soon led foreign direct investment to surpass portfolio capital inflows. Yearly flows of about US\$ 900 millions in 1990–93 went up to US\$ 2.2 billions in 1994, US\$ 3.3 billions in 1995, and then boomed to an unprecedented US\$ 9.6 billions in 1996, US\$ 17 billions in 1997 and US\$ 26 billions in 1998.

This massive inflow of foreign capital helped finance most of the recurrent and increasing Current Account deficit: from less than 1% of GDP in 1993 and 1994 it rose steadily, reaching close to 4.5% of GDP in 1997.

The favourable new conditions granted to foreign investors combined with the favourable international environment led to early expectations of massive participation of foreigners in the process of privatization of state-owned enterprises. As a matter of fact, this was one of the major political obstacles to the programme at the outset, but actual results proved those fears to be excessive, since until as late as 1995 the participation of foreign investors in the National Privatization Programme amounted to less than 1% of total revenues.<sup>41</sup>

Privatization efforts started in the early 1980s,<sup>42</sup> but it was only in the mid-1990s that the process became truly significant. In 1991–98 total revenue accruing from the privatization programme totalled US\$ 58 billions (for federal government companies), plus US\$ 29 billions in revenue from local state firms. This involved a total of US\$ 70 billions-worth of assets sold plus US\$ 17 billions of transferred debt (see Table 1.2).

In 1991–94, a relatively small number of firms (32) were privatized, providing a total revenue of US\$ 8.6 billions. But this was the phase when privatization in the manufacturing sector was completed, with the selling of all relevant state-owned enterprises: firms in the steel, petrochemical and fertilizer sectors corresponded to over 90% of the State's entrepreneurial activities. One peculiar aspect in this phase was that one-third of the revenue corresponded to federal bonds.<sup>43</sup>

The total volume of resources – over US\$ 87 billions, in seven years<sup>44</sup> – makes this one of the biggest privatization processes in the world, and it will certainly have significant impact on the productive sector. The whole process had a double-sided logic: firms were sold to improve overall efficiency, but in several cases there were strong fiscal reasons.<sup>45</sup>

Table 1.2 Brazil: Privatization Programme 1991–98

(US\$ millions)

Sector	Number of Firms	Assets Sold	Transferred Debt	Total
Steel	8	5562	2625	8187
Petrochemicals	27	2698	1003	3701
Electric Power	3	3907	1670	5577
Railways	6	1697	—	1697
Mining	2	3305	3559	6864
Telecommunications	21	26970	2125	29095
Other	14	2442	344	2786
Federal Firms	81	46581	11326	57907
• Local State Firms	26	23724	5311	29035
• Total	107	70305*	16637	86942*

Source: A. Pinheiro and F. Giambiagi (1998), and [www.bndes.gov.br](http://www.bndes.gov.br)

\* Includes sales of minority shareholdings

The successful anti-inflationary plan and the privatization of state-owned companies have, however, failed to produce the positive effects on fiscal accounts that other countries have experienced. On the one hand, fiscal revenues were indexed before stabilization.<sup>46</sup> On the other, some expenditures have increased after stabilization, such as wages in the public sector<sup>47</sup> and expenditure on social security, reform of the health sector and the adjustment of the financial sector.

As a consequence, fiscal balance deteriorated from a surplus of 1.4% of GDP in 1994 to a deficit of about 8% of GDP in 1998. Nominal interest rates needed to finance this deficit<sup>48</sup> have as a result remained at very high levels,<sup>49</sup> often in excess of 3% per month, with monthly inflation rates around 0.3% (and even negative in several months in 1997 and 1998).

The end of inflationary transfers to the banking sector<sup>50</sup> that followed price stabilization led monetary authorities to create new mechanisms to avoid a systemic crisis in the financial sector. The rapid fall in inflation provoked immediate demand for money: the broadest monetary concept (M4) was by 1998 twice as high (in real terms) as in 1994. Also, credit to the private sector had increased fourfold in those four years.

This increase in credit comprises both normal financing and a substantial sum used for adjusting the banking sector. The elimination of inflationary gains coupled with the sharp increase in interest rates (Figure 1.2) since March, 1995<sup>51</sup> has brought enormous difficulties to several private and public banks, making the restructuring of the banking sector a must.<sup>52</sup>

Monetary authorities have had to intervene in several institutions, and a number of instruments have been devised. The most important policy tools have been credit programmes to finance troubled institutions, both at

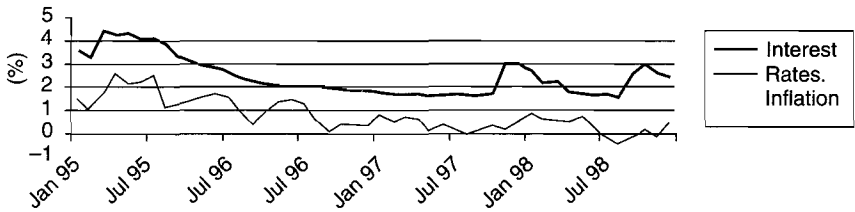


Figure 1.2 Brazil: Monthly Nominal Interest Rates and Inflation (%) 1995–98

federal and local state levels, alongside an induced redesigning of the sector as a whole, through the merging and sale of private and public banks with liquidity problems.<sup>53</sup> This led to the elimination of most of the financial institutions belonging to local state governments. As a result, the banking system was able to face the 1997–98 external shocks with a 35% credits/total assets coefficient and a 13% capital/reserves ratio.<sup>54</sup>

Macroeconomic adjustment also had spill-over effects on social expenditure. At the beginning of the decade social policies were characteristically financed via monetary transfers. The huge numbers of potential clients faced a system strongly dependent on contributions,<sup>55</sup> with multiple organisms and service networks and a strong concentration (two-thirds) of resources in the federal government, all of which led to mistargeting social programmes. Furthermore, the multiplicity of social funds and their link with specific items of expenditure made resources for social expenditure highly sensitive to the business cycle.<sup>56</sup>

The 1988 Constitution weakened the links between contributions and the financing of the system,<sup>57</sup> made access to social services a universal right and established minimum levels for social benefits. The most radical change has taken place in the health area, with the creation of the Unified Health System, comprising both health services and social security.

In the early 1990s there was ironically intense legislative activity to regulate the new Constitutional determinations, in parallel with sharp reduction in social expenditure<sup>58</sup> as well as of the institutional apparatus for the provision of social services. By the mid-1990s, a new strategy for social development had been adopted, taking into account the right to universal access for basic social services, and comprising employment and income programmes for generating new opportunities, priority being ascribed to universal programmes.<sup>59</sup>

Since 1994, and despite the fiscal difficulties faced by local States and municipalities, they have been increasingly absorbing responsibilities in the financing of social programmes, thus reducing the amount of resources contributed by the central government.<sup>60</sup> Table 1.3 displays the distribution of social expenditure by administrative levels and percentage of GDP.

According to figures in Table 1.3, in 1995 the federal government was still responsible for most of the expenditure in 8 out of 14 social programmes. In 1995 social expenditure by federal, state and municipal governments together corresponded to 21% of GDP, 85% of which went on education, health, social security and benefits to public servants.

Price stabilization and political will have allowed for better focusing and higher selectivity of programmes, new expenditure procedures, and clearer technical criteria for the allocation of funds. Social programmes concentrate on two lines of action – investment in human resources and social assistance and programmes to fight poverty.

Education has always been a bottleneck in Brazil's development process. The very dimensions of the country, the poor quality of educational services, syllabuses unsuited to market demands and strong distortions in financing and expenditures<sup>61</sup> are all long-standing characteristics of the education system. A major goal for reform in education is the decentralization of expenditures, unevenly distributed among the three administrative tiers of government.

Health is one of the sectors most affected by the 1988 Constitution. The right to health having become a universal feature imposed new challenges on an already troubled area. Financing sources are varied, comprising contribution out of wages and profits, specific taxes and a variety of other sources. Reform in the health sector concentrates on the redesigning of

Table 1.3 Brazil: Composition (%) of Social Public Expenditure, By Administrative Tier 1995

Programmes	Federal	States	Municipalities	Total Social Expenditure/GDP (%)
Social Security	99	1	0	5.4
Benefits to Public Servants	57	37	6	4.7
Education	25	47	28	4.3
Health	63	21	16	3.4
Housing	4	14	82	1.1
Employment	98	2	0	0.5
Social Assistance	34	40	26	0.4
Urban Transportation	18	15	67	0.4
Sewage & Water Supply	24	21	56	0.2
Agrarian Organization	95	5	0	0.2
Nutrition	96	1	3	0.1
Science & Technology	100	0	0	0.1
Environment	16	52	32	0.1
Human Resources Qualification	100	0	0	..

Source: Draibe (1999); rows might not equal 100 due to rounding

sources of financing<sup>62</sup> and on increasingly focusing services on preventive health actions. The share of municipalities in total expenditure in the health sector increased by more than 50% between 1990 and 1995 (although in 1995 some 60% still corresponded to the federal government).<sup>63</sup>

The need for reforming the social security system became clear in the late 1980s, provoked by a number of determining factors: until then the system incorporated contributors faster than the growth of beneficiaries and even the growth of the labour force; there has been significant demographic change in the population, and the 1988 Constitution incorporated rural workers into the system.<sup>64</sup> The number of new rural retirees was close to 2 million between 1991 and 1995, the value of the average pension doubled during that period and it comprised one-third of the rural population of retiring age (Dias and Amaral (1999)).

Furthermore, life expectancy of the population has increased in recent decades. Since the system allows for retirement on the basis of years of service, it turns out that two-thirds of retirees were 54 years old in 1995, with a life expectancy of another 22 years. Expenditure on social security absorbed some 10% of GDP in 1998,<sup>65</sup> with the number of actual beneficiaries reaching 19 million people. Social security deficit corresponded to approximately 3% of GDP in 1998, most of it (75%) due to benefits paid to public servants.

Reform of the social security system thus comprised the setting of a ceiling for pensions and minimum ages for retirement.

Price stabilization and trade opening have (predictably) fostered economic activity and investment, both via the increase in domestic demand for consumer goods, and by easing the access to cheaper imported capital goods.<sup>66</sup>

Most firms in the manufacturing sector underwent a process of rationalization of production in the early 1990s (1990–92, mostly), as one of the tools to face competitive imports. When inflation disappeared, returns on investment were relatively high, due to the lower cost of equipment and parts, to the fact that most firms had already undergone a rationalization process and that the new equipment helped to close the technological gap of the productive sector. This helped foster factor productivity in manufacturing, even at the cost of making the sector more capital-intensive.<sup>67</sup>

Industrial investment concentrated essentially on modernization, with only limited productive capacity expansion in some specific sectors.<sup>68</sup> The ranking of sectors by capital formation shows a different picture from that observed in previous investment cycles, such as in the 1970s. Table 1.4 displays the basic information.

Sectors which led investment in the 1970s – manufacturing, mining and petroleum – actually reduced their share in gross capital formation in the



Table 1.4 Brazil: Gross Fixed Capital Formation 1970–97

(percentage of GDP; from constant 1980 prices)

	1970/80	1981/89	1990/94	1995/97
Manufacturing	4.5	3.2	2.0	3.3
Mining	0.2	0.2	0.1	0.1
Petroleum	0.9	1.0	0.4	0.4
Infrastructure of which:	5.4	3.7	2.3	2.2
Electric Power	2.1	1.6	0.9	0.6
Telecommunications	0.8	0.4	0.5	0.7
Transportation	2.1	1.5	0.8	0.8
Sewage & Water Supply	0.5	0.2	0.2	0.1

Source: Bielschowsky (1998)

1990s. Investment in infrastructure (electric power, telecommunications, transportation, and sewage and water supply) was reduced in 1990–94 to between half and one-third of the amounts observed in the 1970s. Comparing the first and second half of the 1990s, one finds a sharp absolute fall in investment in electric power, a rather stable pattern in transportation and sewage and water supply and a sharp increase in telecommunications.

Within manufacturing, consumer goods led the pace (the most dynamic segments being durable goods, led by transnational companies), stimulated by the impressive ‘wealth effect’ stemming from price stabilization.<sup>69</sup> Unfavourable results were recorded for intermediate goods and capital goods.

The three new elements affecting investment in the second half of the Nineties are the new role played by incentives granted by local states<sup>70</sup> and municipalities, the post-privatization environment, and the import component of investment and production processes. Another important feature of industrial investment since the mid-1990s is that a good deal of it is associated to further exploitation of the country’s (static) comparative advantages in natural resources.<sup>71</sup>

This raises the question of the extent to which the model of industrial growth in recent years has become based on the endowment of natural resources and thus dependent on the international commodity market.<sup>72</sup> A less dynamic pattern raises doubts as to the sustainability of such a model, as well as to its vulnerability to external market fluctuations. A relevant point is therefore the actual conditions of the economy to support an alternative model that favours more technology-intense products.

Until the late 1980s scientific and technological policy in Brazil was concentrated in building up the infrastructure for R&D. Two lines of action were undertaken: (a) resources for the financing of R&D projects by firms (largely affected by the 1980s crises) and (b) tax incentives.

During the 1990s the institutional structure related to innovation and research has undergone several changes, mainly due to the reduction of the role of federal government: in 1990 it was responsible for 73% of the investments in research and development of new products (R&D); in 1997 that share had been reduced to 64%.

Part of this reduction has been compensated by a more active role played by the private sector. The corporate share of R&D expenditure increased from 15% to 20% in 1990–97, corresponding to an average 0.7% of total sales. Furthermore, the impressive number of ISO 9000 Certificates held by Brazilian firms<sup>73</sup> and the increase in private expenditure on technology and capital goods reflect a concern for modernization of productive plant.<sup>74</sup> But local firms as a whole did not develop their own innovative capacity to enter new markets.

The discussion about potential R&D supply is fundamental for any developing country, and even more so for an economy with two-thirds of its exports consisting of industrial goods. But in the recent Brazilian experience three effects seem to have contributed to such an unfavourable outcome: the negative impact of fiscal adjustment (which meant less public money to finance R&D activities), reforms in legislation facilitating imports of technology<sup>75</sup> (as part of the process of opening up the economy) and the composition of exports,<sup>76</sup> an increasing share of which are natural resource-intensive products.

The argument may be illustrated as follows.<sup>77</sup> Firstly, comparing the productive structure of the manufacturing sector in 1980 and in 1994, it turns out that there was a reduction in the share of traditional industries (from 35% to 31%), but the relative weight of electronic industries<sup>78</sup> is still somewhat limited (8% in 1994), greatly surpassed by chemicals (20%) and automobiles (10%).

Secondly, comparing the rates of growth in output between 1990 and 1996, the best performance is to be found in the producers of consumer durables (9%), whereas for the producers of capital goods growth was virtually nil. Indeed, for the manufacturing sector as a whole it was less than 2%. As a consequence, the relative importance of industrial sectors when classified by end-use of their production varied as indicated in Table 1.5.

*Table 1.5* Value of Production by Types of Industries

	1989	1994
Commodities	32.5	34.4
Durable Consumer Goods	13.0	14.9
Capital Goods	11.5	6.7
Traditional Goods	42.9	44.0
Total	100	100

According to Table 1.5, manufacturing sectors linked to final consumption have increased their share of output – largely a result of the wealth effect that followed price stabilization – whereas the relative weight of the producers of capital goods fell to almost half in the same period.

Thirdly, and as far as foreign trade is concerned, the share of Brazilian products in total world exports remained close to 1% throughout the 1990s, less than the 1.5% attained in the mid-1980s. The highest rates of growth of exports between 1990 and 1996 were achieved by sugar and wood (19%), meat (14%), chemical products (14%), vegetable oils, vehicles and autoparts (about 9% each). Table 1.6 illustrates the argument, for groups of products.

According to Table 1.6, the share of agricultural products remained constant throughout the decade,<sup>79</sup> whereas mining products corresponded in 1995–97 to an even smaller share than in 1990. The more important and more dynamic export items are in traditional industrialized products, followed by rather small gains for durable goods and products associated with the dissemination of technical progress.

The undynamic performance of Brazilian exports in the 1990s is therefore apparently associated with the pattern of specialization: notwithstanding the higher share of industrial products, the export bill is largely characterized by the exportation of natural resource-intensive commodities and energy-intensive or labour-intensive products.<sup>80</sup>

An economic environment more open to trade had implications also for the multiplier effects of foreign trade. For instance, Tigre *et al.* (1999) have found that for sectors such as ceramics and steel – in the production of which the country has a (static) comparative advantage – trade opening did not challenge local producers,<sup>81</sup> and was actually instrumental in developing a network of local suppliers. For other sectors – such as automobiles

Table 1.6 Brazil: Export Composition (%) According to Type of Goods 1980–97

	1980	1990	1995/97
<i>Primary Goods</i> of which:	28.9	19.7	17.4
Agricultural	20.0	10.8	11.0
Mining	8.9	8.9	6.2
Energy	0.1	0.0	0.0
<i>Industrial Products</i> of which:	69.7	79.1	81.2
Traditional Products	36.2	28.7	31.8
Durable Goods	6.7	6.8	8.3
Dissemination of Technical Progress	10.8	12.8	13.7
Other Industrial Products	16.0	30.8	27.4
<i>Other Products</i>	1.4	1.2	1.4
<i>Total</i>	100.0	100.0	100.0

and telecommunications – which depend less on such endowment of resources, the exposure to competitive imported products combined with easier access to capital goods and inputs produced elsewhere has meant a new challenge. It has actually led to a disruption of the links with local suppliers, thus affecting the possibility of inducing research in product and process development.

The consequences for the labour market of such movements – price stabilization, strong domestic demand and investment in specific sectors – have been varied. Until the beginning of 1995 total employment grew, as a net result of the increase in the number of workers in commerce and services and in the informal sector, more than compensating the reduction in employment in the industrial sector and in agriculture.

The participation of industrial employment in total employment fell from 25% to 16% between 1990 and 1997.<sup>82</sup> Almost all of this change in the sector structure of employment is associated with the migration of workers from the manufacturing sector to the commerce and service sectors,<sup>83</sup> by and large connected with the new technologies and (low) labour costs.<sup>84</sup> Table 1.7 illustrates the urban occupational structure by sector.

It emerges from Table 1.7 that the decline of employment in manufacturing has been compensated by an increase in labour absorption in housing, commerce and services.<sup>85</sup>

Industrial employment has been falling since 1995 (despite growing output), whereas employment in the commerce and service sectors increased up to the end of 1996, stagnating since then. In other words, at the beginning of the process of price stabilization the increase in employment in the service sector more than compensated the drop in industrial employment, but that happened only until 1997. As a result, the end of the decade has seen higher and increasing open unemployment: according to IBGE, open unemployment increased from 4.3% in 1990 to 7.6% in 1998 (Figure 1.3).

Generally speaking, there has been a clear productivity shock in both the industrial sector and the services sector of the Brazilian economy, although

*Table 1.7* Brazil: Urban Occupational Structure by Sectors 1990–96 (%)

	1990	1996
Agriculture and Mining	6.8	8.7
Manufacturing	25.2	16.0
Housing	1.0	7.5
Transportation & Communications	4.8	4.6
Commerce and Services	62.2	63.2
Total	100.0	100.0

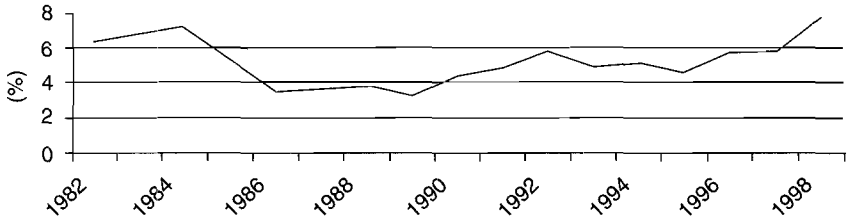


Figure 1.3 Brazil: Open Unemployment Rate (%) in Metropolitan Areas 1982-98

this has been more intense in the former.<sup>86</sup> Previous references to productivity gains reflected in labour/output ratios are confirmed by other indicators, such as the evolution of the initial wage of hired workers<sup>87</sup> as well as the number of years of formal schooling among industrial workers.<sup>88</sup>

Real income of urban workers was not reduced throughout the period: (1) stabilization and opening relatively favoured the prices of non-tradable goods; (2) while this favouring persisted the real income of workers in services increased; (3) when (i) employment in both manufacturing and services started to lose momentum, (ii) open unemployment started to rise and (iii) relative prices stopped favouring the products of these sectors, real income of the workers in services started to fall systematically; but (4) in the industrial sector, while employment fell, the real income of workers increased until 1998, raising the real cost of labour in this sector (Figure 1.4).<sup>89</sup>

Adjustment in the labour market to an economic environment open to trade and with stable prices thus involved the migration of workers from tradable to non-tradable sectors. This is consistent with previous considerations concerning the increasing capital-intensity of production that followed trade opening.

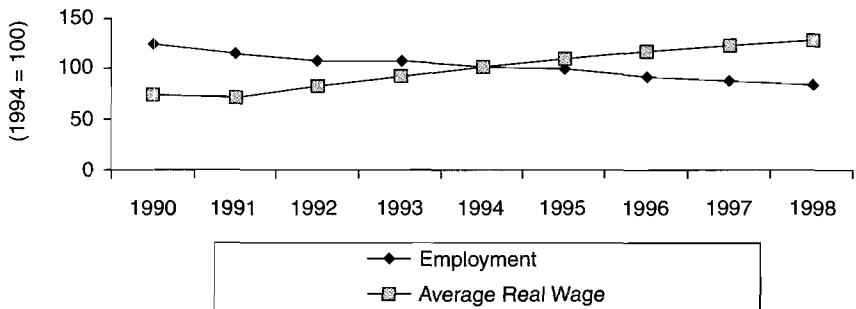


Figure 1.4 Employment and Real Wages in the Manufacturing Sector 1990-98

So much for urban sectors. Until the mid-Eighties the agricultural sector experienced a period of continued governmental intervention, and was instrumental to the growth process by providing food supply at low cost. Since the second half of that decade, however, agriculture has lost its major compensatory mechanism, the (highly subsidized) official credit programmes, as part of the fiscal adjustment process.

In the new (post-1990) environment – where the agricultural sector is exposed to international competition and starved of official credit – the major explanatory factor for output growth has been the systematic sharp increase in productivity: the loss of easy credit led producers to reduce average costs by acute productivity gains in tandem with a moderate reduction in cultivated area and a significant reduction of jobs.

For the most important goods, productivity in 1996–98 had varied quite substantially in comparison to 1990–92: cotton had an increase in productivity of 26%, soya 29%, coffee 27%, maize 30%, and beans 21%.<sup>90</sup> Indicators of productivity for the agricultural sector as a whole show a systematic increase from 1987 to 1998: the yearly rate of increase for this indicator is close to 1.8%.<sup>91</sup>

Such impressive productivity growth was favoured by: (a) the poor infrastructure for transportation leading to more intensive land exploitation, with areas closer to urban centres becoming more intensely used for production; (b) greater use of new domestic technologies;<sup>92</sup> (c) growing professionalism of the labour force, associated, among other things, with the migratory movements from the southern states to the western and northern regions of the country; (d) trade opening having slashed input costs (Dias and Amaral (1999)).

To compensate partially the social burden of such adjustment in the agricultural sector, the government has accelerated the agrarian reform programmes and created a credit programme for small homestead agricultural production. But as far as income generation is concerned, one of the most important compensatory measures has been the reform of the social security system, allowing for retirement of rural workers.

An important element for the sustained growth of output in the agricultural sector has been the improvement of that sector's terms of trade. Between 1987 and 1994 (peak year) the terms of trade in agriculture increased 46%. Profitability in the sector increased 59% between 1987 and 1998, reflecting an increase of 22% in productivity and 31% in the index of the terms of trade for the agricultural sector.<sup>93</sup> It is this advantage – measured in terms of productivity and improved terms of trade – that has helped producers using new technologies to find substitutes for traditional rural credit.

The general picture that emerges from these figures is that the agricultural sector has adjusted through higher productivity combined with

increasing capital/output ratio and selectivity of producers, all of which imposes an additional burden on the urban labour market.

These indicators suggest that Brazil is about to complete its set of so-called first-generation reforms. These new conditions, in turn, pose new challenges, in that different conditions are required for the very sustainability of the results obtained so far, leading to what has been called a second generation of reforms.

These comprise further steps, for instance, in reforming the social security policy. Experience has shown that, as it stands, the social-security system is bound to present alarming deficits in the coming years, and even more so when domestic economic activity is low, providing reduced fiscal revenue. For the system to be in equilibrium over time a number of additional measures have yet to be adopted.

Fiscal constraints throughout most of the decade have led to adjustment of the public sector via expenditure cuts. There are clear limits to that, not least in terms of the very efficiency of the services provided by governmental agencies. Multiplicity of agencies with overlapping functions, geographical concentration of civil servants, and differences in wage levels are some of the aspects that call for sound administrative reform. Some steps have been taken in that direction with a number of measures mostly associated with the control of expenditure. But little doubt remains about the need for additional reforms.

The labour market has likewise shown to be subject to a number of constraints imposed by legislation which in several aspects dates back to the Thirties. Trade union representation, actual funding of the unions, incentives to mobility among different activities are all part of the same package of difficulties that must be tackled soon.

Other reforms which are also often demanded have to do with the functioning of the judiciary system – costly and slow-moving – as well as with the very means of political representation and decision making, by the (historically unprecedented) creation of mechanisms by which citizens feel effectively represented and afforded an active voice. This requires some deep changes in the party political structure and to electoral legislation.

These are steps that will have to be taken if the Brazilian economy and society are to become mature and open to relations with the rest of the world. But these further reforms are more complex in nature and require far more time and political consensus than those achieved so far.

#### **IV. What did not work? Do we know why?**

The Brazilian experience with reforms is rich. Reforms had (ex-post) a well-defined sequencing, were varied, and mostly concomitant with a stabilization programme.

Little doubt remains about the 1990s having been a period of remarkable changes in the Brazilian economy, with several of the so-called first-generation reforms having been virtually completed. A number of indicators show, however, that not everything went the way one would have expected.

To start with, the two spates of intense import tariff reduction that took place in 1990 and 1994 were mostly designed as part of price-stabilization programmes. As a consequence, the phasing down of tariff rates was neither instantaneous nor linear over time. Several sectors had rather to cope with a seesawing sequence of increases and reductions of tariff rates in a relatively short space of time.<sup>94</sup> This mixed signalling imposes a burden on investors and consumers of imported goods.

One of the most frequent criticisms in relation to the stabilization policy adopted in 1994 is that looking back five years on from its adoption it turns out that the programme has remained essentially a stabilization programme. It lacked a medium- to long-term strategy. Economic policy remained subordinated to this prime goal, and this was not without cost.

The exchange rate was kept below equilibrium levels on the grounds that: (i) economic 'fundamentals' have changed with price stabilization (hence parity criteria had to be reconsidered on a new basis), (ii) exchange-rate devaluation would have imposed cost pressures (thus impairing the stabilization process), and (iii) the sounder macroeconomic scenario would ensure the attractiveness of the economy to foreign investors. As shown in Figure 1.5 competitiveness (measured in terms of parity) deteriorated until mid-1996.

Interventions in the foreign-exchange market via adjustment of bands or intra-band intervals were defined by variations in wholesale price indexes, on the grounds that: (a) in stabilization processes the prices of services typically take longer to adapt to foreign prices than the prices of those goods exposed to foreign competition; (b) the relevant indicators are those associated with competitiveness of tradable goods; (c) given the magnitude of

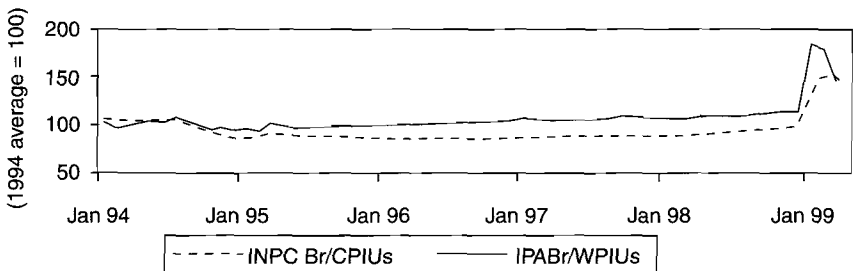


Figure 1.5 Brazil: Real Exchange Rate 1994–99



changes in the process of price formation, there would be no sense in taking as references the price levels prior to the *Real* Plan.

As Figure 1.5 shows, the overvaluation of the *real* was more pronounced when considered in terms of consumer prices. Such overvaluation has been reduced since 1997, when the government started to signal the need to change the exchange rate gradually in line with domestic inflation, but external pressure called for sharper variation of the exchange rate in 1999.

The positive effects on competitiveness stemming from trade reform were expected to generate positive export performance. It is still not quite clear the extent to which easier access to imported goods has helped export growth. In any event, high domestic interest rates affected the production of exportable goods, and wage increases coupled with an overrated currency have negatively affected traders. At the same time, demand for imports boomed. As a result, large trade deficits prevailed.

The literature surveyed in section II suggests that this procedure might have been part of the government's strategy to gain credibility for its reform programme. It is not clear, however, what timespan is required by the credibility argument: exchange-rate policy was essentially maintained with only minor changes for four-and-a-half years.

On the monetary side, in the first half of the Nineties domestic debt was financed via bonds with fixed interest rates. Since the *Real* Plan, price stabilization combined with the inflow of foreign capital has led authorities to alter the financing structure to a predominance of bonds with flexible interest rates (75%) and dollar-indexed bonds (21%). Continued use of monetary policy and a restrained exchange rate were vital for sustaining price stability. The maintenance of high interest rates this policy mix requires, however, has fuelled public debt, and the government has not been able to make the necessary changes in policy.

This is not to say that no attempt was made to increase revenue: fiscal revenue expanded from 25% of GDP in 1993 to 30% in 1998, and 'primary'<sup>95</sup> fiscal results were positive throughout the second half of the decade. The problem lies in the expenditure side, and especially as a consequence of the variation of domestic interest rates: in 1998 payment of interest rates on domestic public debt consumed 44% of total fiscal revenue.

An overvalued *real* fuelled importers' demand for foreign currency. Changes in legislation, price stabilization and renewed access to international capital markets produced a massive influx of foreign capital (loans and portfolio investment initially, followed by foreign direct investment).

The outcome has been a vicious circle of foreign currency inflow being monetized and having to be neutralized via higher interest rates. These, in turn, put pressure on fiscal accounts, leading to higher debt, a need for new loans and hence even higher interest rates. Table 1.8 presents the various components of fiscal deficit.

Two aspects are worth noting in Table 1.8. First, interest on domestic and external debt accounted for most of the deficit by the end of the decade. Second, the monetization that took place at the beginning of the stabilization process was replaced by domestic and external sale of bonds as a source of public financing.

Reliance on external savings has been a mixed blessing. It has helped to finance public debt, as shown in Table 1.8, but at the same time the increase in the external savings rate after 1994 (from 0.9% to 4.4% of GDP in 1998; see Figure 1.6) mostly financed consumption. The investment rate increased from 15% to 18%<sup>96</sup> in those four years,<sup>97</sup> but most of it was essentially modernization projects, not productive capacity expansion.<sup>98</sup> Between 1993 and 1996 private consumption accounted for 72% of the increase in aggregate demand, whereas capital formation corresponded to only 22%.<sup>99</sup>

The privatization programme helped cope with this background of incomplete fiscal adjustment via the sale of public firms and the relief of the fiscal burden imposed by inefficient state-owned enterprises. Whatever the consequences for productive efficiency, however, two side effects are worth noting.

Some firms were sold even before the regulation of their sector was complete, and this may negatively affect competition in the domestic market. On the other hand, privatization of several important firms was initially the outcome of financial arbitrage movements, involving agents not directly involved in the productive activity, and – until recently – limited participation of foreign investors. Efficiency gains may as a consequence not be as high as planned. It may similarly take some time before changes in ownership provide the conditions for competitiveness.

Even though one of the objectives of the privatization programme was apparently to maximize revenue, and despite the impressive sums involved,

*Table 1.8* Brazil: Main Components of Fiscal Deficit (% of GDP)

	1994	1998
'Operational' Fiscal Deficit	-1.4	7.5
Uses		
'Primary' Deficit	-5.3	-0.0
Interest on Domestic Debt	3.2	7.2
Interest on External Debt	0.7	0.3
Sources		
Domestic Financing	-2.6	4.5
External Financing	-3.0	2.2
Monetary Expansion	4.3	0.8

Source: Central Bank Bulletin, May 1999.

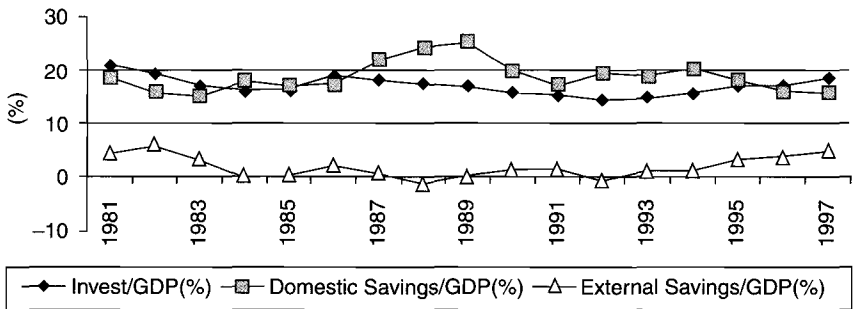


Figure 1.6 Investment and Savings (% of GDP) 1981–97

a hefty public debt remained, due mostly to the public-sector wage bill (9% of GDP in 1997), social security deficit (9.4% of GDP) and real interest rates (3.4% of GDP).<sup>100</sup>

Privatization of public companies, in addition to changes in regulation and elimination of public monopoly in several sectors, have improved private capital activity. But private capital has become more active only in the productive sector. Its contribution to social expenditures has remained quite limited. Although private firms and NGOs have for quite some time participated in the provision of social services, most of it remains very much a public-sector activity.

The level of social expenditure in Brazil is comparable to most medium-income countries – about 19% of GDP, although unfairly distributed – and reforms have not so far been able to alter significantly the origin and composition of revenues: in spite of constitutional changes, social expenditure remains dependent (58% in 1996) upon funds formed by social contributions.<sup>101</sup>

Furthermore, aggregate social indicators suggest that there is still a long way to go in this area. Price stabilization and public transfers have provided significant, positive effects. Real income of employed workers increased 30% between 1993 and 1997, due essentially to: (a) sharp increase in transfers to households at all income levels and (b) changes in relative prices that have reduced the price of basic products. As a consequence, between 1990 and 1996 the proportion of households below the poverty line fell from 41% to 29%,<sup>102</sup> which is an undisputed positive indicator.

Insofar as income equality is concerned, Neri and Camargo (1999) estimates – using PNAD<sup>103</sup> data – confirm the well-known high-income concentration in Brazil, and find relatively small variation in the indicators of inequality between 1990 and 1997 (the coefficients are almost stable, when one allows for the margin of error in this type of indicator). This result is achieved using both a Theil-T index (0.748 in 1990 and 0.715 in 1997 for

all income sources) and a Gini coefficient (0.607 in 1990 and 0.595 in 1997 for all income sources).<sup>104</sup> Moreover, most of the reduction in inequality measures obtained in Brazil in 21 years (1976–1997) took place in 1993–1997.

Neri and Camargo (1999) also show that detailed computation of primary PNAD data calls for a qualification of these results. This fall in overall inequality indicators does not reflect an improvement in income distribution: the share of the richest strata of the population in total income remains very high and the individuals in those strata have accrued most of the gains stemming from a number of effects, such as those associated with better payment for more qualified workers, better payment by type of activity, financial gains obtained from the high interest rates, and others. Several tests indicate that the improvement in those inequality indicators is an outcome of wealth effects ensuing from the lower cost of the consumption basket as well as the reduction of volatility of workers' income resulting from price stabilization. There has hardly been any significant structural change in the profile of income distribution in this period.

Be that as it may, the significant number of households that crossed the poverty line has had a major impact on domestic aggregate demand. As a consequence, imports boomed at the same time that the aggregate investment rate increased, by and large to meet domestic demand.

In most industries investment increased significantly in 1995–97 as compared to 1990–95. But except for telecommunications it remained below the levels observed in the 1970s and 1980s. In the 1990s there is clearly a new investment model, probably more efficient from the microeconomic standpoint, but not instrumental in terms of productive capacity and economic growth. Furthermore, investment has been more intense in those sectors that remained somehow protected from foreign competition (such as consumer durables), with highest productivity, and where the presence of transnational companies is more intense.

Apart from manufacturing, the record of investment is mixed. In the mining industry there has been very limited investment (due to the relatively poor knowledge of available resources, and unpromising market prospects for those minerals with known reserves), the same occurring in the petroleum industry.

Productive and distributive bottlenecks are so widespread that they have come to be known as 'Brazil Cost', meaning overall inefficiency costs imposed by specific inadequacies. Investment in infrastructure is also a mix of success and failure. Modernization of ports is under way, since privatization, but at the same time there has been relatively little investment in railways and equipment, and several constraints remain in the railway system due to the lack of integration with other transportation facilities. Private investment is also starting to improve conditions on a number of

highways, but this is still a troubled sector, since only a few motorways in the country are likely to be privatized, given the expected private profitability.

The most impressive performance has taken place in telecommunications, with an unprecedented amount of investment associated with privatization. At the same time, however, there has been a mediocre performance in electric power, leading to insufficient supply and even a risk of blackouts. In sewage and water supply there has been an important recovery of investments since 1996, but there might be some future constraints caused by financial difficulties and high indebtedness of firms in the sector.

From the viewpoint of industrial policy, therefore, reforms have allowed only partial success in the improvement of infrastructure. As shown, output growth could resume for some time, but increasing doubts persist as to the resulting productive structure and its long-term prospects, inasmuch as the economy's insertion in the international division of labour is concerned.<sup>105</sup>

In general, firms have sought to adjust to import competition via defensive specialization strategies, often negatively affecting the local production of parts and products with higher technological components. The process of adjustment of the industrial sector has fostered competitiveness in those sectors that are intensive in gains from scale and are labour-intensive. Facility to import capital goods has stimulated the modernization of sectors with low technological dynamism.

Between 1991 and 1993 a number of measures facilitated the importation of technology. But the utilization of foreign technology has traditionally not been accompanied by a domestic technological effort other than the adaptation of such technologies to local conditions.<sup>106</sup> Only a limited number of firms have R&D activities, and technological links outside the firm are rather limited, not only among firms but also between them and universities and research institutions. An excessively heterogeneous industrial sector makes it harder to establish technical liaison among firms.

More capital-intensive production processes with higher import content have also added a structural component to the increase in open unemployment: even when the economy resumes an output growth trajectory, the reduction in open unemployment is slower than in previous periods. The period of time that the average worker remains unemployed increased from 3.5 months in 1991 to 6 months in 1998.<sup>107</sup>

This is compounded by labour legislation.<sup>108</sup> As a consequence, 3% of the workers in the manufacturing sector change job every month, reducing the incentives for labour training, and adding to the difficulties previously mentioned with regard to local technological efforts.

The effects of adjustment were also felt in the rural area. Reduced credit, trade liberalization and an overvalued currency have provoked significant changes in the relative prices of agricultural products.

The agricultural sector adjusted by trying alternative forms of internal capitalization, mostly associated with sharp improvement in productivity, cost cutting and reduction of assets. As a consequence, there has been massive unemployment.<sup>109</sup>

The impressive increase in demand for food<sup>110</sup> following stabilization was met by an increase in domestic food supply fostered by the significant reduction in imported input costs. This characteristic, plus the sharp reduction of official credit, has proven to be highly discriminatory against smaller producers, users of more traditional technologies. The elimination of producers with below average productivity levels likewise aggravates open unemployment rates.

The questions that emerge from this panorama and the dissatisfaction with the results have to do with the reforms having been incomplete, incorrectly implemented or whether inappropriate signals were given to economic agents.

## V. Lessons from the Brazilian experience

The reforms that have taken place in Brazil since the late 1980s are quite illustrative in several aspects. To start with, these reforms have at least two characteristics not considered by the usual models: (a) they have taken place alongside a process of regional integration (Mercosur), and the commitments associated with that process were significant, at least for foreign trade policies; (b) Brazil is a federative structure, and this has major implications for the outcomes of several reforms, such as the reforms of the social security system and the financial sector.

As suggested by Table 1.1, section III, the sequencing of reforms has apparently corresponded to the recommendations found in the literature: trade reform has preceded every other reform. But there were clearly two stages – until mid-1994 and thereafter, the turning point having been the adoption of a drastic domestic price stabilization programme.

In other words, trade reform started at a point when the economy still presented acute macroeconomic imbalances – so the benefits transmitted via relative prices could not be maximized – and was then accelerated in tandem with a stabilization programme.

This simultaneity of opening and disinflation is more familiar to the literature about reforms.

Indicators shown here suggest that opening has actually helped stabilization and fostered producer and consumer surpluses through access to imported goods. The simultaneity of exchange-rate overvaluation required for stabilization purposes affected both the trade balance and the relative price of tradable and non-tradable goods. As a result, trade deficit burgeoned and there was a stimulus to factor movement towards the production of non-tradable goods.<sup>111</sup>

It is conceded that during stabilization programmes the maintenance of an overvalued exchange rate might be a cost to be paid, if it is part of the government strategy to show fierce commitment to reform. The alternative social cost of dwindling faith in the reforms could be much higher. The question posed by the Brazilian experience is, however, that such a policy remained for quite a long period, well beyond the period of time one would have considered necessary to induce credibility.

Consequently, this has led to increasing concern in terms of long-term growth. Signalling to economic agents has concentrated on stabilization purposes. Not much has been done in terms of the conditions for resuming growth, except for the expected efficiency effects stemming from privatization and trade opening. As a result, investment has increased as a whole, and is more efficient in microeconomic terms, but the amount actually invested is not sufficient from the viewpoint of a long-term growth strategy (increase in productive capacity has been limited) nor does it give much hope in terms of export performance.

It has also been shown that the literature on reforms indicates that reform of the domestic financial sector should come before the dismantling of controls on foreign capital. The Brazilian experience has been peculiar in this respect, too. Incentives for foreign investment were adopted in 1990–91, whereas the actual reform of the financial sector only took place in 1995, after adjustments became necessary due to the loss of inflationary gains that accrued to the banking sector. That reform has not induced a reduction in interest rates, as one might have expected. Instead, there has been a vicious circle of capital inflows combined with fiscal deficit leading to higher rates, which attract new capital, and so on.

In terms of the models reviewed in section II, when lack of faith in the permanence of reforms coincides with access to external financing, the private sector incurs debt to finance anticipated consumption. The Brazilian experience shows a different story. The same effect of increasing external debt essentially to finance domestic consumption occurred in a context of relatively low investment but intense domestic demand, even when there was little doubt regarding government intentions (as illustrated by the series of political gains the government has accumulated).

The basic recipes regarding structural adjustment would also indicate that public expenditures should concentrate on health, education and infrastructure, leaving all other activities to private enterprise.

This is perhaps the aspect where the federative structure of Brazilian society stands out more clearly as determining the outcomes. Sections III and IV have shown that a number of aspects have changed in the structure of public financing. But evidence also shows that: (a) private-sector commitment to financing in these areas is slow and limited and (b) there are structural constraints that condition the extent to which it is possible to transfer expenditures from the federal government to local states and

municipalities. Pursuing such reforms requires a redesigning of the entire fiscal structure.

This latter aspect, compounded by indications of rigidities in the labour market imposed by legislation and to the increasingly evident costs involved in the way the judiciary and legislative powers operate, lead to the conclusion that there is no partial reforming. Once initiated, if the reform process is to remain, there is need for continual deepening and spreading of the process itself.

In brief, one might identify seven lessons (at least) that can be derived from the Brazilian experience in the 1990s:

1. There are clear gains accruing from the end of inflation but the outcome depends on how stabilization is sustained. Brazil has not adopted (i) a repressive scheme, such as in Chile in the Eighties or Argentina (with Bonex and the reduction of nominal wages) nor (ii) a negotiated procedure, such as in Mexico and Israel. Instead, in the Brazilian experience since the mid-1990s, there has been (a) a nominal exchange rate *anchor*, (b) high positive real interest rates, (c) a real wage squeeze in the public sector, combined with (d) quantitative adjustment in the labour market, all of which imposes the costs of impairing competitiveness and performance in the medium-to-long run.
2. Trade opening has increased producer and consumer surpluses, as theory would have suggested. But the way opening took place seems to have imposed excessively high costs on some sectors.
3. Fiscal adjustment is a must, if one wants to avoid excessively high interest rates and resume public-sector action. But adjustment should be devised in such a way as not to impair productive efficiency nor impose excessive social costs: private financing of social expenditure is neither immediate nor should it be taken for granted.
4. Adjustment of the financial sector is crucial in a world of intense capital movement: the Brazilian process has cost less in terms of GDP than similar processes in other countries and has been apparently instrumental in avoiding the multiplier effects of recent external crises.
5. However important, price stabilization should not become the sole goal of economic policy. Experience does show that it takes some time for inflationary expectations to die out.<sup>112</sup> But a correct signalling to economic agents with regard to resuming output is as important, in order to ensure the very conditions for the reforms to be sustainable over time.
6. Once initiated, the process of reform calls for its own continuity at progressively higher stages if a reversal is to be avoided. Therefore, economic contexts with low inflation and open economic relations with the rest of the world call for fiscal fitness and for changes in labour legislation as well as modifications in administrative and institutional procedures.



7. Relying on external savings to resume an investment cycle is a risky bet, since decisions by foreign investors are taken on the grounds of what happens to domestic variables, but also include facts emerging elsewhere.

The intensity and multiplicity of the reforms undertaken in Brazil in the 1990s were such that it is perhaps still early to appraise them fully. A number of policy changes – such as the privatization of public enterprises and the reform of the social security system – are bound to be translated into dynamic gains only after some time. But it is now nine years since the first significant movements took place, and certainly some of the lessons that can already be identified contribute to our understanding of the adjustment process in a developing economy.

The Brazilian experience illustrates a case where reforms did not follow the prescribed ideal sequencing, where in some cases there was inadequate signalling to economic agents, but also where the gains that have been achieved might easily be lost in the event of a reversal of these movements.

## Notes

- \* UN/ECLAC and Universidade de Brasilia. Opinions here are strictly personal and do not necessarily represent the position of these institutions.
- 1. As witnessed, for instance, by the Chilean, Argentine and Uruguayan opening processes in the late Seventies and early Eighties, as compared to the later trade reforms in Mexico, Bolivia and Brazil.
- 2. Stern (1991), p. 3.
- 3. Rodrik (1993a), p. 7.
- 4. Thomas *et al.* (1991), p. 12.
- 5. According to Williamson (1990).
- 6. Conley and Maloney (1995).
- 7. Mussa (1986).
- 8. Calvo (1989).
- 9. Conley and Maloney (1995).
- 10. At what point should reforms also include other markets, such as the labour market (an inevitable step, if trade opening is to remain), is not so clearly stated in the literature.
- 11. A matter of great interest for Brazil in the early Nineties.
- 12. Largely influenced by the Chilean experience in the early Eighties.
- 13. Edwards and Edwards (1987) and Edwards (1990).
- 14. McKinnon (1982).
- 15. An alternative way of presenting this argument follows from the pace of adjustment in the goods and financial markets: since the former takes more time to clear than the latter, a homogeneous reform would call for the goods markets to be liberalized before financial markets (J. Frenkel, cited in Edwards (1990)).
- 16. Chomski and Papageorgiou (1986). Real devaluation of the domestic currency is considered a necessary condition for successful trade liberalization.
- 17. Corbo and Fischer (1992).
- 18. Rodrik (1993b).

19. See the discussion in Rodrik (1993b).
20. The elimination of inflationary gains resulting from a successful stabilization process may lead the financial sector to look for other sources of financing.
21. Edwards and Edwards (1987).
22. Rodrik (1993b).
23. Wages, monetary aggregates, the exchange rate.
24. Rodrik (1993b).
25. Rodrik (1992).
26. Rodrik (1993a).
27. Taxes and interest rate differentials were a major stimulus to international financial arbitrage movements.
28. A full account of the changes in trade policy in the Nineties would also have to consider that for the first time in its history Brazil was committed to a regional integration process, with some important additional consequences.
29. Some criticism remains with regard to the way these changes actually took place. See Baumann *et al.* 1997 for a detailed account of tariff reforms in 1994–96.
30. To September, 1994.
31. Despite the continued export expansion – 6% yearly growth on average in 1994–98 – and the improvement of the terms of trade (almost 20% between 1991 and 1995).
32. Total imports/GDP (%).
33. Data from IBGE indicate that in 1990 only 11% of gross fixed capital formation in machinery and equipment corresponded to imported goods. In 1997 that percentage reached 41% (Sáinz and Calcagno (1999)).
34. Exchange-rate policy during the 1990s was rather varied. Starting from an initial position of letting the market determine the equilibrium rate (as an additional tool for breaking a long-standing indexation process) the government was soon led to adopt a band system that experienced some changes over time. In January 1999 external pressure based on the accumulated overvaluation led to new freely floating system.
35. A Bilateral Real-US Dollar index deflated by wholesale price indexes based in mid-1994 would show overvaluation from July 1994 to March 1996, reaching a maximum of 17 percentage points by February 1995. Bonelli and Fonseca (1998b) qualify this argument: while labour competitiveness increased 62% in 1990–96, the average wage in US dollars increased 84%, which means that productivity gains were surpassed by labour costs. In other words, the reduction in competitiveness was not due merely nor predominantly to exchange-rate overvaluation: industrial wages deflated by the wholesale price index increased 76% in that period, compared to a 5% appreciation of the Real against the Dollar.
36. It has been estimated (Chudnovsky and Lopez (1997)) that in 1995 92% of total sales in the automobile industry, 59% in the pharmaceutical industry, 56% of the sales of electrical appliances and 44% of beverages and tobacco in Brazil were associated to foreign-owned firms.
37. Brazil's share of total world foreign direct investment was as follows: 1970–75 5.1%; 1976–80 6.3%; 1981–85 4.4%; 1986–90 1.2%; 1991–95 1.3%; 1996 2.7%, according to UNCTAD, World Investment Report, several issues.
38. Thanks to the amortizations of the external debt.
39. As well as international liquidity.
40. GDP growth rates went from –0.3% in 1992 to an average 4.5% in the next four years.
41. According to Pinheiro and Giambiagi (1998).

42. In 1979 the government created the Special Secretariat for the Control of State Enterprises (SEST), with a mandate to rein-in state enterprises. It was not until 1981 that the first 'Special Privatization Commission' was created (Pinheiro and Giambiagi (1998)).
43. For a detailed account of the whole process of privatization in Brazil see Pinheiro (1996).
44. And with a number of significant firms still to be sold, in the energy and telecommunications sectors.
45. For instance, privatization at the state level was important for its more pronounced fiscal impact: while federal-owned firms showed a fiscal surplus equal to 0.1% of GDP on average in 1995–98, local state firms recorded a deficit of 0.5% of GDP in the same period. See Pinheiro and Giambiagi (1998).
46. The 'Olivera-Tanzi effect' associated with the end of inflationary processes was small: in the inflationary years this effect was actually positive, given that indexed revenues coupled to delays in payments afforded the government extra gains.
47. Wage policy in the public sector in 1995 (with wages being adjusted to compensate previous inflation) is estimated to have added some 15–20% to the wage bill. Furthermore, the sharp increase of the minimum wage in that same year also affected social security expenditures. These two items taken together are estimated to have added some 2% of GDP to total government expenditure (Baumann and Mussi (1999)).
48. As well as neutralize the monetary impact of the inflow of foreign resources.
49. And increased sharply even further in response to external shocks in 1995, 1997 and 1998.
50. Transfers accruing from the fall in the real value of deposits. It is estimated that those transfers corresponded to 4% of GDP in 1990–93, having disappeared since 1995.
51. Monthly average nominal rates for overnight operations rose from 3.2% in February to 4.4% in March 1995.
52. The proportion of nonperforming operations increased from less than 9% of total loans to almost 14% by the end of 1995 (Baumann and Mussi (1999)).
53. A total of 42 banks (out of a total of 271) were affected, from July 1994 to December 1997.
54. Higher than the Basle Committee recommended 8% ratio.
55. Fixed percentages of wages and profits, as well as other quasifiscal sources of revenue.
56. Draibe (1999).
57. Although financing remains very dependent (58% in 1996) upon such contributions.
58. Social expenditure by the federal government fell from 11.4% of GDP in 1990 to 9.7% in 1992, a recessive period. Individual areas were affected in different manners: while federal expenditures in the health sector, food and sewage and water supply were in 1993 between 50 and 60% of their corresponding value in 1989, expenditure on social security had actually doubled in the same period (Draibe (1999)).
59. The social expenditure/GDP ratio increased some 4% between 1990–91 and 1996–97 (coming close to 20%). In the same period the share of social expenditure in total public expenditure remained approximately the same (59%) (CEPAL (1999)).
60. This has been made possible by the higher transference of resources from the federal government to states and municipalities, as well as by the improvement

of their fiscal revenue: in 1980 states absorbed 25% and municipalities 9.6% of total revenue; in 1991 those shares had become 27% and 16%, respectively (Draibe (1999)).

61. By way of illustration, public per capita educational expenditure is estimated at US\$ 223. But that reflects US\$ 870 per student at the basic level and US\$14,303 per university student (figures refer to 1995; see Draibe (1999)).
62. The recent tax on cheques is the most well-known example.
63. It is estimated that the number of persons covered by private health plans has increased fourfold in ten years, reaching 45 million people in 1998. This is more a reflection of discontent with the state system than actual planning (*The Economist*, 8 May 1999).
64. The value of retirement pension is estimated on the basis of the last 36 months of contribution to the system, up to a limit of approximately US\$ 1000. Civil servants can, differently, retire and earn the equivalent of their last wage. Rural workers are afforded retirement but do not contribute. Resource transfer that followed from the inclusion of rural workers in the social security scheme are considered as having been a major contribution to reducing the percentage of households below the poverty line from 41% in 1990 to 20% in 1996 as estimated in CEPAL (1999).
65. When both public and private regimes are taken into account.
66. An effect amplified by the exchange-rate overvaluation throughout most of the second half of the decade.
67. Bonelli and Fonseca (1998b) estimate that the yearly increase in total factor productivity went up from an average of 1% in the 1980s to 2.1% in 1990–97. According to Neri and Camargo (1999) industrial output grew 10% between 1991 and 1995, whereas industrial employment fell 22% in the same period, leading to a 40% increase in labour productivity.
68. In some sectors (e.g. the automobile industry) there has actually been some ‘greenfield’ investment, motivated by tax incentives. But in most sectors investment projects essentially aimed at modernization.
69. The only exception being textiles.
70. Which have played a decisive role in the unprecedented geographical relocation of productive plants the country has been experiencing in recent years.
71. According to Bielschowsky (1998) total fixed investment in manufacturing at constant 1980 prices averaged 3.3% of GDP in 1995–97. The group of ‘dynamic’ sectors formed by producers of Steel Products, Transportation Material, Processed Food, Electric and Electronic Material, Plastics, Pharmaceutical Products and Textiles invested on average some 2.1% of GDP, whereas the producers of Chemical Products, Machinery, Non-Metallic products, Pulp and Paper, and Rubber Products invested on average only 0.77% of GDP in the same period.
72. Different, for instance, from the strategies followed in other emerging economies and in Brazil in previous decades, i.e. the provision of stimuli for (producers and) exporters to enter dynamic, new markets.
73. About 2,500 Certificates until 1997 (Tigre *et al.* 1999).
74. Though positive, such results compare rather poorly with other countries. The R&D/sales ratio for OECD countries comes close to 2%, and even other emerging economies present a higher commitment to technology: in South Korea the share of the private sector in R&D is as high as 80%.
75. In 1991 and again in 1993 specific norms facilitated technology transfer contracts between foreign subsidiaries in Brazil and their parent companies (see Tigre *et al.* (1999) for a description of the major changes in legislation).

76. The elimination of a number of export incentives has led to a more 'passive' participation in the international division of labour.
77. Tigre *et al.* (1999).
78. The most dynamic segment in the present technological paradigm. For the sake of comparison, suffice it to say that in Taiwan, South Korea, Singapore and Hong Kong the share of electronic industries was on average 16%, in the same year.
79. Although much lower than in the 1980s. This point is discussed later on.
80. As illustrated, for instance, by the remarkable export performance of pulp, paper, orange juice, soya and semi-processed mineral products.
81. The ceramics sector is actually a very successful story of restructuring leading to an increase in the number of patents, greater outlay on R&D and a number of other positive effects.
82. There was also a reduction of employment in agriculture, to be discussed later on.
83. This migratory process was also facilitated by another structural characteristic of the Brazilian labour market: on average between 2.5% and 3% of industrial workers change job every month; about 40% of the workers in the industrial sector have been in the same occupation less than two years, thanks to the legislation regulating payments following dismissals (see Amadeo and Gonzaga (1997) and Amadeo and Neri (1997) for more details).
84. The increase in labour costs in the industrial sector (55%) between 1994 and 1997 outpaced the corresponding increase in the services sector (15%) (Camargo (1998)).
85. Figures relative to agriculture in Table 1.6 apparently reflect the significant increase in the number of self-employed workers: the share of rural wage-earning workers has fallen from 44% of total employment in this sector in 1990 to 34% in 1996, whereas the number of self-employed workers increased from 53% to 64% in the same period (Cepal (1999)).
86. Which might lead to an increasing disparity of wages between the two sectors in the future (Camargo, Neri and Reis (this volume)).
87. Taken as an indicator of marginal productivity of the labour force, it indicates that between 1995 and 1997 the gains in productivity were 45% in the industrial sector and 33% in the services sector (Camargo, Neri and Reis).
88. The percentage of workers with less than four years of schooling fell from 38% in 1989 to 31% in 1996, whereas the percentage of workers with more than 8 years of schooling increased from 42% to 49% of the labour force (Camargo, Neri and Reis).
89. A 30% increase between 1994 and 1997 (Camargo, Neri and Reis).
90. Data from Dias and Amaral (1999).
91. In the cattle-raising subsector a similar figure obtains, with an annual increase in productivity close to 1.9% (Dias and Amaral (1999)).
92. Mostly developed by Embrapa – Brazilian Agricultural Research Enterprise, attached to the Ministry of Agriculture.
93. Dias and Amaral (1999).
94. Baumann *et al.* (1997) have shown that for a group of products there were up to 8 changes of nominal tariff rates in a 26-month period from July 1994 to September 1996. In some cases, nominal tariff rates oscillated between 0% and 19% (between 19% and 73% for some other products) and those changes were repeatedly in both directions (i.e. a sequence of increases and reductions).
95. That is, excluding monetary correction and the payment of interest rates.
96. At constant 1980 prices.

97. Mostly by the private sector: public investment in machinery and equipment was reduced from 0.7% in 1994 to only 0.4% in 1998, whereas for investment in construction those rates were 2.9% and 1.8%, respectively, according to IBGE.
98. Reliance on external financing also raised total external debt by 47% in four years, from US\$ 151 billions in 1994 to US\$ 222 billions in 1998.
99. Sáinz and Calcagno (1999).
100. Cysne (1998).
101. Resources remain concentrated in specific areas: federal government concentrates two-third of its resources in social security and benefits to public servants; local states concentrate their resources in education, benefits to public servants and health, whereas municipalities have three-quarters of their social expenditures in education, housing, health and sewage and water supply.
102. The reduction being from 36% to 25% in urban areas and from 64% to 46% in rural areas. Data from CEPAL (1999).
103. PNAD – National Household Sampling Survey.
104. Alternative methodologies using a different unit for analysis – as in CEPAL (1999) – also indicate quite a high degree of concentration with relatively small variation during the 1990s: in 1990 the Gini coefficients were 0.528 for urban areas and 0.456 for rural areas, only slightly lower than the corresponding 1997 coefficients of 0.538 and 0.460, respectively.
105. There are concerns also with regard to the actual involvement of producers with the exporting activity: only some 14,000 firms have systematic operations with the foreign market, out of more than one million registered firms.
106. Balance of Payments data show an increase in the importation of technology in the 1990s, with a significant change in its composition: the share of imports of 'specialized technical services' in total imports of technology fell from 67% in 1990 to 32% in 1996, with a simultaneous sharp increase in payments for 'use of patents', and 'supply of industrial technology' (for non-patented technologies). This reflects an increase in importing and transferring foreign technology, without a corresponding increase in expenditure on R&D by local firms (Tigre *et al.* 1999).
107. Camargo, Neri and Reis (this volume).
108. When the economy is growing and unemployment is low there is an implicit incentive for workers to provoke their dismissal, as they receive a payment corresponding to one monthly wage plus 40% from a fund accumulated by the firm (FGTS – formed by one wage per year employed in the firm) (Amadeo and Gonzaga (1997)).
109. It is estimated that the number of workers in the agricultural sector was reduced by 23% between 1985 and 1996 (corresponding to 5.5 million jobs), whereas the sector's output grew 30% in the same period.
110. The purchasing power of urban workers in relation to the cost of food and clothing increased more than 60% since 1990, with the rise in wages of less qualified urban workers outpacing the variation of food prices.
111. Very much in the way an absorption approach model with fixed exchange rate would have predicted: a displacement of the production frontier with relative prices benefiting the production of non-tradable goods.
112. See, for instance, the analyses of the stabilization experiences in Argentina, Chile, Mexico and Peru published in IPEA/Escritório da Cepal no Brasil (1997): it might take more than four years after stabilization for economic agents to lose their inflationary memories and behave accordingly. The long-standing

Brazilian experience with widespread indexation might require an even longer period of adaptation, however.

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# 2

## Macro- and Microeconomic Aspects of the Reforms<sup>1</sup>

*Rubens Penha Cysne\**

### I. An overview of the reform process

Moves toward privatization and freer trading can be detected before 1990. Nonetheless, the period of reform in Brazil effectively began in that year. The first wave of reforms in the 1990–98 period brought relative progress on at least four fronts: price stabilization; privatization; opening-up of the Brazilian market, in terms of both trade and finance; and regulation, extensive to the financial system. Mention should also be made of reforms undertaken to correct distortions ensuing from the 1988 Constitution.

Price stabilization was achieved as of July 1994 when phase three of the *Real* Plan commenced and the new currency was launched. Inflation plummeted from a monthly figure of about 50% in June 1994 to annual rates of 14.8%, 9.3% and 7.5%, respectively, over the next three years. Since the beginning of 1999, however, following the switch to a flexible exchange-rate mechanism, the prospect of higher inflation has returned. There is a long way still to go; stabilization is not yet complete and the need to trail a sustainable fiscal path persists.

Brazil's privatization programme began in 1981 when Decree no. 86.215 was passed. It set forth the initial guidelines for closing down and transferring to private enterprise companies controlled by the federal government. It was only after 1990 (particularly as from 1995) that the privatization programme got into full swing.

Liberalization of trade, on the other hand, dates back to 1990–91 (tariffs had already been reduced in 1988). From then on, a few setbacks occurred but, on balance, in comparison with the previous decade, there has been a clear improvement. Resolution 1,289 (1987) and annexes to the same introduced at a later stage, set in motion the process of opening up the Brazilian financial market.<sup>2</sup>

Brazil has made a clear transition – perhaps a little linear (given the country's relative lack of experience in this sphere) – from an entrepreneur-

ial to a regulatory State. Regulatory bodies have been set up to oversee the electricity system (ANEEL), the telecommunications (ANATEL) and the oil (ANP) markets. These watchdogs are still in their infancy and their concessionaire powers, as representatives of the Executive Branch, may often conflict with their role as moderators for disputes in which the Executive itself may be one of the litigious parties involved. Moreover, the regulators' independence, though expressly stated in Law, has not proved sufficient to provoke questioning in the public sector itself. One instance of this is the persistence of a plethora of market reserves and monopolies in the state sector, none of which has been questioned outright by the body instituted to defend the interests of unfettered competition. The sector still suffers a lack of regulatory culture and human capital.

Reforms in the financial sector (1995–98) likewise merit attention. The challenges still to be met in this segment include further improvements regarding supervision of banking, and a firm commitment to drive ahead with the extinction, privatization or transformation into funding agencies of many state banks and some federal banking institutions.

Following the introduction of the *Real Plan* in 1994, a broad-sweeping, successful reform of the Brazilian banking system was implemented. It was designed to soften the costs of sudden transition to lower inflation, made more acute by the Central Bank's excessively lax supervision during the period of rampant inflation. The extension of this reform to state banks is now under way, the states forfeiting the right to issue money (through assumption of state debts by the Central Bank).

Tax reform, reform of the country's labour legislation, of the Judiciary and political reform are all currently under discussion.

Congress has already passed the so-called administrative reform – the backbone of which is the possibility of dismissing civil servants granted permanent tenure by the 1988 Constitution. For it to be made effective, however, the reform requires supplementary and ordinary legislation to thresh out the details. The bill passed requires that all non-tenure civil servants (those admitted to the service without a public selection exam since 1983) be dismissed before dismissal of those with tenure be contemplated. This, of course, severely restricts the law's applicability and its potential impact on public-sector deficit.

Bolder reform of the social security system is in the pipeline. The bill debated and passed by Congress can hardly be deemed what was required in this sector.

In assessing Brazil's overall macroeconomic predicament since 1994, one can state that fiscal policy has been the weak point of the last two administrations. The Fiscal Liability Law currently under discussion, by which public administrators are made more accountable for authorizing expenditure, is a step in the right direction.

## **II. Description of the reforms**

### **II.1 Constitutional amendments**

Important changes were approved during the period of constitutional reforms and through the supplementary reforms that followed in its wake. The distinction between 'Brazilian companies' and 'local stock Brazilian companies' was abolished, market reserves on natural gas, mineral deposits and hydraulic resources were removed, the private sector was allowed access to the telecommunications market, and the government cancelled Petrobrás's entitlement to act as the exclusive executor of the Union's oil monopoly. An Emergency Social Fund was also approved, increasing the unearmarked portion of the fiscal budget and so granting the federal administration greater leeway to reallocate or streamline expenditure.

### **II.2 Reform of asset holding (privatization)**

The Brazilian Privatization Programme (PND) can be divided into four distinct phases. The first began in 1981 and involved the sale of companies that had previously been nationalized when they were on the verge of going into receivership. This stage is also referred to as the reprivatization phase. With a few exceptions (for instance Aracruz Celulose), the companies privatized between 1981 and 1989 were very small and financial returns extremely modest, totalling a sum of US\$ 735 millions for the sale of 39 companies.

The following phase, begun in 1990, concentrated on state-sector manufacturing enterprises, mainly in the steel, petrochemical and fertilizer segments. By 1992, about 20 companies had been sold off, bringing in a total of US\$ 5.4 billions, including revenue from sales and the transference of debts.

The third phase, beginning in 1993, was marked by institutional changes in the rules for privatization. The most remarkable alterations were the increase in credits against the Treasury (acceptance of so-called 'rotten money' – illiquid public bonds of various types) for the purpose of privatization, the sale of Federal stakes (even minority shareholdings) in companies, and the elimination of restrictions on the participation of foreign investors – in most cases being permitted to acquire up to 100% of the voting capital. It should be noted that the negotiation of the Union's minority shareholdings alone accounted for US\$ 3.8 billions in revenue. Meanwhile, the second phase of PND (1993 and 1994) proceeded with further privatizations in the chemical and fertilizer sectors.

The fourth and final phase of the programme began in 1995. It differs from the preceding phases because it includes public service concessions. Besides generating revenue, this phase is marked by new investments in infrastructure capable of reducing manufacturing costs and averting bottle-

necks for future economic growth. Problems have arisen regarding the quality of the services provided by recently privatized concessionaire companies, a sign that the government underestimated the need for planning to ensure a smooth transition in this final phase. Table 2.1 provides a summary of the four phases and their respective results.

*Table 2.1* Phases of Brazil's Federal Privatization Programme

Phase	Period	Government	Main Sectors	No. of Companies	Sum(*) US\$ Millions	Remarks
Phase One Reprivatization	1981/89	Figueiredo & Sarney	Miscellaneous	39	735	Return to the private sector of companies nationalized on the verge of going into receivership. Privatization becomes one of the mainstays of the set of liberalizing reforms. Programme continued but with less priority; emphasis on the use of legal tender in sales. Focus on public service concessions with a view to obtaining investment in infrastructure. One of the landmarks of the privatization programme is reached with the sale of CVRD.
Phase Two	1991/92	Fernando Collor	Steel Petrochemical Fertilizers	18	5371	
Phase Three	1993/94	Itamar Franco	Steel Petrochemical Fertilizers	15	6503	
Phase Four	1995/96	Fernando Henrique Cardoso	Chemical Railways Electricity Services	19	6375	
	1997–	Fernando Henrique Cardoso	Mining Ports	4	7826	

*Source:* 1995 to 1997 – BNDES/Privatization – Result per Company (Internet).

NB: The sums above include not only sales revenues but also debts transferred to the private sector. Results of public-service concessions not included.

During Fernando Henrique Cardoso's administration 24 public-sector companies belonging to state governments have also been privatized, generating a total effectively received or receivable revenue of US\$ 17,434 millions and transferring to private enterprise debts totalling US\$ 4,848 millions.

The privatizations have been geographically concentrated in the states of Minas Gerais, São Paulo and Rio de Janeiro. In sectorial terms, and regarding the number of companies and volume of funds, sales have been concentrated in electricity (11) and transports (7).

Table 2.2 shows the results for privatization of state-government assets.

A relevant question about the privatization programme has to do with its fiscal impact and the extent to which it has helped keep inflation under control. Table 2.2a presents the official figures on the borrowing requirements (operational concept) of state-sector companies between 1988 and 1997 as a percentage of GDP.

Privatization usually produces four fiscal benefits. First, sales revenues, which can be used to finance government debt, in tandem with debt loans or expansion of the monetary base. Second, as interest paid on government debt tends to be lower than the dividends the Treasury receives on its shareholdings in state-sector companies, there is also a reduction in the current-account deficit. Third, the Treasury ceases to transfer funds to government-owned companies (even though such transfers are made mostly by public financial institutions). Fourth, privatization usually produces an increase in tax revenue because privatized state-owned companies tend to expand investment (no longer being subjected to the constraints of public-sector cost-cutting drives) with a consequent boost to revenue.

Table 2.2 State Government Privatizations – Status on 16/07/98

Aggregate Results 1996–98				
	US\$ millions	US\$ millions	US\$ millions	
Companies Privatized	Revenue from Auctions	Debt Transferred	Total Revenue	
Total	17434	4848	22252	
Sale of Shareholdings	Revenue from Auctions	Debt Transferred	Total Revenue	
Total	3399	–	3399	

Source: BNDES

Table 2.2a Borrowing Requirements (Operational Concept) of State-Owned Companies (% of GDP)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
State-Owned Companies	0.77	2.60	0.80	0.07	0.59	-0.02	-0.32	0.86	0.32	0.28

Nonetheless, Table 2.2a clearly indicates that, unless one takes a long-term view of fiscal accounts, it is not possible to infer from statistical evidence that privatization has been crucial in helping the government to balance its accounts – a danger persistently dogging the *Real Plan*. Among the fiscal benefits associated with privatization mentioned above, the most important for the *Real Plan*, in the context of short-term operational borrowing requirements, appears to have been the possibility of using revenue from privatization to finance (not reduce) public debt. For instance, the revenue obtained from concessions in the telecommunications sector (not included in Table 2.1) has been heavily tapped for this purpose.

As for helping to reduce the fiscal deficit, the privatization programme has not produced the impact it might have done had it included state banks from the outset, moved faster, and expanded to include the oil sector. Banco do Brasil alone demanded capitalization from the federal government to the tune of R\$ 8 billions in 1996. As for banking institutions owned by the states, it is reckoned that the transference of Banespa's debt to the Treasury cost the government over R\$ 30 billions. Privatization of these financial institutions would certainly have enhanced fiscal impact as it would have put a clamp on the current capacity to realize expenditure of interest to the federal or state administrations through the issuing of means of payment ultimately underwritten by the Central Bank.

### **II.3 Economic liberalization – current account**

Table 2.3 reflects the evolution of imports and their proportional relation to GDP from 1990 to 1997.

The 1990–97 period can be divided into three subperiods: 1990–93 (before the *Real Plan*), 1994 (the year of the transition to price stability and greater use of imports) and the period following implementation of the Plan. It can be observed that, as a percentage of GDP, the coefficient for imports grew continually, rising from 5.5% between 1990 and 1993 to 7.2% between 1995 and 1997.

The opening-up of the Brazilian economy was given an initial boost in 1988–89 when average tariffs were reduced from 51% to 37% and the tariff ceiling fell from 105% to 85%. Non-tariff barriers on imports, however, were only eliminated in 1990. With the exception of a few agreements previously established (for example the Informatics Law which remained in force until 1992), as from 1990 nominal rates served as the basis for the country's foreign trade policy.

A calendar for the gradual reduction of tariffs was also announced in 1990. Imports, which had remained practically stagnant between 1990 and 1992, expanded approximately 25% in 1993, 31% in 1994 and 51% in 1995. In other words, although the initial move toward opening up the economy took place in 1990, actual growth in imports occurred only from

*Table 2.3* Value (US\$ millions) of Brazilian Imports per Sector, 1990–97

Period	Total Imports	GDP at market price	Imports as % of GDP	Oil and others	Consumer Goods	Raw Materials & Intermediate Products	Capital Goods	Building Materials	Transportation Equipment
1990/93	22,232	405,175	5.49	4,879	2,586	8,810	4,415	136	1,440
1994	33,488	543,100	6.17	4,766	5,128	13,533	6,996	191	2,874
1995/97	54,879	761,355	7.21	6,026	9,732	19,947	13,900	257	5,105

*Sources:*

1990: Central Bank Bulletin, May 1994, p. 162.

1991/96: Resende, Gervásio C. Nonnenberg, Marcelo & Marques, César M. (1997).

1997: Central Bank Bulletin, Feb. 1998, vol. 34, no. 2, p. 173.

NB: In the Building Materials item, averages 1 and 2 were altered due to a lack of data for both. As a result, the first is divided by 3 and the second by 2.

1993 onwards, especially in 1994 and 1995. From 1995 to 1997, average annual growth in imports subsided to 11%.

Table 2.4 presents the evolution of tariffs between 1988 and 1997, reflecting the opening-up of the Brazilian economy in the period.

One can observe that the simple (non-weighted) average rate dropped regularly from 38.5% in 1988 to 11.2% by the end of 1994. The point at which trading was most open – as measured by the average rate – was in the last quarter of 1994. From then on, dispersion increased and the simple tariff average rose. In annual terms, between the second quarter of 1995 and the third quarter of 1997 the simple average tariff was virtually constant. The fourth quarter of 1997 saw a sharp increase in import tariffs on durable consumer goods, producing a rise in average rates.

The standard deviation of rates likewise diminished in the 1988–93 period, falling from 15.4 to 6.7. Between 1994 and 1996, the standard deviation quarter by quarter, beginning in the third quarter of 1994 and ending in the third quarter of 1996, behaved as follows (data from Baumann *et al.*, 1997): 8.0 (3/94), 7.9 (4/94), 7.2 (1/95), 9.4 (2/95), 9.6 (3/95), 9.8 (4/95), 9.0 (1/96), 8.4 (2/96), 8.9 (3/96). The data reflect a rise and fall for this variable, rising as high as 9.8 and bottoming out at 7.2.

The pattern produced is of a more uniform tariff structure between 1988 and 1993, followed by slight reversals in the trend from then onward. Variations in import tariffs for certain products between July 1994 and September 1996 were specially relevant given their admittedly negative effects on business planning.

A more suitable indicator for gauging the policy of opening-up the economy is the evolution of the weighted average tariff rate since it reflects the relative importance of each tariff. Depending on how it is weighted, this variable can present different values.

By this measure too, Table 2.4 shows a regular fall in average rates between 1988 and 1993 (34.7% to 11.4%). From then on, the rates rise and fall but at no point do they return to the level registered when the economy began to open up to foreign trade or even to the 25.4% figure recorded in 1990.

The drive to open up the economy as from 1994 served at least two purposes. The first was to help keep prices stable. Both the rise in public debt from 1994 onward and the reduction in inflation tax led the government to resort to external savings, made accessible by more open trading. The second objective was to boost productivity through competition with foreign products and the greater influx of foreign technology and investments; and that is what actually happened.

Bonelli and Fonseca (1998) show that total factor productivity improved 2.1% on average per annum between 1990 and 1997, compared with the 1.0% average figure recorded in the 1980s. They likewise state that the



Table 2.4 Evolution of Nominal Tariffs (%) 1988–97

Period	Average	Weighted Average
Jul/88	38.5	34.7
Sep/89	31.6	27.4
Sep/90	30.0	25.4
Feb/91	23.3	19.8
Jan/92	19.2	16.4
Oct/92	15.4	13.3
Jul/93	13.2	11.4
Jul–Sep/94	12.9	14.4
Oct–Dec/94	11.2	13.7
Jan–Mar/95	12.6	16.6
Apr–Jun/95	13.2	19.5
Jul–Sep/95	13.2	15.8
Oct–Dec/95	13.3	15.5
Jan–Mar/96	13.1	13.5
Apr–Jun/96	13.0	15.5
Jul–Sep/96	13.2	n.d.
Jan–Apr/97	13.4	13.0
Jan–Apr/98	14.3	16.0

*Sources:*

From 1988 to 1993, Kume (1996), from 1994 to 1996, Baumann et al. (1997).

From 1997 to 1998, Federal Revenue Department (SRF/COGET).

NB: In the case of the weighted average rates for 1988–93, the weights were calculated on the basis of the value added for free trade, whereas for the following period the weights are based on the value of imports in each period.

increase in total factor productivity accounted for approximately 75% of the growth in potential output observed between 1993 and 1997. A report by McKinsen (1998) based on disaggregate figures for different sectors indicates that average productivity grew about 5% per annum in the 1990–97 period.

Naturally, increased productivity in the Nineties cannot be attributed exclusively to more open trade and price stabilization. Privatization and, in some sectors (for instance airlines), deregulation also made a significant contribution.

Open trading suffered a few setbacks following the introduction of the real in 1994. None, however, were strong enough to reverse the trend regarding imports or to suggest a return to pre-1990 days when import quotas were employed to protect domestic industry against competition from imported goods. The first setback occurred at the end of 1994 when the balance of payments crisis made international capital markets jumpy. Import controls were established by jacking up tariffs for a select group of products, and non-tariff barriers were introduced, an expedient to which the Brazilian government had not resorted since 1990.

The second setback occurred in the third quarter of 1997 when the Asian crisis flared up and again the international liquidity available to Brazil became restricted.

#### II.4 Economic liberalization – capital flows

Baumann (1997) provides a fairly detailed account of the opening-up of the Brazilian economy to foreign capital.

Since 1991, almost shadowing the gradual opening-up of its economy to foreign trade, Brazil has tended to allow greater foreign access to its finance market.

Although from a theoretical standpoint more open trade should preferably precede the opening-up of the finance market, the fact that the two processes were concomitant apparently did not impair the formulation of economic policy. The government considered the possibility of taxing short-term capital (and actually did so at some points) but the philosophy underpinning the real envisaged external financing, especially in the form of venture capital. Capital flows, pursuant to the usual balance of payments taxonomy, are displayed in Table 2.5 below.

Two facts should be highlighted in this context. The first is the sharp increase in portfolio investments (fixed-income funds, privatization funds, funds for investment in emerging businesses, and so on) between 1991 and 1994. From then on their share in total financing dropped from 33.6% (1994) to 10.6% (1997).

Table 2.5 Capital Flows (US\$ millions)

	1987/89	1990/92	1993	1994	1995	1996	1997
Financing of Imports	4,080	5,901	2,380	1,939	2,834	4,302	18,296
Loans/ Disbursements	319	4,261	10,790	10,417	14,425	22,553	26,626
Direct Investments	995	846	877	2,241	3,285	9,580	17,085 (26,110 in 1998)
Portfolio Investments	64	795	6,650	7,280	2,294	6,039	5,300
Short-term Capital	-696	-693	869	909	18,834	3,995	-16,699

*Sources:*

In 1987 and 1988 (for direct investments) – Central Bank Bulletin – Jul/93, Vol. 29, no. 1, pp. 106, 108, 118.

From 1992 to 1996 – Central Bank Bulletin – Oct/97, Vol. 33, no. 10, pp. 120, 134, 136.

From 1988 to 1996 – Central Bank Bulletin – Feb/95, Vol. 31, no. 2, pp. 132, 146, 148 (excluding Direct Investments in 1988).

In 1997 – Central Bank Bulletin – Apr/98, Vol. 34, no. 4, pp. 124, 126, 140, 142.

The second is the increase in direct investments as from 1994. Brazil's share of global direct investments grew from 1.3% in 1991–95 to 2.7% in 1996.

The rise in the influx of capital for both portfolio investments and direct investments reflects modifications to legislation. In the case of direct investments, another major factor that explains the increase is the economic stabilization process that has been under way since 1994, as well as the privatization of countless companies, especially in 1997 and 1998. This is not likely to subside in the near future as there are still many sectors (infrastructure, telecommunications, electricity) in which the private sector has plenty of room for expansion.

The initial legislative breakthrough making it easier to attract foreign portfolio capital occurred in 1987 when Resolution 1289/87 was passed, to which several annexes were subsequently added.<sup>3</sup> The great upsurge in investment came in 1991 when non-residents were authorized to operate on the Brazilian stock markets. This was also when domestic regulations were introduced for foreign investment by the mechanism of American Depositary Receipts (ADR) and International Depositary Receipts (IDR).

A number of institutional changes have since been made with regard to portfolio investments. In June 1992, investment funds and non-resident investment societies were authorized to operate in the futures and options markets, thus broadening the hedge mechanisms for such investors. As from 1993–94, the instruments covered by Annex IV were reduced and average taxation was increased. In 1996 the Brazilian Depositary Bonds were launched to enable the shares of non-resident corporations to be traded on the Brazilian stock exchanges.

As far as direct investments are concerned, the first incentives came from the constitutional reforms introduced when the Constitution came under review in 1995. Law 9249/95 then cancelled taxation on the transference of profits to other countries. Since 1995, the idea of foreign capital circulating in the financial sector has won greater support.

Shortly after the introduction of the *Real* Plan, the government's high interest policy and the influx of foreign capital raised the exchange rate. Initially, taxation on foreign capital was increased to prevent even greater overvaluation of the *real*. In March 1995 the trend in the net inflow of capital was reversed in the wake of the Mexican crisis and as a result of the negative prospects for Argentina. Following a specification of the exchange bands it had introduced, in a single week the Brazilian Central Bank lost approximately US\$ 4 billions of the country's reserves. To compensate, the government lowered the rate for the Financial Transactions Tax (IOF) on the entry of foreign capital (see Table 2.5a). The sudden slump on the stock market, for instance, was only contained by cancellation of the 1% compulsory tax on foreign investment in shares.

In August 1995, a mere five months after the reduction of the IOF rates charged on the influx of capital, the situation was reversed, provoking a

problem of excess foreign currency reserves and thus making monetary control trickier. Once again the government raised IOF, back-tracking on its former policy: in six months a complete U-turn had been made, as was also the case with importation facilities and credit.

Until the end of 1998, the government consistently operated in this fashion, raising taxation on the influx of capital when the build-up of foreign reserves became undesirable and reducing them whenever the opposite occurred.<sup>4</sup> In the short term, this policy produced the results expected. In the medium to long term, however, crafty market operators impaired the efficiency of the Central Bank's regulatory manoeuvres. Table 2.5a below describes the evolution of the IOF rates set to control the influx of foreign capital.

## II.5 Financial reform

### *II.5.1 Drop in inflationary transferences after the Real Plan*

As inflation fell (from approximately 40% a month in the run-up to the introduction of the *Real Plan* to an average of 3.6% [IGP-DI *General Price Index*] or 2.6% [IPC-r *Consumer Price Index*] between July 1994 and May 1995), the inflationary transferences to commercial banks (negative real interest paid on sight deposits in excess of total reserves) suddenly dwindled. This fact, combined with the banks' need from then on to compensate by enlarging their credit portfolios, which they were ill-equipped to do, obliged the Central Bank to take swift action to avert a major systemic crisis in the finance market.

The reaction came in the shape of a credit programme to bolster floundering financial institutions (PROER), a new Credit Guarantee Fund, greater influx of foreign capital in the financial intermediation sector (principally as of mid-1996), encouragement of mergers and take-overs and through legislation granting the Central Bank greater powers of regulation and supervision. For their part, the financial institutions sought to offset

*Table 2.5a* Alterations in Rates and Terms for the Influx of Capital (IOF charged)

Type	Previous	09/03/95	10/08/95	28/02/96 (Finance Ministry Ruling 28)	30/10/96 (Finance Ministry Ruling 241)	24/04/97 (Finance Ministry Ruling 85)
Currency	7%	0%	5%	5%	3%	0%
Loan						
Fixed Income	9%	5%	7%	7%	7%	2%
Privatizations	1%	0%	0%	5%	5%	0%

the forfeiture of gains from inflation by expanding loans to the private sector and by raising their charges for banking services.

Between early January 1990 and the end of June 1994, total inflationary transferences to Brazil's commercial banks averaged about US\$ 795 millions per month. Of this total, 38.7% (gross) were absorbed by private commercial banks, 32.0% by state banks, the remainder going to federal banks.

Comparing the average monthly inflationary transferences between January 1990 and June 1994 with those for the period between July 1994 and May 1995, the commercial banks suffered a downturn in transferences of about US\$ 8.6 billions a year. Still dealing in gross figures, the losses were severest among private banks (US\$ 3.3 billions a year), followed by state banks (US\$ 2.7 billions a year) and federal banking institutions (US\$ 2.5 billions a year). In net terms, however, the fact that private banks were relatively more prepared on the eve of the *Real* Plan to adjust to a low-inflation economy, meant that public-sector state and federal banks required greater adjustment.

These figures do not reflect the variable inflationary gains on deposits not classified as sight deposits. Federal and state public-sector banks sustained additional losses these statistics fail to reflect owing to deposits not classified as sight deposits made in official banks by federal and state administrations, some of which were unremunerated while others were remunerated at rates well below inflation.

Many banks only felt the effects of diminished inflationary transferences (for instance the R\$4.2 billions loss Banco do Brasil recorded for 1995 and the difficulties facing Banco Econômico, Banco Nacional, Banerj and Banespa) in the first two quarters of 1995. During the last two quarters of 1994, when the economy was booming, this loss of income was largely offset by higher banking charges and by the widespread increase in loan transactions.

In the wake of the problems generated by the introduction of joint federal and state administration (RAET) at Banerj and Banespa at the end of 1994 and by the intervention in Banco Econômico in August 1995:<sup>5</sup>

1. *PROER – Programme for Restructuring and Strengthening the Brazilian Financial System (Provisional Act 1179 of 11/03/95 and Resolution 2208 of 11/03/95) was instituted.* The programme establishes conditions for obtaining access to special Central Bank loans, even temporarily waiving the requirement to comply with the Basilea agreement with regard to capital limitations. A parallel programme (PROES) governed by similar rules has been instituted for state banks, the aim being to help them get their books in order and prepare for privatization. One of the requirements of PROER was a change in the shareholding structure of the institution being supported.

2. *Incentives were introduced for incorporation of financial institutions (Provisional Act 1179 of 11/03/95).* Incorporated financial institutions were

permitted to record as a premium the difference between the purchase price and the asset value of the purchased company's shareholdings after posting as losses non-performing credits due.<sup>6</sup>

3. *A Credit Guarantee Fund (FGC) was instituted to protect depositors in the Brazilian financial system (Resolution 2211 of 11/16/95).* This is a kind of deposit insurance scheme which:

- i. Establishes monthly contributions of 0.025% of the balance of accounts covered by the guarantee;
- ii. Applies to financial institutions issuing sight deposits, time deposits, deposits in savings accounts, bills of exchange, real estate or mortgage bills;
- iii. Sets a ceiling of R\$ 20,000 to be guaranteed to each depositor in the same financial conglomerate for the purposes of the Credit Guarantee Fund.

4. *Incentives were created for mergers, incorporation and transference of the controlling share of financial institutions (Resolution 2,212 of 11/16/95).* The minimum capital requirements encouraged such transactions in return for the creation of new financial institutions.

5. *The powers of the Central Bank were enlarged (Provisional Act 1,182 of 11/17/95 and, subsequently, Law 9,447 of 03/15/97).* The Central Bank was empowered to capitalize, merge or compulsorily transfer the controlling share of any financial institution in order to protect the financial system. This measure extends the freezing of assets to the majority shareholder (and not just the board of directors) of financial institutions in the case of intervention. It also empowers the Central Bank to transfer the controlling share, expropriate shareholdings (and auction them in public bidding) and/or to decide on the need for capitalizing the institution under intervention.

6. *The joint liability of accountancy auditing firms is established where irregularities are detected (Provisional Act 1,334 of 03/13/96).*

7. *A Loan Risk Board was created (Resolution 2,390 of 05/22/97).* This Board enables financial institutions to access, with authorization from clients, their debtor status in the Brazilian financial system (only debit balances in excess of R\$ 50,000 are recorded).

8. *The financial statements of banks in Brazil and abroad have been consolidated (Resolution 2,302 of 07/25/98).* This set of measures the government introduced was important in view of the potential crisis in Brazil's financial

system hinging on the difficulties facing a number of large institutions once inflation levelled off.

### II.5.2 *Costs of the financial reforms*

Brazil's Central Bank officially estimated the initial costs of PROER (5% interest on a total of R\$ 10.5 billions in PROER funds released for Nacional, Econômico and Caixa Econômica) at R\$ 526 millions per annum. This corresponds to the difference between the average cost for the Central Bank of raising funds on the market (TR [*Referential Rate*] + 16% p.a.) and the cost stipulated by PROER (TR + 11% p.a.).

By early March 1997, however, the funds released through PROER already totalled R\$ 15.1 billions. When Bamerindus was sold off, the figure rose to over R\$ 20 billions. Interest rates have been high ever since, so these estimated costs are no more than a preliminary indication of the costs of PROER. Franco (1999) reckons the debit balance for PROER in March 1999 at R\$ 8.7 billions for a total of R\$ 19 billions in guarantees and shortfalls in bank reserves of R\$ 12.4 billions. This casts an uncertain light on the programme's financial results.

Moreover, to this must be added the high costs of bailing out banks run by the states. The Central Bank has assumed state banks' assets at a cost in excess of their market value, the most glaring case being the São Paulo state bank Banespa.<sup>7</sup>

Figures for 1995 published by the Brazilian Geography and Statistics Institute (IBGE) show that public financial institutions accounted for 3.2% of the country's GDP compared with 3.6% for private banks (that is public banks represented 47% and private ones 53% of the banking system). In that case one might expect that with the drop in inflation as from July 1994, financial liquidity assistance for official and private-sector banks would follow the same pattern. This was not to be the case, though. According to data published in the April 1997 issue of the Central Bank Bulletin, funds loaned to official banks to ensure their financial liquidity leapt from R\$ 4.2 billions to R\$ 44.1 billions between July 1994 and January 1997, whereas financial assistance to private banks rose from R\$ 10 millions to R\$ 27 billions.

Financial assistance (not to be confused with subsidies) provided after the introduction of the *real* amounted approximately R\$ 40 billions for federal banks and R\$ 27 billions for state banks. Thus, public-sector banks, which account for only 47% of total added value obtained through financial intermediation, received roughly 60% of all the financial assistance provided by the Central Bank.

As far as state banks are concerned, the Credit Support Programme (PAC) instituted by National Monetary Council vote 233/83 (20.07.83), the Financial Recovery Programme (PROREF) instituted in 1984 by National Monetary Council vote 446/84 (04.04.84), and several other failed adjustment schemes all make one point patently clear: the Brazilian Central Bank

does not have the political clout or means to honour the agreements made with state administrations when they continue to control their own commercial banks.

Two other statistics likewise shed a negative light on public-sector management of financial affairs. Although only 47% of the financial system's added value is generated in the public-sector, IBGE data for 1995 show that public financial institutions account for 61.5% of the financial sector's total payroll.<sup>8</sup>

Finally, mention should be made of PROES, regulated by Central Bank Circular 2745 of 18 March 1998. It empowers federal financial institutions to assume the liabilities of state financial institutions. The sums and terms are defined in contracts between the state institution and the Central Bank (initial term five years), guarantee by the Union serving as surety. Financial charges are set by the Central Bank Base Rate (TBC).

## **II.6 Welfare reform**

This section and section II.8 (Tax reform) will deal not only with reforms currently tabled in Congress but also reforms still in the pipeline. In the case of Welfare, although a reform bill has recently been passed by Congress, a broader project that effectively corrects present imbalances has yet to be submitted. The bill passed introduces minimum ages and years of contribution for retirement (men: 60 years of age and 35 years of welfare contributions; women: 55 years of age and 30 years of contributions), scraps the system of proportional retirement pensions based on length of service and the many special retirement schemes, besides establishing other measures.

Full approval of the reform bill currently being examined in Congress is expected to provide savings of about R\$ 3 billions, a sum way short of the total welfare deficit for 1998 of R\$ 27 billions (approximately R\$ 10 billions of which refer to private-sector pensions administered by INSS, the remainder referring to federal public-sector pensions). The ratio for the current system is estimated at 1.7 welfare contributors per pensioner.

Table 2.6 displays the balance for the Welfare System (INNS and retired federal public-sector workers and pensioners).

It can be observed from Table 2.6 that:

1. the deficit is mostly (about 75%) concentrated in civil service pensions and not in INSS. This is because retired civil servants do not pay social security contributions (though this is under review) and because they receive relatively high pensions;
2. in the last three years, as with the collection of taxes in relation to government debt, INSS fiscal revenue has risen in tandem with the system's deficit; in other words, expenditure has outstripped revenue;
3. total deficit covered by fiscal resources (taxes), calculated as described above, stands at approximately 2.9% of GDP (R\$ 27 billions).



Table 2.6 Balance of Social Welfare System

(R\$ millions in December 1997)

Specification	1996	% GDP	1997	% GDP	1998 <sup>2</sup>	% GDP
A. INSS (A = A1-A2)	(2,529)	(0.3)	(5,445)	(0.6)	(9,598)	(1.0)
A1. Net Revenue	44,896	5.2	45,421	5.1	47,278	5.2
- Bank collection + others + <i>Simples</i>	48,562	5.6	49,336	5.5	51,353	5.6
- Transferences to third parties <sup>1</sup>	(3,667)	(0.4)	(3,915)	(0.4)	(4,075)	(0.4)
A2. Expenditure	47,425	5.5	50,866	5.7	56,876	6.2
- Benefits except federal pensions	45,527	5.3	49,222	5.5	55,377	6.1
- Operating Expenditure	1,898	0.2	1,644	0.2	1,499	0.2
B. Federal Civil Service (civilian & military)	(15,833)	(1.8)	(16,166)	(1.8)	(17,361)	(1.9)
B1. Social Security Contribution Plan	2,862	0.3	2,671	0.3	2,593	0.3
B2. Expenditure on retirement & pensions	18,695	2.2	18,837	2.1	19,954	2.2
C. Welfare Result (A+B)	(18,362)	(2.1)	(21,611)	(2.4)	(26,959)	(2.9)

Primary Source: IPEA's Public Finances Bulletin, March 1998, Issue 02, Year 2.

Sources: INSS, MPAS, SRF & STN. Elaborated by CGFP/IPEA.

Notes: <sup>1</sup> Revenue collected by INSS and transferred to the following institutions: SENAR, SENAL, SESI, SENAC, SESI, INCRA, SDR, NDE, Salário Educação, SEST, SENAT, Fundo Aeroviário, E. Prof. Marítimo (DPC) and SEBRAE.

<sup>2</sup> Estimate for 1998 incorporating the 18% pay rise granted to military personnel, the 4% increase in INSS beneficiaries, and the increase of the minimum wage to R\$ 128.

The data in this table do not include retired state and municipal civil servants and pensioners, who number about 2 million and cost public coffers approximately R\$ 29 billions per annum. The number of beneficiaries stands at about 16.6 million for INSS and 875,000 retired federal civil servants and pensioners.

The negative features of the present system that persist despite the adjustment are:

1. with the exception of a few private-sector pension funds and a small number of state owned companies, the system operates on a cost sharing basis when the ideal would be a mixed system involving cost sharing and capitalization (adoption of a scheme based 100% on capitalization would imply a traumatic transition as it would leave the present system without the necessary cover);
2. benefits are calculated on the basis of salaries received in the years prior to retirement, which may produce actuarial distortions;
3. the high level of benefits granted to retired civil servants and federal pensioners contrasts with those paid to private-sector wage earners by INSS; in 1996-97 workers retiring from jobs in the private sector

received 1.7 times the minimum wage on average whereas the Union paid an average 13.3 times the minimum wage to retired civil servants in the Executive Branch, 22.7 times to those retiring from the Judiciary and 30.4 times the minimum wage to Legislative Branch employees.

## **II.7 Administrative reform**

Congress has already passed the administrative reform bill. In fiscal terms, the most important measures are:

- (a) Review of the Rules of Tenure for Civil Servants (minimum of three years to acquire tenure rights; assessment of performance to obtain tenure; periodic assessment of the performance of civil servants who may be dismissed due to poor performance; possibility of suspension from work on proportional pay).
- (b) Control of Spending and Balancing of Public Sector Accounts: federal, state and municipal administrations will be obliged to reduce spending on commissioned posts and special appointments by at least 20% whenever they overshoot payroll spending limits; dismissal of civil servants not eligible for tenure;<sup>9</sup> permission to dismiss civil servants who have acquired tenure;<sup>10</sup> bar on reinstating posts that have been extinguished; suspension of transference of funds to state and municipal administrations;<sup>11</sup> bar on financial assistance to cover payroll expenses.

## **II.8 Tax reform**

The 1988 Constitution produced a net transference of fiscal revenue to state and municipal administrations without transferring to them the respective onus and responsibility. Moreover, tax legislation has proven excessively complicated as it is based on distorted taxes and collection is subject to a high level of tax evasion.

So far the proposed tax reform is no more than a pipedream. The bill originally tabled in Congress has been sidetracked by a new, broader and more tenable proposal submitted by the Ministry of Finance. To date, the following reform measures have been passed:

1. Exemption from ICM-S (tax on the circulation of goods and services) for primary and semi processed exports;
2. Standardization of the rates levied on small and micro-businesses for all taxes and contributions through agreements between the federal, state and municipal administrations (with the introduction of this system, called SIMPLES, rates now range from 5% to 10%);
3. Establishment of measures designed to thwart corporate tax evasion by means of accounting devices.

The tax reform is still under discussion within the government. The basic idea is to keep the present tax collection system virtually untouched and to

redefine the duties incumbent upon each of the three tiers of administration in dealing with the taxation issue. The main points under debate are:

1. Creation of a Value Added Tax (IVA) to replace ICMS and IPI (tax on industrialized products), taking the opportunity to redefine the fiscal duties of each of the three tiers of administration, as well as benefits and tax incentives;
2. Extinction of the contributions on net profits (CSLL), COFINS and PIS-PASEP; loss of revenue would be compensated by an adjustment mechanism based on other taxes;
3. Concentration of IOF (tax on financial transactions) on regulatory functions and not on the generation of income;
4. Creation of a Retail Sales Tax (IVV), to constitute the main source of fiscal revenue for state administrations, in addition to selective taxes to be regulated by the Union, and IPVA (automobile licence tax);
5. Creation of an Excise Tax, to be levied by state administrations, on end consumption of specific goods such as fuels, tobacco, beverages, and so on;
6. Extinction of ISS (services tax), municipal administrations receiving compensation for loss of revenue on the basis of other taxes (it is not yet clear how this is to be done) and from IVV when levied on services;
7. Creation of a new financial transactions tax;
8. Maintenance of Income Tax with adjustments of rates to compensate for the extinction of COFINS, PIS-PASEP and CSLL;
9. Reduction or elimination of the current budget ear marking mechanisms and of tax exemptions.

### III. Macroeconomic evolution during the reform period

The 1980s began with inflation spiralling. After remaining relatively stable at around 40% between 1974 and 1979, annual inflation went through a transition phase in 1979 (price indexes closing the year up 77%) and then rose to 100% between 1980 and 1982, climbing again to around 220% between 1983 and 1985.

Between February 1986 and January 1991 several unsuccessful stabilization plans were launched (the Cruzado Plan in February 1986, the Bresser Plan in June 1987, the Summer Plan in January 1989, Collor Plan I in March 1990 and Collor Plan II in January 1991). Figure 2.1 gives an idea of the comparative evolution of each of these attempts at price stabilization.

Table 2.7 presents the inflation rates in the 12 months following the introduction of each stabilization plan.

It is clear that in the first 12-month period, the *Real Plan* was more successful than its predecessors. In actual fact, the Plan's performance was relatively better for a much longer period. Four years on from its introduction at the end of June 1994, inflation rates continue low and declining: 14.4%

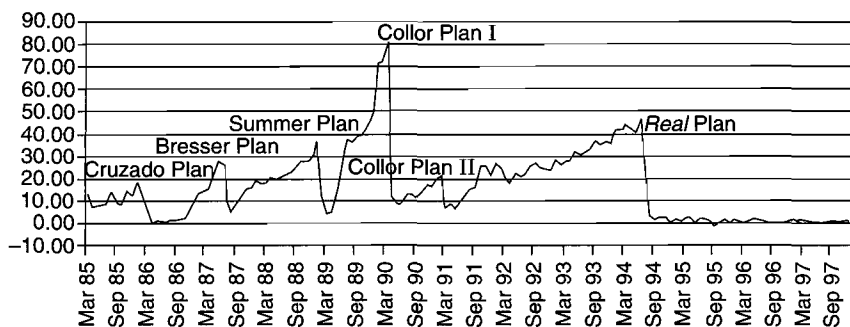


Figure 2.1 Monthly Inflation Rate (IGP-DI)

Table 2.7 Monthly Inflation Rates Following Attempts at Price Stabilization (IGP-DI percentage variation)

Month	Cruzado	Bresser	Summer	Collor I	Collor II	Real
0	Mar. 86	Jun. 87	Jan. 89	Mar. 90	Jan. 91	Jun. 94
1	-0.5	9.3	11.8	11.3	19.9	24.7
2	0.3	4.5	4.2	9.1	21.1	3.3
3	0.5	8.1	5.2	9.1	7.2	1.5
4	0.6	11.2	12.8	13.1	8.7	2.5
5	1.3	14.5	26.8	12.9	6.5	2.5
6	1.1	15.9	37.9	11.7	9.9	0.6
7	1.4	19.1	36.5	14.2	12.8	1.4
8	2.5	17.6	38.9	17.4	15.5	1.1
9	7.6	18.2	39.7	16.5	16.2	1.8
10	12.1	20.3	44.3	19.9	25.8	2.3
11	13.9	19.5	49.4		22.1	0.4
12	15.2	20.8	71.9		26.8	2.6

Source: Getúlio Vargas Foundation (FGV)

p.a. in 1995, 9.3% in 1996 and 7.5% in 1997. In April 1998, inflation for the preceding 12 months stood at 4.6%.

Until January 1999, while the Brazilian Central Bank stuck to its policy of maintaining a fixed adjustable exchange rate (with an average annual devaluation rate ranging from 6% to 9%), inflation remained below 6% per annum. When the government reneged on its policy and ceased to peg the exchange rate, the *real* devalued sharply in two months (dropping from R\$ 1.29 to the dollar to R\$ 2.10 and then recovering slightly to R\$ 1.85) putting pressure on the monthly inflation figures. Annual inflation for 1999 is estimated to be somewhere between 15% and 20%.

The success of the *Real Plan* is due in part to the ingenious way in which it was introduced. With the exception of Article 38 of the Provisional Act that instituted the Plan (later converted into Law no. 8,880), which redefines the rules for monetary correction of federal securities indexed to IGP-M (general price index for the finance market), no vectors, conversion tables or other artifices were used to make sudden changes to the rules of the economic game.

On the other hand, the *Real Plan's* initial success can also be credited to the favourable economic climate as regards obtaining external credit, and to the economic team's perception that they could use the opportunity to sustain the Plan's basic principles (deindexation) and tide it over until the necessary reforms were in place. Obviously, the reverse side of that particular coin was that the country became increasingly vulnerable to external shocks. Forecasts for 1999 estimate a 4% to 6% reduction of GDP with unemployment rising to over 10%.

### III.1 The *Real Plan*

On 1 July 1994, Brazil changed the name of its currency for the fifth time since the introduction of the Cruzado Plan in 1986. It was now changed from *cruzeiro real* to straight *real*. The introduction of the *real* was preceded by a transitional indexed accounting unit, the Value Reference Unit (URV). The purpose of the URV, created on 1 March 1994, was to create a superindexation of the economy so as to make subsequent deindexation easier.

The synchronization of wages, prices and other earnings was achieved, *grosso modo*, in four stages:

1. calculation of the value in URVs of wages and other earnings, adopting the average sum received over the last four months; this was done by dividing the wage in *cruzeiros* by the value of the URV on the date on which the wage was actually received;
2. conversion of wages into URVs by the mathematical average (also in URVs) of the four sums obtained in (1);
3. transformation of all prices into URVs at the values (in *cruzeiros reais*) on the date the URV was created;
4. fixing of a daily value in *cruzeiros reais* of the URV until the date (1 July 1994) on which the *cruzeiro real* was replaced by the *real* (which meant daily indexation of all prices).

The aim of this process was to mimic the synchronization of prices and wages produced by hyperinflation without the damage that does to the organization of the economy. The fundamental difference is that, instead of resorting to a foreign currency to serve simultaneously as a medium of accounting and exchange, as occurs when hyperinflation takes hold, the

URV served solely as an accounting device (not as a medium of exchange) without provoking a slump in demand for the non-indexed currency.

As would happen at the end of a period of hyperinflation, by fixing the value of the foreign currency in local currency, the value of the URV in *cruzeiros reais* was frozen on 1 July 1994, the new currency (*real*) replacing the old (*cruzeiro real*) as the medium of exchange at a fixed rate (one *real* being equivalent to one URV, the value of which in the former currency was fixed at the daily rate on 30 June 1994). (Daily) indexation to the URV solved the problem of the possible expansion of M4 as from 1 July because daily indexation, even of financial assets, had reduced people's memory of inflation from one month to a single day.

Following the Central Bank's floating of the exchange rate at the beginning of 1999 (basically due to the fact that reserves were too low to maintain the currency peg at its previous level against the dollar), monthly inflation figures began to climb once more, as did unemployment. It soon became clear that, despite the ingeniousness of the income and deindexation policies implemented in 1994, the government had failed to make the necessary changes to Brazil's fiscal regime. The Plan had been sustained until the beginning of 1999 by a combination of high external savings and high real interest rates.

A question asked was whether the government had sufficient backing to ensure the inflation-targeting policy negotiated with the IMF was effective throughout 1999, despite the high unemployment rates that are an inevitable consequence of tight monetary policy coupled with a lack of fiscal discipline. One must not forget that fiscal adjustment is to be obtained when economic growth is low. This highlights the harmful pro-cyclical nature of the cost-cutting measures adopted and the increase in the rate of taxation. In such circumstances, attaining the absolute fiscal targets set was an uphill task.

The agreement drawn up with the IMF<sup>12</sup> projected 1% negative growth of GDP and 12% inflation for 1999. A turnaround was expected in the trade balance figures, reverting the US\$ 6.4 billions deficit in 1998 to achieve a trade surplus of US\$ 3.7 billions in 1999, and the country should obtain a primary (that is, pre-tax) surplus in its public-sector accounts equivalent to 3.1% of GDP. One not forget that fiscal adjustment was to be obtained when economic growth was low. This highlight the harmful pro-cyclical nature of the cost-cutting measures adopted and the increase in the rate of inflation.

### III.2 Fiscal policy and public debt

Taking the public-sector borrowing requirement (calculated as a percentage of GDP) as the point of departure, three distinct phases can be observed in the period between 1988 and 1997. The data are presented in Table 2.8.

In the first period, between 1988 and 1989, public-sector borrowing requirement stood at 4.3% of GDP and 6.9% of GDP according to the oper-

Table 2.8 Public-sector Borrowing Requirement  
Nominal, Operational and Primary Concepts 1988–97 (% GDP)

Type & Level of Administration	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>Nominal Requirement</b>	48.50	73.00	26.90	23.18	42.71	58.17	45.22	7.18	6.07	5.89
Federal										
Government States & Municipalities	8.70	22.10	10.40	6.11	14.38	20.39	17.69	2.31	2.64	2.39
Public-sector Companies	13.00	18.90	7.80	8.31	15.84	24.51	19.25	3.56	2.81	3.05
<b>Monetary Correction</b>	26.80	32.00	8.70	8.76	12.49	13.27	8.28	1.31	0.62	0.45
Federal	44.19	66.10	28.10	24.53	40.58	58.42	46.58	2.31	2.20	1.82
Government States & Municipalities	5.31	18.40	12.80	6.40	13.61	20.39	19.31	0.65	0.97	0.87
Public-sector Companies	12.85	18.30	7.40	9.44	15.07	24.74	18.67	1.21	0.93	0.78
<b>Operational Requirement</b>	26.03	29.40	7.90	8.69	11.90	13.29	8.60	0.45	0.30	0.17
Federal	4.31	6.90	-1.20	-1.35	2.13	-0.25	-1.36	4.87	3.87	4.07
Government States & Municipalities	3.39	3.70	-2.40	-0.29	0.77	0.00	-1.62	1.66	1.67	1.52
Public-sector Companies	0.15	0.60	0.40	-1.13	0.77	-0.23	0.58	2.35	1.88	2.27
<b>Real Interest</b>	0.77	2.60	0.80	0.07	0.59	-0.02	-0.32	0.86	0.32	0.28
Federal	5.61	6.82	3.50	1.48	4.37	2.38	3.90	5.23	3.78	3.39
Government States & Municipalities	2.36	3.36	0.60	0.54	2.04	1.42	1.53	2.24	2.07	1.52
Public-sector Companies	0.86	0.86	0.60	0.19	1.11	0.32	1.46	2.18	1.31	1.52
<b>Primary Requirement</b>	2.39	2.60	2.30	0.75	1.22	0.64	0.91	0.81	0.40	0.35
Federal	-1.30	0.08	-4.70	-2.83	-2.24	-2.63	-5.26	-0.36	0.09	0.68
Government States & Municipalities	1.03	0.34	-3.00	-0.83	-1.27	-1.42	-3.15	-0.58	-0.40	0.00
Public-sector Companies	-0.71	-0.26	-0.20	-1.32	-0.34	-0.55	-0.88	0.17	0.57	0.75
	-1.62	0.00	-1.50	-0.68	-0.63	-0.66	-1.23	0.05	-0.08	-0.07

Sources: 1988/89 – Central Bank Report (1989), p. 68; 1990 – Central Bank Report (1990), p. 64;

1991/97 – Central Bank Report (Jan/98) – Internet

NB: Up to and including 1990, the item public-sector companies includes decentralized agencies and the social security system

ational concept, which is a sign of an expansionist fiscal policy. In the second period, covering 1990 to 1994, a certain degree of success can be noted in the endeavour to reduce fiscal imbalance. Operational public-sector borrowing requirement in relation to GDP began to produce negative figures: -1.2% in 1990, -1.3% in 1991, 2.1% in 1992, -0.2% in 1993 and -1.4% of GDP in 1994. In the third period, following the stabilization of prices in the second half of 1994, the fiscal scenario worsened. Public-sector borrowing requirements rose to 4.9% of GDP in 1995, 3.9% of GDP in 1996 and 4.1% of GDP in 1997.

The figures presented are open to two types of analysis. The first has to do with the different contributions (by the federal government and the Central Bank, state and municipal administrations and state-owned companies) to the imbalance in public-sector accounts. Particularly relevant is the sharp increase in state and municipal administrations' borrowing requirements as from 1994. This partly explains the burgeoning of expenditure on personnel, mainly as a result of pay rises introduced subsequent to the launching of the *Real Plan*, no longer corrected to compensate for inflation.<sup>13</sup>

The second type of analysis is based on the operational concept (PSBR) and focuses on the primary deficit concept with a view to singling out the real interest account. Once again, a repetition of the previous pattern can be observed: accounts improving in the 1990-94 period and deteriorating in 1995, 1996 and 1997.

To provide a clearer idea of the impact on public accounts of different items, we have reproduced new data culled from IBGE's National Accounts report. Beforehand, however, it should be stated that, when it comes to defining national accounts, the government sector comprises three tiers of administration (municipal, state and federal) in addition to associate government agencies. This rules out a direct comparison with the data reported above, since they include state-owned companies.

Having made this proviso, Table 2.9 shows that the deterioration of public accounts in the third period analysed (1994 onwards) was due mainly to payroll and associated expenses (9.0% of GDP in 1993 rising to 10.5% in 1996) and to the social security account (10.9% of GDP in 1993 rising to 11.9% in 1995). Spending on interest payments also increased substantially, rising from 1.8% of GDP in 1993 to 3.0% in 1994, 4.4% in 1995 and 3.4% in 1996.

The last column of Table 2.9 also describes the government's savings account calculated with real interest.<sup>14</sup> Observe the negative figures for the last two years, which contrast with the positive figures obtained in the Seventies and early Eighties when the public-sector contributed substantially to national savings.



Table 2.9 Public Administrations Current Account Data (IBGE-DECNA)\*

(%)

Year	Payroll	Social Security	Real Interest	Subsidies	Goods & Services	Expenditure	Revenue	Government Savings
1990	11.26	9.19	1.20	1.90	5.55	29.10	33.00	3.9
1991	8.81	9.64	0.73	2.10	5.75	27.03	28.24	1.21
1992	8.80	9.33	3.15	2.29	5.65	29.22	28.87	-0.35
1993	9.02	10.95	1.74	1.11	7.24	30.06	32.84	2.78
1994	9.27	10.65	3.00	1.09	6.70	30.71	30.47	-0.24
1995	10.66	11.87	4.42	0.97	6.13	34.05	31.07	-2.98
1996	9.59	9.64	3.38	0.44	5.13	n.d.	30.80	-1.26
1997	9.14	9.35	3.39	0.45	5.23			

*Sources:*

With the exception of the data on interest payments, all the other figures have been culled from the IBGE annual statistical reports for 1994 and 1995.

The data relating to 1996 were issued by DECNA/IBGE using a new methodology and gathered for this study using the Internet.

Debt-related interest:

1990 – Central Bank Report (1990) p. 64 *ji* = NFSPo–NFSPp

1991 to 1997 – Central Bank Report Jan. 98 – public accounts item – Internet

1. The figures relating to interest on debt are published in Central Bank bulletins or on the Internet. Revenue figures include not only taxes but also the government's other sources of current net income. This explains why the figures differ from those presented in the table on tax revenue in this chapter.
2. Government savings calculated with real interest using the method described in note 14. Figures regarding government savings in 1996 were obtained from Cândido Jr (1998).

Table 2.10 displays statistics relating to the public-sector's net debt as a percentage of GDP. In this case also distinct periods can be gleaned from the figures: the 1988–89 period, 1990–93 and the 1994–97 period. As a different methodology was used for the first period, however, the evolution of this variable can only be assessed in comparative terms from 1990 onwards.

Total domestic debt ranged from 15.9% to 18.9% of GDP between 1990 and 1993, then rose substantially to 20.3% of GDP in 1994 and 24.5% in 1995, levelling off at 30.3% in 1996 and 29.6% in 1997.

Table 2.10 Public-sector Net Debt as % of GDP

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997*
Domestic Debt (total)	22.4	24.1	16.5	15.9	18.9	18.5	20.3	24.5	30.3	29.6
Central Bank & Federal Government	4.0	7.9	1.6	-2.5	0.8	1.8	6.2	9.6	14.8	15.1
State & Municipal Governments	5.7	5.8	6.4	7.0	8.4	8.3	9.2	10.1	11.5	12.3
State-sector Companies	12.7	10.4	8.5	11.4	9.7	8.4	4.9	4.8	4.0	2.2
External Debt (total)	32.8	27.8	20.1	27.6	19.2	14.4	8.2	5.4	4.0	4.8
Central Bank & Federal Government	18.6	16.9	12.4	17.0	11.6	7.8	6.0	3.4	1.6	2.4
State & Municipal Governments	1.8	1.5	1.0	1.3	1.1	1.0	0.3	0.3	0.4	0.5
State-sector Companies	12.4	9.4	6.7	9.3	6.5	5.6	1.9	1.7	2.0	1.9
TOTAL DEBT	55.1	51.9	36.6	43.5	38.1	32.9	28.5	29.9	34.4	34.4

Sources: 1988/89 – Central Bank Annual Report 1990, p. 66; 1990 – Central Bank Annual Report; 1991, p. 71; 1991 – Central Bank Annual Report 1994, p. 76; 1992/93/94 – Central Bank Annual Report 1995, pp. 68–9; 1995/96/97 – Central Bank Bulletin Jan. 98 – Internet edition

\* Data available up to October 1997

NB: For 1988/89 the state-sector companies item is an aggregate figure including the decentralized agencies item, whereas for the following years the latter is not recorded in the statistics.

Total government external debt has fallen steadily since 1991, when the figure stood at 27.6% of GDP, to 4.0% in 1996. In 1997, the figure rose slightly to 4.8% of GDP.

Total net (domestic and external) public-sector debt recorded by the Central Bank has expanded approximately 6 per cent of GDP since the *Real Plan* was introduced in 1994. One should, nonetheless, bear in mind that in recent years, especially 1996–97, the figures recorded for this variable may be underestimated since they do not properly reflect the expansion of debt in market-value terms.<sup>15</sup> Moreover, the revenue obtained from privatizations and the sale of public concessions has offset the rise in debt.

Between 1986 and 1989 Brazil's tax burden stood at about 24.1% of GDP. From 1990 to 1993 it increased to 26.2%. Finally, the 1994–96 period registered an average tax burden of 29.3%. In other words, since 1986, the year in which the first heterodox shock was employed to bring inflation under control, Brazil's tax burden has risen consistently.

### III.3 Monetary policy and inflation

Tables 2.11 and 2.12 provide data on the principal monetary aggregates. Table 2.11 presents the ratios between these aggregates and GDP while Table 2.12 displays the percentages of the nominal monetary base stocks

(M1, M2, M3 and M4) measured from December to December, as well as the rate of inflation and Selic interest rates for each period recorded.

The inflexion point of the monetary data occurred during the introduction of the *Real Plan* in June 1994. It is clear from the table that the average rate of expansion of M1 was very high until 1993, soaring as high as 2,029% in that year and, mostly as a result of rapid expansion in the first two quarters of the year, attaining an impressive 2,537% in 1994. In the following years – 1995, 1996 and 1997 – the monetary base grew at a much slower pace.

The hallmarks of the regime produced by the monetary policy adopted in Brazil prior to the June 1994 monetary reform were monetary passivity and tacit acceptance of seignorage as a mechanism for inflationary financing of fiscal deficits.

The downturn in inflation in 1994 produced strong remonetization, that is, rising real demand for money. Even if the Central Bank had been able to provide a reasonably precise estimate of the desirable real stock of money following the drop in inflation, there was no way of knowing how fast the adjustment toward a new equilibrium would develop. That ruled out pursuing quantitative targets for the monetary base. As a result, in that phase at least, the Central Bank was obliged to use interest rates as its monetary instrument of first resort.

#### III.4 Exchange policy

Before the *Real Plan* was implemented, the aim of exchange policy was to maintain real exchange constant (1990–94). In June 1994, the idea was to maintain a flexible exchange regime in which the price of the dollar at a given moment would be determined by the market. In view of the large fiscal deficit and the high interest rates that entailed, this system soon proved unworkable as the currency became overvalued, making for big deficits in Brazil's balance of trade. The Government then decided to switch to an exchange mechanism determined by mini-bands periodically adjusted to keep real exchange on the right track.

The evolution of the balance of Brazil's current transactions since the introduction of the *Real Plan* clearly reflects a rise in the value of the currency and a loss of competitive edge for exports. Between July 1993 and July 1994 Brazil's current account ran a credit balance of US\$ 824 millions. In the 36 months following the introduction of the Plan, however, it dwindled substantially and soon turned to a debit balance: US\$ 15.1 billions between the beginning of July 1994 and the end of June 1995; US\$ 13.6 billions between the beginning of July 1995 and the end of June 1996; and US\$ 32.3 billions in the third year following the introduction of the *real*.

Table 2.13 presents the ratio between *effective exchange and wages* (RCES) as well as the ratio between *exchange and wages* (RCS) from 1988 to 1997. In

Table 2.11 Relation (%) between Monetary Aggregates and GDP

Ratios	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Base/GDP	1.30	1.37	1.79	1.47	0.91	0.67	1.34	2.51	2.43	3.04
M1/GDP	2.50	2.46	2.80	2.48	1.54	1.14	1.84	3.03	3.27	4.49
M2/GDP	13.8	15.84	8.18	7.19	11.43	10.56	11.37	12.77	18.38	22.75
M3/GDP	23.20	26.28	11.73	10.47	15.43	14.98	17.56	21.26	27.18	32.77
M4/GDP	26.80	29.34	14.44	14.36	21.97	22.65	25.77	32.93	38.45	42.67

*Sources:*

Prior to Jan. 1989–91 Central Bank Report, p. 40.

Jan.–Dec. 1989 – data obtained from the 1989 Central Bank Report, Vol. 26, p. 37.

Jan. 90 to Dec. 1991 – data obtained from the 1991 Central Bank Report, no. 28, p. 40.

Jan. to Dec. 1992 – figures obtained from the June 1994 Central Bank Bulletin, vol. 30, no. 6, pp. 70–1.

Sept. 1994 to Oct. 1997 – figures obtained from Central Bank Bulletin for Dec. 1997, vol. 33, n. 12, pp. 52–3.

Jan. 93 to Aug. 1994 – figures obtained from Central Bank Bulletin for Oct. 1994, vol. 30, no. 10, pp. 68–9.

Nov. 1997 – data obtained on the Internet. Figures for Dec. 1997 obtained from Central Bank Press Releases (28/02/98).

NB For the ratios relating to the Base and M1, the annual figures were obtained by using the average monthly balance for the previous four months of daily values. The same calculation was made for M2, M3 and M4 but the monthly figures refer to the end of the period. For the cases in which the percentage was actually calculated, and not simply transcribed from Central Bank Bulletins, the sums for GDP contained in the present publication were used.

NB: There is a certain discontinuity in the data for M2, M3 and M4 in the 1990 to 1991 period due to the freeze on assets imposed by the Collor Plan in March 1990.

Table 2.12 Annual (December to December) Rates of Variation for Monetary Aggregates

Variation (%)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Base	567.5	421.8	253.9	297.7	996.2	2109.0	3467.0	20.2	-3.1	60.6
M1	536.2	1286.0	261.2	331.8	917.7	2029.0	2537.0	27.6	9.1	57.2
M2	920.8	2103.0	540.3	616.0	1721.0	2773.0	965.3	48.5	55.5	21.1
M3	979.7	1711.0	566.6	608.6	1638.0	2909.0	1087.0	45.9	39.8	25.2
M4	963.7	1669.0	686.8	601.0	1826.0	2914.0	1081.0	43.4	28.6	21.6
Inflation	1038.0	1783.0	1477.0	480.2	1158.0	2708.0	1094.0	14.8	9.3	7.5
Selic Interest	1058.0	2407.0	1153.0	536.9	1549.0	3060.0	1154.0	53.1	27.6	24.8

*Sources:* Brazilian Central Bank Bulletin: June 1994 (pp. 62, 66 and 69); Vol. 30, no. 6, July 1995 (pp. 70 and 74); Vol. 31, no. 7, May 1994; Vol. 30, no. 5 (M2, M3 and M4 from 1987 to 1991), May 1994; Vol. 30, no. 5 (Interest Rates, p. 116), May 1994; Vol. 33, no. 2 (Interest Rates, p. 120), Oct., Nov. and Dec. 1991 (p. 12), Vol. 27, nos 10, 11 and 12. Press releases: monetary and fiscal policies, 26/02/98.

*Notes:* The (monetary) Base and M1 are calculated on a daily average whereas M2, M3 and M4 are figures for the end of each period.

The FGV IGI-DI index was used to measure inflation.

both cases, the 100 index is attributed to the average for 1988. The figures presented are centred on June of each year. There is a clear upward trend in both cases even before the introduction of the Plan.

Increased productivity, of course, can offset the fall in the *exchange vs. wages ratio*, in terms of international competitiveness, significantly outpacing the lag in the exchange rate. Nonetheless, as the figures for the trade balance and the current account balance indicate (Table 2.14), increases in productivity have fallen well short of the levels required to compensate fully for the overvaluing of the currency.

The country's swelling net foreign liabilities, determined by the yearly current account deficit, patently demonstrated that the exchange policy sustained until the beginning of 1999 would have to be altered at some point. Meanwhile, Brazil became increasingly vulnerable to external shocks.

In January 1999, the Central Bank eventually abandoned its former exchange bands policy because the volume of reserves (between US\$ 30 and US\$ 40 billions) was no longer sufficient to stave off bets that the *real* would be devalued. Following the first change of helmsmen at the Central Bank the dollar soared from R\$ 1.29 to R\$ 2.10. In March, interest rates were jacked up from 35% to 45% and the compulsory deposits held against time deposits were raised from 25% to 30%. This brought the exchange rate down to R\$ 1.85. The strategy for monetary policy was also altered, TBC (base rate for interest) and TBAN (ceiling for interest rates for Central Bank funding schemes) being abandoned. Instead, the Central Bank's Monetary Policy Committee (Copom) was entrusted with the task of establishing a single interest rate for loans at its monthly meetings.

Table 2.13 Exchange vs. Wages Ratio

Year	RCS Ratio	RCES Ratio
1988	100	100
1989	81.05	78.53
1990	69.9	71.5
1991	84.7	84.7
1992	78.3	78.3
1993	67.5	66.9
1994	51.9	51.5
1995	35.7	36.4
1996	31.6	32.0
1997	30.2	29.4

Sources: IPEA, Conjunctural Bulletin Oct. 1998 & Jan. 1999.

RCS = Exchange vs. Wages Ratio

RCES = Effective Exchange vs. Wages Ratio.

*Table 2.14* Trade Balance and Current Transactions (US\$ millions)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Current Transactions	4175	1033	-3782	-1407	6143	-592	-1689	-17972	-24347	-33439
Trade Balance	19184	16120	10753	10579	15239	13307	10466	-3352	-5539	-8372

*Source:* Central Bank Bulletin – February '95 – Vol. 31, no. 2, March '98 – Internet.

### III.5 Savings and investment policy

Table 2.15 displays the figures for rates of investment, supplied by the new National Accounts System, issued by IBGE in December 1997.

A glance at any of the first three columns on the left in Table 2.15 shows that investments measured at constant prices fell between 1990 and 1992 but then picked up between 1993 and 1997. It can also be inferred from the figures that the level of investment in Brazil now stands at about 20% of GDP.

Between January 1994 and March 1998, according to data supplied by SOBEET (1998), Brazil ran up a current account deficit totalling US\$ 84.1 billions. Of this sum, US\$ 32.7 billions correspond to direct investments

*Table 2.15* New National Accounts System: Rate of Investment (FBCF/PIB) 1990–97 (% of GDP)

	Constant Prices			Current Prices	Previous Year's Prices
	1990	1995	1996		
1990	20.7	20.6	19.3	20.7	n.d.
1991	19.5	19.4	18.2	18.1	19.5
1992	18.3	18.2	17.1	18.4	17.0
1993	18.5	18.5	17.3	19.3	18.7
1994	20.0	20.0	18.7	20.8	20.8
1995	20.6	20.5	19.2	20.5	21.4
1996	20.5	20.4	19.1	19.1	20.4
1997	21.9	21.1	19.8	n.d.	19.8

*Source:* IPEA Conjunctural Bulletin, Jan. 1998 (basic data from IBGE. Estimates IPEA/DIPES/GAC, n.d. = no data available).

and US\$ 22.5 billions to net portfolio investments. By definition, the remainder corresponds to the increase in the country's net debt, excluding assets already accounted for under the portfolio investments heading.

Theoretically speaking, it is possible to distinguish when dealing with the increase in the net external liability of any economic agent between the portion that is financed by bigger debt loans and that which is financed by the formation of corporate enterprises. Let us assume that corporate capital is more predictable than loan capital, which would make the distinction analytically useful. Strictly speaking, direct investment should express this concept. Assuming now that the Central Bank's accounting is based on this premise, it can be stated that approximately 39% of the increase in Brazil's net liabilities between 1994 and 1998 correspond to the influx of more reliable capital.

A more relevant question from a macroeconomic standpoint is what portion of the current account deficit corresponded to consumption and how much actually went to investment. The data in Table 2.16 show that higher external savings since 1994 have basically been used to finance consumption, be it in the private or public sector. Indeed, a comparison of the data for 1994 with average figures for 1995–96 reveals a downturn in domestic savings (2.85% of GDP) that outstrips the growth in external savings (2.18% of GDP).

The data in Table 2.16 basically reflect two facts. In the private sector, an increase in consumption tends to accompany stabilization plans, particularly those sustained by an exchange anchor.<sup>16</sup> In the public sector, stabilization combined with nominal increases in income (the evolution of the minimum wage) implies greater purchase power for civil service salaries and for transferences made to cover pensions and retirement pay. These features are worrying to the extent that they may not produce a sufficient rise in productive capacity to counterbalance the principal and interest associated with the country's increased net foreign liabilities (net debt plus net venture capital).

### III.6 The replacement of inflation tax by external savings

It is worth examining the figures that reflect the replacement of inflation tax by external savings in financing the public sector's operating deficit as from June 1994. Table 2.17 illustrates this trend.

In Table 2.17, inflation tax (II\*) is defined not only as the Central Bank's gains from inflation but also inflationary transferences to public-sector banks. In this case, the government's gains (exclusively from negative real interest paid by the monetary base and from sight deposits in excess of the public banks' reserves) stood at approximately US\$ 16.5 billions per annum in the 12 months prior to the introduction of the *real*. In the 36 months following the implementation of the *Real Plan* this figure fell back to US\$ 2.4 billions a year.

*Table 2.16* Gross Savings and External Transactions  
(figures in *reals* and as a % of GDP)

Item	1990	1991	1992	1993	1994	1995	1996	1997
Current transactions (R\$)	-124	-706	5,921	-106,832	-3,207,077	-18,226,492	-26,314,197	-36,478,290
Domestic Savings (R\$)	2,205	11,212	127,284	2,831,902	74,126,265	125,800,683	134,698,515	148,209,585
GDP at market prices (R\$)	11,549	60,286	640,959	14,097,114	349,204,679	646,191,517	778,820,353	866,722,721
External Savings/GDP	1.07%	1.17%	-0.92%	0.76%	0.92%	2.82%	3.38%	4.21%
Domestic Savings/GDP	19.09%	18.60%	19.86%	20.09%	21.23%	19.47%	17.30%	17.10%

Source: IBGE (Brazilian Geography & Statistics Institute)



Table 2.17 Inflation Tax (II\*) and External Savings

(US\$ billions)

Period	Inflation (%)	II*	Current Account Deficit
July '93–June '94	5153.3	16.5	–0.8
July '94–June '97 (average)	22.1	2.4	20.3

\* Inflation Tax II\* is calculated by consolidating figures for the Central Bank, commercial banks and state and federal banks.

Suppose that the public operating deficit had remained constant after the introduction of the *real*. In this case, a fall in inflation tax should imply an additional increase in the public sector's net liabilities compared with the pre-*real* period of the order of US\$ 14.1 billions. In other words, if previously public-sector liabilities grew a certain amount in *reais* each year, they would now increase that same amount plus US\$ 14.1 billions. This is directly implicit in the tautology that equates real deficit (calculated with real interest) with the increase in the real value of public liabilities. It is likewise inferred from the definition of operating deficit as real deficit plus the inflation tax collected by the Central Bank and by other official banking institutions:<sup>17</sup>

$$D_{go} = \Delta Z + II^*,$$

where  $D_{go}$  represents operating public deficit,  $Z$  the variation in the real value of public-sector net liabilities and  $II^*$  inflation tax.

It is common knowledge that the government's operating deficit increased following the implementation of the *Real Plan*. This means that growth of the government's liabilities, compared with the situation pre-*real*, outpaced the drop in inflation tax. To what extent the expansion of public-sector net debt since the *real* is due to dwindling inflation tax revenue is a matter for investigation.

The fiscal statistic that most closely resembles variable  $Z$  above is the public-sector net fiscal debt published by the Central Bank. This indicator is designed to reflect public-sector financing needs. It differs from public-sector net debt inasmuch as it does not include asset adjustments or, more importantly, income from privatizations.<sup>18</sup> Public-sector net fiscal debt, then, leapt from R\$ 145.7 billions in June 1994 to R\$ 271.0 billions in June 1997, a difference of R\$ 125.3 billions in the first 36 months following the introduction of the *real*.

Comparing the figures for net fiscal debt with those for inflation tax before and in the 36 months subsequent to the *real*, and supposing an average *real*/dollar exchange rate close to one unit, it can be stated that

about one-third (423/1253) of the increase in public-sector net fiscal debt in the wake of the *real* can be attributed to the reduction in inflation tax. Ideally, the reduction in inflation tax should have been offset by reduced expenditure not by debts due in the future, but this objective is not yet possible to attain.

In the reasoning above, a variation in net liabilities was compared with an accumulated flow, both of which were measured over a period of 36 months. Another comparison can be made between flows, also based on logical deductions, by dividing the economy into three sectors: governmental, private and external. From this standpoint, operating deficit is financed by that portion of private operational savings that exceeds private investment, by operational external savings and by inflation tax, as set out in the following equation:

$$D_{go} = S_{pr} - I_p + S_{er} + \Pi^*,$$

in which  $S_{pr}$  and  $I_p$  stand, respectively, for real private savings (calculated with real interest) and private investment and  $S_{er}$  represents real external savings (here taken to be equal to nominal external investment, given the low rate of inflation in dollars).

As with the previous exercise, it can be stated that, if total operating public debt plus private investment minus gross (real) private-sector investment ( $D_{go} + I_p - S_{pr} = \Pi^* + S_e$ ) were kept constant after the *real*, the current account deficit in the balance of payments (external savings) should increase, in comparison with the previous period, by approximately US\$ 14.1 billions per annum.

Available data show that external savings increased in annual figures about US\$ 21.1 billions. The snag is that total operating deficit during the period plus the sum of private investment that exceeds private savings actually increased. Discounting the difference between real private savings and private investment throughout this 48-month period, one can go even further and state that since the *real* was introduced, the portion of operating public deficit that had hitherto been financed by inflation tax has instead switched to being financed by external savings (that is, by going deeper into debt). The increased supply of external savings has more than compensated the decrease in inflation tax partly due to burgeoning public deficit.

*Grosso modo*, it can be claimed that the *Real Plan* has brought the Brazilian economy another kind of balance in which a tax not approved by Congress is added to new expense items not covered by the budget to be traded against future taxation (the cost-cutting alternative is a remote possibility), the swap being financed by non-residents.<sup>19</sup>

This is the escape valve to which the *Real Plan* has resorted. If the aim had been to curb inflation without resorting to external savings – as was the case in Brazil between 1964 and 1966 with PAEG – the government

would have had to cut back public spending at the end of June 1994. The cut in spending would have had to be sufficient to compensate the loss of inflation tax (stimulating private consumption through higher available income in the private sector), the subsequent rise in private consumption fostered by a favourable exchange rate and greater access to credit. What actually happened, though, was that public spending rose even further accompanied by increased deficit, despite stiffer taxation on the private sector. The outcome was the emergence of a dangerously acute annual need to resort to savings abroad, making the Brazilian economy excessively vulnerable to oscillations in external finance flows.

There are advantages and disadvantages to replacing inflation tax by external savings. The first advantage is the exchange of inflation tax for future taxation, which shows a degree of respect for citizens since taxes, unlike compulsory loans, are at least passed by Congress. Another advantage is that future taxes enable authorities to identify those who pay them, thus restraining the mechanisms that concentrate wealth. A third advantage, arguably the most important of the three, is the enhanced efficiency and productivity produced by stable prices.<sup>20</sup>

A fourth advantage is that, at least for a certain amount of time, the new state of equilibrium provides greater clarity for foreign investors. This smooths the path to financing a sizeable portion of the current account deficit by direct investments, giving the government more options for reducing its net debt, for instance through privatizations.

However, the possibility that the swapping of a current tax for future taxation may provoke an imbalance, since this taxation is not fully realized today, may actually undermine political support for a cutback in public spending.

Another drawback from the fiscal standpoint is that, unlike a confiscation, a debt must be paid up in the future. The costs of debt include the principal, creditors' distrust (quite considerable regarding the Brazilian government) and the time required for repayment (interest).

#### **IV. Interrelations between the reforms and specific points**

Both the establishment of a more open economy and privatization served to bolster the price stabilization ushered in by the *real*. By facilitating importation of the goods required to meet excess demand in various segments of the market, the opening-up of the economy helped relieve upward pressure on prices. The opening-up of the finance market ensured a sufficient influx of capital to cover the current account deficits that had become a feature of the Brazilian economy since the beginning of the stabilization process. Privatization, meanwhile, generated temporary revenue that enabled the government to finance part of its deficit. Privatization has

thus combined with the opening-up of the finance market in providing foreign capital and funding for current-account deficits.

The drive to up the pace of the privatization programme and promote auctions of public concessions since 1997 has been geared to generating extra revenue and obtaining direct investments in foreign currency. This can be viewed as an escape valve for the government to make up for the failure to correct fiscal imbalances in the public sector in good time.

No doubt stabilization not only benefited from but also benefited the opening-up of the economy and privatization since it made the management of economic transactions less volatile and uncertain. The fact that some of the benefits of a more open economy and of privatization failed to produce greater efficiency in the allocation of resources has to do with the way they were handled.

The rationale of the *Real Plan*, given the persistent fiscal imbalances, was founded on the replacement of inflation tax by net external indebtedness. This demanded keeping the currency overvalued and restraining the outflow of capital. An overvalued currency prevents increased openness in the economy from producing all the benefits in terms of improved distribution that might otherwise be expected. Since nominal wages are not flexible, exports are artificially hampered, thus throttling employment and growth.

The preoccupation with stabilization and, consequently, with non-inflationary mechanisms for financing public deficit has led to excessive emphasis on sales revenues to the detriment of greater competition and proper regulation. This perverse combination has seriously diminished the benefits for consumers of privatization. As a result, a state monopoly has made way for a private one – generally poorly regulated.

A more open economy has favoured privatization since most of the sales of state-owned companies and public-service concessions have involved foreign capital, even if in some cases it has been present under the guise of Brazilian investment funds.

There is a clear interdependence of financial reforms and the taming of inflation. As inflation fell, retail banks' net earnings from floating shrank. The loss of income was most keenly felt by official banks, obliging the Central Bank to introduce regulatory measures not simply to deal with the problems arising but also as a matter of precaution. This new set of regulations enabled the government to reduce the fiscal cost of adjusting the financial system to the new environment. Even so, the costs were hefty.<sup>21</sup>

Reforms in labour legislation were also to have a positive effect on stabilization. The informal market has provided a degree of adjustment. However, the prospect of greater flexibility in wage negotiations is vital in a context where a real devaluation of the currency must be attained by means other than nominal devaluations.

The pressing need to obtain revenue from privatization and to transfer to the private sector the onus of investment that the government is no longer capable of making since it is strapped for cash has produced two kinds of problems. First, a relative loss of competitive edge for Brazilian producers, manufacturers and exporters and of end-consumer satisfaction. Consumers would have been better served in terms of price and quality had some of the privatizations and sales of concessions been based more on minimum prices and the standard of the goods and services on offer and less on the revenue to be collected into the Treasury's coffers.

The idea of obtaining maximum revenue from concessions is not in itself to be admonished so long as that does not close the doors to other competitors. Haste in pushing through privatization should not be condemned out of hand either. After all, running up debts with real interest rates at the soaring levels that characterized most of the second half of the 1990s merely to retain assets yielding virtually no return is certainly a less sensible strategy than converting such assets into revenue at auction. Nonetheless, this must not blind one to the need to assess carefully the problems such a move may unleash in the future.

#### **IV.1 Policy recommendations – political and budgetary aspects of the fiscal conundrum**

Several policy recommendations have been set out in this chapter and will not be repeated here. Rather, we shall concentrate solely on the most important of them all: the correction of fiscal imbalance. It has serious implications for political reform and for a review of the way the budget is formulated.

As far as political reform is concerned, though there is no consensus on this point among political scientists, a number of empirical studies – for example Roubini and Sachs (1989), Alesina and Perroti (1995) and the exposition made by IDB (1997) – corroborate the idea that party loyalty and a reduction in the plethora of small parties in Brazilian politics would make it easier to achieve lasting fiscal adjustments. In this respect, the political reform the government envisages is a step in the right direction. It institutes party loyalty and a so-called 'threshold clause', according to which only parties obtaining a minimum number of votes across the country would be eligible for representation in Congress. Another option for minimizing the splintering of Brazil's political parties would be to redraw the boundaries of the country's electoral districts, reducing the number of representatives per constituency.

At the same time, recent studies for Latin America (for example IDB, 1997) show that the absence of party loyalty and a high degree of party fragmentation generally imply greater difficulty in meeting fiscal targets. It has likewise been observed, however, that budget mechanisms can override party-political constraints. It would therefore seem sensible to create-

institutional means for providing continuous domestic monitoring of the increase in public-sector net debt so as to obviate the need for external auditing and abrupt changes of tack in fiscal policy.

The establishment of a legal upper limit for public deficit would be a healthy development. Targets, nonetheless, should be subject to review when conjunctural factors so demand, in line with the methodology announced in advance and made public.

More sceptical analysts cast doubt on the feasibility of achieving continuous auditing by the Executive Branch, by Congress or by an autonomous agency (q.v. the proposal for creating a Fiscal Council set forth by Eichengreen, Hausmann and von Hagen, 1996). On the other hand, attempts to delegate this duty to an autonomous agency (Eichengreen, Hausmann and von Hagen's Fiscal Council) founder on political-institutional obstacles.

It should, nevertheless, be said that such obstacles are not insurmountable. There is sufficient leeway for attempting bolder solutions, including major reforms of the procedures for determining fiscal policy in all three tiers of public administration in Brazil. The Fiscal Liability Law, currently under discussion in the Brazilian Congress, clearly sets out the responsibilities of public administrators when it comes to spending revenue. This is undoubtedly a promising initiative.

Summary Table I – Digest of Economic Reforms

		Reform	Forum	Current Status
Constitutional Amendments	1993/95	Important constitutional amendments were approved during the period of constitutional review and in subsequent amendments. The distinction between Brazilian companies and national stock Brazilian companies was abolished, market reserves on natural gas, mineral deposits and hydraulic potential were scrapped, the private sector was authorized to provide telecommunications services, and Petrobrás's sole rights to operate the Union's oil monopoly were revoked.	Legislative	FA
Assets (Privatization & Concessions)	15/07/81	Decree Law no. 86.215 – pioneer regulation of the transformation, transference and deactivation of small companies controlled by the Federal Government.	Executive	FA
	28/11/85	Decree no. 91.991 – end of 1st year of Sarney Administration – begins phase two of the Brazilian privatization programme, encompassing privatization of small companies controlled by the Union and closure of unviable companies. Transference of stock control by means of auctions commenced.	Executive	FA
	29/03/88	Creation of Federal Denationalization Programme, now to include concessions for the exploration of public services by the private sector.		
	02/90	Law no. 8.031 creates the National Denationalization Programme (PND).	Legislative	FA
	02/03/94	Decree Law no. 1.068 includes in PND minority shareholdings of foundations, associate government agencies, public companies and other institutions directly or indirectly controlled by the Union.	Executive	FA
	1995	Law no. 8.987 defines the new regime for public-service concessions and permits, mostly applicable to the electricity and transportation sectors, the latter covering roads, rail and ports.	Legislative	FA

Summary Table I – Digest of Economic Reforms (*continued*)

	Reform	Forum	Current Status
	1995 Law no. 9.074, regarding public works and services, especially electricity, paving the way for its transference to the private sector.	Legislative	FA
	16/08/95 The States are entrusted with exploring local piped gas services, either directly or by concession.	Ec no. 6	FA
	09/09/97 Law no. 9.491 henceforth regulates privatization procedures and raises the possibility of workers using their FGTS funds to purchase securities up for auction in the PND.	Legislative	FA
	99 Possibility of privatizing Banco do Brasil, Caixa Econômica Federal and Petrobrás vented and later denied by the government.	Executive	FA
Open Trading	1988–89 Reduction of average tariff from 51% to 31% and of maximum tariff from 105% to 85%.	Executive	FA
	Decree Law no. 2.434: import tax exemption for capital goods.		
	1990 Non-tariff barriers on imports eliminated.	Executive	FA
	1994 Reduction of average import tariffs and anticipation (in September) by three months of the introduction of Mercosur's Single External Tariff (TEC); highpoint of imports liberalization policy.	Ministry of Finance	FA
	1995–97 Renewed restrictions on imports.	Ministry of Finance	FA
	On 29th March, Decree 1.427 raised import tax on automobiles, bicycles, house hold appliances, consumer electronic equipment and motorcycles to 70%.		
	On 27th April, Decree 1.471 established a list of items exempt from the Mercosur Single External Tariff.		
	On 28th April 1995, Decree 1.475 established a global quota for imports from the Manaus Free Trade Zone receiving incentives.		



Summary Table I – Digest of Economic Reforms (*continued*)

	Reform	Forum	Current Status
	On 26th December, Decree 1.761 instituted a system of incentives for the automobile industry, granting resident assembly plants special advantages for importing vehicles.		
	1997 More restrictions on imports were decreed at the end of 1997 in the wake of the financial crisis in Southeast Asia.		
Open Finance Market	January 1991 Central Bank Circulars 1.884 & 1.885 and Circular Letter 2.144 authorize the use of external funds to cover losses on the domestic market.	Central Bank	FA
	May 1991 Central Bank authorizes direct use of foreign capital on the Brazilian stock market.	Central Bank	FA
	July 1991 Institution and regulation of external investments in the shares of Brazilian corporations by the creation of American Depositary Receipts and International Depositary Receipts.	Central Bank	FA
	1991 Creation of Annex IV to Resolution 9/87 regulating the administration foreign institutional investor portfolios. This Annex has been instrumental in attracting foreign capital to Brazil's stock exchanges.	Central Bank	FA
	1994-95 Renewed period of encouragement for increased volume of foreign capital for direct investment and reduction of portfolio investments.	Central Bank	FA
	23/08/95 Supplementary Law regulating the Sole Paragraph of Article 52 in the transitory provisions of the Constitution (Central Bank <i>Exposição de Motivos</i> 311) concerning increased participation of foreign banks in the Brazilian economy.	Executive	FA
	Between 1995 and 1998 various modifications were made to the policy on taxing foreign capital. Taxation was increased when the accumulation of reserves hampered monetary control and reduced when reserves fell below the desired level. These modifications are described in the body of the text.		

Summary Table I – Digest of Economic Reforms (*continued*)

	Reform	Forum	Current Status	
Financial System	03/11/95	Provisional Act 1.179 establishes tax incentives for the incorporation of financial institutions.	Executive	FA
	03/11/95	Resolution 2.208 institutes the Programme for Restructuring and Strengthening the Brazilian Financial System (PROER).	Central Bank	FA
	16/11/95	Resolution 2.211 creates the Credit Guarantee Fund (FGC) to protect the rights of deposit holders in the Brazilian financial system. This is a kind of deposit insurance scheme.	Central Bank	FA
	16/11/95	Resolution 2.212 creates incentives for mergers, incorporations and transference of shareholding for financial institutions.	Central Bank	FA
	13/03/96	Provisional Act 1.334 institutes joint liability for accountancy auditing firms in cases of irregularities.	Executive	FA
	18/03/97	Central Bank circular, based on Laws 4.595 (12/64) and 7.730 (01/89) regulates the special financial assistance line for state financial institutions as part of the Programme of Incentives for Reducing State Public Sector Involvement in Banking (PROES).	Central Bank	FA
	15/03/97	Law 9.447 derived from Provisional Act 1.182 empowers the Central Bank to capitalize, merge or compulsorily transfer the controlling share of any financial institution, with a view to protecting the financial system.	Legislative /Executive	FA
	22/05/97	Resolution 2.390 creates the Loan Risk Board, granting financial institutions, with due authorization from their clients, access to debit positions of over R\$ 50,000.	Central Bank	FA
	25/06/97	Resolution 2.399. The Central Bank raised the minimum reserves of for financial institutions of assets weighted according to risk from 8% to 10%. This new base line is higher than that recommended by the Basilea Inspection Committee (8%)	Central Bank	FA

Summary Table I – Digest of Economic Reforms (*continued*)

	Reform	Forum	Current Status
	and implies a reduction of the upper limit for loans from 12.5 to 10 times the net asset value. The same Resolution also altered the calculation for estimating the risk of non-guaranteed swap operations with derivatives. The banks will have to provision for 16% of the value of the sum exposed to risk in this type of operation. Moreover, Circular 2.784 (27/11/97) sets the minimum level at 11% but allows the institutions to adapt to this new legislation by the end of 1998. Provisioning for swap operations, meanwhile, was set at 20%, companies having until February 1998 to adapt.		
	25/07/97 Resolution 2,302 consolidates the financial statements of banks in Brazil and abroad.	Central Bank	FA
Social Security	15/02/96 Supplementary Law 85 institutes the Contribution for Funding Social Security – COFINS.		FA
	31/01/97 Law 9.506 extinguishes the Congressmen's Welfare Institute (IPC).		
	23/04/97 Law 9.630 sets rates for contributions to the Civil Service Social Security Plan including pensioners and retired civil servants.		FA

Summary Table I – Digest of Economic Reforms (*continued*)

Reform	Forum	Current Status
10/98	<p>The government's social security reform bill, that had already been in Congress for some time was finally voted on and partially approved in 1998. The bill is very timid considering the country's needs. With regard to the National Social Security Institute (INSS), the bill included minimum age limits and length of contribution (60 years of age and 35 years of contribution for men and 55 years of age and 30 years of contribution for women), abolished the option of retiring on a pension proportional to length of service and special pensions, among other measures. The novelties in the civil service pension scheme are: i. a combination of age limit and length of contribution, restricting cases of early retirement, plus the introduction of a transition regulation adding an extra period of contribution (toll); ii. restrictions on special retirement pensions. The government expects an annual economy of about R\$ 3 billions if the proposal currently before Congress is passed in its entirety. This falls well short of the social security system's total deficit for 1998 of R\$ 27 billions (R\$ 10 billions for INSS and the remainder for the federal public sector). The ratio for the present system is 1.7 contributors per pensioner.</p>	FA

Summary Table I – Digest of Economic Reforms (*continued*)

	Reform	Forum	Current Status
	98/99		DA
	98/99		FA
Admin. Reform	4/6/98	Congress – Constitutional Amendment 19 requires supplementary legislation	FA

Summary Table I – Digest of Economic Reforms (*continued*)

		Reform	Forum	Current Status
Fiscal & Tax Reform	1995	<i>Limits for spending on personnel (active &amp; retired)</i> Submission of bill for Constitutional Amendment 175-A on Tax Reform, designed to make the system simpler and more general.	Executive	DA
	1998	This bill is still under examination in Congress and has since been hampered by the tabling of another, more ambitious bill informally presented by the Finance Minister.		DA
Political Reform	1998	Political reform is on the books for 1999/2000, including the institution of compulsory party loyalty and reduction in the number of parties represented in Congress (threshold clause – minimum requirement of 5% of the vote across the country for representation in Congress).	Executive	DA
Reform of the Judiciary	1999	Schedules resumption of reform of the Judiciary for 1999. The original bill was tabled in 1997. The reform includes external control of the Judiciary, abolishment of 'class judges' (appointed by Trade Unions) and state-level military tribunals.	Executive	DA

Key: FA = fully approved; AI = approval imminent; DA = difficult to approve

## Notes

- \* Getúlio Vargas Foundation.
1. The author wishes to acknowledge Ricardo Wyllie's assistance with the research as well as support from CERES/FGV in obtaining and formatting the data. Ubiratan Iorio helped draft the preliminary version of section II.5.
  2. The most important Resolution was the fourth, issued in 1991, regulating the entry of non-resident institutional investors' capital in Brazil.
  3. The most important of these was the fourth, published in 1991 regulating terms of investment in Brazil for non-resident institutional investors.
  4. No limits in terms of either volume or permanence were imposed.
  5. For a detailed description of these measures see Mendonça de Barros & Almeida Jr (1997).
  6. The incorporating company can, under certain circumstances, deduct the premium from income tax due.
  7. These costs are probably smaller than those that would in all likelihood be incurred in the case of a banking crisis. One can recall, for instance, the billions of dollars the US administration spent in the Eighties to overcome the Savings & Loans crisis, or the crisis brought on by the failure of Banco Latino in Venezuela (when government bail-out loans cost approximately 13% of GDP), which dragged down several other banks and did considerable damage to Venezuela's economy. A more recent case is Japan, where the government disbursed a staggering US\$ 500 billions to shore up the local financial system.
  8. These data are consistent with studies carried out at Getúlio Vargas Foundation (Cysne and Soares, 1997), reckoning payroll expenditure as a percentage of income generated at 46.0%, 69.6% and 142.5%, respectively, for a sample of private, state and federal banks in the first two quarters of 1995. The discrepancies can hardly be ascribed exclusively to different tertiarization practices.
  9. In addition to those mentioned in the previous item, personnel hired without a public selection examination will likewise be liable to dismissal if they have not already acquired tenure under the terms of the 1988 Constitution.
  10. Civil servants who have tenure rights may also be liable to dismissal if the adjustment measures described in items 1 and 2 have been exhausted.
  11. Federal and state transferences to States and Municipalities (the Federal District included) will be suspended if they fail to adjust their payroll expenditure to the budgetary limits established.
  12. Second review, June 1999.
  13. In May 1995, for example, the minimum wage was raised 42.9%, from R\$ 70 to R\$ 100.
  14. A methodological observation should be made regarding this statistic (government savings calculated with real interest). Ideally, IBGE should produce national accounts statistics using not only nominal but also real interest rates to calculate private, external and public-sector shares of total income. As this is not done, many authors resort to the real interest account obtained as a by-product of the Central Bank's methodology for calculating PSBR. The methodology employed here to calculate real interest paid by the public-sector and so obtain its savings calculated with real interest in national accounts is based on an estimate of operating and primary borrowing requirements, excluding state-owned companies and subtracting the latter from the former.
  15. One example is the funds the Central Bank supplies to different states to bail out their banks. They are recorded as an exchange of state debt for federal debt using

- face values, thus not affecting consolidated public-sector net debt. However, it must be admitted that, at market values, the federal debt issued is worth more than the state banks' debt assumed by the Federal Treasury. This implies an increase in net debt at market values not recorded in the statistic presented here.
16. Similar problems occurred in Mexico, Argentina and Colombia in the Eighties and Nineties.
  17. These and other tautologies used here have been defined and deduced in Simonsen and Cysne (1992 and 1994).
  18. Note that employing this variable obliges us to adopt in our analysis in this section the definition of government used by the IMF and the Central Bank, including not only the direct administration at federal, state and municipal level (as in the National Accounts concept) but also state-owned companies.
  19. Another way of viewing this matter, adopting a long-term as opposed to a macroeconomic approach, is to use the framework of growth models that endogenize the savings rate, i.e. Ramsey (1928), Cass (1965) and Koopmans (1965). Although such models – for a brief description see, for instance, Romer (1996) or Simonsen and Cysne (1995, section 9.10) – are more suited to long-term analysis, an interesting angle on Brazil's macroeconomic evolution since 1994 can be derived from the conclusions of this type of model, when the government temporarily raises its spending in an unanticipated fashion. When that happens, private-sector consumption falls initially then returns to its original level once the government spending trend is reversed. Temporarily, unlike when higher government spending is permanent (*ditto diminished private sector consumption*), interest rates rise corroborating a private consumption growth pattern. When the economy is open to the world, this symmetry between the increase in public consumption and the decrease in private consumption fails to occur. The reason is that non-residents may finance the absorption in excess of gross national product.
  20. Historically, the collection of inflation tax produced inflation welfare costs totalling 3.1% of GDP to levy approximately 2.2% of GDP (Simonsen and Cysne, 1994 and 1995). The first figure (3.1% of GDP) represents misguided allocation of resources in a society that spent more than 12% of its GDP on the finance system, basically to anticipate monetary settlements. The second figure (2.2% of GDP) represents the historical average value of losses sustained by the non-banking segment of the economy as a direct result of inflation, which the Central Bank used to balance public accounts.
  21. Especially after the October 1997 crisis, financial institutions began to operate with less leverage. As a result, when interest rates soared again in September 1998, losses were lighter and neither monetary austerity nor the government's strategy of not devaluing the currency were put at risk.

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# 3

## Social Policies in the Nineties

*Sônia M. Draibe*

### I. Introduction

For the sake of analysis, it is best to examine the recent history of Brazilian social policies in association with two reform cycles. The first took place in the Eighties in a context of redemocratization and economic instability. The second began in the second half of the Nineties, under the aegis of a complex agenda of stabilization, institutional reform and consolidation of democracy.

Since the closing years of the Seventies, indeed, redemocratization has imbued the social sphere with the reformist agenda of the transition to democracy (Draibe, 1998). The processing of this agenda – moulded mainly by the 1988 Constitution – has been hampered by the contradictions and doubts pervading the larger political movement from which it stems. This has not prevented it, however, from introducing several significant changes: acknowledgement of the principle of social rights; a drive to achieve universal access to social programmes; and, in the case of social security, a relative slackening of the contribution link as the backbone of the system, combined with the fixing of minimum sums for benefits.

The agenda has undoubtedly secured a central position for social issues but its implementation has been patently partial and modest. This is probably due to counter movements and signals emanating as much from economic restrictions as from the corporatist distortions of organized interests. The result is that:

- despite the endeavour to broaden and diversify sources of revenue, funding remains highly dependent on social contributions and so vulnerable to economic fluctuations that directly affect the wage bill;
- partly as a consequence of the previous item, funds allocated to social policies have remained heavily centralized in the federal administration despite the strong municipal bent of the fiscal decentralization operated by the 1988 tax reform;

- glaring corporative privileges persist in the social policy framework. In other words, egalitarian, universalist concerns have proved incapable of challenging the corporative defence of special benefits and the consequent earmarking of sizeable portions of available funds to pay the privileges due to particular social groups.

Since the mid-Nineties, a new agenda has ushered in another reform cycle in the social arena. This new cycle is informed by the broader – and no doubt more complex – context of economic adjustment, completion of institutional reforms and consolidation of democracy. The hallmark of this new stage has been a tense reconciling of macroeconomic objectives geared to securing stabilization and social reform targets theoretically designed to achieve greater efficiency and equity.

Observing the two periods or cycles, one cannot but be struck by the modest achievement of the changes and innovations wrought. In the final analysis, health policy alone has undergone proper reform. This is not to deny the significant changes made in the sphere of social assistance programmes and those for dealing with poverty. Welfare reform is recent and partial and has not even completed the initial legislative implementation phase. In education, major changes have been almost entirely restricted to elementary schooling. Areas such as housing, basic sanitation and public transport have been virtually excluded from the recent reform agenda.

Table 3.1 records the introduction and implementation of sectorial social-policy reforms in the two cycles described above.

The present chapter adopts this approach to examine the move to restructure Brazil's social programmes. It concentrates on the profile and performance of public spending in the social sphere and on the main innovations and changes brought about in the fields of education, personnel training, health, social welfare and programmes for combatting poverty.

## **II. Brazil's public spending in the social sphere: profiles and recent performance**

When the first cycle of reforms for social programmes began, three salient features could be observed in Brazil's public spending in the social sphere: the incoherence of relatively high spending and its ineffectiveness; the weight of social contributions and funds in the make-up and earmarking of revenue; and, finally, strong centralization of funding and spending in the hands of the federal government. The picture was as follows:

- in the mid-Eighties, the *level of spending* in Brazil in the social sphere was comparable to that attained by countries with medium social development (approximately 15% of GDP) yet it was remarkably ineffective,

Table 3.1 Brazil. Policies and Programmes: Reform Cycles and Current Status 1980-98

Areas/Programmes	Reform Cycles and Current Status		
	1st Reform Cycle 1985-90	2nd Reform Cycle 1990-98	Current Status
Investment in Personnel			
<b>Education</b>			
• Primary	absent from agenda	reformed	implemented
• Secondary	absent from agenda	introduced	under discussion
• Higher	absent from agenda	absent from agenda	absent from agenda
• Technical (secondary)	absent from agenda	introduced	under discussion
<b>Health</b>	reformed	fully implemented facing serious setbacks	being adjusted
<b>Social Welfare</b>	partly reformed	resumed on agenda, under discussion (strong opposition)	partly approved (legislative)
<b>Labour Training</b>			
• Federal Public Programme	absent from agenda	introduced	fully implemented
• S System (business)	absent from agenda	absent from agenda	absent from agenda
• Young Persons Training Programme	absent from agenda	introduced	implemented
• Solidary Literacy Programme	absent from agenda	introduced	implemented
<b>Elimination of Poverty &amp; Defence of Rights</b>			
• Social Assistance	reformed	being implemented	implemented
• <i>Programme for Combating Poverty</i>	absent from agenda	introduced	implementation facing serious setbacks
• <i>Popular Credit Programmes</i>	absent from agenda	introduced	being implemented
• <i>Agrarian Reform</i>	barely on agenda	barely on the agenda	implementation facing serious setbacks
<b>Defence of Minority Rights</b>			
• Women	introduced	being implemented	being implemented
• Children & Adolescents	introduced	being implemented	being implemented
• Blacks	absent from agenda	absent from agenda	absent from agenda
<i>Eradication of Child Labour</i>	absent from agenda	introduced	being implemented (good prospects)
<i>Eradication of Slave Labour</i>	absent from agenda	under discussion	under discussion
<i>Defence of Human Rights</i>	absent from agenda	introduced	under discussion

tending to benefit the most needy segments of the population proportionally less (IPEA, 1998);

- regarding the *origin and make-up of funds* – little altered in the two subsequent reform cycles, as a matter of fact – a high proportion of total public funds allocated to the social sphere<sup>1</sup> (equivalent to a half of all federal revenue and a third of Brazil's total tax burden<sup>2</sup>) derived from social contributions. Besides tying spending to specific programmes, the plethora of *social funds*<sup>3</sup> tends to make revenue very sensitive to fluctuations in the economy;
- in the *federative dimension*, despite the persistence of a centralized standard, since 1988 state and municipal administrations have progressively taken on greater responsibility for funding social programmes, with the federal government allocating fewer funds to these same programmes<sup>4</sup> (Afonso, 1994; Rezende, 1995).

## II.1 Federative distribution and sectorial make-up

Both the present make-up of spending and recent trends in performance largely confirm the observations made above. Indeed, in the 1982–92 period, though the participation of the federal tier of administration is still predominant, a clear increase is visible in the part played by state and municipal administrations: while the proportion of spending at municipal level rose six percentage points (from 10.6% to 16.5%), spending at state level increased about 2% (Médici and Maciel, 1996).

The data for 1995 displayed in Table 3.2 confirm the effort to increase spending and to make it more decentralized.

The allocation of approximately 21% of GDP to public social programmes, especially in the areas of social welfare, civil service benefits, health, education and culture,<sup>5</sup> reflects a reasonable effort to channel spending into the social sphere in 1995. From the standpoint of decentralization, the data available confirm the trend suggested above of greater participation on the part of the state and municipal tiers of administration and, to an even greater extent, of decentralization of actual disbursement. Table 3.3 distinguishes between source and disbursement of funds as a percentage of GDP and displays the relative share of the three tiers of administration in the growth of consolidated social spending in 1994 and 1995.

In terms of equity, mention should be made of the discrepancies in spending from one region of the country to another. *Per capita* figures for the less developed regions of the country are up to twice as small as those for the richer regions and states.

## II.2 Evolution and recent dynamics of spending

One can infer from the recent trajectory of social spending a number of important conclusions about current growth trends in public spending in the social sphere in Brazil:

Table 3.2 Brazil, 1995. Consolidated Public Spending in the Social Sphere, by Source of Funds,\* Tier of Administration and Social Area – Make-up and Percentage of GDP

Areas/Programmes	R\$ millions current & %						
	Percentage spending per area, tier of administration and % GDP						
	Fed.Gov. (F) % total federal	States (S) % total state	Municip. (M) % total municipal	% GDP			Consolidated (% GDP)
			F	S	M		
% Total of Social Spending	59.5	23.7	16.7	12.4	4.9	3.5	20.9
Social Welfare	99.7	0.0	0.0	5.4	0	0	5.4
Civil Service Benefits	56.9	36.8	6.2	2.6	1.7	0.2	4.7
Education & Culture	24.8	47.1	27.9	1.0	2.0	1.2	4.3
Health	62.9	20.6	16.3	2.1	0.7	0.5	3.3
Housing & Urban Planning	3.8	13.8	82.3	0.4	0.1	0.9	1.1
Employment/Labour Rights	98.0	1.9	–	0.4	0	0	0.4
Social Assistance	34.0	39.8	26.0	0.1	0.1	0.1	0.4
Urban Mass Transports	17.7	15.1	67.0	0	0	0.2	0.4
Sanitation	23.7	20.6	55.6	0	0	0.1	0.2
Agrarian Organization	94.9	5.0	–	0.1	0	0	0.1
Food & Nutrition	95.9	0.9	3.0	0.1	0	0	0
Science & Technology	100.0	–	–	0	0	0	0
Environment	16.4	51.8	31.6	0	0	0	0
Personnel Training	100.0	–	–	0	0	0	0

Sources: IPEA/DIPOS based on the SIAFI/SIDOR systems for the Federal Government; IBGE/DECNA for state and municipal administrations; IPEA/DIPOS for GDP.

\* The source of funds concept indicates from which tier of administration funds derive.

*Table 3.3* Brazil. Consolidated Social Spending per Tier of Administration, Distinguishing between Source of Funds and Responsibility for Disbursement

(as % of GDP)

Tier of Administration	Source				Disbursement			
	1994		1995		1994		1995	
	% GDP	% Total Spending	% GDP	% Total Spending	% GDP	% Total Spending	% GDP	% Total Spending
Federal	12.3	62.4	12.8	62.4	11.2	56.7	11.6	56.5
State	4.3	21.9	4.4	21.7	5.1	25.8	5.2	25.6
Municipal	3.1	15.7	3.3	15.9	3.4	17.5	3.7	17.9
Total	19.7	100.0	20.5	100.0	19.7	100.0	20.5	100.0

Source: STN/PEA/DIPOS



- federal social spending oscillated sharply throughout the Eighties but, differently from many countries in the region, spending in Brazil did not actually decline. Leveraged by strong recovery in 1986, under the auspices of the Cruzado Plan, spending in 1989 attained a level higher than that recorded in 1980 (Draibe, 1995);
- it was during the Collor Government (1990–92) that federal social spending reached its low point in the Nineties, in some areas sinking to about half the level attained in 1989.
- a drive for recovery was begun under Itamar Franco's administration (1993–94) and boosted between 1994 and 1996 during Fernando Henrique Cardoso's first mandate. IPEA estimates suggest the evolution shown in Table 3.5.
- in terms of funding, despite the changes in the Constitution, social spending continues to rely on funds consisting of social contributions.

Table 3.4 Brazil. Evolution of Federal Social Spending, by Sector – 1989–93  
(Index: 1989 = 100)

Areas	1989	1990	1991	1992	1993
Health	100	71.2	59.2	52.2	68.6
Education	100	79.1	57.0	49.2	73.1
Labour	100	233.7	160.5	150.1	103.7
Assistance	100	55.7	106.6	158.4	209.8
Welfare	100	86.9	77.8	84.1	119.0
Food	100	95.4	50.3	15.3	50.7
Sanitation	100	78.4	93.1	67.5	67.8
Housing/Urban Planning	100	86.9	148.6	132.2	88.8

Source: IPEA/DIPOS – *Evolução do Gasto Social Federal*, FSP, 22/03/1997

Table 3.5 Brazil. Total Federal Public Spending, *per capita* and as a percentage of GDP in different years and according to evolution in the 1994–96 period

Social Spending/types	1994	1995	1996	Evolution (index no.)		
				1994	1995	1996
Total social spending (in current R\$ million)	42,111.6	78,847.1	92,176.8	100	187.2	218.9
<i>Per capita</i> social spending (in current R\$)*	275.21	508.54	586.81	100	184.8	213.2
Total social spending/GDP (%)	11.7	12.0	12.3	100	102.7	104.8

Source: IPEA/DIPOS

\* Excluding financial expenses allocated to social programmes.

These grew strongly in the 1994–96 period as a result of the stabilization secured by the *Real Plan*;

- recent years (1994–96) have seen a sharp reduction in spending on active payroll as a proportion of federal social spending, this item of expense dropping from 12.4% in 1994 to 7.6% in 1996; by way of contrast, spending on retired federal civil servants has risen from 9.2% of total spending to 12.1%;<sup>6</sup>
- the transference of federal funds to state and municipal administrations has risen about 22%. This is mostly as a result of the increase in negotiated transferees, tokening the deliberate effort to decentralize the execution of spending mentioned above;
- between 1986 and 1996, the most relevant alteration in the make-up of federal spending in the social sphere has been the growing share of (public and private) Social Welfare spending in total expenditure. This is due to several factors including the ageing of the population, universal enjoyment of rights and the increase in benefits determined by the 1988 Constitution, implemented as from 1992–93. Thus, federal social spending rose 68%, with federal spending on welfare benefits increasing more than 80% against a rise in non-welfare spending of just 44%. As a result, the latter, which had accounted for 43.4% of total outlay in 1986, dwindled to a mere 37% in 1996 (IPEA, 1997);
- the 1994–96 period likewise saw considerable variation in the sectorial evolution of federal social spending. Once again there was strong growth in outlay on Social Welfare to the detriment of funding for sectors such as education. This was probably owing to the behaviour of salaries (which did not increase) and the reduction in staffing, given the large number of retirements registered over the three-year period.

Priorities in federal social policies can also be gleaned from the pattern of spending in certain programmes. Thus, in the 1995–96 period, besides the welfare sector, spending expanded significantly in professional training (60%), basic sanitation (45%), primary education (26%), health (20%) and unemployment benefit (15%).<sup>7</sup> Between 1996 and 1997 the sums paid in benefits for the elderly and for invalids increased about 300% (IPEA, 1997).

Let us now turn our attention to the main changes introduced in particular social programmes in recent years.

### III. Recent reforms in Brazilian social programmes

Recent changes brought about in Brazilian social programmes will be analysed here mostly in terms of investments in human resources and the endeavour to grapple with the problem of poverty. The social policy areas focused on are education and professional training, health, social welfare and programmes for combating poverty. All these areas are fundamental

for examining the reforms under way from the standpoint of equity and the broadening of opportunities.

### **III.1 School system and educational reform**

Brazil has reached the Nineties with a public education system fraught with distortions and beset by difficulties. They include the size of the system,<sup>8</sup> insufficient educational cover at all levels of schooling except primary level, the poor quality of teaching, and the big gap between the new demands for workforce qualifications and the educational contents of school syllabuses. Moreover, the sharp differences within the education system are reflected in inequality of access, disparities of educational cover and performance between social groups and classes; between and within regions; and between municipal and state public-school networks. The agenda for reform in education deals with many, if not all, of these aspects and challenges.

#### *III.1.1 Some characteristics of the Brazilian education system*

The Brazilian education system is predominantly public at primary and secondary level and private in higher education.<sup>9</sup> With regard to the participation of the different tiers of administration, state and municipal governments are responsible for the provision of elementary and secondary schooling and municipal administrations for providing pre-schools. The system is thus highly decentralized.<sup>10</sup> Even so, the regulatory and economic powers of the federal government are considerable, making for a high degree of dependence of state and municipal administrations, particularly in the poorer regions of the country. The decentralization of educational policy has become one of the main tenets governing the reorganization of the system, though concrete steps in this direction have only been made since the mid-Nineties.

*Characteristics of spending on education.* Public spending on education was estimated at about 5% of GDP in 1995 or US\$ 223 per inhabitant. However, annual public spending per child in primary education of about US\$ 870 contrasted sharply with the annual US\$ 14,303 spent on each university student (Negri, 1996; Afonso, 1996).

By 1995, a reasonable degree of decentralization had been achieved with the Union accounting for 25% of total outlay, while state and municipal administrations were responsible, respectively, for 44% and 30% of disbursements in the field of education. Even the transferences made by the federal government to subnational administrations represented only 12% of consolidated government spending on education (Afonso, *op. cit.*, p. 12).

*Main educational indicators.* Two features of the behaviour of educational indicators deserve special mention: the faster pace of improvement in

recent years, and higher rates of improvement among younger age groups. Even so, the population's educational profile is still unsatisfactory, especially when international comparisons are made.

High rates of growth in enrolments at school in the Seventies and Eighties do indeed confirm that primary education is becoming universal, with the rate rising in the Nineties to more than 95% attendance in the 7- to 14-year age bracket (approximately 36 million schoolchildren). However, the number of children completing primary education is still very low: only about half the children enrolled ever complete the eight years of elementary schooling and a large number of them attend classes out of step with their age group. Probably as a result of such distortions, the rate of cover for secondary education is notoriously low, attaining no more than 25% of the corresponding age group. The rate of growth in enrolments in secondary schools between 1985 and 1994 has, though, been very high, increasing from three to more than five million pupils.

Between 1980 and 1996, the rate of illiteracy among people aged 15 years or more likewise fell sharply from 25.4% to 14.7%, though regional differences continue to be glaring, with the backward Northeast region still recording rates of illiteracy as high as 30%.

The educational profile of the Brazilian population has also improved considerably when measured in terms of years of schooling among the adult population. Between 1980 and 1996, the average length of schooling among adults aged 25 years or more rose from 3.9 to 5.7 years among men and from 3.5 to 6.0 years among women. Nonetheless, this figure is admittedly low, lower than the average in most Latin American countries.

### *III.1.2 The recent educational reform*

Educational reform is an integral part of the institutional reforms currently under way in Brazil. It is guided by the simultaneous objectives of improving the system's efficiency, guaranteeing quality teaching and securing equal access to education. The reform strategy is founded on a set of relatively integrated lines of action and fronts. These are of a general nature although to date they have mainly affected primary teaching. The overall dimensions of the system and the contents of the changes are displayed in Table 3.6.

Besides the modernization of syllabus contents and investment in the quality of teaching,<sup>11</sup> a few examples of the recent drive to promote reform deserve special mention.

*New guidelines for funding and spending in education.* The most radical measure in educational reform, approved in 1996 and begun in 1998, was the creation of the Fund and Development Plan for Primary Education and Enhancing the Status of Teachers (FUNDEF). The purpose of FUNDEF is to

Table 3.6 Brazil. Recent Education Reform: Outline and Content

Items for Reform	Content & Guidelines
Funding & spending	<ul style="list-style-type: none"> <li>• redistribution of funds to benefit elementary schooling</li> <li>• decentralization of spending</li> <li>• stress on progressive and redistributive nature of funds</li> <li>• recovery of regional balance in allocation</li> </ul>
Organizational structure & decision-making system (networks & programmes)	<ul style="list-style-type: none"> <li>• Decentralization</li> <li>• Deconcentration of funds and posts</li> </ul>
Public/private relations	<ul style="list-style-type: none"> <li>• Parent participation</li> <li>• Partnerships with civil society</li> </ul>
Didactic-pedagogical aspect	<ul style="list-style-type: none"> <li>• Modernization of syllabuses</li> <li>• Diversification of careers</li> <li>• Creation of national teacher-training systems</li> <li>• Programmes to support primary education</li> </ul>
Introduction of new programmes	
Monitoring & qualitative control	<ul style="list-style-type: none"> <li>• Creation of an integrated national educational assessment scheme</li> </ul>

regulate the distribution of funds between the units of the federation, introduce progressive allocation and promote better pay for teachers.

New legislation, which began to be implemented in January 1998, has brought major changes to the system by which federal funds for primary education are distributed among the units of the federation. Under the new scheme, 60% of all the funds constitutionally allocated to education by state and municipal governments – or 15% of available revenue and fiscal transferences – are pooled in each state in a fund for distribution to the State itself or to municipal districts. The sums distributed are proportional to the number of primary schoolchildren actually attending school in the respective school networks, on the basis of US\$ 300 per child per year. Likewise, under the new scheme at least 60% of the total resources in the fund must be spent on improving the pay of primary-school teachers, the suggested minimum salary being equivalent to *per capita* annual expenditure on pupils. It falls to the federal government to top up state funds that fail to attain the minimum expenditure level owing to lack of resources.<sup>12</sup>

This measure met with strong opposition, postponing implementation for a year.<sup>13</sup> However, just one year after it was introduced, significant effects of the new scheme could be felt, especially *regional redistributive effects*,<sup>14</sup> *increased average spending per pupil*,<sup>15</sup> and *better pay for teachers*.<sup>16</sup>

The programme has also had a major impact on municipalization<sup>17</sup> and the quality of teaching by reducing the number of unqualified lay teachers and improving teacher qualifications.<sup>18</sup>

*Decentralization and greater redistribution of spending.* The transference and delegation of spending powers to states, municipalities and to schools themselves have been a constant feature of the new system for implementing virtually all federal programmes designed to promote primary education.

The Ministry of Education introduced the Programme for the Maintenance and Development of Teaching (PMDE), now called the Efficient Public School Management Programme, in 1995 with the dual purpose of reinforcing schools' autonomy and encouraging parents and the community to take an active part in the running of schools. The programme transfers funds annually to municipal and state public elementary schools to facilitate disbursements for small items of day-to-day expense and for physical maintenance of school buildings.<sup>19</sup> Every year the programme distributes approximately US\$ 250 millions, each school receiving a sum based on the size of the establishment and its regional location.<sup>20</sup>

PMDE encourages more active participation of the school community – teachers and parents – in management of schools. Indeed, the legislation requires that the funds for the programme be delivered direct to the school's collegiate board, normally organized along the lines of a teachers' and parents' association. In order to perform its role as a financial executor agent, the collegiate board must acquire appropriate legal status.

Decentralization of the School Meals Programme (PNAE) likewise seeks to promote autonomous administration on the part of municipalities and schools. The programme annually transfers federal funds for school meals in public elementary schools equivalent to R\$ 0.13 per pupil (and, until 1998, R\$ 0.20 for schoolchildren in poorer municipal districts encompassed by the federal government's Solidary Community programme). Between 1995 and 1998 the programme covered about 95% of all public elementary schools and extended funding from 180 to 200 days of attendance for 95% of all the municipal and state public elementary schools in Brazil, supplying one daily school meal to approximately 35 million schoolchildren. Funds for School Meals derive from taxation and are part of the Ministry of Education's budget. The evolution of spending for this programme in recent years (in millions of *reais*) is as follows: 1995 – 625; 1996 – 628; 1997 – 673; 1998 – 785. Spending on this item in the 1999 budget is estimated at R\$ 903 millions.

Decentralization has advanced progressively in recent years with the programme's cover expanding from 1,532 municipal districts in 1994 to 4,134 municipalities in 1998, that is, roughly 80% of all the municipal districts in the country. Decentralization to individual schools has also advanced considerably, 27% of Brazil's public elementary schools now receiving funds directly.

Recent studies and surveys (NEPP, 1998) have observed positive results of decentralization in terms of efficiency and effectiveness, registering

improvement in coverage and regularity of services. Owing to regional differences and to discrepancies within the school networks themselves, effects on the quality of teaching are as yet unsatisfactory. The Ministry of Education has implemented several programmes to tackle this predicament, especially in the fields of teacher training and improvement of teaching materials.<sup>21</sup> The most noteworthy of these are the Distance Education – ‘TV Escola’ Programme<sup>22</sup> and, more recently, the National Computers in Education Programme (PROINFO).<sup>23</sup>

*Changes in public/private relations and increased community participation in the public education system.* Privatization *sensu strictu* or even decentralization through involvement of the private sector, with or without a view to profit, has not been on the agenda of government policy for public elementary and secondary education. In actual fact, the recent trend has been for the private sector’s share of places on offer at schools to diminish at elementary level.

The State’s relations with the private sector in education, though, have changed markedly in two areas. On the one hand, they have changed in the visible trend toward greater parent participation in school management through school boards and parent and teacher councils to which it is government policy to transfer funds and delegate an increasing number of duties. The other area is the growing participation of NGOs and the business community in activities supporting the public education network.<sup>24</sup> In the case of the NGOs, participation comes in a variety of forms,<sup>25</sup> mostly through partnerships or contracts with the public sector, which partly or entirely funds their actions.

Proposals for reform in higher education are becoming more specific though not yet clearly defined. The hefty *per capita* outlay (per student) and the high proportion of spending on universities in the federal education budget are the main arguments used either to demand greater efficiency from the university system or to support proposals for recovering the costs (through payment of enrolment or tuition fees). These proposals are repeatedly put forward as ways of correcting another glaring distortion in Brazil’s higher-education system: public universities generally provide higher quality degree courses and are attended mostly by students from middle- and upper-income brackets.

The introduction of university fees is not, however, a prevailing position on the government’s agenda and faces strong opposition from various social groups, not least, of course, from public-sector lecturers who regard it as a potent inroad for privatization.<sup>26</sup> Autonomous financial management – achieved by setting a percentage of revenue – was the one innovation introduced in this area in the mid-Eighties. The relatively successful experiments carried out at state public universities have not been extended to federal universities, due likewise to resistance from the universities themselves.<sup>27</sup>

In sum, though it has only been made properly effective at elementary level, a number of breakthroughs can be credited to the education reform:

- quantitative progress and impact on redistribution and equity:
  - improved universalization of primary education and greater cover in secondary education
  - greater regional and individual redistribution of spending
- qualitative progress: improved syllabus contents and educational procedures
- political-institutional achievements:
  - increased credibility of educational policy and authorities
  - broader coalition in support of changes in the field
  - democratization of information
- improved assessment systems and control of educational results
- improvement in the quantity, quality and speed of educational data and statistics
- introduction and extension of educational assessment schemes at all three levels of education.

Nonetheless, there is still plenty of room for improvement in the reform. As already stated, secondary and higher education still lack properly structured, coherent reform projects. At secondary level, despite the recent growth in enrolments, coverage is still glaringly insufficient. Secondary schooling still lacks resources for funding in the present and expansion in the future.

On another front, more directly related to the labour market, investment in human resources involves professional training programmes which are being restructured to meet the new requirements of the pattern of growth.

### **III.2 Labour training and qualification**

Since the mid-Eighties the growing, fluctuating unemployment rates have placed the issue of professional training and programmes for encouraging forms of self-employment on the social agenda. However, progress was only visible in the Nineties when innovative programmes in this sphere were created and implemented. Among recent institutional innovations are the introduction of 'productive' type programmes designed to generate employment and opportunities for generating income besides improved 'employability' of workers.<sup>28</sup>

#### *III.2.1 Professional training programmes*

*National Professional Education Plan (PLANFOR).* The PLANFOR (National Professional Education Plan) has encompassed and extended previous state-level professional qualification programmes. One of the federal government's priority projects, it was designed to cover the 1996–99 period, and,



annually as from 1999 to provide professional qualification for 20% of the economically active population (EAP) – about four times more people than are served by current programmes. The programme is run by the Ministry of Labour's SEFOR (Professional Qualification and Development Secretariat) and is funded by the Workers' Support Fund (FAT).

The government's decentralized implementation of the programme is organized on three fronts: State Qualification Plans,<sup>29</sup> partnerships with the entire network of Brazilian professional education institutions<sup>30</sup> and the mechanism of using councils and commissions as the basis for decision taking (CODEFAT and the State commissions).

The programme and the funds invested in it expanded rapidly between 1996 and 1998. This can be gleaned from Table 3.7 below: the programme has advanced to cover approximately 1.8 million workers in 1997 as compared with 1.2 million workers in 1996 – about 12% of the unemployed (that is, roughly 5% of all those in employment).

*Solidary Community Council programmes: Solidary Qualification and Solidary Literacy.* The Solidary Community Council, meanwhile, has been running two programmes since 1996 specifically designed for training underprivileged young people, a group virtually excluded from the regular social protection net. These programmes are the Solidary Qualification Programme, designed to introduce poor young people resident in metropolitan regions to the professional labour market, and the Solidary Literacy Programme, the purpose of which is to improve literacy among poor youths living in municipal districts in the North and Northeast of Brazil where illiteracy rates are highest among adolescents and adults.

The aim of the first programme, funded exclusively by private enterprise, is to give young people between the ages of 14 and 21 living in metropolitan regions the necessary training to enter the labour market. Between

Table 3.7 PLANFOR: Evolution of the Number of People Trained and of Investment – 1994–98

Absolute figures & annual variation							
PLANFOR							
Brazil	No. of trainees (in thousands), annual variation (in %)						
	1994	1995	1996	1997	95/94	96/95	97/98
	83.1	153.4	1,193.1	1,800	185%	778%	51%
	Investments (in thousands of R\$) and annual variation (in %)						
	14,932.3	28,214.2	226,442.2	–	189%	803%	–

Source: MT/Sefor in Azeredo (1998), p. 201.

1996 and 1999 this programme provided approximately 22,000 young people with professional training. The second programme, supported by both public and private funds, is designed to reduce or reverse the high rates of illiteracy among adolescents aged 12 to 18 in municipal districts recording the highest levels of illiteracy for that age group. This is a necessary step for any endeavour to provide young people in this age bracket with professional training. The programme taught about 200,000 young people to read and write between 1997 and 1998.

### **III.3 Health Policy. Overview of the sanitary reform and implementation**

Until the 1980s, Brazil's health policy operated within a highly fragmented institutional framework in which the dichotomy between prevention and cure prevailed.<sup>31</sup> Its most salient features were as follows:

- in the *health care model*, urban medicine geared to curing and based in hospitals predominated to the detriment of basic, preventive health actions, especially where the rural population was concerned;
- private medical institutions collaborated with the public health system in the *provision of public health services*, the former supplying 70% of all the medical services<sup>32</sup> contracted by the public sector and, since the late Eighties, accounting for more than 30% of the entire health market;
- concerning *access to services*, a trend toward universal access was visible extending from the social security segment.

#### *III.3.1 The first reform cycle: the Eighties*

The powerful social movement supporting sanitary reform since the late Seventies has been guided by the following main principles:

- decentralization, focussing on the states and increasing the role of municipal authorities;
- integration of the managing authority in each tier of administration;
- participation of civil society to ensure social control;
- systemic integration of preventive and prophylactic actions.

The victorious reform, wrought in the environment of Brazil's redemocratization, was consecrated in the 1988 Constitution as the Unified Health System (SUS). It was integrated not only with Social Security but also with Welfare and Social Assistance<sup>33</sup> and was based on the population's universal right to health. The following organizational aspects of the new policy deserve special mention:

- *Healthcare model*. System of free demand and universal access to all types of services regardless of complexity;

- *Organization.* System based on principles of decentralization, municipalization, observance of hierarchy, regionalization, integration and unified command;
- *Funding.* Funds derived from social security contributions (deducted at source from payroll), fiscal revenues (taxes and rates collected by the federal, state and municipal governments), levy on corporate invoicing (COFINS), tax on net profit and finally sums originating from other sources (gambling, taxes on harmful substances, and so on);
- *Federative distribution of obligations.* Duties shared by federal, state and municipal authorities: health care, public assistance for the needy and protection for the disabled. The system envisages decentralization and municipalization of basic and preventive actions in the provision of health services, technical and financial cooperation being supplied by the Union and the states.

The decentralization of SUS was slow. In 1994, the government defined modes of decentralization and management: incipient management, partial management and semi-full management. As late as the end of 1997, however, only a little over half Brazil's municipal administrations had adapted to these modes.<sup>34</sup>

The funding of the system proved increasingly unstable as resources ran dry. Besides excessive dependence on the Union, two circumstances brought SUS under considerable pressure: the cancellation of payroll deductions for funding the health system in 1993<sup>35</sup> and, since 1994, the restrictions imposed by fiscal adjustment and the operation of the Emergency Fiscal Fund.

### III.3.2 *The second cycle of reform for SUS*

A series of measures unveiled in 1995 and 1996 has gradually changed the face of SUS. The guidelines and principal contents of the reform are outlined in Table 3.8.

*Diversifying sources and criteria for transferring funds.* The unstable system of financing SUS led to the creation of a specific source of funding, passed by Congress in 1996, in the form of a tax on cheques, the CPMF<sup>36</sup> (Provisional Financial Transactions Contribution).

*Intensifying decentralization.* In 1996 the system of decentralization and engagement was simplified to comprise just two types of management: Full Basic Assistance – involving a lesser degree of autonomy – and Full Municipal System (or State System in the case of the engagement of states) – under which municipal authorities assume full responsibility for administration of health. By the end of 1998, 5,136 municipalities (93% of Brazil's

Table 3.8 Brazil. Recent Health Policy Reforms: Dimensions and Contents

Reform Items	Contents & Guidelines
Funding & transference system	<ul style="list-style-type: none"> <li>• Diversification/expansion of sources – CPMF tax</li> <li>• Redistribution of resources to benefit basic services – PAB</li> <li>• Introduction of individual <i>per capita</i> as a parameter for intergovernmental transferences – PAB</li> </ul>
Decentralization & autonomy in management & spending	<ul style="list-style-type: none"> <li>• new forms of decentralization and inclusion of municipal districts (NOB 96)</li> </ul>
Targeting basic actions and the poor	<ul style="list-style-type: none"> <li>• Family Doctor Programme</li> <li>• Community Health Agents Programme</li> <li>• PAB</li> <li>• Basic Pharmacy</li> </ul>
Priority programmes	<ul style="list-style-type: none"> <li>• Combating Infant Mortality</li> <li>• Women's Health</li> </ul>
Reorganization of the State's regulatory apparatus	<ul style="list-style-type: none"> <li>• Modernization of regulation &amp; control systems</li> </ul>

5,506 municipalities) had already adhered, 4,665 to the Full Basic Assistance scheme and 471 to the Full Municipal System.

*Targeting basic actions and the poor. Priority programmes – PAB and Basic Pharmacy.* A new system of transferring funds to state and municipal administrations using PAB (Base Rate for Basic Assistance) was introduced in 1997 to preserve and expand basic assistance. PAB allocates a base rate of R\$ 10 (about US\$ 8.80) per inhabitant per year to cover the cost of basic health actions.<sup>37</sup> The PAB mechanism raises the level of spending for many municipalities, especially those not spending on health a sum equivalent to the base rate. The Basic Pharmacy, on the other hand, distributes medicines to approximately 4,000 municipal districts with fewer than 21,000 inhabitants, providing coverage for about 33 million people at a rate of R\$ 2 per inhabitant per year.

*Targeting the poor: Community Health Agents and Family Health Programme.* The strongest programmatic and conceptual innovation is certainly that relating to the Family Health Programme and, within it, to the Community Health Agents Programme.

The PSF (Family Health Programme) features a strategy for implementing community care. It seeks to redirect basic assistance, strengthening local health systems, ultimately promoting change in the current healthcare model. In the first six months of 1998, 1,472 PSF teams were providing 6.6

million people (1.47 million families) with basic healthcare in 567 municipalities across Brazil (approximately 81% of the target set for the entire year).

The PACS (Community Health Agents Programme) trains and mobilizes people from within the local community to carry out basic health and educational actions among poor families, particularly in rural areas. Growth has been substantial since 1995 with the number of agents increasing from 34,000 to 88,000 and the number of people covered rising from 22 million to 41 million (26% of Brazil's total population in 1998).

Two major innovations in this programme deserve special mention as they represent if not an advance at least a correction of SUS deficiencies: territorial restriction of clientele<sup>38</sup> and the decision to elect the family unit as a reference unit.<sup>39</sup>

Crucial to the actions of the two programmes mentioned above (PACS and PSF), PMRI is comprised by the National Immunization Programme (the successful traditional National Vaccination Campaigns) as well as the programmes for Combating Nutritional Deficiencies, Basic Sanitation and Integral Healthcare for Women and Children. Various positive results have been attributed to this approach.<sup>40</sup>

*Reorganizing the State's regulatory apparatus.* Probably one of the most decisive initiatives in the new cycle of change in health policy has to do with the modernization of the codes, regulatory systems and public controls on private-sector provision of medical and sanitary services. The broad-ranging, strong and diversified health market was traditionally governed by a loose, old-fashioned system of norms and institutions incapable of disciplining the market and safeguarding consumers' rights. The new law regulating private health insurance passed by Congress in 1998 is a landmark. The main innovations of the new law are the extension of risk coverage to treatment of chronic-degenerative diseases and AIDS, besides the requirement that insurers provide financial compensation when the patients they insure make use of public health services.

As for the control and inspection systems, the main drive of the changes is to strengthen the controls of the sanitary inspection services themselves and to make the application of fines more agile, especially with regard to medicines. The behaviour of spending broadly reflects and confirms such trends.

### *III.3.3 Health spending: level, make-up and recent performance*

Total expenditure on health between 1995 and 1997 ranged from 3.4% to 3.2% of GDP, respectively. Added to private-sector spending (1.9% of GDP in 1997), aggregate expenditure totalled 5.1% of GDP (IPEA, 1998; Ministry of Health, 1998). Recent spending patterns reveal two clear trends: increased spending and, in terms of make-up, the rising share of sub-national administrations in total public expenditure on health.

*Evolution of spending.* A sharp oscillation and increase in total and *per capita* social spending are two visible trends in the evolution of spending on health in the two decades under examination.

Consider, for instance, the statistics for the 1980s, as shown in Table 3.9, in comparison with the statistics for the 1989–98 period in average 1996 US\$ millions (Table 3.10).

A comparison of the two series shows a substantial increase in the level of spending from the early Eighties to the late Nineties of about 70%. In relative terms, too, there was significant variation: average *per capita* spend-

*Table 3.9* Public Spending on Health in the Different Tiers of Administration 1980–90

(in 1992 average US\$ millions)						
Year	Federal Spending	State Spending	Municipal Spending	Total Outlay	Federal Spending <i>per capita</i> (US\$)	Total Spending <i>per capita</i> (US\$)
1980	7,356.3	1,666.3	687.5	9,710.1	61.82	81.59
1981	6,846.3	1,560.1	641.7	9,048.1	56.46	74.62
1982	7,148.3	1,379.0	755.1	9,282.4	57.86	75.13
1983	5,715.6	1,291.0	632.1	7,638.7	45.41	60.68
1984	5,956.6	1,470.0	728.5	8,155.1	46.44	63.58
1985	6,857.3	1,553.6	827.5	9,238.4	52.47	70.69
1986	7,340.9	1,962.9	1,061.7	10,365.6	55.13	80.03
1987	10,624.4	906.4	982.2	12,513.0	78.31	92.23
1988	10,030.2	-59.0	1,535.0	11,506.2	72.56	83.24
1989	11,320.3	1,159.2	1,260.4	13,979.8	80.37	99.26
1990	9,451.6	1,621.1	1,424.0	12,496.7	65.86	87.13

Source: Médici, 1999 (Federal General Balance Sheets)

*Table 3.10* Brazil: Federal, State and Municipal Spending on Health (in 1996 average US\$ millions)

Year	Federal		State		Municipal		Total	
	Absolute	%	Absolute	%	Absolute	%	Absolute	%
1989	12.3	82.0	1.3	8.7	1.4	9.3	15.0	100
1992	7.2	72.0	1.5	15.0	1.3	13.0	10.0	100
1995	14.9	60.6	5.5	22.4	4.2	17.0	24.6	100
1998*	16.7	66.8	4.5	18.0	3.8	15.2	25.0	100

Source: Médici, 1999

\*Estimates based on budgets

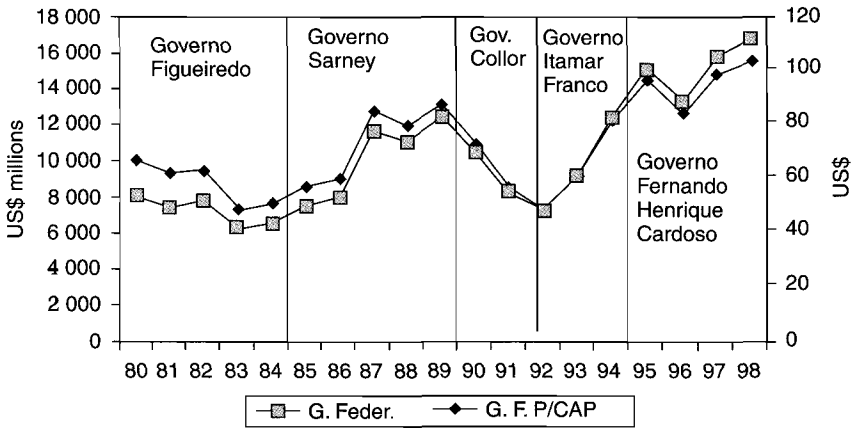


Figure 3.1 Evolution of Federal Spending on Health and Per Capita Spending on Health, Brazil: 1980–98  
Source: Médici, 1999.

ing in the 1980–90 period was 2.44% of GDP compared with approximately 3.3% of GDP in the second half of the Nineties. Figure 3.1 traces the evolution of spending between 1980 and 1998 per period of government.

*Federative decentralization and changes in make-up of spending.* A sharp trend toward decentralization of spending on health occurred throughout the federative tier structure. The federal government still accounts for a large share of spending. Owing to the rapid municipalization of SUS, though, municipal administrations' share of spending increased more than 60% between 1989 and 1998, compared with a 50% increase in spending on the part of state administrations.

Decentralization goes deeper than that, however, and is reflected in the dwindling federal government share of execution of expenditure, even when the share of funding (source of funds) for the system remains high, as can be observed in Table 3.11.

Table 3.11 Brazil. Federal Departments' Share in Consolidated Public Spending on Health – 1995

Type of Share	Federal Govt.	States	Municipalities
Share as per source of funds	63.0%	19.7%	16.4%
Share in execution of expenditure	58.0%	21.5%	20.5%

Source: IPEA/DIPOS, 1998

In other words, recent years have also seen major changes in the internal make-up of public spending on health, reflecting overall adjustment in the public sector. Indeed, the evolution of itemized federal public expenditure during the period of stability (1994–96) shows the sharp decline in spending on personnel, the almost imperceptible and shrinking share of investment<sup>41</sup> and the rise in spending to amortize debt. These figures, however, are accompanied by an undeniable effort to sustain the level of spending on medical assistance and substantial growth in negotiated transferences to state and municipal administrations. This can be seen in Table 3.12.

*Table 3.12* Brazil. Evolution of Spending on Health per Item of Expense 1994–96

Items of Expense	1994 (%)	1995 (%)	1996 (%)
Personnel	26.1	18.4	18.0
Current Expenses (in/out patients)	61.3	60.2	62.1
Investments	1.2	1.2	0.6
Capital Expenditure (amortizations)	2.5	9.3	3.0
Negotiated Transfers	9.0	11.0	16.2
Total	100	100	100

Source: IEPA/DIPOS, 1998.

The Brazilian government has been insistently criticized for the insufficiency of funds allocated to health, even though they have increased considerably. As a result, the drive to eliminate inefficiency has been a permanent concern in the implementation of SUS. The government's determination to sustain and increase funding in such a critical area throughout a period of severe fiscal adjustment and deep recession undoubtedly makes the Brazilian case both interesting and important.

### *III.3.4 Dimensions of SUS: indicators of coverage, production and productivity*

The effects of the reform movement are largely visible in the sizeable change in the dimensions of the health system and in production and productivity indicators.

*Coverage and performance indicators.* Following the introduction of SUS, the 'health market' has come to consist of three subsystems: the high-technology sector, serving 3% of the population and consuming roughly 35% of the resources for SUS; the intermediate level, catering to about 22% of the population mostly in the private sector through health insurance schemes, group medicine, medical cooperatives and self-management groups;<sup>42</sup> and universal healthcare provided by SUS itself to approximately



110 million people, ranging over all levels of complexity in terms of treatment, service being mainly precarious and varying considerably in quality. Table 3.13 indicates the sheer size of SUS.

Table 3.13 SUS, 1992: Indicators of Capacity and Provision

Clientele		
Potential clientele (total population)	150,000,000	
estimated public-sector clientele	110,000,000	
Equipment/Provision of Services		% of total population
No. of health clinics	49,676	
No. of in-patients	19,864,441	13.3%
No. of out-patients treated	394,575,147	264.2%
No. of hospital beds	544,357	0.36%

From the Seventies to the Nineties, the health system's installed capacity expanded greatly. The number of health clinics and health centres grew more than 133% between 1976 and 1986 (from 13,133 to 30,672) and more than 60% in subsequent years, attaining the 50,000 benchmark in 1992. Most of this growth occurred in units providing solely out-patient care (42,246 in all in 1992, compared with 7,823 in 1976) though the in-patients per 100 inhabitants ratio also rose from 11.0 in 1981 to 13.3 in 1992.

The number of hospital beds followed a similar growth pattern with the three beds per 1,000 inhabitants ratio in 1960 increasing to 4.2 in 1982 and settling at 3.6 in 1986 remaining the same until 1992. Meanwhile, the public sector's relative share in these figures diminished: in 1976 it provided 27% of all hospital beds in the country whereas in 1992 public hospitals provided just 24.8% of all hospital beds. Throughout the period, nonetheless, the relative position of less developed regions has improved, principally between 1990 and 1994. The number of medical appointments per capita (inhabitants per year) rose from 0.9 in 1981 to 2.6 in 1992.

*Health system personnel.* Doctors, nurses and paramedical staff – likewise grew in number between 1981 and 1992, the total number of work posts rising from 515,800 to 1,438,708 and the number of doctors increasing from 155,819 to 293,204.

*Decentralization indicators.* In 1992, the public sector accounted for 54% of all health establishments in Brazil but since 1980 the private sector has seen strong growth, its share expanding from 22% in 1980 to 45% in 1992. Nowhere is this more noticeable than in the hospital segment where private establishments represented 78.2% of the total in the last year of the period surveyed. However, since SUS was introduced the most significant change to the health system has been the decentralization of public health-care in the shape of municipalization, that is, municipal authorities' increased share in the global provision of health services.

Indeed, municipal networks saw their share of total medical establishments expand from 14.6% in 1980 to 37.6% in 1992, their share of public establishments rising from 26.6% to 69% in the same period. Municipal administrations were likewise previously responsible for just 16% of total public employment in the health sector, the figure standing at 44% in 1992 (Costa, 1999).

The trend toward municipalization has been strong since then also. In 1991, municipal hospitals accounted for 4.4% of all SUS in-patient treatment, this figure rising to 8.1% in 1994, their share of total hospital beds likewise increasing from 3.9% to 7% over the same period.<sup>43</sup>

### *III.3.5 Present challenges*

The sanitary reform in the 1980s bequeathed the Nineties a gigantic health system organized according to generous principles of universal care and provision of services. Operating the system has proved a complex task fraught with difficulties. The challenges facing the current agenda for change are as follows:

- universalization by exclusion since the system has incorporated contingents of patients previously excluded but by 'expelling' to the private sector an equivalent number of former users of the public health system;
- insufficiency and poor quality of service provided, producing growing discontent with the treatment dispensed.

As regards the design and dynamics of health policy, the problems mentioned undeniably stem from serious limitations and constraints such as:

- a healthcare model based on unfettered demand that totally lacks clear principles for limiting clientèle and determining the 'front door' for access to the system, only recently outlined;
- the slow pace of decentralization both in terms of including municipalities in the more autonomous modes of decentralized administration<sup>44</sup> and in terms of raising the proportion of direct transferences of

resources to state and municipal funds with a proportional reduction in the payment of service providers;<sup>45</sup>

- distorted, insufficient investment leading to incomplete installation of intermediate and basic service networks, which tends to overload and impair the efficiency of the hospital system;
- insufficient but above all ineffective use of resources: the high cost of the system as a whole combined with utterly insufficient levels of pay for staff and services;
- outmoded, inadequate organization and management of the system and its units.

One cannot fail to acknowledge the paradoxical nature of the recent history of health policy in Brazil and the ambivalent way both the process of change and the results of the policy are assessed. For some it suggests an urgent need to adopt another agenda for reform that reviews the very principles on which SUS is founded, especially the tenets of universal service provided free of charge. Others, meanwhile, consider that what is required is simply correction and adjustment of the present model which, to a large degree, has so far been prevented from demonstrating its full potential and advantages.

Polarization apart, there is no denying that the current minimum agenda for the health system requires a search for solutions to at least four basic aspects: on the funding and expenditure side, a positive combination of greater, more regular funding and, above all, more efficient spending; with regard to the healthcare model, the introduction of some kind of filter on demand;<sup>46</sup> concerning relations between the public and private networks, strengthening of the states' capacity for regulation; and, finally, where the management of the system (at all levels) is concerned, modernization and professionalization of procedures.

### **III.4 Social welfare reform**

Only at the end of 1998 did Brazil's welfare system undergo substantial – even then, only partial – reform. A number of adjustments and alterations were, however, made during the first round of reforms and even in the early Nineties. Certain characteristics of the system make it possible to identify the factors that are progressively making the system unworkable.

#### *III.4.1 General characteristics*

Together the two divisions of Brazil's welfare system (INSS social security for private-sector workers and the civil service welfare scheme in all three tiers of administration) provide welfare services for approximately 32 million beneficiaries at a cost of about 10% of GDP – roughly half the consolidated outlay on social spending for the three tiers of government. Table 3.14 displays these dimensions and other data regarding the system:

**Table 3.14** Brazil: Dimensions of the Social Security System – INSS and Civil Service

Dimensions	INSS General Regime (A)	Civil Service Regime			
		Federal (I)	State/Mun. (II)	Total B=I+II	Total A+B
Contributors (1996) (thousands)	28,278	953	2,837	3,790	32,068
Beneficiaries (1996) (thousands)	16,912	892	2,000	2,892	19,804
Revenue (1998) (in US\$ thousands)	38,347	2,197	3,351	5,648	43,894
Expenditure (1998) (in US\$ thousands)	44,859	17,481	16,796	34,276	79,135
Expenditure as % of GDP (1998)	5.95	2.32	2.23	4.54	10.49
Outlay as % of total public spending (1995)	43.5 <sup>1</sup> 25.9 <sup>2</sup>	21.4 <sup>1</sup> 0.08 <sup>4</sup>	34.9 <sup>3</sup>	22.4 <sup>2</sup>	48.5 <sup>2</sup>

Source: Barreto, Beltrão and Ferreira, 1997 and MPAS. Anuário Estatístico da Previdência Social, 1997.

<sup>1</sup> % of federal social expenditure

<sup>3</sup> % of state social expenditure

<sup>2</sup> % of combined social expenditure

<sup>4</sup> % of municipal social expenditure

The *private segment*, managed by the National Social Security Institute (INSS), operates on a pay-as-you-go system with defined contributions. As it advanced into the eighties, besides differing significantly from the social security regimes for civil servants (including military personnel), three other major features set it apart:

- glaringly unequal protection for urban and rural workers;<sup>47</sup>
- ample cover for risks in urban areas with the exception of unemployment pay, only introduced in the second half of the Eighties separate from the welfare system;
- the fact that it was the INSS medical assistance scheme that served as the basis for the policy of universal healthcare in Brazil.

By way of contrast, the *social security regimes for civil servants* were distinguished by the following features:

- the absence of any actuarial rule or any link between the level of contribution and the benefits received;

- unequal rules, contributions and benefits among the three tiers of government, among the different careers within the civil service and among the departments of the direct administration and the associate government agencies of the respective governments;
- a system of rights/privileges that facilitated early retirement on full pay or even on higher income.

The *costing* of the General Regime is based on payroll-associated contributions: employees pay 8 to 11% of their salary, depending on their income bracket, while employers contribute 21 to 23% of the payroll, the percentage varying according to the risk of the labour activity involved.<sup>48</sup> The role of the State is confined to covering the system's administrative and personnel costs and, at federal level, paying the pensions of federal civil servants. The social security regimes for civil servants vary considerably: each tier of government has its own retirement and pensions scheme to which civil servants pay different rates of contribution.<sup>49</sup>

In terms of benefits, it is worth recalling that only after the 1988 Constitution did urban and rural workers begin to receive equal treatment. Another salient feature is the variation and inequality of the sums paid for different types of retirement: due to permanent disability, age,<sup>50</sup> length of employment,<sup>51</sup> proportional (to the number of years of employment) and special retirement.<sup>52</sup> Between 1974 and 1994, the system included a sort of 'social pension' (Lifelong Monthly Income) for destitute old people and invalids not eligible for retirement or other pensions.<sup>53</sup>

Civil servants, on the other hand, besides being entitled to the same types of retirement pensions:

- retire on full salary as of the date of retirement, plus 20% in the case of federal civil servants, their benefits thus being subject to no upper limit;
- have retirement pensions indexed to the salaries of regular civil servants, their income being adjusted whenever civil service salaries are raised.

Partly because of this state of affairs, civil service social security regimes have gradually come to be financed solely from fiscal resources, the link between contributions and benefits being lost. In the Nineties, it is precisely these civil service regimes that have sunk into financial bankruptcy.<sup>54</sup>

### III.4.2 *Principal causes of the system's dynamic imbalance*

*The demographic factor and its relation to the labour market.* The growth of the Brazilian welfare system was rapid, particularly in terms of the number of contributors to the General Regime: in 1970 there were 7.6 million, in 1980 they totalled 23 million and by 1990 the figure had risen to 32 million contributors. The growth curve for beneficiaries was not so sharp until the

1980s when it climbed steeply, the total number rising from 9 million in 1980 to about 13 million in 1990 and more than 16 million in 1996.

Among the fastest-growing groups of beneficiaries are rural workers: they were no more than 4 million in 1991 but by 1994 were already more than 6 million. As a result, rural benefits represented about 40% of the total number of benefits granted and approximately 50% of all the base-rate benefits disbursed (equivalent to one minimum wage). These figures reveal a particularly interesting state of affairs. Owing to the changes introduced by the 1988 Constitution (extension of rural workers' rights to include a wider range of benefits; increase of the base rate for all benefits to the level of one minimum wage and simplification of the rules for granting benefits), in the early Nineties Brazil witnessed the inclusion of a wave of rural workers into the welfare system, access to which had hitherto been restricted, as stated above. This can certainly be credited to the democratic reform movement in the Eighties.

Such growth, though, should also be examined from the standpoint of structural factors contributing to the financial imbalance of the social welfare system. On the one hand, there is the system's relation (with the labour market, with the traditionally low welfare coverage of the economically active population, to be more precise). The main explanation for this is the sheer size of the informal labour market in Brazil, as can be seen in Table 3.15.

The modest recovery in coverage for the EAP in the second half of the 1980s seems to have been reversed in the Nineties as a result of the restructuring of the labour market provoked both by record levels of unemployment and by the highest-ever level of informalization of labour relations. Welfare coverage, that had stood at about 50% in the previous decade, sank to approximately 44% in 1995. This negative relation with the labour market is certainly one of the main causes today of the financial imbalance in the social welfare system.

*Table 3.15* Brazil: Ratios of the Economically Active Population (EAP) According to the Form of Involvement in the Labour Market and Registration with the Social Welfare System 1981-97

	(% figures)						
EAP/EIP*	1981	1985	1989	1991	1993	1995	1997
Formally registered (% of EIP)	–	55.8	58.8	58.8	53.8	48.4	46.5
Contributors	49.9	47.2	50.6	–	–	–	–
Non-contributors	50.1	52.8	49.4	–	–	55.6	–

Source: PNAD/IBGE in the Câmara dos Deputados 1992 Britto Report.

\* Economically idle population

Other structural factors that explain the current imbalance stem from recent demographic transition trends and the consequent ageing of the population. Besides the growing proportion of people aged 60 or over in the total population, life expectancy is also increasing as is the number of years beneficiaries actually make use of retirement pensions<sup>55</sup> – a matter of direct interest to the welfare system. Consequently, the rate of dependency on the welfare system, which stood at 3.18 in 1980, has shrunk to 2.5 contributors per beneficiary – a rate close to that for countries with populations whose average age is much higher, such as Japan, the USA, France and Germany. Projections suggest that the proportion may reach 1.2 or even less by the year 2020 unless the rate of formal registration in the labour market improves or the rules for granting benefits change rapidly (Barreto *et al.* 1997; Além and Giambiagi, 1997; Camarano *et al.* 1998).

*The financial imbalance of the Social Welfare system 1994–97.* The golden age of the Brazilian welfare system lasted until the eighties. This meant that contributors joined the system at a faster rate than growth of the EAP and of beneficiaries. This is typical of the situation of relatively new systems: positive demographic growth figures and growth in employment. The reversal of the trend commenced in the 1980s when stagnation of the EAP and demographic transition began to put pressure on the contributors-to-beneficiaries ratio. Meanwhile, running counter to this, benefits were being reviewed upwards in line with constitutional precepts.

The effect on the financial imbalance of the system is appreciable. In a strict technical sense, of course, the General Regime has not reached a state of bankruptcy. On the contrary, between 1994 and 1997 the system was operating with a credit balance, reflecting gains derived from economic stabilization. However, as early as 1996 the progressive reduction of these gains signalled an increased risk of debit balances.<sup>56</sup>

A historical series, though, is capable of showing that since the end of the Eighties revenue and spending in the system were on a collision course, as

Table 3.16 Brazil: Social Welfare Revenue and Spending 1989–97  
(R\$ millions in December/98)

Revenue/Spending	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Net revenue collected*	30.8	30.5	31.5	28.3	27.9	31.7	33.9	40.7	44.4	45.9
Outlay on benefits**	17.8	19.0	19.5	20.5	22.3	30.0	33.1	41.0	44.5	49.1
Balance	12.9	11.4	12.0	7.8	5.6	1.7	0.8	(0.3)	(0.1)	(3.2)

Source: Ornellas and Vieira (1999)

\*Total revenue collected less transferences to third parties.

\*\*Includes assistential benefits and benefits managed by the Treasury.

became apparent in 1996. By adding up the combined welfare obligations falling to the Union, one can detect a deficit in the making as early as 1995.<sup>57</sup>

The deteriorating predicament of the General Regime has been accompanied in the last four or five years by growing awareness of the outright imbalance pervading the civil service welfare regimes.

### *III.4.3 Reform cycles and agendas: objectives and principle measures*

Reformers in the 1980s pursued three objectives in social welfare: universalizing the system and making it more even-handed; correcting the main internal distortions; diversifying sources of funding so as to protect the system from the most acute fluctuations in the economy.

The following innovations and modifications introduced by the 1988 Constitution deserve special mention:

- establishing the concept of Social Security (encompassing social welfare, assistance and health) as the basis of the system;
- diminishing the inequalities between urban and rural beneficiaries;
- setting a base rate for welfare benefits (one minimum wage), thus slackening the direct link between contributions and benefits;
- introducing the principle of selectiveness with a view to enhancing the protection of lower-income segments among beneficiaries;
- electing specialization of payrolls as the basis for exclusive welfare contributions, and diversifying sources for other areas of Social Security (Health and Assistance).

These measures were implemented between 1988 and 1993 and, as we have seen, the most visible effect has been the increase in the system's level of spending. So much so that sources of revenue, already strained by changes in the labour market, seemed and indeed still seem insufficient, a fact that is gradually being grasped by social agents in Brazil. In the Nineties, a new reform agenda has been broached in this field against a backdrop of diffuse discontent and frustration.

As the second cycle of reform got under way between 1992 and 1993, an endeavour was made in parliamentary circles to establish a consensual reform bill. It was only in 1995, however, that the government finally tabled its new welfare reform bill. After several defeats in Congress and fresh rounds of negotiation, the main proposals in the government's bill were eventually passed in December 1998. Table 3.17 depicts the two reform cycles and the measures introduced.

### *III.4.4 Incomplete reform*

It is virtually a consensus that the reform undertaken to date is incomplete. From the point of view of tackling the deficit, it is reckoned that, although the reform will reduce INSS spending by R\$ 1.7 billions in 1999, the deficit



Table 3.17 Brazilian Social Welfare: status *ex-ante* and recent reform cycles 1988–98

Dimensions	Status Ex-Ante	1st Reform Cycle: 1988/94	2nd Reform Cycle: 1998
Institutional Organization	Comprehensive Welfare/Health/Social Assistance	Social Security Concept Functional separation Welfare (MPAS/INSS)* Health (MS)** Social Assistance (LBA)***	reduced basic system combined with supplementary private insurance
Financial Regime (General Regime)	Pay-as-you-go system Upper limit 20 min. wages contr./benef. Unified welfare fund	Pay-as-you-go system upper limit 10 minimum wages for contributions/benefits base rate one min.wage unified welfare fund	abolishes special service civil regimes upper limit 10 min. wages for contr. & benefits (R\$ 1,200), civil servants included contr. rates raised to 20% (active & retired) individual accounts in the fund <sup>1</sup>
Benefits Plan equitable	Extensive & equitable	Extensive	limited to welfare benefits & workplace accidents family allowance restricted to low-income contributors

Table 3.17 Brazilian Social Welfare: status *ex-ante* and recent reform cycles 1988–98 (continued)

Dimensions		Status Ex-Ante	1st Reform Cycle: 1988/94	2nd Reform Cycle: 1998
Retirement Pensions	Repayment Rate (Sum)	Civil servants: full pay Indexed to current salaries General regime: full pay after 30/35 years contribution	Unchanged	abolishes special civil service regimes (except military personnel) gen. regime: upper limit (R\$ 1,200) introduced (civil service included)
	Types	Age: 60 (W) & 65 (M) Rural: 70 (W&M) years of employment: 30 (W) & 35 (M) special & proportional: 25 (W) & 30 (M) disability	Rural: 67 (W&M)	abolishes retirement for length of service abolishes proportional retirement restricts special retirement to primary teachers age: 60 (W) & 65 (M) rural: 55 (W) & 60 (M)
	Cumulation	Permitted	Limited	Bans cumulative retirement pay (exceptions: teachers & doctors)
Workplace Accidents		1% to 3% payroll deduction (employer) exclusive INSS coverage	unchanged	Allows for private sector coverage
Pension Funds (State-Owned Enterprises)		Company/employee contr. = 2/1	Unchanged	Balances contributions 1/1

\* Ministry of Welfare & Social Assistance/National Social Security Institute; \*\* Ministry of Health; \*\*\* Brazilian Assistance Legion

<sup>1</sup> measure in preparation for (intended) conversion of retirement pensions to an individual capitalization scheme

is still likely to pan out at about R\$ 10 billions.<sup>58</sup> To a certain extent, this limitation reflects poorly designed political strategies both on the part of the government and of the various groups opposed to reform.

As far as the government was concerned, the gradual nature of the welfare reform was actually presented as a strategy, or at least as a resigned analysis of the facts. Obviously, as in other countries carrying out welfare reforms in a democratic environment, the issue engages virtually all segments of society, all pressure groups and thus tends to be slow and negotiated step by step.

In Brazil's case, however, the reform negotiated from 1995 through to the end of 1998 was plodding, confused and incompetently managed by the government. This is partly due to the fact that it was sidetracked by a challenging round of political negotiation (to push through Congress an amendment to the Constitution allowing the president to run for re-election), to urgent negotiations imposed by the electoral calendar (the October 1998 presidential elections) and to the fact that the government failed to drive home its proposal with sufficiently strong political will – at any rate it appeared that way – and to back it up with an efficient scheme for informing and forming public opinion. Worse still, no coherent statement was made to persuade people of the overall significance of the set of proposals tabled in Congress. A vision of the intended system of protection underpinning the proposal was lacking. In addition to the distortions and inconsistencies of the bill finally passed by Congress, the system that has emerged apparently does not contain all the elements required for restoring balance to the system in the long term.

From the standpoint of the political forces opposing the reform, the outlook is very bleak. This is not so much because of the defeats they sustained as of the dubious way they handled thorny issues, extending blanket opposition to items of the reform that were morally and socially irrefutable or making last-ditch defence of backward stances that were plainly unjust from a social viewpoint. The consequent loss of political capital may prove disastrous as the terms of the next round of welfare reform are announced.

### **III.5 Social assistance and programmes for combating poverty**

The last decade has seen substantial change in the way social assistance and programmes for combating poverty are administered. The difference is especially sharp if one considers the legacy of the previous period: an uncoordinated mass of programmes heavily concentrated in the federal administration; fragmented, discontinuous action; glaring ineffectiveness in terms of the results obtained and the impact produced among the target population; and, above all, the strongly clientelistic approach adopted in implementing such programmes.

### III.5.1 *The inflexion of policy: a brief assessment*

However much legislative measures may have restricted the major alterations in this field in the two reform cycles, change is forging ahead in a gradual, cumulative manner, the effects being felt above all in terms of key concepts and policy praxis. Among the strategic options shaping current action in this field, the following deserve special mention:

- the emphasis on social rights as the normative underpinning for programmes;
- the preference for programmes that enhance the target groups' autonomy;
- the insistence on selectiveness and focus combined with universalizing programmes;
- liaison with civil society viewed as an efficient strategy for combating poverty;
- decision-making mechanisms that foster participation;
- more efficient, decentralized and transparent management standards;
- the introduction of innovative procedures in the implementation of programmes, affecting particularly the procedures and systems for selecting beneficiaries and providing detailed accounts of the results obtained.

The first reform cycle came in the wake of redemocratization in Brazil, which culminated in the promulgation of the 1988 Constitution, and lasted until 1993 when the LOAS (Social Assistance Law) was passed. With regard to policy on poverty, since 1995 the Solidary Community Programme has been active in the poorest communities. Its Board has introduced several programmes implemented jointly with organized civil society, including the Solidary University, Solidary Training and Solidary Literacy programmes.

In the sphere of government, the main federal social assistance programmes are displayed in Table 3.18.

## IV. Final remarks

Reform of Brazil's social programmes is not yet complete, there being considerable room for improvement in terms of efficiency and equity.

The modest results obtained to date belie the intensity of change which, despite the lack of broad-sweeping reforms, has been altering the shape of social programmes since the Eighties, making significant alterations to the profile of the distorted, centralized Welfare State the country inherited from the military regime.

Indeed, the last 15 years have witnessed a large number of changes and inflexions to a variety of programmes, affecting everything from basic design to funding, organization, *modus operandi* and management approach. As we have underscored in this study, the results across the board in social areas confirm significant change in objectives, approaches

Table 3.18 Brazil. Federal Social Assistance Programmes 1995–98

Objectives/Programmes	Beneficiaries (May 1998) 1995–98	Funds executed ( <i>reais</i> )
<b>Care of Children &amp; Adolescents</b>		
Support for Poor Children (0–6 years)	1,465,568 children	665,570,240
Brazil Citizen Child Programme	403,752 children & adolescents	194,671,380
Combating child & degrading labour	43,000 children/24,000 families	20,495,235
<b>Support for the Elderly &amp; Disabled</b>		
Monthly benefit (one min. wage)	737,999 people supported	1,259,464,734
Support services for the Elderly	274,268 elderly people	78,459,701
Support services for Disabled	128,262 disabled	183,027,947
<b>Community/Income Generation Programme</b>		
Income Generation	12,484 projects supported 112,919 families & 564,595 people	35,935,960*
Community Action	1985 municipal; 129,662 families; 648,310 people	12,775,109*
<b>Other Programmes</b>		
Community vegetable gardens	51,114 families	28,083,837
<i>Meia Ponte</i> project (Goiania)	15,000 people covered	1,490,000

Source: MPAS/SNAS, 1998

\*1997

and guidelines even though not all the outlines of policies have been sufficiently redesigned.

Table 3.19 seeks to provide an overview of the change under way in Brazil's social policies: the main lines of action affected by the changes introduced during the two reform cycles described above.

It would therefore be no exaggeration to state that there has been a gradual inflexion in Brazilian social protection standards over the past 15 years. Not all the tenets of the emerging standard are yet discernible. On the other hand, the recentness of these modifications prevents distinguishing between permanent elements and other more circumstantial features related to the guidelines adopted by governments and specific administra-

Table 3.19 Brazil. Social Policies and Programmes: Main Lines and Contents of Change

Lines of Change	Main contents of modifications
<i>Conception</i>	
<ul style="list-style-type: none"> <li>• policy standards</li> <li>• criteria of justice</li> </ul>	Social Rights as the basis for policy Statement that basic programmes (elementary education; health) are universal & free of charge Stress on selectiveness and improvement of focus criteria Greater progressiveness in spending
<ul style="list-style-type: none"> <li>• policy/management style</li> </ul>	Reduction of clientelistic practices
<i>Public/private relation</i>	
<ul style="list-style-type: none"> <li>• funding</li> <li>• provision</li> </ul>	Introduction of private-sector participation Strengthening of third-sector partnerships
Type of programmes implemented	Introduction and/or boosting of monetary transference programmes Introduction of 'productive'-type programmes – training & popular credit
<i>Institutional set-up of policies</i>	
<ul style="list-style-type: none"> <li>• financing system</li> <li>• decision-making system</li> </ul>	Decentralization of decision making and resources Federative delegation of powers
<ul style="list-style-type: none"> <li>• supervision &amp; control system</li> </ul>	Expansion & institutionalization of social participation (council form)

tions. Even so, at least three of the new features described in this study seem to be operating more lasting changes in the sphere of the national social policy system: decentralization, the new parameters for allocating resources and the redefinition of public-private relations in the funding and provision of social goods and services.

Details have already been given of how these trends translate into each policy area. In these closing remarks, nevertheless, two salient features tend to set the Brazilian case apart from other social reform experiments. On the one hand, as we have already emphasized, public social spending has increased despite the concomitant fiscal adjustment even when, on many occasions, contingencies and cutbacks have seriously hampered implementation of social policies.

On the other hand, the reform movement has developed in two cycles with distinct, if not contradictory, approaches and objectives that partially overlap. This has undoubtedly fostered the search for more complex, innovative options than those envisaged by the simplistic neoliberal prescription of the Eighties. The final shape of the new social protection system now emerging from this process will in all likelihood reflect the peculiarities of the current situation and the options derived.

## Notes

1. Estimates for 1986 show that social contributions accounted for approximately 35% of total consolidated public spending in the social sphere and 70% of federal social spending. In 1988 social contributions were equivalent to 6.3% of GDP, funds allocated to social security totalling 4.1% of GDP, compared with 8.7% for total federal tax revenue (Draibe *et al.* 1995).
2. In 1990, Brazil's total tax burden corresponded to 25.5% of GDP, 17.3% being federal revenue (8.6% in the form of taxes and 8.7% from social contributions). Revenue collected by the states was equivalent to 7.3% of GDP and by municipal administrations 0.8% (*ibid.*).
3. These are funds derived from contributions or special taxes levied for specific purposes to which they must be allocated. Today, there are still more than eight such funds, the most important being the Welfare and Social Assistance Fund (for financing welfare benefits); FNDE – the National Fund for the Development of Education (derived from payroll contributions – the 'education wage' designed to support elementary education); FGTS – the Guarantee Fund for Length of Employment (an assets fund based on payroll contributions, the purpose of which is to support workers made redundant and to finance housing programmes); FAT – the Workers' Support Fund (a fund for financing unemployment pay) (Draibe *et al.* 1995).
4. In 1988, for instance, the breakdown of social public spending among the three tiers of administration, totalling US\$ 67.5 billions, was as follows: 64.1% for the federal government, 22.3% for state governments, and 13.6% for municipal administrations (*ibid.*).
5. Given a *per capita* GDP of R\$ 4,186 in 1995, estimated *per capita* social spending came to R\$ 868.90, roughly 20% of the total sum (IPEA, 1998, p. 20).
6. The sudden increase in the number of retired civil servants was mainly due to uncertainties regarding social welfare reform; the drop in spending on civil service payroll is mostly the result of wage losses incurred since 1994 (IPEA, *op. cit.*, p. 34).
7. IPEA, *Evolução do Gasto Social Federal*, FSP, 22/03/1997.
8. In 1997, a total of 46.5 million schoolchildren and students were enrolled in the public and private education system, 35 million in primary schools, 5.1 million in secondary schools and 1.6 million in higher education.
9. In 1994, 84.1% of all enrolments were made in the public-education network, compared with 15.9% in the private network; at elementary level the public system accounted for 88.4% of all enrolments and 86.3% of the teaching staff.
10. Schools run by the states account for 64% of enrolments at primary level and 90% at secondary level, whereas more than two-thirds of all pre-school places are provided by municipal establishments. The federal government, followed by state administrations, provides the majority of places in higher-education establishments. However, the figures vary considerably from one region to another when it comes to the share of state and municipal administrations in the provision of places at elementary schools. Municipal schools provide most places in the Northeast (47%) but in the South, North, Centre-West and Southeast regions of the country they account for only 36%, 32%, 26% and 20%, respectively, of all the places on offer. In any event, in 1994 municipal schools were already providing 32% of all the places on offer throughout Brazil in primary education.
11. Among programmes designed to improve the quality of teaching, two deserve special mention. The TV Escola Programme uses the medium of television to

provide teacher training and to give schoolchildren access to new information. The programmes are broadcast on an exclusive channel. In 1998, about 1,500 films had been broadcast and the programme was already available in approximately two-thirds of Brazil's public schools (50,000 establishments) to 73% of all schoolchildren (21.9 million) and to 70% (840,000) of the primary teachers in public elementary schools. The National Textbook Programme supplies about 90 million textbooks to all children enrolled in public elementary schools. In 1996 and 1997, 100 million textbooks for Portuguese Language, Science, Mathematics, History and Geography were assessed and distributed to children in the first four grades, the same procedure being initiated for fifth- to eighth-graders. A total of US\$ 100 millions was spent on this programme, benefiting 34 million schoolchildren.

12. According to Ministry of Education estimates for 1998, 20 of Brazil's 26 states transferred funds to municipal administrations, while in 6 states (São Paulo, Roraima, Goiás, Espírito Santo, Minas Gerais and Santa Catarina) the reverse occurred, that is, municipal governments forfeited funds to the state network if they failed to increase the number of places on offer in municipal schools. *Folha de São Paulo* 19/03/1999.
13. The resistance began in the States and municipalities that obviously stood to lose under the new system for failing to provide places in elementary schools proportional to 15% of their revenue. In some cases, the reaction also expressed concern at the scarcity of resources for funding other levels of education, especially pre-school and secondary education (*ibid.*).
14. Global transferences of funds relating to FUNDEF in 1998 totalled R\$ 13.3 billions or approximately US\$ 7.3 billions. The redistributive effects and the consequent reduction of regional inequalities are clear: R\$ 2.02 billions were transferred to municipalities that failed to attain the minimum funding level. Of this sum, R\$ 931.1 millions (46%) were distributed to the Northeast and R\$ 160.9 millions to the North (8%), two regions previously registering the lowest levels of spending per pupil. The federal government contributed R\$ 500 millions to these transferences and has allocated approximately R\$ 900 millions in 1999 (*ibid.*).
15. The increase in per capita spending on schoolchildren was about 22.7% nationwide but considerably sharper in the two poorest regions of the country, the Northern Region (47%) and the Northeastern Region (90%). In all, 2,703 (49%) of Brazil's 5,506 municipalities, providing 10.9 million of the 32.3 million places available in elementary schools, increased annual spending per pupil. In 1997, average annual spending per pupil in these municipalities was R\$ 167 and increased 129% to R\$ 375 in 1998 (*ibid.*).
16. The average increase nationwide was 10% between 1997 and 1998 but was truly remarkable in some municipal districts: 270% in Girau de Ponciano (Alagoas State); 195% in Boa Viagem (Ceará); 180% in Coroatá (Maranhão); 175% in Itabaiana (Sergipe); 165% in Redenção (Ceará); 150% in Santo Antônio de Jesus (Bahia) and Barras (Piauí); 131% in Araci (Bahia); 125% in Anápolis (Goiás); and from 85% to 110% in Marapanim (Paraíba), Ceará-Mirim and Macaíba (Rio Grande do Norte) (*ibid.*).
17. Between 1997 and 1998 the number of enrolments in the municipal network increased 21.5% whereas enrolments in the state network fell 4.6% in the same period. Even though the state share of enrolments continues to be the majority (53.3% in 1998), it has fallen 6%, which corresponds to the increased share of



- municipalities in total enrolments (46.7% in 1998). Here again, the sharpest increases in the municipal share of enrolments were registered in the North (11.1%) and Northeast (5.1%) (*ibid.*).
18. The proportion of teachers who have completed secondary education rose 7.6% and the proportion with a degree rose 12% (*ibid.*).
  19. PMDE transferred US\$ 229 millions to schools in 1995 and US\$ 269 millions in 1996. The legislation instituting the programme determined that the money received by schools be spent on the following items: maintenance and conservation of the premises; purchase of teaching aids and consumption material; training and qualification of school staff; assessment of learning; implementation of the school's pedagogical project; development of sundry educational activities. In 1997, schools were also authorized to spend this money on permanent material.
  20. The sums vary from school to school, from a minimum of R\$ 500 (schools with 100 pupils or less) to a maximum of R\$ 10,000 (schools with 2,000 or more pupils) in the South, Southeast and Centre-West regions. In the North and Northeast, the sums are 50% higher, ranging from R\$ 600 to R\$ 15,000.
  21. In addition to textbooks, the Ministry also distributes stationery and maintenance materials to public schools.
  22. Begun in 1996, the Pedagogical Kit Programme distributed TV sets, video recorders and satellite dishes to about 52,000 schools (virtually every school with over 100 pupils). The equipment was provided to support the TV Escola Programme for training teachers.
  23. PROINFO was introduced in 1997 with a view to installing computers in schools to aid teaching and learning and to modernize school administration. In the first phase, the programme distributed 100,000 computers to 6,000 schools and set up 200 Educational Technology Centres (NTEs) training a thousand multipliers to pass on their skills to 25,000 teachers and 6,400 technical staff.
  24. Foundations linked to large corporations assist the public-education networks in training activities, production of teaching aids, assessment and special education projects for schoolchildren. They have established their own national association, the GIFE (Educational Foundations Group) to coordinate their actions and promote their interests.
  25. Remedial tuition, teacher training, production of teaching aids, project assessment and so on.
  26. Considering the low proportion of spending that the charging of fees would cover (15% to 20% according to some estimates), the political reckoning of cost vs. benefit fails to rally support from other political agents.
  27. At primary and secondary level also there have been few successful experiences in hiring private enterprise to administer schools. In this case, the current reform agenda seems to have opted to incorporate managerial skills and practices into the institutional culture of the public-school network through training courses for school directors.
  28. In addition to training programmes, popular credit schemes have been introduced or strengthened.
  29. These plans, introduced in 1994, are coordinated by the respective State Labour Secretariats under the direction of the State and Municipal Employment Commissions, and are financed by resources from FAT.
  30. Comprised by the following training agencies: the federal, state and municipal technical education systems; public and private universities; the national

- apprenticeship services (SENAI/SESI, SENAC/SESC, SENAR, SENAT/SEST, SEBRAE); trades unions; schools and foundations run by corporations; NGOs; schools associated with free professional education.
31. The public sector itself was divided between preventive/collective medicine (administered by the Ministry of Health, State Health Secretariats and the secretariats of some large and medium-size municipalities) and prophylactic/individual treatment provided by the INAMPS (National Social Assistance and Welfare Institute), which was part of the National Social Welfare System. State and municipal authorities in large and medium-size municipal districts also provide hospital facilities.
  32. In 1978, 67.1% of private establishments had agreements with the public sector. By 1984, the proportion had fallen to 57.8%, probably as a result of the deterioration in financial transferences from the public sector and of the bias in public agreements toward philanthropic institutions, whose share increased from 69.3% to 72.9% in the same period. In terms of out-patient treatment, strong relative growth in the public sector (19.3% growth between 1978 and 1985) was matched by a relative contraction in the private sector (a mere 2.3% annual growth figure).
  33. Social security comprises the concerted action of public authorities and of civil society to guarantee the right to health, social welfare and social assistance. The Brazilian Constitution ascribes special importance to the following features of social security: I – universal coverage and attention; II – uniform, equivalent benefits and services for urban and rural populations; III – selectiveness and distributiveness in the provision of benefits and services; IV – the irreducible value of the benefits granted; V – equitative sharing of the burden of costing; VI – diversity of sources of funding; VII – the democratic, decentralized nature of administration with the participation of the community, especially of workers, the business community and pensioners.
  34. 57% of Brazil's roughly 5,500 municipalities (2,941 municipalities) had been included in the incipient or partial management categories and only 2% (137 municipal districts encompassing about 16% of the population) had adopted semi-full management, while 40% had not been included in any category.
  35. The compliance since 1991 with constitutional decisions regarding the value of welfare benefits meant that payrolls could no longer be used as a source of revenue for the health system, all Social Security transferences to cost SUS ceasing in 1993.
  36. Provisional Financial Transactions Contribution. Despite strong opposition, the contribution was renewed twice; in 1999 the rate charged was also raised from 0.2% to 0.38% on all financial transactions.
  37. The following actions can be costed by funds from PAB: appointments with doctors in basic specialities; basic dental treatment; out-patient treatment or home visits by Family Health teams; vaccination; community group education activities; pre-natal assistance; family planning activities; small-scale surgical operations; basic treatment by middle-level staff; Community Health Agent activities; PSF doctor assistance with deliveries in the home; initial emergency treatment (first aid). Certain other components are also contemplated: oral health; combating of nutritional deficiencies; environmental inspection; sanitary inspection; epidemiological inspection and control; and basic pharmacy.
  38. The family health unit operates within defined areas of cover, each team being responsible for an area including 600 to 1,000 families, the figure varying from one region to another.

39. PSF/PACS teams enrol patients using a *family register* that records members of the family, morbidity caused by living conditions, sanitation and environmental conditions in the areas where homes are located.
40. Infant mortality has dropped from 48.4 deaths per thousand live births to 33.7 between 1995 and 1997.
41. The most noteworthy investment programme at the moment is the Project for Enhancing the Reorganization of SUS – REFORSUS, begun in 1997. Financed by a loan from IDB, the programme is to distribute investments of US\$ 650 millions over a three-year period to projects for physical and technological readjustment of the assistance network, to the Family Health Programme, to haematology and haemotherapy services and to public health laboratories.
42. By chance, this is the segment where growth is highest, climbing from 22.4 million people in 1987 to 35 million in 1995.
43. Along the same lines, their share of spending on SUS admissions has risen in the same period from 2.9% to 5.4%. In both indicators, the share of the federal hospital network has fallen (to 1% or less) as has the contracted/philanthropic network (from 80.6% of admissions to hospital to 72.2% and from 78% to 65% in terms of expenses with admissions). Municipalization is also impressive when examined from the standpoint of the municipal hospital network's share of provision of beds, which has grown from 3.9% to 7% between 1991 and 1994 (IPEA, 1995: 10.8).
44. Despite the higher pace engendered by NOB 96, the proportion of municipalities classified in the Full Municipal System was a mere 8% (411 municipalities) whereas those operating in the Full Basic Assistance mode (3,706 in all) represented 72%.
45. 'Fund to fund' transferences were only regulated in August 1994. In December 1996, these direct, automatic transferences still represented as little as 23% of all the funds allocated to medical assistance (Levcovitz, 1997, p. 236).
46. Vianna and Piola refer to the notion of 'gatekeepers' (and the associated concept of restricted clientele) to give an adequate description of the idea of a filter on demand, recalling the role performed by the general practitioner in the British health system. They claim that the Family Health Programme operates in the same way, to a degree. Other experiments of the same kind have been implemented, for example the city of São Paulo's Health Assistance Programme (PAS) (Vianna, Piola and Reis, 1998).
47. Between 1930 and 1980, the system gradually incorporated different groups of workers and middle-class wage-earners in a sequence similar to that observed in other countries. Reforms carried out in 1967 and 1977 succeeded in harmonizing and unifying the different regimes for urban workers, standardizing contributions and rules for calculating benefits. Despite maintaining internal inequalities concerning types of benefits, the system achieved a fairly high degree of homogeneity, with the one exception of rural workers.
48. Two other business community contributions levied, respectively, at 2% of corporate turnover (COFINS) and at 10% of net profits (Contribution on Corporate Net Profits) are likewise earmarked for Welfare, ostensibly to finance Health and Social Assistance.
49. Although 6% is a frequent rate, in the 1980s the rates were raised to 11%, roughly the same level as the General Regime. In their capacity as 'employers', governments generally do not contribute.
50. Until 1988 the minimum ages for retirement on full pension were 70 for men and 65 for women; from then onwards they were lowered to 65 and 60, respectively.
51. In the case of men 35 years and 30 for women. Very few countries retain this type of benefit.

52. Teachers can retire after 30 years on the job (men) and 25 years (women).
53. In 1993 this benefit was replaced by the *old person's benefit* equivalent to one minimum wage granted after means testing to poor senior citizens whose *per capita* family income does not exceed more than 25% of the minimum wage.
54. In 1998, the states of Rio de Janeiro, Rio Grande do Sul, Piauí, Espírito Santo and Alagoas spent, respectively, 36%, 35%, 35%, 34% and 30% of their total revenue on retirement and other pensions. Only two states (Ceará and Bahia) spent less than 10% of their revenue on this item. OESP 29/11/1998.
55. Demographic projections show that Brazil's old-age population (that is, those aged 65 years or more) will total 8.7 million in the year 2000 and by 2020 will have grown to about 18 million.
56. The levying of welfare contributions outstripped inflation by 26%, 11% and 4%, respectively, in 1995, 1996 and 1997.
57. According to estimates for 1998, spending by the Union, states and municipalities on retirement and other pensions generates a total deficit of R\$ 42.2 billions, of which the Union accounts for R\$ 18.3 billions, the states R\$ 13.5 billions and municipalities R\$ 2.5 billions (FSP, 06/11/98).
58. According to the Welfare Ministry, the saving for the Federal Government will be R\$ 1.33 billion and R\$ 1 billion for the states.

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# 4

## Capital Formation in the Context of Brazil's Economic Reforms in the Nineties – A Sectorial Approach

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### I. Introduction

#### I.1 Contents

The analysis in this chapter focuses on the 1994–98 period. It constitutes a first phase of transition to a new 'model' of behaviour among agents of investment in Brazil in the wake of stabilization and deregulation and during the major series of privatizations. In other words, it concentrates precisely on a phase in which the decision to invest was strongly charged with *transitory* circumstances, a phase in which many of the changes in the regulatory framework were still being implemented.

The sectors examined are those that have traditionally affected the global rate of investment in Brazil: industry, petroleum and mining (among tradable or import/export goods) and transports, sanitation, telecommunications and electricity (in the sphere of infrastructure). The manufacturing industry is the only sector in which the new open-market, privatized model had already been fully implemented in 1995. The present analysis is thus largely an examination of investors' behaviour *during* transition.<sup>1</sup>

Section II presents the figures on which the discussion below is based. As a novelty it provides sectorial statistical series that permit historical comparison with the investment drive currently under way in Brazil. The next seven sections summarize the sectorial studies carried out. The concluding section sums up the principal results obtained.

## I.2 The macroeconomic context of the 1995–98 period and the decision to invest

The evolution of Brazil's macroeconomic framework following the introduction of the *Real Plan* has been analysed in many studies that will not be reproduced here. With regard to investments, it is sufficient to say that since then the macroeconomic context has combined 'favourable' and 'unfavourable' signs for a decision to invest. In a very stylized manner, it can be stated that the favourable signs include success in taming inflation, an increase in real wages of approximately 30% (between July 1994 and the end of 1997), the resumption of credit for the purchase of consumer durables, reduction in the price of capital goods, and the 'wealth effect' phenomenon. Factors that have an unfavourable effect include low, very irregular aggregate growth, the overvalued currency (which has an ambiguous effect on the decision to invest because, on the one hand, it lowers the price of capital goods but, on the other, slashes profits in tradable goods sectors), the glaring imbalance in the balance of payments, soaring deficit and public-sector debt, and excessively high domestic interest rates.

For the purposes of the present chapter – which underscores the relation between profitability and the risks/uncertainties determining the business sector's decisions to invest – it should be stressed that, despite the tremendous advance achieved through price stability, the macroeconomic environment has produced a cautious attitude among the business community. As a matter of fact, that was one of the results obtained from a questionnaire to which 730 industrial companies replied. It was also confirmed by interviews with industrial-sector executives, both Brazilian and foreign. This 'atmosphere' was continually reflected in a good many forecasts concerning the future of the Brazilian economy made by macroeconomic analysts. On the one hand, they expressed concern at the overvalued exchange rate and external debt (that is, at the external vulnerability of the foreign exchange anchor model) and, on the other hand, at such high interest rates, public debt and public deficit.

The atmosphere was already fraught with doubt before the problems ensuing from the Asian crisis and, more recently, from the international instability made manifest during and after the Russian crisis had surfaced. In such circumstances, the 'external vulnerability' factor becomes acutely influential. The unfolding of events on the international stage from September 1997 onwards can be seen as a glaring manifestation of the balance of payments problems intrinsic to the model.

## I.3 Overview of the status of reforms in 1998

Table 4.1 provides a brief summary of the two dimensions of the reform process that most directly affect the decision to invest, that is, deregulation of trade and privatization.

Table 4.1 Status of the Main Reforms in 1998

Sector	Trade Deregulation		Reform of the Regulatory Framework & Privatization	
	Key Dates	Status	Key Dates	Status
Manufacturing Industry	1989/94	Concluded	1991/92	Concluded
Mining	1989/94	Concluded	1997	Concluded
Petroleum	1997/00	Little advance, progress predicted as from 1999.	1995/00	End of state monopoly in 1997. Partnerships and open competition in 1998/00.
Telecommunications	-	-	1997/98	Reform completed except concessions for 'mirror' operators forming regional duopolies.
Electricity	-	-	1993/00	Concessions Law passed in 1995. State/private-sector partnerships begun in 1994-95. Privatization of distribution concluded in 1998. Privatization of generation in progress 1998/01.
Transports	-	-	1995/02	Concessions Law passed in 1995. Privatization of rail ways virtually concluded in 1997. Incipient concession to private enterprise of highways and ports.
Sanitation	-	-	1996/01	Concessions Law passed in 1995. Absence of regulatory framework for the sector, continued indefiniton on ownership. Scarce privatization until 1998. Faster pace expected for 1999/01.



Industry was the only sector to enter the post-*Real* stabilization phase with reforms virtually complete since not only was the basic cycle of establishment of free trade coming to a close in 1994 but privatization had already been concluded in the two sectors where the State's presence had been strongest: the steel and petrochemical industries. In the mining sector, privatization of Companhia Vale do Rio Doce (CVRD) took place several years after the opening-up of the Brazilian economy (that is, in 1997). In the third tradable goods sector examined (petroleum) deregulated international trade has gradually been implemented as from 1998, market pricing being due by 2000.<sup>2</sup>

## II. Relevant figures

This section presents a framework of numerical reference to help focus discussion of the issues raised in the remainder of the chapter.

Table 4.2 shows how gross fixed capital formation evolved between 1971 and 1998 in the distinct periods into which investment in Brazil can be divided.<sup>3</sup> In the early Eighties a steep pro-cyclical decline set in, a period of relative stability in the rate of investment ensuing. A second pro-cyclical decline occurred during recession in the early Nineties, followed by a gradual increase in the rate of investment lasting until 1998 when the trend was reversed.

Table 4.3 provides an initial sectorial breakdown of the figures. Note that all the major sectorial groups experienced a decline in investments as a proportion of GDP in the Eighties (the one exception being residential building). In the first half of the Nineties, the drop was even sharper. Note that in this period investments that had been the dynamo of the Brazilian economy in infrastructure and tradables in the seventies (for example

*Table 4.2* Brazil. Annual Growth Rates for GDP and Gross Fixed Capital Formation (GFCF) and Investment Coefficient (GFCF/GDP) periodic averages  
(at constant 1980 prices)

	1971/80	1981/83	1984/89	1990/92	1993	1994	1995	1996	1997	1998
GDP annual growth rates (%)	8.4	-2.8	4.6	-1.7	4.1	5.8	4.1	3.0	3.3	0.2
GFCF annual growth rates (%)	9.3	-11.5	4.7	-7.1	7.1	12.4	12.9	2.4	12.7	-2.7
GFCF/GDP (%)	23.5	19.1	17.1	14.9	14.4	15.3	16.6	16.5	18.0	17.5

Source: IBGE (Brazilian Geography and Statistics Institute)

Table 4.3 Brazil. Gross Fixed Capital Formation – Total and Selected Sectors (as % of GDP)

(at constant 1980 prices)

	1971/80	1981/89	1990/94	1995/97
Manufacturing Industry	4.5	3.2	2.0	3.3
Mineral Extraction	0.2	0.2	0.1	0.1
Petroleum	0.9	1.0	0.4	0.4
Infrastructure	5.4	3.7	2.3	2.2
Subtotal	11.0	8.1	4.8	6.1
Governments (except Transports)	3.1	1.5	1.9	1.7
Residential Building	4.8	4.7	4.1	4.1
Others	4.7	3.5	4.1	5.3
Total	23.5	17.8	14.9	17.1

Source: Bielschowsky (1999)

industry, mining and petroleum) fell to less than half the levels recorded in the 1970s. They slumped from 11.0% to 4.9% as a proportion of GDP.

The drop in investments of 6.2% of GDP for infrastructure, petroleum, mining and industry is equivalent to more than 70% of the 8.7% reduction in GDP registered in the economy as a whole between the two periods (from 23.5% to 14.6%). To a large extent, recovery of the rate of aggregate investment in Brazil depends on performance in these sectors – precisely those to be analysed in the remaining sections of this chapter.

In the 1995–97 period resumption of investments was basically powered by the manufacturing industry and by other private-sector-led sectors of the economy. The most dynamic segment in the public sector was telecommunications. Data available suggest that, telecommunications excepted, investments in the public sector would have remained depressed in 1995–96 and only have begun to pick up again in 1997.

Considering that the currency has been overvalued in recent years, the figures are remarkable at first glance. It might be expected that industry would remain in a trough and that infrastructure sectors would receive disproportionately heavy investment. The explanation is that investments in infrastructure still relied on public funding and were therefore dictated by factors other than relative prices – essentially fiscal control and financial constraints – whereas investments in industry, as will be seen later in this chapter, were governed by transitory stimuli, producing a highly peculiar reaction on the part of economic agents.

Tables 4.4 and 4.5 provide a further breakdown of the data.

Table 4.4 portrays the main infrastructure sectors. Note that in every one activity declines with the passage of time, investments in the 1990–94 period dwindling to somewhere between half and a third of the level

*Table 4.4* Brazil. Gross Fixed Capital Formation in infrastructure sectors (as % of GDP)

(at constant 1980 prices)

	1970/80	1981/89	1990/94	1995	1996	1997
Electricity	2.10	1.55	0.91	0.52	0.57	0.57
Telecommunications	0.80	0.43	0.49	0.53	0.79	0.78
Transports	2.06	1.49	0.75	0.77	0.77	0.85
Sanitation	0.46	0.24	0.10	0.10	0.17	0.25
Total	5.42	3.71	2.25	1.92	2.30	2.45

Source: Bielschowsky (1999).

*Table 4.5* Rates of Fixed Investment in the Manufacturing Industry (as % of GDP) 1970–88 (averages) and 1995–97 (at constant 1980 prices)

	1971/80	1981/88	1995/97
Steel/Metallurgy	0.70	0.77	0.75
Auto/Transportation Material	0.42	0.21	0.44
Foodstuffs	0.52	0.31	0.37
Electric & Electronic Material	0.21	0.14	0.15
Plastics	0.10	0.09	0.12
Pharmaceuticals	0.08	0.02	0.06
Textiles	0.29	0.16	0.19
<b>Subtotal</b>	<b>2.32</b>	<b>1.70</b>	<b>2.08</b>
Chemical	0.63	0.53	0.33
Mechanical	0.37	0.21	0.17
Non-metallic	0.30	0.18	0.13
Pulp&Paper	0.17	0.13	0.10
Rubber	0.06	0.03	0.03
<b>Subtotal</b>	<b>1.53</b>	<b>1.08</b>	<b>0.77</b>
Others	0.66	0.44	0.44
<b>TOTAL</b>	<b>4.51</b>	<b>3.22</b>	<b>3.29</b>

Source: Elaborated on the basis of data supplied by R. Fonseca (1997) and IGBE for the 1971–88 period and by CNI/ECLAC (1997) for 1995–97.

recorded in the Seventies. In comparison with the first half of the Nineties, the figures for 1995–96 register a further sharp decline in the electricity sector, relative stability in transports, slight recovery in the sanitation sector, and a clear upsurge in telecommunications, especially in 1996. The data for 1997 suggest that the outlook did not change much in this last year.

Table 4.5 records the evolution of investments in the main segments of the manufacturing industry. Comparing the rates of investment observed in the 1995–97 period with those registered in the Eighties, it can be seen

that, besides steel and metallurgy, the segments with the most positive performance are those manufacturing consumer goods. The segments where performance compares least favourably with the Eighties are those manufacturing intermediary and capital (mechanical) goods, that is virtually the entire rearguard of the production chain in Brazilian industry.

The prospect presented by the figures displayed in the pages above is hardly encouraging. With the exception of telecommunications, all the sectors examined have consistently invested much less as a proportion of GDP than in the Seventies, and in the majority less even than in the Eighties.

One aspect, however, may allay the despondency these figures provoke: the fact that apparently some of the segments analysed (telecommunications, electricity, the manufacturing industry and petroleum, at least) are experiencing a phase of high capital yields produced by a variety of circumstances that are nearly always specific to each segment.<sup>4</sup>

The implication is that investment in industry and infrastructure is set to reap the fruits of previous endeavours, and that these sectors are about to enter a phase of 'growing yields'. If that is true, as the survey suggests, the prospect is that in the short and medium terms Brazil's incremental capitaloutput ratio will be lower than it has been in the recent past. Even just a slight increase in the country's investment/savings effort for the 1990-95 period would suffice to produce a series of basic advances in eliminating physical bottlenecks, improving systemic competitiveness and generating foreign currency earnings. If that is the case, underinvesting in recent years also means that the country has passed up an opportunity to grow without having to promote a major investment/savings drive.

A comment should be made on the relation between foreign direct investment (FDI) and gross formation of fixed capital by foreign capital. It is common knowledge (and this is borne out by the figures in Table 4.6)

*Table 4.6* Foreign Direct Investment (FDI) in Brazil, Select Indicators, 1976-98<sup>a</sup>  
(at current prices)

	FDI in Brazil as %of World FDI	FDI/GDP (%)	FDI/GFCF (%)
1976-85	5.3	0.7 <sup>c</sup>	3.3 <sup>c</sup>
1986-94	1.1	0.2	1.1
1995	1.5	0.6	3.1
1996	2.7	1.3	6.9
1997	3.9	2.0	10.4
1998 <sup>b</sup>	6.0	3.0	15.6

*Sources:* Elaborated on the basis of data from Unctad (WIR, several issues), Sobeet/Carta n.4/1997, Banco Central do Brasil, and Giambiagi e Reis (FGV, Conjuntura Econômica, Dezembro 1997).

<sup>a</sup> FDI figures include reinvestment but exclude portfolio; portfolio investment hypothesis equal to zero between 1976 and 1996 due to lack of data; <sup>b</sup> preliminary; <sup>c</sup> 1978-85.

that there has been a veritable flood of FDI in Brazil in recent years, to the point of restoring Brazil's share in worldwide FDI. Indeed, FDI has risen to an unprecedented level as a proportion of GDP and accounted for an historic share of Brazil's gross fixed capital formation.

It is best to exercise some caution in interpreting such figures, though. FDI sums are connected with financial flows and their precise relation to fixed investment (a non-financial economic variable) is an unknown quantity. What we do know is that much of the recent influx of FDI has to do with asset changes – it is estimated that approximately 50% of FDI in 1997 referred to privatizations and take-overs but it is not known what portion of the remainder was attracted to fixed investments in the country.

This is a one-off situation resulting from special opportunities afforded by economic reforms, so henceforth the volume of FDI can be expected to shrink substantially. The fact that the share of foreign capital in the stock of capital built up in the Brazilian economy means that in all likelihood such capital will play a greater part in the expansion of investments in the future than it has done to date. It says very little, though, about recent fixed investments. Among the seven sectors studied in this chapter, the only one in which there are unequivocal signs of a growing share of foreign investments in total fixed investment is the industrial sector. The other sectors, of course, were essentially state-run in the period under examination.

### **III. Investments in Brazilian industry following the establishment of free trade and the introduction of the *real*: the mini-modernization cycle, 1995/98<sup>5</sup>**

This section provides an overview of the results of a research project on factors determining the formation of fixed capital in Brazil's manufacturing industry after implementation of the price stabilization plan (*Real Plan*) and once the reforms were concluded.

Brazilian industry underwent a process of radical deregulation in the first half of the Nineties. The most important feature of this deregulation was, of course, the opening-up of the economy. The research examined investment behaviour in this brand new scenario and came to two sets of key results.

First, it identified a 'mini-cycle of modernization' in industry as a whole. In comparison with the trough in the first half of the decade, there was strong recovery in investments. Indeed, investments slightly topped the level attained in the Eighties (as a proportion of GDP) but remained lower than the peak recorded in the Seventies (see Tables 4.3 and 4.5 in section II).

Although in the more dynamic sectors of the economy investments extended beyond modernization, the most important and widespread objective was modernization. Indeed, the 730 corporations replying to the questionnaire and the 40 interviews held leave no room for doubt: the

investment boom in this period was basically geared to replacing equipment, unblocking bottlenecks, eliminating waste, and so on. In other words, it was focused on cost-cutting modernization.

The analytical argument is that this process was feasible because investment in modernization spells high yields inasmuch as it raises the efficiency of the entire stock of pre-existent capital. This argument solves one 'enigma': that in an environment fraught with low yields (associated with an overvalued currency), a high degree of uncertainty (as yet not much less than in the mega-inflation period) and high interest rates, industry managed to raise substantially the rate of investment, at least in relation to the rates prevalent before the introduction of the *Real* Plan. During this mini-cycle the marginal efficiency of capital was high, even higher than the soaring 'opportunity cost for capital', that is the astronomical interest rates paid by public securities (an average of 20% per annum in the 1995–97 period in real terms).

Three explanations can be given for such high yields: (a) the relative obsolescence of the installed productive park; (b) modernization occurring in an industrial park that had just undergone intense streamlining; and (c) the sharp drop in the price of equipment as a result of the exchange rate.

The mini-cycle corresponded to a relatively easy stage of post-reform, post-price-stabilization recovery of investments featuring high returns on investment in modernization. The 'tricky' stage, which has yet to begin, is that in which investments are allocated to expansion and the development of new products. This phase is likely to be 'tricky' because whereas the business community's decision to invest in modernization was designed to preserve the stock of capital already established – under pressure from international competition – its calculations for new enterprises include fears raised by uncertainties about the future that make decision-making all the more complex and cautious.<sup>6</sup>

The empirical data used to assess the behaviour of overall investment also indicated that the key frame of reference is growth in the domestic market. The aim was to raise the volume of exports but investment was basically geared to the domestic market – as in the past. Confinement to a domestic market where growth was throttled by balance of payments restrictions was tantamount to establishing a vicious circle in which exports expanded because the domestic market failed to expand and the domestic market was prevented from growing due to restrictions imposed by stagnant exports.

Second, the research established a hierarchy in the relative degree of dynamism between the distinct sectors of industry, explaining what determined this hierarchy. Analysis of the factors determining investment concentrated on the impact of macroeconomic evolution and industrial organization in the wake of deregulation on yield, growth and investment of corporations from different sectors. The determining factors were

sought, on the one hand, in increased output and higher capital gains and, on the other, in the relation between the investment–growth–yield trilogy and the conditions in which the ‘microeconomic’ organization of each sector coped with international competition.

The most dynamic segments were mainly in the consumer goods manufacturing sector – the steel industry being the odd man out. With a few exceptions, this group has much higher average yields than the less dynamic group and benefited from strong growth in demand driven by a real increase in wages. The reintroduction of medium-term hire purchase loans also played a major part in the case of consumer durables. Another key contribution came from the long-term strategies adopted by multinational corporations with regard to the domestic market in Brazil (and in Mercosur), which counterbalanced the uncertainties on the macroeconomic front. No less important was the fact that the favourable effects on competition of opening up the economy far outweighed the unfavourable effects. While these dynamic segments were in a position to import cheaper machinery and inputs, they were protected by high tariffs (durables), tax incentives (electronics companies in Manaus, car manufacturers in some states), by transportation/storage costs (food), by technical-sanitary norms and patents (pharmaceuticals, hygiene) and by high distribution costs due to low scale and the dispersion of the consumer market (other non-durables).

The less dynamic sectors were afforded less protection and so were severely hit by the overvalued currency. As a result, they displayed very low yields. This group can be divided into two on the basis of competitiveness and potential recovery of investments.

The first subgroup comprises those most likely to recover if the economic environment in Brazil improves. These segments include intermediary goods – chemical products, paper and cellulose, non-metallic minerals (building materials) and basic aluminium metallurgy – capital goods manufactured on order and the autoparts industry. The devaluation of the *real* in January 1999 may bring some relief to the textiles industry but there is scant prospect of major expansion in this segment due to the relatively undynamic potential of the domestic market and the difficulties of competing on the international market.

The second subgroup consists of sectors in which recovery is more problematic. These include serial capital goods, electronic components, and pharmaceuticals, that is, highly technology-intensive sectors.

The general conclusion to be inferred from the foregoing paragraphs is that the post-*Real-Plan* scenario has strongly encouraged investment in the production of consumer goods but has discouraged it in all the manufacturing support sectors, for instance capital goods, most basic inputs and components.

It is impossible to gauge to what extent each of the two elements analysed (deregulation and price stability) contributed to producing this

outcome. This methodological quandary holds true for the experience of most Latin American countries, especially those that moved from an environment of high inflation to one marked by price stability obtained by an exchange anchor.

In Brazil's case, the impact of the evolving macroeconomic environment in the Nineties (that is turbulence prior to the *Real* Plan and difficulties subsequent to it) is hard to distinguish from the effects of deregulation. It certainly impaired some of its potentially beneficial effects on industry's competitiveness. It also conspired against such effects in terms of possible positive urges to invest.

Added to this were uncertainties about future growth. Our research confirmed previous studies concluding that the driving force for investments is domestic market growth. The desire to increase exports is not absent from the decision to invest, but this decision hinges essentially on prospects for the domestic market. As there was consensus in Brazil that the stabilization model grounded in an exchange anchor would be difficult to sustain in the medium term and that it relied on low growth rates, expectations for future yields were likewise glum.

The methodological drawback mentioned does not prevent deriving at least one lesson from Brazil's recent experience. It confirms the validity of the postulate that deregulation policy is deficient if combined with an overvalued currency. An unreal exchange rate hampers competitiveness and investments in the tradable goods segment and that in turn sours the trade balance and sows doubt as to medium- and long-term price stability.

Brazilian industry is entering on a new phase with a 'model of accumulation' utterly distinct from that which governed decisions to invest in the past.

During the decades in which industrial output grew rapidly and industrial investment expanded even faster, business planning was informed by circumstances that strongly favoured investment.

Protection against imports restricted competition to domestic agents generating high returns and behaviour relatively undaunted by the risks and uncertainties inherent in open markets. Moreover, the very success of uninterrupted growth merely confirmed favourable expectations vis-à-vis risks and uncertainties. The open market environment of the economic scenario in the Nineties was markedly less inducive to investment. First, the 'superfluous' profit margins afforded by a closed market tended to vanish. Second, in stark contrast to the past, the risks and uncertainties of the domestic economy were compounded by those of the world market.

As the country enters this new phase, the relatively discouraging climate for investment is aggravated by the fact that the business community's 'animal instinct' has been dulled by almost two decades of meagre performance by the Brazilian economy, by scepticism about the prospect of broaching a new cycle of strong, sustainable growth, and by the complete



absence of government policies for supporting investment and industrial technical progress.

So from now on, investment is likely to be more cautious than in the past in reacting to economic expansion and macroeconomic stability.

#### **IV. Mining: low investments and indefinition regarding recovery in the wake of privatization**

The cycle of investments in the Carajás region in the 1980s was the last spate of intensive investment in the Brazilian mining sector. Compared with the Seventies and Eighties, investments in mining remained relatively depressed throughout the Nineties even after the introduction of the *Real Plan* in July 1994 (see Table 4.3 in section II above). The coefficient recorded is equivalent to annual investment of about US\$ 700 millions, a figure well below the target envisaged for the sector.<sup>7</sup>

Stagnation has set in at a time when the sector is undergoing significant organizational change.

Until recently mining was an activity run by the State in Brazil, the powerhouse of the system being the state-owned CVRD (Companhia Vale do Rio Doce). Large, private, Brazilian conglomerates also invested in a series of projects often granted government incentives. The participation of foreign capital was relatively timid.

In recent years three changes have radically altered the institutional framework for the sector. To begin with, since the beginning of the decade the sector has been exposed to deregulation, which has benefited the more competitive exports sectors (for instance iron and aluminium) and weakened less competitive imports segments (such as copper and minerals used to produce fertilizers).

Second, in 1995 an amendment to Brazil's Constitution restored access for foreign capital to the country's mineral wealth on an equal footing with Brazilian enterprise, thus abolishing a bar introduced in 1988. Legislators hope that this modification will attract investment from world mining giants, several of which have already been operating in the country for decades though on a much smaller scale than their Brazilian counterparts.

Third, privatization of Companhia Vale do Rio Doce went ahead in 1997. CVRD alone accounts for more than half of Brazil's total mining output and is the world's third largest mining company (3.3% of world output) behind Anglo American and Rio Tinto Zinc (8.6% and 5.4%, respectively).

Brazil's territorial extension and geological make-up suggest great potential mineral wealth. However, known reserves and current exploration fall far short of this potential. Given the country's failure to make full use of this mineral potential and the fact that its economy is highly diversified, mining has a very small share in GDP. This feature sets Brazil apart from other Latin American economies such as Chile and Peru. In 1995, for

example, Brazil's mineral output was a mere 1% of total GDP. It is the weight of mining products in exports (more than 80% of which are iron, aluminium and gold) and imports (potassium, phosphate, copper and coal – not to mention oil and gas, which are not covered in this section) that makes them important in the economic scenario.

The explanation for the dearth of investments in the Nineties lies in the combination of a powerful set of adverse factors. There are four main causes: insufficient knowledge of Brazilian geology; CVRD's strategic behaviour in recent years; failure to attract capital; and insufficient infrastructure.

With regard to insufficient knowledge of Brazilian geology, although there has always been a dearth of geological surveys of Brazilian territory, the situation has deteriorated drastically of late.

Perhaps the most glaring failure has been the feebleness of state commitment to basic geological surveying of Brazilian territory. This is essential to the mining industry wherever it exists. To make matters worse, private enterprise has invested very little in geological research.

In this scenario, CVRD and its prospection subsidiary Docegeo have been the most active institutions. (That, of course, does not include Petrobrás, whose prospection activities are confined to petroleum and gas.)

The recent privatization of CVRD has given the company new controllers, none of whom are a major mining group. Shareholders include Brazilian pension funds, Brazilian and foreign banks and investment funds, and a Brazilian textiles manufacturing company (there has been impressive growth in textiles in the last five to seven years). The consequences of this event are not yet clear, there being no guarantee that the grassroots exploration philosophy guiding Docegeo's operations since its foundation will be preserved.

Prior to privatization, the company confined itself to small-scale projects, mostly replacement of equipment, removal of bottlenecks, and so on. Large-scale new projects such as Salobo (copper, gold and silver) have been kept on ice and await the go-ahead from the new proprietors.

The relative cooling of investments at CVRD in the early Nineties was not improvised nor was it exclusively due to the saturation of the worldwide raw materials market in which the company has specialised. It was part of a strategic decision to adopt a cautious approach to investments in a period in which it needed to boost productivity and competitiveness. Priority was ascribed to improving geological knowledge of the ore-rich Carajás region, enhancing efficiency and the integration of transportation services, ports and terminals, raising productivity, honing the company's competitive edge through 'Total Quality Management', and expanding the electric energy resources available.

The third factor explaining the dearth of investments in the Nineties was the unattractiveness of the sector from the viewpoint of private enterprise, which is more wary of risk and more demanding of profit than the state

sector. A prime example of the unattractiveness of this sector in the Nineties is the rate of return on own capital among mining companies in the Nineties: 2.9% on average between 1990 and 1995. These are very low rates, all the more so when one considers the high risk inherent in the activity, the uncertainties concerning world and domestic markets, and the interest rates prevalent in Brazil. The exchange rate is obviously partly responsible for such low profits, with the currency being overvalued since the late Eighties and strongly so since the introduction of the *Real Plan* in 1994.

Prospects for the future are none too promising either, at least as regards the geological map known to date. Forecasts for domestic market growth are inevitably affected by recent low economic growth and the peculiarities of the exchange anchor model which, it is presumed, requires slow growth.

The main obstacle to the resumption of investments on the demand side, however, is the saturation of the world metals markets where Brazil has a comparative edge: iron ore, bauxite, copper, nickel, tin, lead and titanium.

Perhaps the most convincing illustration of low appeal is the lack of interest large international corporations in the sector have shown for investing in Brazil. Counter to what one might expect, this lack of interest was not caused by the provision in the 1988 Constitution barring investment by foreign companies in mineral prospection and mining. It predates the Constitution and was merely reinforced by the constitutional bar. Even with the removal of such restrictions determined by the 1995 amendment to the Constitution, this lukewarm approach to investments is likely to prevail in the years ahead. The trend is to invest little in mineral prospection and to prefer engagement in projects where risks are smaller. The overriding interest of foreign investors seems to be to minimise risk by investing in mineral deposits that have already been surveyed and are a known quantity, steering clear of direct exposure to the risks of geological prospection and preliminary working of mineral deposits.

In this respect, the absence of major world mining corporations in the 1997 privatization of CVRD is highly suggestive.

The fourth set of factors that have taken the shine off this sector comprises so-called systemic factors. More specifically, territorial extension combined with insufficient infrastructure in energy supply and transports have weighed against the Brazilian mining industry. To offset this, the government must take a stand and announce a development project attributing high priority to exploration of the country's mineral riches with a clearly defined prospect of occupying territory where mineral potential is known to exist.

## **V. Petroleum and natural gas: reduced investments before and after the reforms**

Observation of the petroleum and gas sector reveals a scenario of insufficient investment given the need to supply rapidly expanding domestic demand

for fuel from internal sources. The lack of investments contrasts starkly with Petrobrás's exuberant performance in terms of efficiency in output.

Between 1990 and 1997 investment remained in relative decline. As can be seen from Table 4.3 (section II above), the rate of investment dropped slightly throughout the Nineties, falling from 0.39% of GDP in the first half of the decade to 0.35% in the 1995-97 period (compared with an average of 1% in the Eighties).

The organisation of the oil sector in Brazil has undergone major change. Owing to constitutional restrictions, Petrobrás until recently stood for the entire sector since it had exclusive entitlement to operate the state oil monopoly. Constitutional Amendment 9/95 abolished the company's exclusive control, opening the way for private operators to enter the market.

Law 9478/97 introduced a series of subsequent regulations restricting Petrobrás's freedom of action. These new restrictions include a requirement for the company to submit its investment decisions to the recently created independent ANP (National Petroleum Agency), to allow other operators to use its transport installations and terminals (for a fee yet to be stipulated) and to place its geological knowledge at the disposal of ANP for possible use by other agents.

In principle, the basic innovations introduced in the recent institutional reform could both enable Petrobrás to take full advantage of the opportunity for expansion and provide private enterprise with a foothold for rapid growth in this sector.

For this to happen, though, the Federal Government must demonstrate its political will. In this respect, the last few years have been confused, years of indefiniteness marked by a pointless mix of conflicts between Petrobrás and the government (a natural consequence of the gradual curtailment of the autonomy the company previously enjoyed) and a prejudicial throttling at the hands of the government of its capacity to generate benefits for the country.

Petrobrás's recent track record is the result of a successful drive by the country to: (a) increase domestic production; (b) replace oil stocks faster than consumption; (c) expand supply logistics; (d) reduce the unit cost of prospection, exploration and refining; (e) develop advanced technology for deep-water drilling and extraction.

Nonetheless, the increase in consumption of oil by-products continues to cancel out growth in output and to fuel the deficit of supply over domestic production.

In a variety of ways, the Brazilian government has put a damper on Petrobrás's investment plans. It has cut down the sums SEST authorizes public companies to spend on investments, besides controlling prices and preventing the company from raising funds on the finance market compatible with its debt-to-equity ratio.

This attitude is an outright squandering of opportunities. Petrobrás is regularly achieving high returns with an output–marginal capital ratio way above any in its past history. With very little extra effort to save and invest, substantial gains in output could be obtained. This means that the company's capacity to reduce the deficit in current account transactions in the balance of payments by investing in productivity and competitiveness has been underused.

Results in the near future, however, continue to be strongly dependent on Petrobrás's capacity to invest. It should thus be authorized to raise the money it requires. Petrobrás is the only company with projects that can be implemented immediately. New projects require long terms for detailed planning and implementation.

Petrobrás has developed leading-edge technology for oil prospection and exploration in deep waters (at depths of 1,000 metres and approaching 2,000) in the conditions encountered in Brazilian coastal waters. If its investments programme is secured, it may soon be able to make the country self-sufficient in oil.

Despite the competitive edge Petrobrás has conquered over the years, there are at least three potential sources of uncertainty. The first resides in the fact that from now onward the relation between Petrobrás and the Brazilian government will be marked by greater institutional submission of the company to the government through the two new agencies created: CNPE and ANP. Dispelling the uncertainties raised by this new set-up largely depends on how restrictive the government's policy on corporate investment proves to be, since this is the main bone of contention.

Another source of uncertainty is the possibility raised by recent legislation that other agents operating in the sector may require access to the transportation and storage logistics Petrobrás possesses. Third-party use of Petrobrás's logistic capacity is a potential flashpoint as it would be very difficult to reckon a just price for such a lease. Leasing infrastructure may hamper expansion of sectorial investments. On the one hand, it casts doubt on Petrobrás's operational planning and scheduling of investments and, at the same time, discourages investment in private corporations. The latter cannot plan properly activities in the sector that may be subject to endless legal wrangles.

Third, the demand that Petrobrás make available to ANP all the geological knowledge it has gathered through decades of prospection may actually reduce the efficiency of petroleum activities in Brazil if it results in the purchase by other companies of the right to explore oil and gas reserves in regions where it would be 'natural' for Petrobrás to expand, that is, oil fields on the periphery of those where the company's activities are currently concentrated. In any case, the mere theoretical possibility that this could occur tends to disturb the company's strategy for future expansion,

casting serious doubt on the possibility of capitalizing to the full on the gains it is currently achieving. Since other companies would be unlikely to derive such gains from operating in the areas referred to above, owing to lack of scale economies, the outcome would be a loss of efficiency for the country as a whole.

Favourable prospects regarding the future of investments in Brazil's petroleum sector do, however, exist. There are increasingly clear signs that the government is determined to encourage joint-venture projects between private enterprise and Petrobrás and, should no takers emerge, to authorize the company to forge ahead with expansion projects on its own.

From the point of view of both the government and Petrobrás the system of joint ventures has the advantage of attracting funds to the sector. This apparently suits private enterprise too given Petrobrás's comparative advantages. The mechanism also has the merit of minimizing uncertainties and defusing potential conflict by bringing the productive agents in the sector (Petrobrás and private operators) together to tap the full potential for expanding the production of petroleum in Brazil. In the atmosphere of uncertainty pervading the new, post-reform industrial organization of the oil sector, the system of joint ventures is surely the best way to protect the expansion of investments and microeconomic efficiency.

## **VI. Investment and privatization in telecommunications: two vectors of a single strategy**

Table 4.4 shows that 1996 was a turning point in the pattern of Telebrás's investments. The rate of investment soared back to the levels observed in the Seventies, that is, about 0.8% of GDP or R\$ 7 billions (*reais*). This was way above the average rate of investment recorded in the intervening period (1988–95), which stood at about R\$ 4 billions.

The boost in investment was envisaged in the Ministry of Communications sectorial target programme (PASTE) announced in mid-1995. The document warned of the need to make hefty investments in telecommunications to establish the basic infrastructure in preparation for the advent of the Information Society.<sup>8</sup>

The restructuring and privatization of the sector began when Telebrás's monopoly was abolished (1995). This was followed by the institution of the so-called 'minimal' telecommunications law (private mobile telephony and other services, in 1996–97) and the subsequent General Telecommunications Law (passed in July 1997) and the proposal to divide Telebrás into regional sectors, and organize the system into regional markets in preparation for privatization (pursuant to the General Authorization Plan). The amendment of the Constitution and the subsequent reordering of the legal framework for telecommunications were nec-

essary preconditions for the success of the reform. This lesson had been learnt in the early Nineties when failure to make the necessary legal adjustments was one of the main factors to thwart the planned opening of the private mobile telephony market.

Once Congress had approved the constitutional amendment abolishing the public monopoly, the Ministry of Communications established a strategy consisting of three stages: (i) immediate opening of the private (Band B) mobile telephony market under the auspices of the Minimal Law (1996–97); (ii) drafting and approval of the General Telecommunications Law (1997) comprising four chapters – basic principles; the ANATEL (National Telecommunications Agency) watchdog and sectorial policies; the organization of services (classified as public or private, of collective or restricted interest); and restructuring and privatization – and (iii) reorganization and privatization of Telebrás, with the introduction of competition in the basic telephony network (1998–99). The guiding principles of the reform were competition and privatization.<sup>9</sup>

The privatization model based on Telebrás being regionalized (with competition for provision of services in the basic network) involved the following aspects: (a) division of Telebrás into four holding companies, three regional (Tele Norte-Leste, Tele Centro-Sul and Telesp in the state of São Paulo) and one national (Embratel); (b) privatization of the four holding companies for fixed telephony services (the three regional companies plus Embratel) and Telebrás's eight regional mobile telephony operators (dismembered from the existing system), making a total of 12 privatized holding companies; (c) introduction of competition in the fixed telephony basic network by means of concessions (regional and national) to new operators (local duopolies in the regions and in interregional and international telephony until 2002 followed by the removal of restrictions on new concessions from then on – pursuant to the Authorization Plan bill of 4 December 1997).

In stark contrast to what happened in the electricity sector, for instance, where investments declined during the period of reforms and privatization, in the telecommunications sector investments increased substantially during the period of institutional transition, as mentioned above.

A favourable combination of factors occurred in this period: recovery of the operating companies' funding capacity (mainly as a result of a sharp tariff hike at the end of 1995), the high rate of return on mobile telephony, the scale gains from expanding the network, the streamlining of costs among the Telebrás System operators, and the rapidly expanding telecom market (highly repressed demand).

Just as important was the political decision to modernize and expand in preparation for privatization. Since increased investment and subsequent expansion of the system occurred at the same time as the first stages of the privatization of Telebrás, the history of the period clearly shows that these

two elements (expansion and privatization) formed the kernel of the government's strategy in its endeavour to promote the global transition/restructuring of the sector, encapsulated in the idea of expanding the system under new institutional rules.

The political agenda, which implied unfreezing investments, was characterized by the following features: (i) agreement to the demand for immediate opening of the private mobile telephony market; (ii) decision to raise investments in tandem with the announcement of privatization/competition (investment for privatization and not to perpetuate a state monopoly); (iii) centralization of political power in the hands of the Minister of Communications and swift decision making.

The outstanding feature in the pattern of investments during the privatization period is the fact that as from the end of 1995 Telebrás was the object of a series of revitalizing measures. This contrasts with many of Telebrás's Latin American counterparts, which were only strengthened and received the investments they required to expand their networks after privatization was complete. The enhancement of investments in Telebrás in this period was a decision typical of a highly regulated monopoly company under strong political tutelage.

The decision was based on good economic and financial fundamentals. Moreover, it was part of an agenda of policy decisions leading to the unblocking of investments in Telebrás. The political clout of the Communications Minister, Sérgio Motta, was instrumental in ensuring differential treatment both for raising public tariffs and unblocking investments, as mentioned above. The ease with which these measures gained political approval was, of course, closely related to the fact that they were part of the plans and strategy announced in advance, that is, preparation for privatization of Telebrás.

Recovering the level of phone service tariffs was key to ensuring that in 1997 the Telebrás system's own resources (retained profits plus the depreciation fund) were equivalent to 77% of the sum of investments – an unprecedented level in the company's entire history.<sup>10</sup> Another contributive factor was the sharp increase in revenue from mobile telephony services, which accounted for 20% of total income in 1997, compared with a mere 4% in 1994.<sup>11</sup>

In 1997, the net profits for Telebrás (consolidated) attained the record sum of R\$ 3.9 billion, with a net profit margin of 24.7% (practically triple the figure for 1994). This can be explained by the tariff hike mentioned above, by considerable scale gains and by the substantial streamlining of costs in the system. Telebrás's excellent performance and its comfortable debt-to-equity ratio produced a remarkable increase in its stock market value from 1995 until the Russia crisis struck. The company's financial health was visible, and it soon became an attractive investment on the domestic and international finance markets. This enabled the company to



raise direct funds abroad (Eurobonds, American Depositary Receipts – ADR, and so on).<sup>12</sup>

With reference to investments in State telecom companies, even prior to the privatization of fixed telephony services, as from 1995 private investments increased considerably. This was directly due to the explosion of new markets, such as the mobile telephony segment, cable television, corporate networks, development of specialized networks, and so on. Incentives for investment in the most lucrative seam (that is, Band B mobile telephony) included the establishment of temporary duopolies (lasting about five years) in each of the ten telephony areas into which the country was divided, and a regulatory framework which was amended so as to favour future private operators,<sup>13</sup> besides the huge backlog in demand.

The prospects for continuity are bright for several reasons. The privatization contracts include binding expansion clauses – Universalization Plan (from about 20 million fixed lines at the time of privatization to 33 million by the end of 2001). Another major boost for investment has been intense technical progress and investments made in anticipation of competition (maintenance or increase of market share). No less important is the fact that the segment is highly attractive for private investment owing to the high profits and low pay-back periods and in view of the demand backlog that guarantees several years of rapid future expansion.

At present there are three basic causes for concern. First, several of the groups that won the privatization bidding include companies that do not possess the necessary scale and technical–financial structure to face up to international competition. This raises a suspicion that in the future the sector will once again be controlled by international champion operators. Until then investments in certain segments and regions may well be interrupted, impairing service to telecom users.

Second, the Universalization Fund envisaged by the General Telecommunications Law has not yet been approved. The purpose of the Fund is to finance services for distant and underprivileged communities, access to the Internet for schools, libraries, health centres, and so on. Due to the delay, the government's plans to universalize services have so far been confined to meeting the targets for individual and public payphone telephony contained in the concession contracts.

Third, the Fund for the Technological Development of Telecommunications, also envisaged in the General Law, has likewise yet to be approved. Serious doubts thus persist regarding the impact of privatization on the Brazilian telecom equipment industry. Since many of the new system operators are foreign companies with their own global sourcing policies, there is considerable uncertainty as to the volume and pace of imports of telecom equipment ordered by operators entering the market in the wake of privatization. On the one hand, Brazil already possesses a large installed

industrial park in this sector consisting of suppliers that include both subsidiaries of foreign corporations and Brazilian manufacturers capable of continuing to supply the domestic market. On the other hand, the new operators may have decided to participate in privatization in Brazil precisely because they see the country as a valuable market to be disputed by the suppliers with which they already maintain a special relationship abroad.

## **VII. Electric energy: low investments in a problematic transition phase**

The Brazilian electric energy market was deregulated in the 1993–98 period so that private capital could be invested in new power plants. The entire distribution segment was privatized but most of the energy generation segment is due to be privatized in the 1999–2001 period. The future of the transmission segment is still shrouded in uncertainty. As a result, decisions regarding investment in power generation and transmission have so far been taken basically by state-owned companies and the authorities. What follows is therefore an analysis of investment in an initial transition phase in which investments have still been determined and implemented by the government and by public-sector companies. The institutional framework has merely sought to accomplish the first stages of distancing the sector from the State-run model in preparation for privatization and the introduction of a system essentially dictated by market rules.

In contrast to the telecommunications sector, investment performance has been mediocre. As can be seen from Table 4.4, investments in this phase have been very low: 0.6% of GDP between 1995 and 1997 compared with an average 2.1% in the Seventies, 1.6% in the Eighties, and 0.9% in the first half of the Nineties.

These investments have been insufficient to meet growing demand (without neglecting basic safety criteria), which has exceeded all expectations since the introduction of the *Real Plan*. Fortunately, abundant rainfall in recent years has averted the need to ration electricity, though year after year Eletrobrás has warned that this may be on the books after reckoning shortfall risks. According to the most recent Ten-Year Plan (1998–2007) the most critical years concerning the ‘risk of a shut-down of peak demand’ and of ‘risk of an energy shortfall’ are 1999 and 2000.

Both concepts are inherent to the Brazilian energy model, which is based on hydroelectric power: (a) the risk of a shut-down of peak demand does not exist in countries where thermoelectric power plants predominate because they can always bring back into operation old thermoelectric plants that have been disconnected from the power grid. In the case of excess demand, they can be reactivated. This is not so in Brazil, and to make matters worse, it cannot import sufficient energy from neighbouring

countries; (b) countries operating thermoelectric plants do not have to deal with fuel supply problems because, at worst, it is a matter of having to pay a higher price. This does not apply to hydroelectric power, the fuel for which is water. Water supply is determined by rainfall and the capacity to stock sufficient water in the power plants' reservoirs.

The financial crisis hampering the energy sector, which had been dragging on since the Eighties, set the transition phase in motion in 1993. From then on there was a gradual introduction of institutional change. However, it took until mid-1997 for the first draft for the new regulatory framework to be concluded.

The model now being implemented aims to encourage competition in power generation. It is estimated that when privatization is complete, there will be about ten big hydroelectric power generation companies in the Centre-South of Brazil and two in the North-Northeast region, besides dozens of small hydroelectric power-generating companies and a good number of new thermoelectric generation plants. Verticalization is prohibited, distributors being restricted to purchasing only 30% of their sales from associate companies. The tariff system will be in a transition scheme from 1998 to 2005 with tariffs prevailing at the time of privatization of the distribution companies being maintained until 2002 and then gradually deregulated at a rate of 25% of the volume of energy sold each year. New power plants, however, will be free to fix their own prices from the outset. The most salient feature of the tariff regime is the establishment of a ceiling for the tariff the distributors can charge to captive clients (residential consumers, small and medium-size companies, and so on). This ceiling is to be fixed by the new regulatory body for the electric energy sector, ANEEL. In mid-1999 the criteria for setting this ceiling were still being discussed.

Transition in recent years has been problematic for at least three reasons. First, little heed was paid to the fact that the system in Brazil is hydroelectric and thus lacking in reserves. This requires the country to operate with a constant surplus capacity to make allowance for possible droughts or sudden surges in consumption. As stated above, the problem became more acute due to the surge in demand in the aftermath of the *Real Plan*. The fact that investments in expansion require very long construction periods became painfully apparent. This is particularly true of hydroelectric schemes but also of thermoelectric plants since, in the case of Brazil, long-distance gas ducts have to be built.

Second, despite the institutional changes that made the power-generation segment accessible to private capital, the specific conditions pertaining to the transition phase in Brazil make it very hard to predict the future of the energy market. Private sector estimates of risks and returns are thus subject to the generalized uncertainties as to the evolution of supply and demand. There is, for instance, considerable discrepancy among specialists as to what the marginal cost of medium- and long-term power generation

is. In other words, the climate for private capital is highly uncertain with investors giving clear signs of caution. They prefer to await the outcome of privatization (and the introduction of the new regulatory regime) to spot the best opportunities and choose the best options before venturing into hefty investments in new power-generation plants. Moreover, as the purchase of state-owned companies involves large sums, agents potentially interested in entering the energy market in Brazil must be biding their time by accumulating financial capacity. That would explain why they prefer to avoid investing in new enterprises.

Third, transition has come at a time when the government is ascribing top priority to its policy to keep inflation under control, maintaining public-sector debt as low as possible and preparing to maximize fiscal revenue from privatization. This option clashes with the decision to avoid the risk of energy shortfalls because it runs counter to the decision to make investments.

Investments in the electric energy sector have been low mainly as a result of the financial restrictions imposed on state-owned companies: between 1993 and 1998 there was a one-and-a-half-year period (1993 to June 1994) of megainflation combined with a drop in real tariffs, a one-and-a-half-year period in which the *Real Plan* was being implemented (until the end of 1995) when real tariffs declined again, and a three-year period in which, despite reasonable recovery of tariff levels, state-owned companies failed to achieve sufficient financial returns to meet the investment targets set.

This was partly due to the fact that higher tariffs more than proportionately benefited the distribution segment. The aim was to raise the segment's value to maximize fiscal revenue from the privatization of state concessionaire companies. At least until 1997, recovery of the distribution companies' tariffs failed to prevent investment in this segment from shrinking. The pattern of investment behaviour was even worse than in the generation and transmission sectors.

The main cause of poor investment performance in the electricity sector as a whole was the decline in the net inflow of third-party resources, which turned negative in 1996 and 1997, as a result of the strategy to settle debts.

In 1995, generation of domestic resources (retained profits plus depreciation) totalled US\$ 3.9 billions, and was scarcely supplemented by third-party funds, resulting in a mere US\$ 4.6 billions in investment. In 1996 and 1997 the increase in operating income substantially raised the generation of own savings.

These results improved the sector's financial performance. In 1996, it compensated the loss recorded in the previous year with 2% returns on the capital registered in the balance sheets of companies operating in this sector, and 3.3% returns when calculated on the basis of the sector's market (stock exchange) value. Moreover, successive years of financial adjustment provided the electric energy sector with an increasingly comfortable debt-

to-equity ratio – up to 17% on the accounting value of the capital invested or 28% of the estimated market value.

Such favourable results could have helped leverage loans. However, from 1996 to 1997 priority was still attached to financial adjustment to the detriment of fixed investment. The result was negative third-party funding if the difference between new debt and amortizations is accounted for.

One could mention the following signs of cautious behaviour on the part of state-owned companies in terms of running up debt for fixed investment:

- (1) Eletrobrás allocated relatively small funds to expansion projects. Part of the money that could have been spent on financing fixed investments was spent on settling the finances of the state electricity concessionaire companies prior to privatization;
- (2) Companies big enough to place bonds directly on the international finance market use these funds to settle their debts, replacing very onerous debts with new money. Note that the terms for placing bonds for fixed investments in the electricity sector continued to be very short, exposing them to excessive risks (two to five years, put option excluded) owing to floating international interest rates. This helps explain why the strong resumption of access to international loans (the placing of bonds rose from US\$ 210 millions in 1994 to US\$ 630 millions in 1995 and US\$ 1,570 millions in 1996) combined with a return to reasonable interest rates (close to 9% to 10% per annum) was mainly channelled into the settlement of debts.
- (3) BNDES continued to refuse to lend money to state-owned companies, other than in the exceptional case of projects committed to auctions in partnership with the private sector.
- (4) The World Bank and IDB have not supplied the sector with funds since the Eighties.
- (5) It was not possible to resort to 'project finance'-type schemes due to the imminent change of ownership, the lack of guarantees on the part of Eletrobrás, and the complete lack of predictability of tariffs in the future.
- (6) Whereas modernization and expansion in the telecommunications sector helped raise the sale price of state-owned companies in the sector, theoretically speaking the sale price of a state-owned power generation company tends to fall if it has commenced work on the construction of large-scale hydroelectric schemes. In other words, investment in new power plants and preparation for privatization seem, at first sight, to be irreconcilable.

Comparison with the telecommunications sector is highly revealing. Transition to privatization is intrinsically far more complicated in the electricity sector than in telecommunications. In the former, in addition to the problem of preparing the sector for privatization, yields are lower and

returns much slower. In Brazil's case, the risks and uncertainties are compounded by the difficulty of predicting what the future private market will be like. Moreover, the problems of funding are far more complex.

The relative disadvantages of the electric energy sector do not stop there. In very condensed form, Table 4.7 presents ten factors that favour investments in telecommunications and hamper investments in the electricity sector.

In brief, the 1993–98 period constituted a transition stage in which the former rationale for investments was weakened and the new rationale replacing it has not yet been able to operate satisfactorily. In the meantime, transition solutions have been found. They have failed, however, to avoid expansion of demand outstripping the increase in the supply of electricity. The risk of a shortfall in 1999 and 2000 has reached a level for which there is no precedent in recent decades.

The near future is still riven with uncertainties. When privatization is complete, the problem of insufficient investment in power generation and transmission may become even more complicated unless the volume of natural gas available on the market allows new, gas-powered thermoelectric plants to replace much of the hydroelectric expansion planned. This is highly uncertain, though. The new regulatory body, ANEEL, should pay special attention to this matter. The agency's complex brief should extend beyond broadening competition and defending the consumer to including as its prime objective guaranteeing the expansion of power supply.

### **VIII. Recovery of investments in transportation infrastructure (roads, railways and ports) in the privatization phase: progress and shortcomings**

The legal basis for privatization of transport services is the February 1995 Concession Law that, supplemented by Law 9,074/95, regulates Article 175 of Brazil's 1988 Constitution.

In the case of federal highways, the bidding process began in 1993 before the law had been passed. Reform of the railway network was basically confined to the sale of the state railway companies as part of the federal government's Denationalization Programme coordinated by the National Denationalization Council and administered by BNDES. Privatization of the main railway companies took place in 1996–97, each line being sold off separately. Brazil's ports sector is undergoing thorough, extensive modernization combined with decentralization and privatization of operations.

As can be observed in Table 4.4, which displays the rate of investment as a proportion of GDP for the entire transports sector (that is, not just roads, railways and ports), after a cycle of intense investment in the Seventies, recording an average of over 2% of GDP, there was an initial decline in the Eighties and a further drop in the Nineties. This trend has led to growing deterioration in the efficiency of haulage in Brazil.<sup>14</sup>

Table 4.7 Factors Determining Low Investment in Electricity in Contrast to High Investment in Telecommunications

Telecommunications	Electric Energy
Coincidence between investments in modernization/expansion and increased revenue from privatizations.	Non-coincidence between investments in power generation and increase in value of companies.
Predictability of conditions for competition and yield during the pay-back period	Total lack of predictability of medium- and long-term conditions. Even when uncertainties about the future regulatory frame work have been dispelled, there is no way of knowing what long-term marginal costs will be. There is also a lack of information about the evolution of demand. The conditions for private investment (including 'project finance') are unknown.
Political deregulation and concentration of decision making.	Multiplicity of agents, political coordination difficulties.
High yield, rapid installation and short pay-back period.	Lower yield than in telecommunications. Longer pay-back period (thus greater uncertainty) and long term for completion of work.
Highly repressed demand.	No demand backlog.
Local technological backwardness and intense worldwide technical progress.	Scarce technical progress in hydroelectric schemes (considerable advances in the case of thermoelectric plants).
Low environmental risk.	High environmental risk.
Relatively solid financial circumstances in 1994-95, further strengthened by recovery of tariffs in 1996-97.	Corporate financial streamlining policy (fall in the sector's debt-to-equity ratio despite the recovery of tariffs).
Funding of expansion from own resources without compromising public debt.	Financial dependence implying increased operating shortfall in the public sector. Non-existence of earmarked public funds and loans from multilateral agencies.
Ease in obtaining foreign funding compatible with the investment and pay-back period stipulated.	Absence of external funding for three to four years, incompatible with sectorial deadlines.

The main factor determining the decline in investments in transportation infrastructure in Brazil was the financial crisis in the public sector. Merely for the sake of illustration, the financial straits of the state-owned railways obliged the sector to slash investments from an average of 0.25% of GDP in 1980–84 to 0.12% in 1985–89 and to 0.03% in 1990–94. A similar decline in investments occurred in the ports during the same periods, with investments dwindling from 0.7% of GDP to 0.5% and then 0.2%.

If one can believe in estimates made for 1996, in recent years the level of investment has recovered slightly. In absolute terms, investments in that year were supposedly 18.2% higher than in the 1990–93 period, climbing to 0.8% of GDP.

Unfortunately, no specific estimate is available for roads, railways and ports. It is possible, nonetheless, that the rate of growth in these segments has been higher than for the transports sector *en bloc*. This hypothesis is mainly based on the fact that investments in federal and state highways recovered somewhat after 1995 with an injection of public funds and financing from international agencies, and there was a slight increase in investments in the wake of privatization.

The slight recovery from the slump in investments in the first half of the decade did not, however, prevent the level of investment remaining well below that recorded in the Seventies and Eighties.

The gradual recovery is mainly due to the fact that more public resources are being allocated to federal highways and railways (Fernão Dias highway, the Mercosur Highway, the North–South Railway, and so on) under the aegis of the federal government's Plan of Action. It is also due to the fact that state governments have spent more on state highways.

Privatization has so far had only a marginal effect. The highlights have been investments in repairs and conservation of the roughly 1,000 km of privatized federal highways and the 2,000 km of privatized state highways (Rio Grande do Sul, São Paulo, Paraná and Rio de Janeiro), in emergency replacement of equipment on privatized railways and in the modernization of services at ports through partnerships between the State Docks companies and private enterprise.

Privatization of companies and concessions to the private sector are theoretical options for getting round the problem of the shortage of funds. It would, however, be wise not to be over-optimistic about the extent to which this solution will prosper. There are two reasons for due caution.

First, it is common knowledge that the transports infrastructure sector is less attractive to private capital than other infrastructure sectors such as electric energy and telecommunications (World Bank, 1994). The reforms currently being implemented will have significant impact on only two types of investment in the transports sector: (a) conservation, repairs and modernization of the infrastructure stock, operation of which presents the basic requirements for attracting private capital; and (b) investment in



expansion or new projects in which the expected private profits are sufficient to compensate high risks and the uncertainty of this sort of undertaking, which tends to produce greater social than private benefits and so tends to be administered by the public sector.

It is thus reasonable to suppose that the burden of investment will continue to rest with the public sector, even after the process of reform is complete.

Second, because there is a trade-off between maximizing fiscal revenue from privatizations and concession contracts and maximizing demands for investment at auctions and public bids. The greater the demands, the less prospective investors will be willing to pay at auctions and public bids (or the higher the tariff they will demand in compensation). If the prime concern is to achieve maximum fiscal revenue, the authorities are likely to soft-pedal demands for investments. There appears to be excessive concern for fiscal revenue in the process currently under way in Brazil.

Special mention should be made of well-conceived concessions to the private sector of highways and ports in which the contracts have given high priority to investments.

A slight increase in private investments and a decline in public investments are likely to be in store in the years ahead. As the private component of investment in Brazil's entire transports infrastructure sector cannot be very great, the prospects for the future are, at best, continued recovery at the slow pace observed in recent years.

Any alteration in the pace of investment will, to begin with, depend on federal government budget restrictions, which can be expected to be tight in the short and medium terms, and on the predicament of the states' faltering finances.

The recovery of investments also depends on the pace at which privatization proceeds and on the commitments to invest written into the contracts. There is plenty of room for expanding private-sector investments in highways but it is not unlimited. By optimistic estimates, only one-fifth of all Brazil's paved highways have sufficiently intense traffic to make them profitable to private enterprise.

If the country's 30,000 km of paved highways are properly privatized so as to guarantee a commitment to invest, privatization may effectively produce a significant improvement in the standard of road haulage in Brazil.

The end effect on Brazil's systemic competitiveness is uncertain, though. This is because tolls tend to raise the costs of transportation even to the point of cancelling out the gains resulting from improved safety, less wear and tear on equipment and shorter haulage times. The agencies responsible for administering privatization have proved to be incapable of establishing tolls that are merely sufficient to attract private operators and so avoid excessive profit margins. The concessions granted to date on federal highways have allowed internal rates of return in excess of 20% of the capital

invested, an extremely high rate in comparison with world standards of profitability in public utilities.

The prospects for private investment in the building of new highways are not bright. The ratio between private profits and the risks inherent in this sort of undertaking tends to discourage private undertakings in this sector.

The railways are a very different case. The recent experience with Ferroeste in the state of Paraná – the building of the line had to be completed with public funds due to the problems encountered by private enterprise – may have heightened the prevailing discouragement. The case of the only privately built railway line in Brazil, Ferronorte, is hardly encouraging either. The project has been dragging on for years and construction work has only recently resumed after several pension funds decided to join forces with Grupo Itamaraty, which had backed out of financing the line single-handed. The future of recently privatized railway lines is similarly uncertain but one should not expect investments to grow significantly. The crux of the problem seems to be that the railway network is uncompetitive within the Brazilian transports system because it has not been planned as part of an intermodal system that promotes rail haulage. Privatization in this sector was exclusively designed to generate revenue and eliminate a permanent source of public deficit (state railway companies). In other words, it was not even remotely related to strategic concerns about redefining the country's intermodal transportation system.

Prospects are good for expanding investments in Brazil's ports. This is due to the sensible model adopted of partnerships between state port administrators and private operators of port services. As port reform is under way and there is an enormous backlog both in terms of managing dock labour and modernizing procedures and equipment, it is reasonable to suppose that productivity will improve considerably in the next few years.

Lastly, it should be said that the entire reform process is being handled in a highly inefficient manner in terms of setting up adequate bodies and mechanisms for regulating and overseeing concessions. The enormous technical and economic shortcomings have generated countless problems with real and potential negative effects for users. What is lacking is technical information and a capacity to alter trajectories or impose additional commitments from time to time. Worse still, inadequate estimates of costs predominate with negative effects on tariffs for services and consequently on systemic competitiveness.

## **IX. Investments in sanitation in the first phase of privatization: insufficient recovery, uncertain prospects**

The performance of investment in basic sanitation<sup>15</sup> in the second half of the Nineties has been marked by insufficient recovery. As can be observed

in Table 4.4, which records the evolution of investments as a proportion of GDP since the Seventies, there was a considerable increase in relation to the first half of the Nineties (at constant prices, 0.34% of GDP in the Seventies, 0.28% in the Eighties, 0.10% between 1990 and 1995, 0.15% in 1996 and 0.25% in 1997). However, this most recent level is still well below the average attained in the Seventies and Eighties. Moreover, in contrast with the telecommunications and energy sectors, the low technical progress in this sector and the worsening of environmental conditions, water resources in particular, make for higher unit costs than in the past. This is due to the cost of both treating (potability) and transporting water for human consumption (greater distances between water sources and points of consumption).

The current phase – transition to a system in which private participation is set to grow considerably – has begun with very low levels of investment since the Seventies. In real absolute terms, the 1996–97 period witnessed the highest historic levels of investment and as a proportion of GDP an upward trend approximating to the levels recorded in the Seventies.

Recovery of the absolute level of investments was made possible by renegotiation (roll-over) of the debt of state sanitation companies, a real increase in charges, and increased domestic and international funding. With regard to this last factor, the recovery of the lending capacity of FGTS (the main source of funding for investments in this sector) deserves special mention. All told, these measures have enabled sanitation companies to recover their capacity to raise credit to finance investments.

The recovery of investments registered in this most recent period has nonetheless proved insufficient to attain the targets set for universalizing sanitation services. While government estimates suggest that an annual sum of R\$ 3.8 billions would be required to meet that target by the year 2010, in 1997, when the highest absolute investment in the sector's history was recorded, the sum invested was approximately R\$ 2.4 billions. An important feature of future investments has to do with the present shortfall in sanitation services concentrated in the poorer strata of the population (particularly on the outskirts of big cities and small towns), in less developed regions of the country, in sewage collection and treatment services and in the replacement of capital (rehabilitation of infrastructure). In other words, investments in this sector are in areas where capacity for payment is lower and services are less profitable.

Prospects for the coming years present a real likelihood that the strong growth in investments observed in the last three years will prove to be an 'investment bubble' with declining investment as from 1998. One factor that may determine this downturn is macroeconomic measures for containing public deficit, which severely limit the financing of investments and prevent the signing of new financing contracts. Another relevant factor is the exhaustion of the capacity to contract and pay back debt among

most of the companies in the sector. Even considering the recent (small) gains in efficiency of some public companies, they are unlikely to generate the internal savings required to raise further credit.

The prevailing trend for the immediate future is thus towards a decline in investments. This is due to the maintenance of the present organization of the rendering of services by public institutions, which have limited access to funding and also remain dependent on public money or continue to be run by the State.

If the participation of the private sector may be an important instrument for reversing this state of declining long-term investment, for the time being it is ill-placed to do so, at least over the next few years. Private-sector participation is still incipient, and expansion will probably be slow. Since 1995 little more than 30 municipal administrations have signed concession contracts with private operators, 20 of which are already operating privately. These contracts include full concessions (all municipal services) and partial concessions (of the BOT type<sup>16</sup> for water or sewage treatment stations), affecting about 2 million inhabitants, the vast majority in the states of Rio de Janeiro and São Paulo. Investments contracted in recent years by private agents total no more than R\$ 100 millions. Moreover, the pace of growth in 1997–98 has relented in relation to 1996, mainly as a result of contractual hitches arising from inadequate terms of concession or, above all, from inadequate and insufficient service regulation mechanisms.

For private participation to increase, disputes regarding the ownership of sanitation services must be settled forthwith, especially in the so-called predominant common interest schemes. This sort of scheme is adopted in most metropolitan regions and also applies to the integrated pumping and transportation of water in the Northeast region, and involves integrating infrastructure facilities. It requires the definition of an appropriate regulatory framework but, to date, no federal law has set out guidelines for the sector. Regulatory action will permit the development of new management models and new standards for financing investments in the sector.

Current tariffs (already high by international standards) are not profitable for new investments, especially with reference to sewage systems and in low-income areas. Thus, the guiding principle for the privatization of concessions in this sector should be the guaranteeing of investments. This implies selling companies off more cheaply and forfeiting fiscal revenue, especially revenue derived from the sale value, more than charges paid for permits. It remains to be seen whether state and municipal authorities responsible for privatization will give priority to the social dimension to the detriment of fiscal revenue.

In sum, the sector faces at least four serious problems for the future of investments. First, the federal government's macroeconomic targets designed to control public spending are stifling investments, particularly by restricting access to new loans from FGTS for public companies. Second,

these companies' capacity to contract debt is virtually exhausted, which means that, regardless of restrictions, investments are set to decline. Third, major regulatory indefinities persist and discourage private enterprise from providing public services and funding investments. Fourth, there is a risk that privatization will restrict future investment of a social nature, given the low profits it affords private operators.

## X. Conclusion

The summary presented above of a set of sectorial studies on factors determining gross fixed capital formation in recent years shows how uneven behaviour is from one sector to another. In most sectors – as in the economy as a whole, for that matter – investments have grown considerably compared to the mediocre performance in the early Nineties. With the exception of telecommunications, however, the level of investment is still much lower than the averages registered in the Seventies and Eighties, and still falls short of the modest targets set by the government and/or public operators.

The research on which the present chapter is based shows that many sectors are experiencing a phase of high returns on capital. This means that it may not be necessary for rates of investment to rise to the levels of the past to attain similar rates of economic growth. If this hypothesis is correct, the low level of investment signifies that the country has squandered an historic opportunity to promote growth with very little extra effort to generate savings and additional investment.

Brazil is currently undergoing a transition to an economy utterly different from that which existed in the past. A new 'model of investment' is emerging which is probably more efficient from a microeconomic point of view and in terms of allocation of resources but not necessarily more effective with regard to investment dynamics and economic growth. This is because, in principle, deregulation tends to reduce the rate of return and to increase risks and uncertainties in tradable goods sectors while privatization tends to raise demand for profits and to instil fear of risk in sectors where the State predominates. The Brazilian economy thus runs the risk of operating with a propensity to invest less than in the long cycle of expansion (1943–80) over which the previous model presided.

The new model is not yet fully developed, so our research has examined a transition phase. Two comments should be made concerning this phase. First, as stated earlier, the context of stabilization did not simply stimulate investment; it also cramped its potential in both the tradable goods sector and in infrastructure. Stability, or at least low, controllable, predictable inflation, is a *sine qua non* condition for dynamic investments. However, the option to use deregulation and even privatization as instruments of stabilization has had a restrictive effect on investment.

Second, as transition to a market regime is inevitably long, it must be administered with due care to ensure minimum investment targets are attained for the duration of the transition.

Lastly, it must be acknowledged that the future deregulated, private regime will not dispense with the need for special care on the part of the State concerning the evolution of investments. Investments require strategic planning even if only to guide the action of the new regulatory bodies. The effectiveness of the new 'model of investment' will largely depend on the implementation of an appropriate policy formulated by the government to ensure that the private sector makes essential investments and to nurture its propensity for investment. Otherwise, doubts will proliferate as to the new model's ability to automatically restore the Brazilian economy's vocation for investment, clearly visible in the growth cycle that came to an end in 1980.

## Notes

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1. This chapter is a combination of papers collected in the book *Investimento na transição brasileira dos anos 90 (Investment during transition in Brazil in the Nineties)* to be published by the Applied Economic Research Institute (IPEA). The authors gratefully acknowledge the inestimable intellectual support they received from Antonio Barros de Castro, Carlos Mussi, Graciela Mognuillansky and Renato Baumann throughout the research.
2. Petrobrás's state monopoly was abolished by an amendment to the Constitution in 1995, the law regulating competition in the oil sector and Petrobrás's operations being passed in 1997. The system of joint ventures between Petrobrás and foreign partners is emerging as the most promising innovation.
3. As in the rest of the chapter, the figures are recorded at constant 1980 prices.
4. The causes of this phenomenon probably hinge on three main factors: technical progress in capital goods (a prime example being telecommunications), greater efficiency in implementing projects, and the fact that the Seventies and part of the Eighties witnessed an 'overload' in investments producing a sizeable portion of the economy's basic social capital formation, building for the future and allowing investments to level off as a proportion of GDP from then on. These factors do not include the downward trend in the prices of capital goods. This is already incorporated in the figures since calculations are made on the basis of prices recorded in 1980.
5. The text on which this section is based was conceived as part of a joint National Confederation of Industry/ECLAC research project which the first author coordinated in collaboration with Flávio Castello Branco and José Guilherme dos Reis at CNI.
6. It should be said, in passing, that the idea of distinguishing stages could equally apply to companies' technological behaviour. The sudden improvement in pro-

ductivity between 1991 and 1997 – mainly the result of rationalization (1991/94) and the replacement of equipment (1994/97) – would correspond to the ‘easy’ stage, the mainspring of which was companies’ need to survive in an open market. The ‘tricky’ stage featured increased productivity and competitiveness through the constant, routine introduction of innovations among companies based in Brazil. There is scarce evidence of progress on this front.

7. The Pluriannual Plan for Development of the Mining Sector is the official planning document drafted in 1994 by the National Mineral Production Department attached to the Ministry of Mines and Energy. The evolution of production it described has not altered much. It projected three sectorial development scenarios up to the year 2010. Investments carried out to date have fallen well below these projected targets.
8. The programme forecast the evolution of the telecom market until the year 2003, envisaging investments of 91.75 billion *reais* (according to the latest version published in March 1997, the original sum announced in 1995 being R\$ 75.06 billions) to be supplied by both the public and private sectors. Half of this sum was due to be spent in the first execution period (1995–99) and the other half in the second phase (2000–03). Fixed telephony accesses were due to increase from 13.3 million in 1994 to 26 million in 1999 and 40 million in 2003; mobile telephony accesses to expand from 0.6 million in 1994 to 12 million in 1999 and 23 million in 2003.
9. It should be stressed that by making the opening-up of the private mobile telephony market a priority (instituting the so-called Minimal Law) and pressing ahead with the General Law in the next stage, the government not only began deregulation in a sector that was highly attractive from an economic standpoint (consequently subject to strong pressure from private enterprises interested in exploring the service), but also pitched its first battle in a field where it would encounter less political resistance since sectors of government reckoned that the drafting, discussion and approval of the Minimal Law would be less time-consuming than the equivalent procedure for the General Law.
10. It is interesting to note that, despite the tariff restrictions imposed until 1995 as part of the government’s endeavour to keep inflation under control, the Telebrás System’s global revenue grew steadily from the beginning of the decade. In the 1990–95 period, net income grew at an average rate of 6.0% per annum at the expense of expansion in plant in operation (though that also rose slowly) and of increased domestic and international long-distance traffic (tariffs for the latter were already on a par with international charges).
11. A novelty in the period following the adjustment of tariffs was the sharp reduction in cross-subsidies between local and long-distance telephony, which led to the former obtaining a higher share of total revenue than the latter.
12. Telebrás System’s main expansion projects offered a higher rate of return than loans or the issuing of bonds on the international finance market. It was thus reasonable to admit greater raising of such funds to obtain positive financial leverage.
13. On the one hand, there was an unwritten commitment by Telebrás by which its operators would initially set aside (that is, not serve) about 30% to 40% of the (aggregate) market so it could be explored by private enterprise. On the other hand, there was a deliberate delay in the launching of tenders for the digitalization of Band A, preventing public operators from improving their mobile telephony services.
14. For example, a large portion of the paved highway network is in a critical state (about 50,000 km of the 157,000 km federal highway network). According to the

latest data available (1994) only 28% of these highways are in good state requiring no more than routine maintenance and occasional resurfacing. Structural resistance is poor on 54% of the network and complete resurfacing is required without the need to remove the existing structure. A total of 18% of the network requires partial demolition. According to Pereira (1997), 85% of the highway surfaces are more than ten years old, 14% are between five and ten years old and only 1% are less than five years old.

15. Traditionally, basic sanitation services comprise water supply, sewage treatment, urban micro-drainage and solid waste. In this chapter, however, we refer exclusively to water supply and sewage, referred to in the text as sanitation, for the sake of simplicity.
16. Build, Operate and Transfer, or concession of public service operations preceded by public works.

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# 5

## Institutional Change and Technology: Impacts of Deregulation on the National Innovation System

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### I. Introduction

The profound institutional and regulatory changes the Brazilian economy has undergone since the beginning of the Nineties have been radically altering the role of economic agents, business strategies and the operation of the so-called national innovation system. The opening-up of the Brazilian economy to imports, the creation of Mercosur, privatization of state-owned companies and deregulation of the economy spell the end of a cycle of developmentalist policies begun during the Vargas Government (1930–45) designed to build up a national industrial park. They also signal the advent of a new phase, the hallmark of which is Brazil's subscription to a liberal model more aligned with the Washington Consensus.

This chapter analyses the way the opening-up of the economy has affected the dynamics of Brazil's innovation system, focusing on the trends toward respecialization and the restructuring of production. It identifies the main opportunities and challenges raised by the new model in different segments of the economy, with special emphasis on the new links established between research institutions and the productive sector. These relations are circumscribed by the economic, historical and institutional conditions inherent to each sector. Freeman (1987, 1988), Nelson (1988, 1993) and Lundvall (1992) have developed the notion of a National Innovation System.<sup>1</sup> They hold these systems to be an institutional construct promoting the endogenization of technological progress in the dynamics of a country's economy. According to this notion, technological progress is not merely a byproduct derived from the operation of market forces. With innovative enterprises at the hub of the system, this institutional construct involves government agencies, universities, research insti-

tutes, networks liaising between these enterprises and other institutions, including the financial system, owing to its role in supporting investment in innovation. National innovation systems are ultimately a historical product, derived from the path a particular country trails. The different routes they travel and their specific cultural traits explain the diversity of national innovation systems. In a semi-industrialized country like Brazil, analysis of the role played by the innovation system can be based on an understanding of the specificities of development in peripheral conditions. In forging and developing their innovation systems, peripheral countries must follow paths and pursue objectives distinct from those pertaining to developed countries. The system's prime task is to take advantage of 'opportunity windows' that may enable them to catch up (Perez and Soete, 1988; Freeman, 1989).

The chapter is divided into three sections, besides this introduction. Section II focuses on the national innovation system (NIS) describing the principal institutions engaged in scientific and technological development, changes in technology policy, R&D endeavours, sources of technology adopted by Brazilian companies and the patenting system. Section III examines selected sectors that are representative of the diverse technological and competitive dynamics. It discusses the impact of the opening-up of the economy showing how strategies have been redirected and how they are adapting to the new scenario. Besides industry, other sectors are analysed, including telecommunications, a sector in which the new institutional and technological dynamics have patently redefined the entire framework. Finally, in the fourth section, the conclusions stress the effects of creating a more open economy, specific sectorial features and the main challenges for improving interaction between the national innovation system and the productive sector.

## **II. Brazil's scientific and technological drive**

### **II.1 The Brazilian science and technology system**

The National S&T System in Brazil is based on research institutions created over the past 40 years. The creation of the Ministry of Science and Technology in the 1980s was intended to unite these institutions and to establish permanent mechanisms for funding research and qualifying top quality human resources. The two main federal institutions for funding R&D are CNPq (National Scientific and Technological Development Council), which concentrates on promoting basic research and postgraduate studies, and FINEP (Studies and Projects Financing Bureau), whose brief is to fund technological activities in business enterprises. CAPES (the Higher Education Personnel Training Coordination Foundation), attached to the Ministry of Education, is responsible for improving the qualifications

of Brazil's university teachers. There are also a number of state institutions for funding and supporting research. FAPESP, for example, attached to the São Paulo state government, is designed to finance research projects and postgraduate studies.

CNPq directly administers a group of research institutions including the CBPF (Brazilian Physics Research Centre), LNCC (National Scientific Computing Laboratory), LNLS (National Synchrotron Light Laboratory) and INPA (National Institute for Pure and Applied Mathematics). Several other public R&D centres are attached to other ministries, the most important being Embrapa (Brazilian Agricultural Research Enterprise), run by the Agriculture Ministry, CTA (Air Force Ministry's Aerospace Technology Centre), and the Osvaldo Cruz Institute, attached to the Ministry of Health. The Industry and Development Ministry maintains basic industrial technology institutes responsible for weights and measures, certification and quality control. Being the country's industrial heartland, the state of São Paulo is renowned for its public applied research institutions, including IPT (Technological Research Institute) and the Campinas Agronomy Institute.

In the productive sector, special mention should be made of the research centres run by state-owned companies (Petrobrás's CENPES, Eletrobrás's CEPEL and Telebrás's CPqD<sup>2</sup>), the SENAI technology centres run by the National Confederation of Industries, and several private-sector research centres concentrated mainly in the metal-mechanics, electronics, pharmaceutical and aerospace industries. The privatization process in the telecommunications and energy sectors, however, has raised serious doubts as to the sustainability of the research centres administered by former state-owned companies.

The institutional framework comprising the Brazilian national innovation system has undergone a series of transformations in the Nineties, the basic drift of which has been diminishing government responsibility for research institutions. The federal government, for instance, has been converting its public institutions into social organizations. In practice, this means handing administration over to a governing board, thus releasing the government from many of its responsibilities and duties toward these institutions. This policy has been adopted by the institutions attached to CNPq. In the case of CPqD (the Telebrás Research and Development Centre), the government has made the Centre into a private law Foundation run by a board of directors whose job is to raise the funds for maintaining the institution.

Investment in science and technology in Brazil has increased 68% in the 1990-97 period, rising to about US\$ 10 billions. Estimates for the end of the decade put spending on S&T at the equivalent of 1.5% of GDP. In 1990, the government was responsible for 72.5% of investments in this field, private enterprise supplying a further 22.2%. By 1997, the government's share had dropped to 64.3% and private corporations were putting

up 31.6% of the funds. The private sector had also boosted its spending on R&D by 121%, providing 20% of total expenditure compared with 15% in 1990. This reveals a trend toward increased application of S&T to productive activities. The substantial increase in FINEP loans to the productive sector likewise deserves special mention. In 1990, these loans were insignificant but by 1997 they already accounted for 4.2% of the total.

## II.2 Technology policy

Until the early Nineties, Brazil's science and technology policy was geared to building up S&T infrastructure. A number of programmes developed by CNPq, FINEP, CAPES and other funding agencies were devoted to establishing research institutions and qualifying top-notch research personnel.

In the early Nineties, the Collor government introduced the Industrial and Foreign Trade Policy, which replaced tax incentives by two programmes for boosting industry's technological capacity: PACTI and PBQP. PACTI (Programme for Supporting the Technological Capacity of Industry) sought to encourage the absorption of foreign technology and to help create an environment conducive to innovation. The aim of the programme was to raise national spending on S&T from 0.5% of GDP in 1989 to 1.3% in 1994, an ambitious target considering the budget constraints the Economy Ministry was pursuing. BPQP (Brazilian Quality and Productivity Programme), on the other hand, aimed to improve the capacity of the workforce, disseminate new management methodologies, and develop

Table 5.1 Investments in Science and Technology 1990-97

(in US\$ millions)

Sector	1990 total	1990 %	1997 total	1997 %	% growth 90/97
Government	4,655.4	72.5	6,926.9	64.3	49
S&T Ministry (MCT)	904.9	14.1	1,557.7	14.5	72
Other Ministries	1,664.4	25.9	1,602.9	14.9	-4
Federal Universities	1,031.9	16.1	1,340.5	12.4	30
Tax relief	33.1	0.5	578.0	5.4	1,646
States	1,021.1	15.9	1,847.7	17.2	81
Companies	1,422.0	22.2	3,398.2	31.6	139
Private	990.9	15.4	2,191.0	20.3	121
State-sector	425.0	6.6	759.1	7.0	79
FINEP loans	6.1	0.1	448.1	4.2	7,246
Private Universities	340.6	5.3	442.5	4.1	30
Total	6,418.1	100	10,767.6	100	68

Source: MCT (Ministry of Science and Technology), Secretaria de Acompanhamento e Avaliação (taken from INOVA, Gestão e Tecnologia, ano V - no. 18 - Sept/Dec. 98, p. 12).

technological infrastructure. The lack of an appropriate stimulus mechanism, however, prevented the programme from achieving any degree of success. The productivity gains registered in the Brazilian economy in the 1992–94 period should be attributed to Brazilian companies' increased efficiency engendered by the need to adapt to their growing exposure to the international market rather than to PBQP.

The Itamar Franco government introduced the PDTI (Industrial Technological Development) and the PDTA (Agricultural Technological Development) programmes to replace PACTI. Tax benefits were reinstated for the technological capacitation of industrial and agricultural companies investing in R&D activities. These incentives, though, were practically abolished in 1997 as a result of the fiscal adjustment measures imposed in the wake of the Southeast Asia crisis. At the same time the government altered its industrial property policy, especially with regard to software and pharmaceutical products, bowing to pressure from the American government.

The following government initiatives implemented throughout the Nineties with the involvement of the private sector likewise deserve special mention: RHAЕ (Human Resources for Strategic Areas programme), designed to train researchers and R&D technicians; the Alpha Project for encouraging technological innovation among small and micro industries provided non-refundable loans for carrying out technical and economic feasibility studies for technological innovation projects; the Omega Project designed to support cooperative research projects led by research centres, universities and/or technology institutes be they public or private; the Technological Management for Competitiveness programme; tax incentives for computer technology and automation (Law 8248/91); SOFTEX 2000 programme for supporting exportation of software; and the PATME (Technological Support Programme for Small and Micro Companies).

The most important advances in Brazil's technology policy in the Nineties had to do with the regulation of contracts for the transference of technology. As early as the publication of Normative Act 15 in 1975, the Brazilian government had sought to control technology transfer contracts with a view to encouraging companies importing technology to invest in R&D and so promote effective absorption of the technology imported. A subsidiary aim of this policy was to control the outflow of capital paid in exchange for the technology by analysing the content. This approach was abandoned as from the Collor administration. The process of deregulating the transference of technology was begun in 1991<sup>3</sup> making for changes in the rules governing relations between contracting companies based in Brazil and their suppliers overseas. The initial aim was to facilitate negotiations for companies importing technology and to speed up the granting of certification requests. Deregulation was taken a step further in 1993. The term for the National Industrial Property Institute (INPI) to register contracts was shortened and a set of demands historically dependent on

approval of the technology transfer procedure was waived, as were a series of other administrative procedures. INPI ceased to issue any type of declaration of 'similarity' regarding products manufactured in Brazil, dispensing with the requirement of studies and analyses that had previously been the mainstay of support for domestic technology. These alterations to Brazilian legislation substantially increased the number of technology transfer contracts drawn up between subsidiaries in Brazil and their parent companies overseas. As a result, there was a sharp rise in the repatriation of foreign currency.

### **II.3 Sources of industrial technology**

Analysis of the sources of technology employed by Brazilian industry shows that:

- the use of foreign technology during the imports substitution phase was not accompanied by a domestic technology drive, Brazilian firms confining themselves to adapting the technology to local conditions and making small improvements, with a few exceptions;
- few business corporations run formal R&D activities;
- even among firms that do invest in R&D spending tends to be concentrated on payroll; as a result, with a few exceptions, R&D initiatives are generally restricted to process and product improvements, failing to promote more radical innovation;
- the small scale of R&D means companies have limited, piecemeal knowledge of their own production processes;
- companies' external technical links are very fragile, and this is equally true for liaison between companies and for links between companies and universities or research institutes;
- the establishment of technical links between companies is hampered by industry's excessive technological disparities.

Indeed, the involvement of the business sector in R&D initiatives clearly distinguishes more advanced countries from Brazil. Whereas in Brazil private enterprise accounts for 30% of investment in R&D, in advanced economies it is responsible for as much as 70% (for example Japan). A similar trend is to be found among the countries of Southeast Asia. An exemplary case is that of South Korea where private-sector investment rose from 34% of total spending on R&D in 1971 to 36% in 1976, 58% in 1981 and a remarkable 81% in 1988.

The business sector's R&D effort (measured as the ratio between R&D investments and total output in the manufacturing sector) is still very insipid in Brazil. According to Coutinho and Ferraz (1994), industrial investment as a proportion of output stands at about 0.7%. Of the 495 companies interviewed, more than half (54%) declared having made no

investment in this field in 1992. This state of affairs contrasts sharply with the situation in more advanced countries where, for example, in 1990 technological investment ratios averaged 2%.

Another source of information on the technological behaviour of Brazilian companies in recent years is the non-sampling survey called 'Business Technological Innovation Indicators' which ANPEI (National Association of Industrial Companies for Research and Development) has carried out since 1992. Table 5.2 portrays the intensity of technological innovation measured as spending on R&D&E<sup>4</sup> (Research, Development and Engineering) based on a sample of 140 companies making systematic, continuous reports to the database. The first noteworthy fact is that the companies reported increased spending on R&D&E throughout the period under examination. Greater increases are detected in investment in R&D *per se* to the detriment of spending on technological services or the purchase of technology.

The deregulation of technology imports has produced a substantial upsurge in exchange contracts for technological services. The most important contractual category among payments for technological services is 'specialized technical services' (assembly of equipment, technical services relating to industrial design and models projects, engineering models, and other services), accounting for 57% on average of payments in the period. The relative importance of this category of payments has, however, declined from about 67% in 1990 to 32% in 1996.

'Exploration of patents', 'supply of industrial technical cooperation' and 'supply of industrial technology' (relating to unpatented technologies) are

Table 5.2 Evolution and Variation in Intensity of Technological Capacitation in R&D&E: outlay in average sums per company

	1993	%Δ	1994	%Δ	1995	%Δ
Spending on R&D (US\$ thousands)	2,198	-	2,511	14.2	3,053	21.6
Spending on Technological Services (US\$ thousands)	1,120	-	1,085	(3.1)	993	(8.5)
Spending on Purchase of Technology (US\$ thousands)	666	-	539	(19.1)	546	1.3
Spending on Non-Routine Engineering (US\$ thousands)	841	-	951	13.1	1,024	7.7
Total Spending on R&D&E (US\$ thousands)	4,825	-	5,086	5.4	5,616	10.4
R&D Spending/Gross Turnover (%)	0.5	-	0.5	-	0.7	

Source: Hasenclever and Cassiolato (1998). Δ is yearly variation.



the most important categories in terms of the sums invested in the purchase of technology, and their relative importance has increased substantially, especially as from 1993. The 'establishment and installation of projects' and 'trademarks and patents: registration, deposits and maintenance' categories are relatively less important.

#### II.4 Scientific specialization

Development of a national innovation system requires a broadening of the local science base in both qualitative and quantitative terms for three reasons. First, because if the country is to make use of the science and technology developed in advanced countries, it must develop a capacity for absorption. Investment in R&D is not simply the bedrock of innovation but also the prime requirement for absorbing new knowledge (Cohen and Levinthal, 1989). Second, more backward countries need basic knowledge to guide their search for technology among more advanced countries and to evaluate what they can and cannot do on the domestic front. This capacity is what Nelson (1988) calls 'knowledge to focus search' – vital for averting the waste inherent in a blind, inefficient search for technological knowledge. Finally, as Bell and Pavitt (1993) demonstrate, in the present

Table 5.3 Brazil. Balance of Technological Payments: Spending 1990–96  
(in US\$ 1000s)

Contractual Categories								
Year	Exploration of Trademarks	Exploration of Patents	Supply of Industrial Technical Cooperation	Supply of Industrial Technology	Establishment & Installation of Projects	Trademarks & Patents: Registration, Deposit or Maintenance	Specialized Technical Services	Total
1990	0	3,000	34,000	32,000	n.a.	n.a.	140,000	209,000
1991	0	2,000	9,000	26,000	n.a.	n.a.	136,000	173,000
1992	0	3,000	10,000	31,000	n.a.	n.a.	114,000	158,000
1993	648	41,260	14,409	40,373	1,253	n.a.	129,469	227,412
1994	1,756	79,104	51,334	48,226	6,106	n.a.	186,651	373,177
1995	5,022	138,602	26,593	222,199	3,684	3,544	283,937	683,581
1996	13,637	200,306	50,695	379,232	16,831	3,940	325,613	990,254

Source: Hasenclever and Cassiolato, 1998.

n.a. = not available

paradigm the development of productive capacity does not ensure the emergence of technological capacitation, for which specific investment in knowledge is required.

Analysis of the development of the different branches of scientific knowledge ('scientific specialization indices') is used to assess Brazil's degree of scientific specialization. These indices were formulated by Schott (1995) based on the ratio between two percentages: (a) the number of scientific articles published in a specific discipline as a percentage of all the articles published in Brazil; (b) the total number of world articles in the branch of knowledge as a percentage of the total number of world articles published in all fields. The resulting figure expresses the degree of scientific specialization in a given country, That is, the branches of knowledge on which a particular country focuses its scientific endeavours.

For Schott (1995), 'national research endeavours are not equally distributed among the different branches of science. Rather, they are more or less concentrated in select fields of knowledge. The areas in which a country focuses its attention outline a national specialisation.' Specialization in a particular field is high when 'the scientific specialisation index' exceeds 1.00 and low when it falls below 1.00. On the basis of these criteria, Schott suggests that Brazil concentrates its research efforts in Biology, Physics and Mathematics (their respective scientific specialisation indices being 1.6, 1.82 and 1.58). In fields such as Biomedicine and Earth and Space Sciences there is no significant difference between Brazil's ratings and the world average. For a particular field to be performing at the 'North American standard', it would have to attain a 'scientific specialization index' of 1.77.<sup>5</sup>

*Table 5.4* Specialization of Brazilian Science as Expressed in the 'Scientific Specialisation Index' \*

in eight disciplines (1970s and 1980s)

Discipline	1970s	1980s
Clinical Medicine	0.70	0.58
Biomedicine	1.33	1.03
Biology	1.39	1.60
Chemistry	0.72	0.74
Physics	1.60	1.82
Earth & Space Sciences	1.08	1.24
Engineering	0.44	0.63
Mathematics	1.49	1.58

Source: Schott (1995)

Note: \* This index is the same as A/B Ratio, according to Schott. The variables mean the following: (a) the number of scientific articles published in a specific discipline as a percentage of all the articles published in Brazil; (b) the total number of world articles in the branch of knowledge as a percentage of the total number of world articles published in all fields

In order to analyse the different disciplines and subdisciplines (using the classification formulated by Schott, 1995), two analytical categories are proposed here: the first refers to an international standard already attained by disciplines scoring above the 'index' (1.77); the second category is for those nearly attaining the international standard (That is disciplines scoring above the 1.5 benchmark but failing to reach 1.77). For the present purposes, all disciplines included in these two categories are deemed to have attained a standard of efficiency compatible with the 'North American standard'.

According to this classification system, Physics has attained 'international standard' while Biology and Mathematics are approaching that standard.<sup>6</sup> At a more disaggregate level, the subdisciplines of Physics attaining international standard are 'Solid State Physics' ('index' of 4.0); 'General Physics' (1.8); 'Nuclear and Particle Physics' (2.9) and 'Other branches of Physics' (3.0). In Biology the international standard subdisciplines are 'General Biology' (2.4); 'Entomology' (1.8); 'Zoology: miscellaneous' (3.1) and 'Botany' (2.1). In Mathematics, the fields are 'General Mathematics' (1.8) and 'Other branches of Mathematics' (2.5).

In other major disciplines classified below the standard proposed certain subdisciplines rank at international level: 'Tropical Medicine' (10.8) in Clinical Medicine (0.58); 'Parasitology' (5.9), 'Anatomy and Morphology' (2.4) and 'Cellular Biology, Cytology and Histology' (1.9) in Biomedicine (1.03), as well as 'Genetics and Heredity' scoring slightly below the index (1.6). This list betokens the positive standard of the science produced in Brazil.

## **II.5 The patenting system**

A degree of caution is called for in using patenting as a gauge of innovative activities in developing countries as this raises a series of problems. Not all economically useful knowledge is codified. In this sense, it should be remembered that the patenting system does not encompass tacit knowledge. Companies sometimes prefer other mechanisms, such as industrial secret, for appropriating technical innovation. The specificities of different sectors are reflected in the variant 'propensities for patenting' since patents are more important in some sectors than in others.<sup>7</sup> Another drawback of using patenting as a gauge of technological endeavour is that the system does not distinguish between radical and supplementary innovation, ascribing the same economic value to both.

Table 5.5 displays the evolution of the number of patents deposited in the USA by corporations, R&D institutions and individuals from several developing countries in the 1969-92 period. Note the significant difference between the predicament of countries like South Korea and Formosa and that of countries like Brazil and Mexico. The former presented virtually no innovation in the late Sixties and by the early Nineties were depositing more than 500 patents a year in the USA whereas Brazil and Mexico

*Table 5.5* Patenting in the USA – Select Developing Countries

Country	1969	1976	1984	1992
Formosa	0	28	97	1000
South Korea	0	7	29	538
Mexico	67	78	42	39
Brazil	18	18	20	40

*Source:* Cassiolato and Lastres (1997)

showed no significant increase in innovative activity over the period, registering about 40 patents each in the United States in 1992.

Relevant information for discussing the issue of national innovation systems can be obtained by analysing the number of invention patents granted to residents in Brazil by the Brazilian Patent Office (INPI – Instituto Nacional de Propriedade Industrial) and by its American counterpart USPTO (United States Patent and Trademark Office). To begin with, this reveals research institutions' relative share of the total number of patents obtained. Secondly, statistics on joint patents provide a clue to their involvement with private enterprise.

The data supplied by INPI and USPTO have been organized according to patent holders, who fall into one of the following categories: natural persons (NP), Brazilian private corporations (BPC), foreign capital private corporations (FCPC), state-owned companies (SOC), universities or research institutes (URI), government agencies (GA). The share of each category year to year was used to calculate the average share, standard deviation and variation coefficient. The results obtained are summarized in Tables 5.6 and 5.7.

A comparison of the data in the two tables shows that distribution was more stable in the INPI data than in the USPTO statistics. This is clear from the lower variation coefficients recorded in Table 5.7. State-owned compa-

*Table 5.6* Distribution of Patents Granted to Residents in Brazil by INPI by Holder Category (Average Percentage Annual Share; Standard Deviation and Variation Coefficient) 1990–95

Patent Holder	Average (%)	Standard Deviation (%)	Variation Coefficient
NP	30.44	2.47	0.081
BPC	36.84	2.80	0.076
FCPC	15.30	1.23	0.080
SOC	12.46	2.07	0.219
URI	3.80	1.42	0.374
GA	1.01	1.12	1.163

*Source:* INPI, Albuquerque and Macedo (1996)

Table 5.7 Distribution of Patents Granted to Residents in Brazil by USPTO by Holder Category (Average Percentage Annual Share; Standard Deviation and Variation Coefficient) 1990-95

Patent Holder	Average (%)	Standard Deviation (%)	Variation Coefficient
NP	30.60	6.43	0.210
BPC	39.87	7.51	0.193
SOC	21.24	6.29	0.296
FCPC	7.96	5.48	0.688

Source: USPTO, Albuquerque and Macedo (1996)

nies (SOC) outperform foreign capital private corporations (FCPC) in the USPTO data. The scope of change is fairly similar: FCPCs patent 51.76% at USPTO of the average they patent at INPI whereas SOC's patent 57.82% at INPI of the average registered at USPTO.

If one compares the distribution encountered in Table 5.6 with investments in R&D in Brazil, it is clear that sectors where there was most investment in R&D do not correspond to those where patents are most prolific. The productive sector absorbed just 22.6% of investments in 1990 yet it was responsible for 63.87% of all the patents granted. Spending on science and technology in the non-productive sector of the economy (universities, research institutes, research agencies) is not primarily designed to appropriate the knowledge generated by means of patents but rather to produce scientific knowledge for the public domain.

A comparison of patenting and spending on S&T shows that although state-owned companies spent more than all the private sector corporations together, they patented less. A large proportion of private-sector patenting is done by foreign companies. In this case patenting does not necessarily represent a local technological endeavour. Quite frequently, patents registered in Brazil by foreign companies are designed to reserve the Brazilian market for certain products or processes against potential exploration by local competitors.

The drop in the rate of patenting at USPTO by foreign companies merely confirms the essentially adaptive nature of the innovative activities transnational corporations undertake in Brazil. The Brazilian subsidiaries of transnational corporations adopt differing strategies when it comes to registering patents at USPTO. Some (Mercedes-Benz, Alcoa and Rhodia, for example) register the patent in the name of the subsidiary while others (for example Robert Bosch) register them in the name of the parent company. The second strategy, of course, reduces the importance of the patents Brazilian residents submit to USPTO.<sup>8</sup> The US Patent Office has also granted patents to non-residents in Brazil for teams of inventors comprised exclusively of Brazilians (four such patents were identified in 1991).

The average attained by patents granted to individuals (roughly 30%) is high but compatible with the level among residents in the United States. As to the role played by Research Institutions (universities, research institutes and centres, foundations), they were responsible for only 3.8% of the patents granted to residents in Brazil in the 1990–95 period<sup>9</sup> on average. This proves that such institutions concentrate more on basic research activities than on applied technological development.

According to INPI data,<sup>10</sup> the most prominent research institutions when it comes to registering patents are IPT in São Paulo (24 patents obtained in the 1990–95 period) and EMBRAPA (17 patents registered in the same period). Both are part of a select group of companies and/or institutions that have succeeded in obtaining at least one patent in every year in the period under examination.

### III. Sectorial impact

The opening-up of the economy and the technological policy pursued in the Nineties have had varying effects on the sectorial dynamics of the Brazilian economy. On the one hand, sectors deemed to be more mature or consolidated, in which technology is incorporated into the equipment and suppliers are specialized, have maintained or expanded their activities through productivity gains and international competitiveness. More technologically complex sectors, on the other hand, whose competitive edge depends on product innovation, have been harder hit. As their products are highly tradable, they lose out to international manufacturers with greater technological capacity and scale production. The capital goods, advanced components and technology-based durables sectors, in which the opening up of the economy has led to a reduction in local R&D activities, are increasingly resorting to foreign sources of equipment, inputs and technology.

The four case studies reported below corroborate these conclusions. In the ceramics and steel sectors – considered mature – the opening up of the economy to imports has posed no real threat since certain competitive advantages were taken to be ‘natural’, though they differ from one sector to the other. In the case of the steel industry, besides gaining easier access to raw materials, the sector has benefited from hefty investments in plant (vintage capital), good port–railway–steelworks logistics and adequate scale of production. For the ceramics industry, meanwhile, the opening-up of the economy has powered modernization with the importation of capital goods, reorganization of processes and access to critical inputs containing a more complex technological component. By outsourcing phases of production, bigger companies have been able to engage specialist suppliers and so boost the sector’s competitiveness. The sector has also benefited from agglomeration in clusters consisting of different types of agents.

In the automobile and telecommunications sectors, the combination of an open economy and favourable exchange rates has encouraged imports to the detriment of local output. In the case of the automobile industry this has been offset by special incentives and protection. Nevertheless, the open economy has dissociated links with the NIS and local suppliers and led to burgeoning balance of payments deficits. Although productivity and output have improved in both sectors, reliance on imported components and the strong internationalization of intellectual property over capital have conspired to make local industry very vulnerable to exchange crises.

### **III.1 The steel sector case**

The steel sector has been one of the mainstays of the metal-mechanics industry dominating the so-called Taylorist–Fordist paradigm. So the maturity of the industry does not imply a lack of technological dynamism. The key factors for competitiveness in this sector continue to be associated with large-scale production, efficient management of processes, logistics and ready access to raw materials and energy, besides high-quality, low-cost labour. World demand for steel continues to grow in a very leisurely fashion as a result of competition from new materials such as plastics and ceramics.

Brazil's steel industry was born in the private sector in 1925 when Companhia Siderúrgica Belgo-Mineira (CSBM) began operating. The industry only attained relevant scale in Brazil in the Forties when Getúlio Vargas' government unleashed its nationalist policy of promoting local industry. CSN (Companhia Siderúrgica Nacional), the first major government-funded steelworks became a milestone in Brazil's industrialisation. In the 1950s and 1960s other steelworks were opened, including Cosipa (Companhia Siderúrgica Paulista) and Usiminas (Usinas Siderúrgicas de Minas Gerais). Although they were initially established with private capital or by local state governments, both were eventually transferred to the federal government or to BNDE (National Economic Development Bank).

Brazil's second PND (National Development Plan) elected the steel industry as a priority due to its importance for economic development. Between 1974 and 1980, hefty investments were made to expand the three main state-owned steelworks (CSN, Cosipa and Usiminas) and to institute new joint ventures – CST (Companhia Siderúrgica de Tubarão), Mendes Jr and Açominas – controlled by the national holding company Siderbrás. In the early Eighties the industry was severely affected by a sharp drop in domestic demand and switched its focus to exports. By the end of the decade, state-owned steelworks accounted for 70% of Brazil's steel output, totalling 19 million tons of steel. The sector soon became a prime target for privatization as it was deemed to fall outside the State's preserve. Privatization, which took the shape of auctions, was concluded in 1993, earning the State US\$ 5 billions. It marked the beginning of a restructuring of the sector,

involving buy-outs, mergers, incorporation and internationalization. This reflects world trends in the steel industry toward concentration and specialisation, designed to ward off international competition in the commodities market suffering from a supply glut, protectionism and falling prices.

Brazil is the world's seventh largest producer of unfinished steel, accounting for 51% of all the steel produced in Latin America. The average annual growth of its steel output in the Nineties is 4.4%, a high rate compared with the 1.2% world average. According to Katz and Fucaraccio (1997), Brazil's iron and steel sector has the lowest relative productivity gap among industrial sectors, attaining approximately 75% of the North American average.

With regard to international trade, in 1996 Brazil was the second largest steel exporter, exports being concentrated in low aggregate-value semi-finished products. More than 80% of its semi-finished products are for export, while flat laminates account for 33% and long and other laminates represent 12%.

As Table 5.8 shows, Brazil's steel exports grew steadily between 1990 and 1993 but then declined in the face of stiff international competition. Domestic sales have picked up, absorbing surplus production. The country's main export markets for steel in 1996 were Asia (42%), countries in North America (30%), Latin America (17%) and Europe (9%). Imports totalled 378,000 tons in 1996 (US\$ 434 millions) and consisted mostly of more expensive products for which there is low domestic demand.

The Brazilian Steel Industry's Technological Modernization Programme estimates investments of US\$ 6 billions in the 1996–2000 period. The money is being spent on updating technology, improving quality, reducing costs and protecting the environment. The privatized steel companies' priority for new investments is upgrading the range of products and rationalizing production processes, following a world trend in the steel industry.<sup>11</sup> In the 1990–97 period, the sector more than doubled productivity, substantially reducing the level of employment.

*Table 5.8 Evolution of Exports and Domestic Sales of Steel*

(in thousands of tons)

	1990	1991	1992	1993	1994	1995	1996	1997
Exports	8,651	10,582	11,447	11,978	10,749	9,319	9,987	9,163*
Flat Laminates	3,187	4,314	4,599	4,279	3,824	3,052	3,385	2,505
Long Laminates	1,942	1,830	2,208	2,390	2,100	1,137	917	790
Semi-finished	3,522	4,439	4,640	5,309	4,825	5,130	5,685	5,523
Domestic Sales	8,793	9,055	8,682	10,367	11,890	11,725	12,681	14,600

Source: BNDES (1998a).

\* This figure includes exports of other types of steel totalling 345,000 tons.



*Impact on the national innovation system of restructuring the sector*

The process of upgrading the technological capacity of Brazil's steelworks began with support activities for production, marketing and unpackaging of imported technologies. These were followed by the installation of quality-control laboratories and the commencement of R&D activities. Only Usiminas, CSN and Acesita had laboratories used exclusively for R&D activities. In the period prior to privatization the Brazilian steel industry was already competitive by international standards due to its technological capacity and low production costs (Ferreira and Hasenclever, 1999).

In view of the current ferocity of international competition, steel companies are implementing strategies to reduce their dependence on sales of steel as a commodity. Technological research has a decisive role to play in this. Investments are concentrated on optimizing and rationalizing production processes, cutting costs, differentiating products and improving processes, in addition to developing technologies for reducing environmental impact. Thus, the restructuring of the steel sector triggered by privatization and by the opening-up of the economy has broadened the scope of the steel companies' technological activities. Moreover, spending on R&D has not diminished since privatization. The number of patents registered has grown, qualifications have risen among staff employed in R&D divisions, spending has increased in the purchase of technology, and companies have concentrated on innovating processes more than products. As a spin-off, the status of R&D activities within the companies' organizational structure has improved. At the same time, management has become more professional with efficiency gains in administration, finance and technology.

The quest for greater productivity to counter competition from steel amalgamated with new materials in the automobile industry has made the prospect of establishing partnerships in R&D activities more attractive. So companies have begun to develop joint projects the aim of which is to achieve greater speed in developing new products and processes and to share the risks of R&D activities (Ferreira and Hasenclever, 1999).

Generally speaking, it is clear that companies are investing in modernization, updating technology and expanding capacity, besides implementing programmes to improve quality and cut costs, the aim being to become more competitive and to raise the value of their assets. However, intense international competition in the commodities market demands that steel companies upgrade the mix of products on offer to secure a foothold in new markets.

### **III.2 The case of the ceramics sector<sup>12</sup>**

The ceramics (floor and wall tiles) sector in Brazil is another instance of successful adaptation to the context of free trade in the Nineties. The sector

is comprised of 160 small-, medium- and large-scale companies, almost all of which have exclusively Brazilian capital. The industry sprang up in the Sixties and Seventies to supply the demand created by the housing policy of the day. Today, Brazil is the fourth largest manufacturer of floor and wall tiles, behind China, Italy and Spain. Output has grown consistently in the Nineties, the total volume recorded in 1997 (339.8 million m<sup>2</sup>) being approximately 80% higher than output in 1989.

Initially the opening-up of the economy had a negative effect on the sector. Table 5.9 shows that in the 1989-92 period output shrank in relation to the figures for the last year of the Eighties. This was due to recession and to the government's policy guideline of opening up the Brazilian market to foreign competition. In the 1993-97 period, output recovered and expanded as a result of the revival of domestic sales and the consolidation of exports to markets overseas. Growth in output began in 1993 with investments intensifying on account of installed capacity (385 millions m<sup>2</sup> in 1997) one-third higher than the volume recorded at the beginning of the decade. There was tangible, progressive reduction of idle capacity and by 1997 the industry was operating at full capacity (99.5% of installed capacity). Brazilian ceramics manufacturers also invested in new production technologies, quality programmes and training of skilled labour.

Table 5.9 Output, Exports, Apparent Consumption and Installed Capacity of the Floor and Wall Tile Industry - Brazil - 1989-97

(in millions m<sup>2</sup>)

Year	Output	Exports	Apparent Consumption	Installed Capacity	Exports/Output (%)	Consumption/Output (%)	Output/Installed Capacity (%)
1989	213.2	20.3	192.9	290.0	9.5	90.4	73.5
1990	172.8	12.7	160.1	300.0	7.3	92.6	58.0
1991	166.0	13.9	152.1	312.0	8.4	91.6	53.2
1992	202.7	21.1	181.6	312.0	10.4	89.5	65.0
1993	242.9	25.6	217.3	320.0	10.5	89.4	75.9
1994	283.5	29.7	253.8	353.0	10.4	89.5	80.3
1995	295.0	29.4	265.6	362.0	9.9	90.0	81.4
1996	336.4	27.9	308.5	385.0	8.3	91.8	87.3
1997	383.3	29.6	353.7	385.0	7.7	92.2	99.5

According to the Study on the Competitiveness of Brazilian Industry (ECIB), the competitive standard attained by Brazil's floor and wall tile industry can be attributed to heterogeneous costs, high quality and variety of products, the result being a combined competitive edge in costs and product variety. The edge obtained in cost factors is mainly due to the modernization of production processes and the introduction of new forms of organization. The products marketed, on the other hand, are of varying quality, which makes for a broad price range.

Technology has been regularly developed in the ceramics industry. This explains the stability of the current technological standard. Innovations attempt to make allowance for trade-offs between different attributes of a product, such as absorption of moisture, resistance to chemical and physical aggression, decorative appeal and functional quality.

The maturity of the sector's technological development limits technological opportunities, confining them to supplementary improvement of existing products and processes. Conditions for appropriating economic results in the ceramics industry are meagre since they are readily publicized. As a result, the most common form of appropriation is the continual introduction of supplementary innovations that encourage variety and shorten the lifetime of each product marketed. The knowledge base for technological development is widely publicized in the industry, and the continuity of innovation activities depends on learning processes. The knowledge underpinning technological development in this field is expressed through the combination of disciplines such as chemistry, mineralogy and materials engineering applied to a specific product. In such conditions, knowledge is widely codified and easy to transmit. As a result, the structure of the industry tends to be less concentrated and fairly stable. These features of the technological dynamics of the ceramics industry stress the importance of training based on *learning by doing*, *learning by using* and *learning by interacting*.

The ceramics cluster located in the southern state of Santa Catarina<sup>13</sup> has shown relative growth in the Brazilian context and now accounts for 20% of the industry's total output and almost 60% of floor and wall tile exports. The exportation coefficient of the production of floor and wall tiles in the region is 23% compared with the 7% figure for Brazilian industry as a whole – a sign of relative competitive edge.

The cluster began to form in the Seventies with capital supplied by local economic groups, mainly in the coal industry. Building on a regional vocation revealed in the manufacturing of red ceramics (bricks and roof tiles), new, large-scale ceramics factories were installed in the region, operating with a high degree of vertical integration, from mining through to the finished product. The cluster became consolidated in the Nineties by outsourcing phases of production (*deverticalization*). This began to attract foreign suppliers of inputs with a large technological component.

Cooperation among directors of the local ceramics businesses, who formed an association, opened the way for the development of a 'regional innovation system' comprising technical colleges, a university and a technology centre. The resulting economies of scale encouraged medium-size companies to join the cluster. This development enhanced the dynamics of learning processes as educational and technological infrastructure were incorporated into the cluster. The availability in the region of institutions capable of providing personnel training, development and transference of technology, certification, metrology and other technical services enabled local manufacturers to expand their internal training programmes and to achieve a level of competitiveness close to international standards.

The adoption of common strategies for companies in different manufacturing sectors but linked together in the production chain demonstrates the existence of shared objectives geared to obtaining greater collective efficiency in a localized production system. This has helped raise the degree of specialization within the local area, to the extent that the agents involved pool their resources in a common drive to enhance the cluster's competitive edge in the context of an increasingly open market economy.

Foreign direct investment (FDI) has been channelled into the cluster, introducing technology and quality at critical points of the production chain. It does not compete with local companies nor does it take a stake in their stock. Foreign companies participating in the glazing, colourants and fritting segment moved into the area in the wake of the deregulation of the market in Brazil and after the ceramics factories began to outsource phases of production. Unhampered imports of inputs for the manufacture of chemical products and the outsourcing of activities formerly performed by the ceramics companies were instrumental in attracting foreign investment to this segment of the production chain. The presence of companies producing key ingredients in the vicinity of the ceramics factories has facilitated *learning by interacting* processes, improving above all the flow of information for technological development and fostering the development of specialization and supplementary production schemes.

The formation of the Mercosur common market has affected the sales policies of the ceramics companies, which intend to increase their presence in the regional market comprised by the member countries. This is reflected in the recent growth in the share of exports to this regional market. They represented 16.6% of total exports of ceramics in 1996, and in 1997 the share had risen to 26.8%. So far there is no sign of integrated action on the part of competing local firms making a concerted effort to penetrate the international market.

### III.3 The case of the automobile industry

The automobile industry is internationally acknowledged to be a dynamo of economic activity due to the mass scale of production and its spill-over

effects for associate industries. Demand in industrialized countries is relatively saturated since a high inhabitants-per-vehicle ratio<sup>14</sup> has been attained. To worsen matters, surplus global supply is estimated at 30%. In developing countries, on the other hand, markets are more dynamic. They have a potential for rapid expansion given the right macroeconomic conditions owing to the high income-elasticity of demand.

The existence of a large, dynamic domestic market has been an important factor for attracting investments to industrial production as this is a sector that is highly dependent on economies of scale. No developing country, though, has ever developed a local industry without a policy to protect it from straightforward importation of vehicles, the one exception being those competitively integrated into unified economic blocs (for example Mexico). Thus, even in an environment dominated by liberal economic policies, trade in the automobile sector of emerging economies is regulated by regional and multilateral agreements, and operates on the basis of import quotas and tariffs above the average rate for other manufactured goods. In Brazil, the sector underwent a process of full exposure to international competition in the early Nineties. This led to imports of vehicles accounting for 20% of all the goods imported<sup>15</sup> and seriously jeopardized the balance of payments. The automobile sector accounts for more than 10% of the country's total industrial output. In recent years it has attracted considerable foreign investments and achieved a leap in productivity. The sector's impact on the trade balance and its interaction with the National Innovation System, nonetheless, have been less impressive.

#### *Regulatory changes and impact on the National Innovation System*

The impact on the Brazilian automobile industry of opening up the economy from 1990 onward should be interpreted in the light of changes in the foreign car manufacturers' own strategies. Deregulation of trade in Brazil helped multinational car manufacturers implement new policies, triggering major changes in the entire industry. Other factors such as the consolidation of Mercosur, the taming of inflation as of 1994 and the agreements drawn up between the assembly plants, suppliers and the government also helped boost demand and restructure the Brazilian automobile industry. This favoured an upgrading to international standard of the models produced by manufacturers already installed in Brazil, the building of new assembly plants by manufacturers not previously operating in the country, besides facilitating increased importation of components and parts.

The current policy for the sector was implemented in two phases. In 1992 and 1993 agreements were drawn up in the Sectorial Chamber involving manufacturers, suppliers and the government. The aim was to revive demand, investments and domestic output. Although they boosted output on the assembly lines, the agreements also produced 100% growth in car imports from 1994 to 1995. To cope with the situation, in February 1995

the government established the Automobile Regime, originally submitted as a Provisional Act, which later became Decree 1,761 of 26 December 1995. The granting of incentives requires a minimum nationalization rate of 60% and the balancing of imports and exports. In a move to curb imports, the rate of taxation on imports was raised to 32% in February 1995 and then to 70% in March. The rate of taxation on imported spare parts remained unaltered at 18%.

Yielding to regional pressures, in December 1996 the government issued another Provisional Act (no. 1,532) introducing a series of special incentives to encourage the installation of companies in the Northeast, North and Centre-West regions of the country.

Besides benefiting from federal tax incentives, the investing companies have also been reaping the fruits of the so-called 'fiscal war' waged between the states. The advantages offered range from tax cuts or exemptions for new assembly plants to state funding of part of the investment, from donation of the land on which to build the factories to training and infrastructure. This has been the case in Rio Grande do Sul (General Motors), Paraná (Renault) and Minas Gerais (Mercedes-Benz) among others. Investments in new factories and expansion of existing assembly plants are estimated at US\$ 4.6 billions for the 1996–2000 period, increasing the industry's capacity by 695,000 units per annum.<sup>16</sup> Total output of automobiles in Brazil has more than doubled in the 1990–97 period keeping pace with the strong increase in domestic demand. On the other hand, car manufacturers substantially increased imports as from 1994 provoking a trade deficit of US\$ 2.4 billions in 1995. The Automobile Regime established in 1995, however, discouraged the importation of fully assembled vehicles though it facilitated importation of spare parts and components.

The emergence of Mercosur enabled manufacturers to integrate production of automobiles between Brazil and Argentina, a process that began in the Eighties by means of bilateral agreements. Intraregional trade is not subject to tariffs whereas the common external tariff is 35%. Because of this arrangement, investment projects take into account the high degree of specialization and complementary exchange between assembly plants installed in the two countries (Tigre *et al.*, 1999b).

From the point of view of the vehicles produced, the opening-up of the economy has led to an updating of the models of cars produced in domestic assembly plants, thus reducing the technology gap between models coming off the assembly lines in Brazil and those produced at the manufacturers' headquarters abroad. As far as processes are concerned, the main impact on technological capacitation has been intensive incorporation of organizational innovations. In line with the manufacturers' global strategies, economic deregulation has enabled them to undertake a complete modernization of their production units. It has also facilitated the entry

into the Brazilian market of other manufacturers employing state-of-the-art production systems, producing a significant increase in productivity.

The adoption of organizational innovations in the car industry can be observed in a survey on the extent to which assembly plants have adopted and employ new technologies carried out by the industrial apprenticeship service – SENAI (*apud* Tigre *et al.*, 1999a). Most car manufacturers make intensive use of quality control and guarantee methods such as Total Quality Management, SPC (Statistical Process Control) and ISO 9000. New organizational techniques relating to work procedures such as KANBAN and Just-in-Time have likewise been adopted throughout the production chain. The modernization of products and processes in the Brazilian automobile industry has lent it a more international profile, visible in the mass importation of technology, capital goods and critical inputs. The downside is the progressive weakening of local R&D initiatives and the breaking of many links in the local production chain.

In the 1980s, car manufacturers maintained substantial R&D initiatives in Brazil. All the major car makers had R&D teams that were subsequently run down and dismantled with the introduction of their world models. Most of the adaptations required have since been made at the companies' headquarters. When they have not been dismantled, the R&D teams now work in close liaison with the parent company instead of developing independent design projects.

Another important aspect in the restructuring of the automobile industry is the change in relations between the manufacturers and suppliers of components. The requirement of a high proportion of local components (nationalization rate) in the Seventies and Eighties led to the development of a sizeable local capital autoparts industry in Brazil. Some of these Brazilian firms (for example Metal Leve and Cofap) attained a high technological standard, which allowed them to export on a large scale and even set up factories and R&D centres overseas. The opening-up of the economy to foreign trade combined with intense international competition and the search for new ways of organizing the production chain seriously affected local autoparts companies' ability to compete. As a result, many were absorbed by foreign car manufacturers.

In brief, the opening-up of the economy benefited consumers, who gained access to more up-to-date, cheaper vehicles. On the other hand, it dismantled much of local production with domestic sources of R&D and supply of components, leading to a deterioration in the balance of payments.

#### **III.4 The case of the telecommunications sector**

The telecommunications sector in Brazil was consolidated in 1972 with the establishment of a state monopoly, following the nationalization and

*Table 5.10* Output, Sales and Trade Flow of Automobiles in Brazil 1990-97

Items	1990	1991	1992	1993	1994	1995	1996	1997
Output of vehicles	663,084	705,303	815,959	1,100,278	1,248,773	1,297,467	1,458,576	1,680,596
Exports	120,377	127,153	243,126	249,607	274,815	189,721	211,565	305,171
Imports	115	11,095	19,807	52,917	155,069	305,554	167,489	217,929
Total domestic sales (wholesale)	532,906	594,167	597,112	903,479	1,130,766	1,412,145	1,413,461	1,577,655
Exports/Output (%)	18.2	18.0	29.8	22.7	22.0	14.6	14.5	18.10
Imports/Domestic Sales (%)	0.02	1.9	3.3	5.9	13.7	21.6	11.8	13.80

*Source:* Elaborated from primary data published in the ANFAVEA Charter



incorporation of a group of public and private telephone companies by the federal government. Telebrás, the system's holding company attached to the Ministry of Communications (MC), was entrusted with the task of coordinating and planning the system, which comprised 28 state-operating companies, a long-distance and international operator (Embratel) in addition to a Research & Development Centre (CPqD) directly subordinate to Telebrás. Four municipal, state and/or private operating companies remained independent.

After operating for a little over 20 years, Telebrás achieved considerable success in expanding and standardizing the network, multiplying by ten the number of installed terminals and introducing advanced new digital services, including a nationwide fibre-optic and satellite network. Besides coordinating the operating companies, Telebrás implemented an active industrial policy using its purchase power to the full to promote local manufacturing of telecom equipment and encouraging technological development, especially through its R&D centre, CPqD. From 1978 onward, the target of substituting the importation of equipment and technology led the Ministry of Communications to enforce growing nationalization of the equipment and materials purchased by Brazil's operating companies. In monetary terms, the degree of nationalization was as high as 90% by some measures. At the same time, it became a requirement for suppliers of equipment to the Telebrás System that their stockholding be majoritarily Brazilian (Melo and Gutierrez, 1998). This policy fostered the establishment of joint ventures between the multinational giants in the sector (mainly Ericsson, Siemens and NEC) and local groups. It also led to the founding of a group of Brazilian manufacturers including Promon, Zetax and Batik (switching exchanges), XTAL (fibre optics), Daruma and Icatel (telephone terminals), which mostly resorted to CPqD to supply the technology.

Liaison between manufacturing companies and CPqD was ensured by the technical specifications for purchases by Telebrás affiliates. The small-size Trópico digital exchange, for instance, considered one of CPqD's main technological accomplishments, was manufactured by several companies in Brazil and by 1997 accounted for 17% of the system's installed fixed telephony exchanges. Thus, a National Innovation System (NIS) was built up by collaboration between CPqD (and other smaller R&D centres attached to universities), equipment manufacturers and operating companies in the Telebrás system. This sectorial NIS was able to benefit from windows of opportunity offered by the switch from electromechanical to microelectronic technology. The switch provoked a sudden hiatus in the technological learning process then under way, and cleared the way for new companies to enter the market.

In the early Nineties, the state telecommunications monopoly came under pressure from the general process of opening-up the economy to foreign trade. Despite the reduction of tariff and non-tariff barriers and the

end of restrictions on foreign capital, the telecom sector maintained technical barriers through the requirement for homologization of equipment by Telebrás and so staved off imports. Thus, the effects of deregulation only began to be felt in the second half of the decade, following the introduction of tendering for (band B) mobile telephony concessions and the privatization of Telebrás and its affiliates. The state monopoly model had been showing signs of strain due to the State's inability to sustain investments and the potential for greater competition ushered in by innovations in transmission technology. Restrictions on investment compounded by policies designed to control the fiscal deficit increased the demand backlog, made regional imbalances in the distribution of telephone lines more acute, and impaired quality and speed in the introduction of value-added services. In addition to this, technological dynamics and convergence with other electronics sectors highlighted the need for a restructuring of the Brazilian telecom market.

The process of deregulation began in earnest in August 1995 when Congress passed a constitutional amendment to flexibilize the monopoly. This permitted direct exploration (or under authorization, concession or permit) of telecommunications services. The model adopted for restructuring the Brazilian telecommunications sector has been geared to privatising and fostering competition in the provision of services. It has been implemented in three stages: the Baseline Telecommunications Law, the General Telecommunications Law and the reorganization and privatization of the Telebrás System.

The Baseline Telecommunications Law (no. 9,295) was passed in July 1996 and introduced competition in mobile (band B) telephone services, satellite transmissions, restricted services (allowing for the formation of corporate networks) and value-added services. The country was divided up into service areas and a public tender was made for new operating companies, earning the government US\$ 8.3 billions in revenue. The Baseline Law also required Telebrás operating companies to transform their business units operating mobile telephony (band A) services into independent companies in preparation for privatization together with Telebrás's fixed telephony units.

The General Telecommunications Law (no. 9,472) was passed in July 1997 replacing the 1962 Brazilian Telecommunications Code.<sup>17</sup> The Law institutes a series of measures which include: the creation of a regulatory body (the National Telecommunications Agency); the redefinition/reclassification of telecommunications services; the establishment of standards for interconnection and competition in the basic (long-distance and local) network; universal access to services; funding mechanisms; and the reorganization of Telebrás in three regional and one nationwide company in preparation for privatization. The National Telecommunications Agency (Anatel) was set up as a special associate government agency and is thus

not subordinate to any government department. Anatel has administrative and financial independence and is directly funded by Fistel (Telecommunications Inspection Fund), thus ensuring impartiality in the performance of its functions.

The General Telecommunications Law has reclassified services in terms of coverage and interests served (collective or restricted) and the regime under which they are provided (public or private). Services of collective interest are those available to all users geared to achieving governmental policy objectives and are therefore subject to legal and administrative restrictions. Companies operating services under the public regime must accomplish targets relating to universalizing access and must comply with the tariff ceilings established in their contracts. It falls to Anatel to determine under which regime services are to be provided. Switched fixed telephony services are to be provided under both the public and private regimes: concessionaire companies (recently privatized companies formerly operating within the Telebrás system) are to operate under the public regime while companies operating under authorization are to operate under the private regime. Concessionaires will be obliged to comply with the universalization targets stipulated in their concession contracts. Authorized companies, on the other hand, are not subject to such conditions. A Fund for Universalization of Telecommunications Services (Fust) has been set up to ensure the targets are met. It is financed by contributions (1% of turnover) from all the companies providing services of collective interest.

The privatization of Telebrás began with the regrouping of the system's operating companies into four regions: Region I (Tele Norte Leste) comprised by 16 regional operating companies; Region II (Tele Centro Sul) consisting of 10 state operating companies; Region III (Telesp) with just one state operating company; and Region IV for Embratel, which provides long-distance and international services and has nationwide coverage. Telebrás's mobile telephony companies, which had previously belonged to the state operating companies, were separated from their parent companies and regrouped into nine companies. All the companies were privatized in August 1998 at a public auction raising approximately US\$ 20 billions. Most of the fixed telephony companies were purchased by foreign groups involving major operating companies. Embratel was bought by the American MCI corporation, Tele Centro Sul by a consortium formed by Telecom Itália, pension funds and Banco Opportunity, Telesp was purchased by a group led by the Spanish telecom company Telefonica, and Tele Norte Leste was acquired by a consortium formed by several Brazilian groups and BNDES.<sup>18</sup>

The principal aim of the model adopted for restructuring Brazil's telecommunications sector was to promote competition in the provision of services. Open competition in all types of services, however, will begin as from 2002. Until then the sector is to pass through a transition phase. In

this phase, the new operating companies (concessionaires and authorized operators) must adapt to the conditions of the Brazilian market, and it is during this phase that the concessionaire operators must meet the universalization targets set. Only when they have been met can new operators (operating under authorization) enter the market freely and will the concessionaires be permitted to operate in other markets as authorized operating companies.

*Impact of restructuring on investments and the National Innovation System*

In 1995 the Ministry of Communications launched a Programme for Recovering and Expanding the Telecommunications System and the Postal System. It presented a sectorial target plan that envisaged investments of about R\$ 75 billions in the telecommunications sector between 1995 and 2003. According to the Ministry, this sum would be supplied by both the public and the private sectors and the money distributed to programmes for the structural parts of the national telecommunications system. Table 5.11 shows the evolution of turnover in the Brazilian telecom equipment industry. The sector has been growing strongly since 1994 though turnover was down in 1998 owing to the privatization of Telebrás. Turnover for 1999 is estimated at US\$ 6 billions.

Initially, government policy paid scant heed to the impact of regulatory changes on the development of domestic industry and on imports of telecommunications equipment. Between 1992 and 1997 imports multiplied by seven (see Table 5.12), while domestic output merely doubled. This trend began to emerge even before the Brazilian operating companies were privatized, which merely underscores the tendency to import equipment considering these companies' pre-established links with international suppliers. The first cases of privatization show new operators are resorting to imported equipment even when similar equipment is manufactured in Brazil. Moreover, the introduction of new technologies and services without any positive signals being made to domestic industry is fuelling explosive growth in the importation of equipment. As can be observed from Table 5.12, the items for which importation of equipment has been proportionally higher are those associated with mobile telephony services – RBS (Radio Base Stations) and SCE (Switching and Control Exchanges) – the

*Table 5.11 Evolution of turnover in the Brazilian Telecommunications Industry*  
(in US\$ millions)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998
Turnover	2,009	2,712	2,386	1,909	2,100	2,442	3,553	5,107	4,750

Table 5.12 Imports of Telecommunications Equipment

(in US\$ millions)

Imports	1992	1993	1994	1995	1996	1997	1998
Switching Exchanges	98.7	146.9	203.6	354	483.6	803.6	826.4
RBSs & Cell Phones	97.1	147.3	274.4	375.8	641.9	891.2	759.7
Other Telecom Equip.	24.4	40.5	54.4	77.5	89.9	113.9	117.5
Wires, Cables & other conductors	51.1	62	82.1	134.5	259.7	315.5	294.9
Parts & Components	120.8	170.9	240	418.3	483.4	616	586.0
Total	392.1	567.6	854.5	1,360.1	1,958.5	2,740.2	2,584.5

Source: BNDES (1999)

first to be privatized. Imports of RBSs and SCEs are further encouraged by a zero import tax rate.

The prospect of a large trade balance deficit has raised *a posteriori* concerns, especially since the exchange crisis in January 1999. This has led BNDES to create instruments and programmes for stimulating local manufacture of equipment.<sup>19</sup> The very entry of new operators for telecommunications services in Brazil may foster the installation of new equipment manufacturers. Telefonica's major participation in the privatization process has encouraged its main international supplier, Lucent Technologies, to open a factory in Campinas. However, the mere presence of manufacturing companies in Brazil is no guarantee of involvement with the National Innovation System, as we shall see in what follows.

Technological development in the Brazilian telecommunications sector has been centred on CPqD, which, in cooperation with private enterprise, has developed (Trópico series) Stored Processing Exchanges, Public Card Phones, optical fibres and network management systems. Development of the Trópico switching exchanges was fostered by Telebrás's purchasing policy, which sought to encourage the creation of Brazilian manufacturing companies and the use of technology developed locally. The Trópico project absorbed 30% to 40% of CPqD's total investments and the technology associated with it is now present in more than one-third of all the digital exchanges installed in Brazil.<sup>20</sup> It should be stressed that the Trópico exchanges are competitive even when compared with similar products manufactured by the multinational giants (Ericsson, NEC, Siemens, and so on). The emergence of Brazilian technology produced a significant reduction in investment costs per phone line as it broke the oligopoly that had hitherto controlled local supply and enabled Brazilian manufacturers to enter the market.

The demise of Telebrás suspended the scheme in which CPqD operated once the Centre lost both its source of funding (roughly 2% of Telebrás's

turnover) and Telebrás's captive market. In 1998, CPqD was transformed into a private law foundation with a 12-member Advisory Board.<sup>21</sup> The Centre's survival during the transition period (1999 to 2001) is secured in the concession contracts for the new operating companies (former Telebrás System companies), which have signed a commitment to ensure CPqD continues to carry out technological development activities. CPqD's income for these three years is R\$ 124 millions/year for activities relating to system maintenance and development (software), technological consultancy services, training and laboratory services. Programmed revenue for the three-year period is compatible with the Centre's budget in the run-up to privatization. In addition, CPqD is drawing up agreements with equipment manufacturers to develop specific projects.

Besides CPqD, other institutions are engaged in technological development for the sector. The most important of these are PUC-RJ (CETUC), INATEL (Santa Rita, Minas Gerais State), UFMG, IPT (São Paulo), Unicamp and USP. These institutions are hired by telecommunications equipment manufacturers to develop specific projects for solving problems. Some of these institutions also collaborate with CPqD in developing specific technologies. Contracts between R&D institutions and equipment manufacturers are covered by the Information Technology Law, the purpose of which is to encourage domestic production of computer and telecommunications equipment. Law no. 8,248 passed in 1993<sup>22</sup> requires companies receiving tax incentives (exemption from the IPI tax on industrial products) to invest 5% of their total income in research and development. Of the sum invested in R&D, 3% must be spent in the company itself and 2% be invested in other institutions. This incentive is due to cease in 1999, however, when it is to be replaced by other mechanisms that have not yet been fully threshed out.

A bill proposing the creation of Funttel (Fund for the Technological Development of Telecommunications) is currently under discussion in Congress. The main sources envisaged for this fund are: revenue from annual budget allocations, a portion (1%) of Fistel resources and a sum equivalent to 0.5% of telecom service operating companies' income. Even if the bill is passed, Funttel will effectively mean a sharp cut in the funds allotted to CPqD, whose budget would be slashed from 2% to 0.5% of billing for telecommunications services. Maintenance of the Centre's research and development activities will thus largely depend on the kind of relations it establishes with the telecom operating companies and their suppliers.

The great challenge facing CPqD is how to maintain its cutting-edge technological research activities. Technologically less complex functions will no doubt be preserved, given the Centre's capacitation and the availability of scientific equipment. This includes the provision of routine technical services to Anatel (for example tests and monitoring of the frequency

spectrum) and to industry (test trials for products, homologation and the awarding of quality certificates). The development of software is likewise progressing naturally, especially among equipment manufacturers due to the availability of relatively low-cost, well-qualified technicians and the existence of fiscal incentives for R&D activities. The continued development of new products, like the Trópico series and optical fibres, however, is a stiffer challenge given the new scenario in the sector. Preservation of domestic technological capacity may well be the key to disseminating information technology in the Brazilian economy considering the country's structural vulnerability on the exchange front.

#### **IV. Conclusions**

Since the beginning of the Nineties, the Brazilian economy has undergone a process of restructuring which, in broad terms, is consistent with the trend toward globalization and economic deregulation observed in other Latin American countries. The new model has dismantled the industrial policy that gave priority to domestic corporations and local production of raw materials by shielding them from imports. Instead, it focuses on three key aspects. First, a drive for monetary stability founded on the *Real Plan* and on an exchange anchor. Second, the opening-up of the economy to foreign trade, technology and finance combined with a strengthening of regional ties through Mercosur. Third, privatization of public services in a move to review the role of the State and attract outside investment.

Foreign investments in financial assets, leveraged by high interest, proved too volatile to meet the government's need for short-term foreign currency loans. This merely highlighted the vulnerability of the model adopted. Industrial investments, which might help raise exports, have failed to perform this function as they are basically geared to the domestic market and to Mercosur and encompass a high proportion of imported components. Investments in non-tradable sectors such as telecommunications and energy – which account for the majority of foreign investments in Brazil at the turn of the century – do not generate export revenues and again imply a high level of imports given the links between foreign service providers and their international suppliers of equipment and services. Subsequent to the opening-up of the Brazilian economy and without the safety net of an industrial policy that ascribes priority to technology-intensive sectors, exports are once more becoming concentrated in agricultural commodities, the markets for which are highly competitive and relatively undynamic.

Generally speaking, Brazilian corporations have sought to adjust to stiffer international competition by respecializing, outsourcing phases of production and resorting to imports – a strategy that might be described as 'defensive'. In many companies the streamlining of production has meant abandoning domestic production of components and more technologically

sophisticated production lines that incorporate greater added value, resorting instead to imports. This is tantamount to a downgrading of production. Production has thus been diverted into segments subject to lower market risks, widening the gap between Brazilian industry and the more dynamic sectors of international trade.

The specialization process has enhanced the competitive edge of sectors that are scale- and labour-intensive and can boast low production costs. Easier access to imported capital goods and critical inputs has encouraged modernization of production in sectors with lower added value and less technological dynamism. These sectors comprise cases of relative success, like the steel and ceramics industries, where the threat of competition from imported products has goaded domestic industry into updating its wares and streamlining its costs. The recent currency devaluation will further enhance Brazil's competitive advantage in these sectors. For such industries, foreign investment has served to increase their competitiveness, either by supplying critical inputs (ceramics) or by opening up new export markets (steel).

The new model of inserting Brazil in the international market, based on its 'natural competitive advantages' is inherently limited by the stagnation of world markets and the downward trend in international prices. A particularly acute threat is emerging in countries (for example China) and sectors where low labour costs go hand in glove with high technical qualification and capacity for international trade (acquired by Southeast Asian corporations, for instance in Korea). At the same time, many countries have raised investments in industrial sectors making intensive use of natural resources and energy, provoking excess worldwide capacity. International competition in such sectors, mostly a matter of pricing, will remain very keen for some time to come.

Meanwhile, investments in science and technology rose 68% between 1990 and 1997 when they were equivalent to 1.5% of GDP. One positive feature is that private enterprise has increased its share of total spending on S&T from 22% to 31%. This investment has mainly been directed to supplementary innovations in industrial products and processes. Products manufactured in Brazil have become more up to date and competitive, incorporating international trends. Several indicators mentioned in this study (for example the sudden proliferation of ISO 9000 certificates and increased business-sector spending on the purchase of technology and capital goods) reflect a consistent endeavour to modernize. With a few exceptions, nonetheless, Brazilian industrial corporations have failed to develop the innovative capacity they require to penetrate new markets.

The data presented on the National Innovation System show that Brazil now has the critical mass required for technological development. After three decades of rapid expansion in undergraduate and postgraduate education, the country currently employs about 35,000 scientists and technicians



in R&D activities and can count on a number of major S&T institutions. What is lacking, however, is institutional mechanisms for fostering and promoting cooperation between these institutions and the productive sector. The situation is worsened by the fact that privatization has not incorporated safeguards to encourage the purchase of local inputs and confirm existing agreements with universities and research centres. As a result, the nuclei of the National Innovation System built up since the Seventies and Eighties in sectors such as energy and telecommunications are beginning to disintegrate.

Analysis of Brazil's technological balance of payments shows a change in the make-up of the deficit. Increased imports in the *exploration of patents*, *provision of technical and industrial cooperation* and *provision of industrial technology* categories suggest a concentration of spending in the purchase of pure technology. Meanwhile, the importance of the *specialized technical services* category, which previously had more weight in the balance, has diminished. Importation and transference of foreign technology have increased without a corresponding proportional increase in corporate spending on R&D. This would ensure imported technology is properly incorporated into productive processes.

From the foregoing, it can be concluded that Brazil has accomplished the 'easy stage' of restructuring industry. This stage is characterized by the incorporation of imported inputs and capital goods, the introduction of new organizational techniques and respecialization in production. Investments made during this initial restructuring phase have been concentrated on the modernization of the industrial park (basically renewal of equipment, cost-cutting and removal of bottlenecks in the productive structure) and have led to increased productivity. The following stage, which should include investment in new industrial plant and greater added value, has not yet begun for Brazilian industry as a whole, though a few important exceptions do exist.<sup>23</sup> As a result, Brazil has failed to compete actively in more dynamic international markets where technologically sophisticated products with higher added value are traded. To reverse the situation, an R&D drive is required and must be combined with new productive investments.

## Notes

1. For further information on the notion of National Innovation Systems, see Nelson (1993), Lundvall (1992) and Freeman (1995). Nelson takes a narrower approach focusing mainly on R&D while the other two propound a broader notion encompassing a combination of public and private institutions and highlighting relations between suppliers and users. They also deal with more systemic aspects such as companies' organizational standards, the interface with the financial system, and the State's organizational and coordinating role.

2. Telebrás was dismembered in 1998 when the telecom market was privatized, and CPQd was transformed into a Private Foundation. More details will be supplied in the case study on the telecommunications sector.
3. Resolution 022 (27/02/91) and Normative Act 120 (17/12/93).
4. R&D&E spending includes outlay on basic research, applied research, experimental development, technological services and purchase of technology, and non-routine engineering.
5. This figure is found by making a simple calculation. When the 'specialization index' in a particular discipline is equal to 1.00, this means the proportion of Brazilian articles in world scientific output in that field is equivalent to 0.35%. Brazilian and world specialization are equal. Thus, for output in a given academic discipline to attain the 'North American efficiency standard' (that is, the country producing at least 0.62% of all the articles published worldwide in the field) the specialization index must be equal to 1.77 (the result of dividing 0.62 by 0.35).
6. It is worth mentioning that among the fields classified as approaching the 'North American standard' of efficiency, both Physics and Biology have built up a great tradition in Brazil. The development of these fields of study dates back a long way: Biology to the beginning of the twentieth century and Physics mainly to the end of the Second World War.
7. By way of illustration, both the chemical and mechanical sectors consistently use patenting as a basic procedure for appropriating innovation.
8. Such diverse strategies justify Patel and Pavitt (1994) researching the origin of patents obtained by transnational corporations by tracing the origin of the inventors as opposed to the holders of the patents. Thus, according to Patel and Pavitt's system, the patent mentioned in the previous note is registered as having been developed in Brazil.
9. Compared with data for the United States (National Science Foundation, 1996), the total number of patents granted to academic institutions has risen: in 1980 they obtained 400 of the 37,356 patents granted by USPTO (1.07%); in 1986 they accounted for 700 of the 38,126 patents granted (1.84%) rising to 1,700 of 54,000 (3.15%) in 1994. These figures seem to suggest that Brazilian research institutions enjoy a position similar to their American counterparts. It should, though, be recalled that the Brazilian institutions receive proportionally more of the country's R&D resources than US research institutions.
10. For further details see Tigre *et al.* (1999b).
11. For a more complete breakdown of the investments in the Brazilian steel industry, see Tigre *et al.* (1999b).
12. This section is a summary of the paper by Campos *et al.* (1999).
13. For further details on the dynamics and principal institutions of the Santa Catarina ceramics cluster, see Campos *et al.* (1999).
14. In the US, Japan and Western Europe the inhabitants-per-vehicle ratio is less than two, compared with about nine in Brazil and five in Argentina.
15. In 1994, tariffs were reduced to 20% which led to 500,000 vehicles being imported in a single year.
16. For further details, see Tigre *et al.* (1999b).
17. The Brazilian Telecommunications Code regulated telecommunications and radio broadcasting services whereas the General Telecommunications Law regulates telecommunications alone.
18. For further details on the restructuring of the telecommunications sector in Brazil see Szapiro (1999).

19. For further details on programmes to encourage the Brazilian telecommunications equipment industry, see Tigre *et al.* (1999a).
20. Electromechanical, analogue and digital switching exchanges are currently in operation in Brazil.
21. The Advisory Board is comprised of representatives of government bodies, public and private research institutions, operating companies and CPqD clients, and civil society.
22. The telecommunications equipment industry is eligible for incentives granted by the new Information Technology Law. The Law offers exemption from IPI for products manufactured in Brazil pursuant to the regulations of the Basic Productive Process (PBP), which on average reduces the final costs of such products by 15%. In return, the beneficiaries must invest at least 5% of their turnover in R&D, 3% within the company and 2% in agreements with Brazilian universities and/or research institutes.
23. The recently privatized aircraft manufacturing company, Embraer, is Brazil's second largest exporter with a turnover of more than US\$ 1 billions in 1998.

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# 6

## Structural Change in Brazilian Agriculture, 1980–98

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### I. Introduction

Brazilian agriculture was beset by constant government intervention until the second half of the Eighties. In the Sixties and Seventies, the government heavily subsidized agriculture by means of rural credit. Alongside the subsidized rural credit programme, the government also interfered with the relative pricing system using regulatory stockpiles and protectionist measures to control prices of both produce and supplies. In the second half of the Eighties, a liberal structural reform programme was gradually introduced. This chapter focuses on a few important transformations taking place in agriculture since the Eighties that may be related to the structural reform.

The subsidized rural credit programme created in the mid-Sixties did not have a neutral impact on the relative prices of agricultural supplies and products. Rationing mechanisms clearly favoured the adoption of modern inputs, particularly machinery and fertilizers.<sup>1</sup> The mainspring of this development was undoubtedly the poorly planned official rural credit scheme, which was soon to collapse. To understand why the programme was so short-lived, it is useful to recall its most salient features.

Rural credit was financed from two distinct sources: (a) a portion of the sight deposits made by the general public in commercial banks and BB (Banco do Brasil), referred to as 'liabilities'; and (b) public funds supplied by Central Bank transferences and rediscounts sometimes originating in the fiscal budget or external loans – in the case of Banco do Brasil, from the so-called 'transactions account', an automatic rediscount from the expansion of its rural credit operations which effectively made BB into an issuing bank. The government obliged the banks to allocate a portion of their sight deposits to rural credit in compliance with the norms established by SNCR (National Rural Credit System). The most important of these norms was that which fixed nominal interest rates for farmers on a par with those set for official credit. The argument used to justify this measure was that the

banks were making money from the 'inflation tax' levied on the public's unremunerated sight deposits.

Interest rate subsidies stemmed both from low nominal rates and, above all, from the fact that real interest rates became strongly negative. As they were nominally fixed and not adjusted, interest rates made no allowance for inflation. Consequently, subsidies grew every time inflation rose. However, rising inflation also meant that sight deposits diminished proportionally as a source of funds for the financial system, thus increasing reliance on Central Bank transfers. Table 6.1 records the onset of the system's demise at the beginning of the Eighties.

The second oil shock in 1979 and the foreign debt crisis in 1982 sapped and exhausted the government's capacity to transfer funds to the private sector, plunging the country into a dire, drawn-out process of rolling over public debt. Overwhelmed by its inability to administer a rising tide of problems in the early Eighties – visible in the inflation rate that leapt from

Table 6.1 Evolution of Rural Credit and Other Monetary Aggregates 1971–81  
(in current Cr\$ million)

Year	Monetary Authorities' Total Available Funds	Resolutions 69 to 98	Total Available Funds in SNCR (1) + (2)	Total Credit for Agriculture	Share (%)	Net Sight Deposits in Commercial Banks	Percentage
	1	2	3	4	5	6	7
1971	10121	2516	12637	17619	71.7	25782	29
1972	13073	3184	16257	24519	66.3	37128	31
1973	28856	7100	35956	36849	97.6	54133	15
1974	48447	9233	57680	63135	91.4	75148	20
1975	66212	13658	79870	105392	75.8	110198	36
1976	93592	17579	111171	159011	69.9	137366	48
1977	137668	22172	159840	227286	70.3	175926	51
1978	170919	29743	200662	270009	67.3	241665	53
1979	293573	49768	337486	461313	66.0	414881	52
1980	470385	78401	548786	791822	62.6	714956	57
1981	486951	202226	689177	1421776	48.5	1276305	73

Source: Figures extracted from Table 8, columns 5, 6, 7, 8, 9, 10 and 13 in Oliveira and Montezano (1982).

40% in 1980 to 200% in 1984 – the government resorted to bail-outs from the IMF and the World Bank. The IMF prescribed a drastic cutback in government spending and recommended a tight monetary policy to discourage spending in the private sector. The World Bank, meanwhile, provided loans for various sectors, demanding collateral or safeguards in the shape of diverse reforms, including deregulation of prices and changes in procedure in each sector. Reforms in agriculture stem from this context.

The cutbacks in spending and the tight monetary policy adopted during this recessive macroeconomic adjustment phase severely affected the agriculture sector, imposing strict limits on the minimum price guarantee policy and sharply reducing official funds available for rural credit. Minimum prices plummeted, reducing the federal government's purchases of produce to support the minimum pricing policy. Meanwhile, interest rates, that had previously been negative, began to rise. Moreover, the farming community was obliged to resort to private sources of credit charging much higher interest rates, and had to reduce profit margins as it went deeper into debt. The only factor favourable to agriculture was the exchange rate policy, which maintained the currency undervalued to boost exports.

By 1989, the experience acquired after successive stabilization plans had provided clear clues about how best to combat hyperinflation. To begin with, it could safely be admitted that there was a strong inertial component in inflation. Some analysts believed that this inertial component in inflation could be tackled in a reasonably independent fashion without necessarily eliminating public deficit. In their opinion, the inertia was basically produced by the indexation system and the population's habits. The inflation provoked by monetary financing of public deficit was the second major cause. Since the most tangible element of public debt was the level of interest charged, interest payments were singled out as major co-agents deemed to be priming inflation. Thirdly, pressure to make the economy more open to foreign competition, which began to make itself felt in the second half of the Eighties and reached a head in this period, produced a predisposition to promote rapid opening-up of the economy. The expectation was that the internalizing of foreign prices would help keep domestic prices under control. The deregulation of trade would benefit agriculture in terms of inputs and supplies, especially fertilizers, and also with regard to certain export products.

Another succession of stabilization plans came in the early Nineties (Collor I, Collor II and the *Real Plan*). The first two made aggressive, even violent, efforts to combat public deficit, concentrating firepower on the most important component: debt interest payments. It was in this period, covering the two Collor administration stabilization plans, that major reforms began to open up the Brazilian economy. They included the elimination of all restrictions on imports, rapid definition of a timetable for



reducing tariffs, dismantling of agencies and state monopolies responsible for the commercialization of produce, and other such measures.

Economic strategy continued to elect public deficit, the opening-up of the economy, flexibilization of prices and the inertial component in inflation as the set of ingredients comprising the recipe for combating inflation. At the end of 1993, the *Real Plan* was announced. It highlighted the ingredients mentioned, adding a fixed exchange rate designed to impose stronger price stabilization. With a relatively open economy and a fixed nominal exchange rate, any upward pressure on domestic prices would raise the value of the currency and favour imports, thus defusing the pressure. In the first year of the *Real Plan*, the government was rewarded with a primary surplus, declining inflation, positive performance in the level of economic activity and more than 4% growth in GDP.

Though prices remained stable in the second half of the Nineties, macro-economic imbalances became more acute in both public-sector accounts and the balance of payments. The 1994 surplus soon turned to a 5% deficit in 1995. An attempt was made to redress the balance in 1996 by reducing borrowing requirements to 3.7% of GDP. However, in 1997 the deficit increased again to 4.3% and climbed to almost 7% in 1998, on a par with the worst performance of the last two decades.

Throughout this period of frustrated attempts to adjust the Brazilian economy, the agriculture sector was affected by conditions that were alternately favourable or unfavourable depending on oscillations in relative prices. The following pages will be devoted to discussing these distortions.

#### *Assessment of distortions in the agriculture sector*

The study by Brandão and Carvalho (1990) is a benchmark for understanding the direction and intensity of the main market forces in the early Eighties. It provides one of the best summaries of relevant evidence from the Sixties to the Eighties of what has come to be known as 'the bias against agriculture'. The authors use a partial equilibrium analysis scheme to examine this phase of 'the bias against agriculture'. They attempt to detect the direction of market forces, reflected in the movement of relative prices, and to reveal the prime relations issuing from the changes observed in the period. The results of their analysis are a set of relevant facts that help understand recent transformations in agriculture.

Perhaps the most important fact concerns the net transference (credit included) of about 8% of agricultural GDP in the 1975–83 period. These transferees stemmed from direct intervention (public spending) and subsidies for rural credit. Excluding rural credit, a clear picture of the discrimination of prices emerges. Had it not been for rural credit, approximately 8.9% of agricultural GDP would have been drained from the sector in the period under examination.

Secondly, the scheme of subsidies and relative prices artificially created by government policy produced the following effects:

- a. Cultivation of food crops was given priority to the detriment of cash crops for export. This transference within the sector inhibited the natural vocation for exportation of Brazil's agriculture. Relative prices of exportable crops (soya, cotton and maize) fell 10% to 30% below the prices of food staples (rice and wheat);
- b. The comparison of agriculture with other sectors of the economy showed a net advantage for agriculture. This was the result of the net effect of discriminatory pricing policies and the strongly subsidized financing policy (credit and interest);
- c. Effective output was below what might be expected in a context of free trade for all the crops analysed (cotton, soya, maize, rice and wheat). Only soya was produced at a level similar to what might be expected without government intervention. Production of maize, on the other hand, was 4% to 39% below what it should have been.
- d. Effective consumption was higher than would be expected without distortions for all the products analysed. Consumption of wheat was 34% higher than it would be without intervention. Consumption of cotton oil was 14.6% higher and of maize 10.7% higher than the levels that could be expected in a free-market context.
- e. The intervention scheme clearly impaired the sector's exports in the period. An annual loss of 10% has been estimated for export crops owing to government intervention. No significant difference has been observed for other crops, though. Imports of fertilizers would have increased very little under a more liberal system.
- f. The distributive impact in the period had a negative effect on low-income consumers in comparison with high-income groups.

Direct and indirect intervention (tariffs, subsidies, quotas, and so on) generated losses for agriculture in much of the period analysed. The relation between agricultural prices (cotton, soya, maize, rice and wheat) and corrected non-agricultural prices was negative at the end of the period for maize and rice and positive in the case of cotton. The net effect of interventions on the price of wheat was even.

The 'bias against agriculture' in Brazil was basically a bias in allocation. Both the pricing policy and the rural credit policy benefited some subsectors in agriculture to the detriment of others. Perhaps the main bias was containing the level of internationalization in agriculture, preventing exports from attaining their full potential with the previous structure of relative prices, though conditions in the international market were hardly favourable.

### *Structural reforms in agriculture*

Exchange crises in the Brazilian economy in the early Eighties were allayed by funds from the IMF and the World Bank. That was the cause of much of the pressure on the Brazilian government to change the economic model on which it based both its macroeconomic policy and its management of sectorial policies. The arguments centred on the government's failure to control public accounts relating to sectorial spending and on the imbalance of relative prices in agriculture, owing essentially to the absence of free trade. They led to the emergence of a new model for policy on agriculture. It involved the deregulation of markets and the government's withdrawal, sometimes gradual (coffee, sugar cane) sometimes sudden (wheat), from regulation of agricultural markets.

The major reforms for agriculture were concentrated in the 1987 to 1992 period. The reforms fell into three main groups: (1) reforms to eliminate barriers to foreign trade; (2) those designed to stabilise domestic prices; and (3) institutional reforms to dismantle state monopolies in agriculture.

The reforms concerning foreign trade included changes in the rules for importing products and raw materials through reduction of tariffs, limitation of dispersal and standardization of the tariff structure. They ranged from lifting bans on imports and exports to modernizing operating procedures in the customs and exchange control agencies. They also involved eliminating taxes, simplifying norms, scrapping forms and prior licences, doing away with quotas, and other such changes.

In the reform of domestic markets, more consistent mechanisms were introduced for intervening in markets. These included aligning minimum prices with the international market, creating a system of paying for the difference between minimum and market prices without resorting to government purchases, making operations more transparent, and improving conditions to encourage private agents to carry stocks and expand agricultural markets.

As for the dismantling of state monopolies, reforms were geared to reducing the government's role in the economy, transferring to private enterprise the task of commercializing produce – previously a preserve of the State. The most important cases were those in the sugar and alcohol, coffee and wheat sectors.

### *Foreign trade reforms*

The purpose of the reform programme regarding foreign trade was clearly to reduce or, if possible, to eliminate the anti-export bias in Brazilian agriculture. Since 1987, the government had been establishing norms for opening up agricultural markets. It was only in 1990 and 1991, however, that the great majority of the reforms were implemented. For imports the main reform was tariff reduction begun in 1988. In 1990, all quantitative

restrictions on imports were lifted. In 1991, the government announced a staggered timetable for reducing tariffs – both average tariffs and its dispersion. Table 6.2 records the evolution of tariffs. It displays nominal protection rates for the main importable and exportable crops. The rates reflect tariff and non-tariff barriers. Given the volatility of border prices, the authors recommend caution in interpreting these indicators.

It can be observed that the nominal protection rates show a reduction in protection for all the crops. This is clear for importable produce considered to be food staples (wheat, rice, beans and maize). In the case of beans, the 39.2% protection rate in 1985 became negative, implying an encumbrance. A similar trend is visible for rice: domestic prices were far higher than international ones in 1985 and lower in 1992.

Observing produce for export, it cannot be claimed that rates diminished, as a comparison of domestic with border prices will show. Fluctuations are strong and no systematic trend toward reduction can be deduced among these crops.

Table 6.3 presents the schedule for reducing tariffs on agricultural produce, supplies, machinery and equipment. Of the produce displayed in the table, the most protected are sugar and milk with 20% tariffs. The next most protected item is wheat, the tariff for which stood at 15% in 1993, after reaching 25% in 1991. No protection was made for cotton, given the protection already afforded to the textile industry. In actual fact, cotton was exposed to the rigours of open competition and had suffered indirect taxation (contingency measures) from the beginning of the Eighties. This produced negative impact on the growth of output, transforming the country from a net exporter in the Seventies into a net importer in recent years.

Increasing reliance on chemical fertilizers, especially nitrates, has determined a low tariff structure for such inputs. For ammonia, sulphur and nitrates tariffs are null, and they range from 5% to 10% for super phosphorus and other fertilizers. Protection remains high for tractors, the aim being to defend local industry, which has become fairly idle since investment loans have fallen to very low levels. The previous 40% tariff has dropped to 30%.

Besides tariff reduction, supplementary reforms have been introduced to modernize the statistical information system for foreign trade and to simplify customs control mechanisms. More agile procedures have been created for registration, forms and processing. An electronic data system capable of supplying the Federal Revenue Office (customs control), the Central Bank (exchange control) and Banco do Brasil (statistical control) with on-line information has been installed. Prior to the reform, these controls were performed separately at the level of each agency. There was precious little liaison between them. The agencies involved often acted in an arbitrary, discriminatory manner in controlling licences, which introduced an element of risk and increased the cost of imports.



Table 6.3 Schedule for Reducing Tariffs on Agricultural Produce and Supplies 1991-93

Produce/Supplies	1991	1992	1993
Wheat	25	20	15
Maize	10	10	10
Maize Seed	0	0	0
Rice - Irrigated	15	15	15
Rice - Others	15	15	15
Beans (3 types)	0	0	10 (0)
Cotton	0	0	0
Cocoa	10	10	10
Coffee - Beans	10	10	10
Coffee - Others	15	10	10
Soy Beans	10	10	10
Soy - Byproducts	20	15	10
Oats			10
Grain Oil			10
Sugar - various			20
Meat - various (beef, pork, lamb, chicken)	15	10	10
Milk - fresh & powdered			20
Fruit & Vegetables			10
Fertilizers	15	15	
Urea			10
Ammonia, Sulphur			0
Nitrates			0
Super Phosphorus			5-10
Others			0-10
Tractors	40	35	30 (20)
Equipment (ploughs etc.)		25	20
Dairy Equipment			20
Other Equipment			20
Chemicals			
Raw Materials	5	5	10
End Products	15	15	10

Source: World Bank (1993).

Brazil introduced legislation on compensatory measures to shorten the period for analysing cases of anti-dumping in 1991. These norms envisaged that whenever a subsidy was detected for a supplier overseas, a compensatory measure would apply: (a) if imports were in excess of 2.08% of average Brazilian consumption (production) in the last three years; and (b) if the import price was lower than the average domestic price in the last five years.

In 1991, taxes on exports and the system of quotas and prior licences for exports of agricultural produce were abolished. In 1992, the requirement of

prior licences for sugar and alcohol exports was likewise waived. All direct and indirect subsidies were eliminated, except those in the free trade zones and those covered by the draw-back system. By this system there were to be no tariffs on imports of inputs used for products due to be exported. The number of documents required for exports was reduced and foreign trade documents were simplified.

The most important remaining restrictions were those relating to health, food safety and endangered animal species. Several indirect taxes (ICMS, IPI and FINSOCIAL) survived. Only in 1996 was ICMS (the state VAT charged at 12% on average for exports) eventually suspended.

#### *Domestic price policy reforms*

Following the reduction of subsidies for rural credit, the government turned its attention to administration of domestic prices. It sought to develop a system of intervention that, as far as possible, would preserve efficient operation of the markets. The challenge was to administer supply and avert shortages by controlling government stockpiles. The scheme devised by Dias and de Barros (1983) combined commercial policies, using regulatory stocks and minimum prices, in a single control system that was strictly tariff-based and non-quantitative.

Employing the mechanisms proposed in the reform, the government began to intervene in the agriculture markets only when prices went very high or very low. It introduced a system of bands with levels corresponding to the minimum and maximum prices announced in advance so as to send agents and traders involved in the entire agricultural trading process the right signals. In its original form, the system Dias and de Barros proposed determined that if the domestic price of a particular product rose above the maximum price stipulated, the government would sell its stocks to keep the price within the band set. If the sale of its stocks failed to produce the desired effect, the government would resort to imports to bring domestic prices down to the level required. If, on the other hand, domestic prices slumped, the government would purchase produce according to the minimum price policy. Again, if the international price of a product rose so much that it jeopardized domestic supply, the government would tax exports of the product sufficiently to offset the internalization of this external instability. Likewise, if international prices plummeted to the point of harming domestic producers, the government would jack up tariffs to prevent Brazilian farmers being exposed to such external shocks.

This reform significantly altered the shape of government intervention. Prior to the reform, the government intervened directly in both farmers' selling prices and consumer prices. The worst thing about this sort of pre-reform intervention was the uncertainty it instilled in farmers, processors and retailers. The system actually implemented was not very different from that proposed in 1984, the one exception being floating tariffs for imports

and exports. The minimum price policy continued to administer supply of agricultural produce by establishing an annual minimum price and granting price incentives based on estimates of future demand. The regulatory stocks policy was combined with the minimum price policy in a programme for controlling government stocks and encouraging the maintenance of private stocks. The minimum price policy continued to serve as a mechanism for signalling future prices for farmers, signalling distinct prices for regional crops, securing easier access to credit for small farmers and setting reference prices for the finance system (World Bank, 1993).

The MPGP (Minimum Price Guarantee Policy) employs two instruments. One, FGP (Federal Government Purchases) is for direct intervention in the markets: the government purchases and stockpiles the product when the market price at the time of harvesting falls below the minimum price. The instrument of indirect intervention is the so-called FGL (Federal Government Loans), which provides financing for the crop harvested. The loans are granted for a period (of about six months) during which the farmer attempts to obtain a better market price. In the case of FGL, farmers may opt to sell the product to the government (transforming it into FGP) should they fail to obtain a better market price.

Minor alterations were made to MPGP subsequent to the reform. In 1988, the SSP (Stock Sale Price) was instituted for sale of the stocks built up under MPGP. It initially served as a trigger for unleashing government stocks of maize, meat, rice, beans and wheat whenever market prices topped SSP. SSP was conceived as a 40- to 60-month moving average plus 15% to give the market a little leeway.

In 1992, the term for settlement of FGL was extended with the introduction of the so-called special FGL with a pluriannual repayment option. In 1993, a loan price lower than the minimum price was instituted to assess loans for specific products such as soya. In the same year, a sale price was

*Table 6.4* Federal Government Purchases (FGP) as Percentage of Harvest 1975-92

Year	Beans	Cotton	Maize	Rice	Wheat
1975	1.7	9.7	0.6	0	0
1985	22.8	6	15.2	17.3	12
1987	43.3	11	29.5	28.1	5
1988	4.8	1.5	6.6	18.8	0
1989	0	0.2	3.8	7.9	0
1990	0	0	2	1.1	0
1991	0.4	0	0	0	0
1992	0.2	0	1.1	0.8	0

Source: World Bank (1993).



Table 6.5 Federal Government Loans (FGL) as Percentage of Harvest 1975–92

Year	Beans	Cotton	Maize	Rice	Soya
1975	3	51	5.4	12	32.4
1985	5	13	7.9	21	17.2
1987	5	42	6.9	30	25
1988	7	38	15.6	31	18.7
1989	2	15	14.1	27	4.4
1990	3	4	2.2	4	3.9
1991	3	7	3.6	3	1.2
1992	17	3	19.6	38	9.5

Source: World Bank (1993).

established for FGL, allowing farmers to sell the product on the market and receive the difference from the government.

The agricultural pricing policy was not satisfactorily administered throughout the period because a shortage of public funds sometimes led to a breach of commitment, undermining the programmes' credibility.

#### *Impacts of the reforms and structural changes in Brazilian agriculture*

Considering this transition phase punctuated by reforms has been rapid and the agricultural sector has had to forfeit its main compensation mechanism (the highly subsidized official credit programme), it is fairly surprising that output has continued to grow steadily. Apparently, the sector has not suffered the adjustment crises that have beset other countries around the world which have recently undergone major structural reform (Figure 6.1).

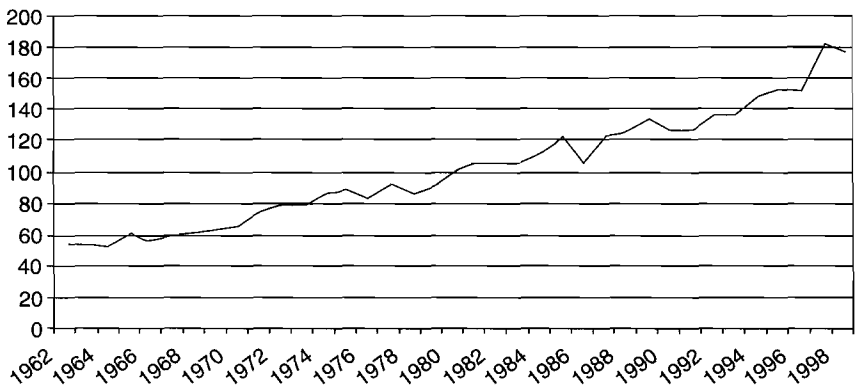


Figure 6.1 Agricultural Output Index, 1969–98

Source: FIBGE, elaborated by MBA.

Another remarkable feature is the degree to which the Brazilian market has opened up, as measured by the volume of exports as a proportion of domestic output, which has ceased to grow and has even presented a slight downward trend (Figure 6.2). This reveals the pro-export bias in the previous model because during the growth crisis of the eighties and even after stabilization, the degree of openness has failed to recover the trend registered up until 1983.

This section endeavours to explain the peculiar performance of Brazil's agriculture sector by the following elements: (a) a microeconomic argument according to which increased productivity among more capitalized companies and a favourable trend in terms of trade (product/input) have sustained growth in aggregate output; (b) a set of macroeconomic factors suggests that the structural changes are not yet complete, with an overvalued domestic currency and heavy reliance on external savings demanding very high interest rates; and finally, (c) the stabilization of inflation, in conjunction with certain compensatory social policies, has kept domestic demand on the agriculture sector growing. To clarify the situation, this section will provide a brief description of the facts that led to a break with the previous agricultural policy.

The policy instrument which had the strongest impact was rural credit. By redistributing incentives, it served as a coordination device. The idea that the financial sector would act as a coordinating agent for agricultural development failed to materialize. This was partly because the financial institutions providing credit for agriculture were entirely controlled by the government, a role never absorbed by the private financial sector. Fundamentally, though, it was because the government progressively lost its capacity to generate financial resources throughout the Eighties. It was in this period that inflation was fuelled by indexation mechanisms, and the

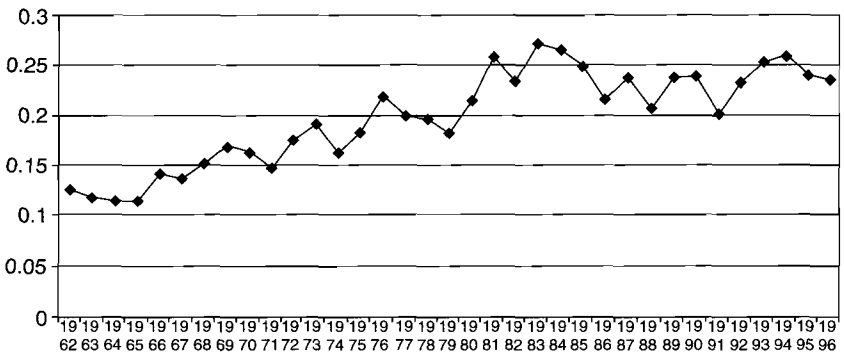


Figure 6.2 Evolution of the Export/Output Ratio (%) 1962–96

Source: FIBGE, elaborated by MBA.

international capital market began to close its doors to Brazil. As a result, the agricultural sector gradually drifted out of the hands of the government and began to witness the dismantling of the intervention instruments that had been used so liberally since the 1960s. As recession hit the economy in the early Eighties, largely owing to the external debt crisis, the government lost its capacity to assist agriculture by injecting public funds, mainly in the form of subsidized rural credit and through its policy of guaranteeing minimum prices. Government intervention had played a positive role in agriculture so long as it was feasible to supply credit for investment, infrastructure and new technology. Through intervention, the agricultural frontier had been rolled back incorporating previously uncultivated, more productive regions in the Centre and West of Brazil.

Following the demise of the principal compensation mechanism, the rural sector began to bring incisive political pressure to bear against the discriminatory aspects of government intervention. The lobbying was compounded by pressure from international organizations, especially the World Bank, which made it patent in the safeguards it demanded in sectorial assistance projects. The new model that was to take shape in the mid-Eighties thus began to emerge. Agriculture began to associate in a far more integrated fashion, on the one hand, with the distribution system (comprised by agroindustrial concerns and retail supermarket chains) and, on the other hand, with suppliers of inputs and services. The new supply system kept pace with the rapid urbanization of the country, imposing a new framework on the sale of foodstuffs and other agricultural produce. Moreover, it began to dictate and coordinate production in large segments of agriculture, requiring standard procedures and greater efficiency. This coordinating power was grounded in the liquidity concentrated in supermarket chains, in food processing industries, traders and also in the agricultural supplies industry. As the official rural credit system declined, these new sources of funding began to gain ground. Supermarkets concentrate liquidity because they purchase on hire purchase but sell on demand on a large scale. Traders and food processing firms, meanwhile, have ready access to external credit through financed imports or advance payment on exports. In this environment of greater integration with other sectors of the economy perhaps lies the explanation for the sector's dynamic performance and growth in the period: the systematic growth of productivity – an issue to be discussed in the following section.

A further set of incentives for agriculture, now predominantly market incentives, began to emerge. The hypothesis we propound is that, as from the second half of the 1980s, the loss of transference of income by means of subsidized credit obliged the farming community to reduce average costs on their property. The most important instrument for offsetting this loss was vigorous growth at the level of production units, implying a moderate reduction in the area under cultivation and a sharp drop in employment.

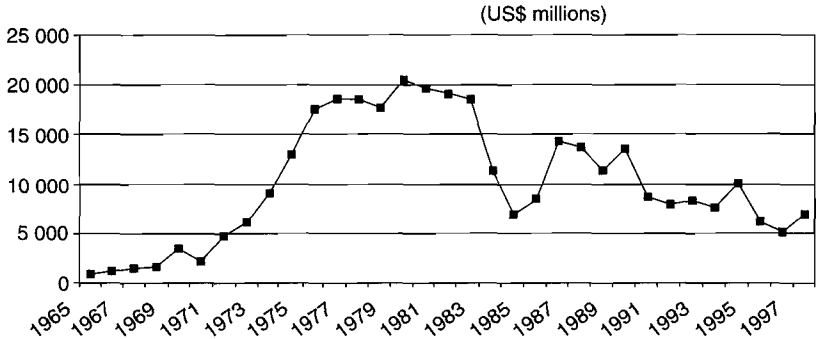


Figure 6.3 Evolution of Rural Loan Sums Granted 1965–97. Microeconomic Adjustment at the Level of Production Units  
 Source: FIBGE, elaborated by MBA.

#### *Increased land productivity*

Productivity indicators for both agriculture and livestock recorded systematic growth in the 1987 to 1998 period. A global crop productivity index has been formulated on the basis of individual crop productivity ratings, the weighting factor being the share of each crop in the global sum of output for the year. These average productivity ratings have recorded regular growth in virtually every year throughout the decade. The growth rate for this crop productivity index for the 1987–98 period has been close to 1.85% per annum. In the 1996–98 period, productivity was 22% higher than in 1987.

A productivity index for livestock cannot be formulated on the basis of annual statistics because no reliable indicators of weight conversion rates based on the consumption of foodstuffs are available. Likewise, no annual data are available for herds. The alternative has been to compare the data for the 1996 Agricultural Census with those for the 1985 Census, as they provide reliable information concerning livestock and output for the sector. As a result, only an estimate for average growth in productivity has been obtained for the period between the two censuses. It shows very similar growth to that registered for crops – 1.94% per annum. Average productivity in the 1996–98 period was 21.3% higher than in 1987 (see Table 6.6). In aggregate terms, combining livestock and crops, the average annual increase in productivity in agriculture was 1.88%.

Several factors contributed to strong growth in productivity in agriculture. First, the weak development of transportation infrastructure compared with the previous two decades obliged the sector to resort to more intensive use of land, cultivating both traditional areas in the vicinity of large urban areas and new areas in the Central and Centre-West regions of Brazil.

Table 6.6 Evolution of Productivity Ratings 1987-98

Year	Subsectors		(1987 = 100)
	Crops	Livestock	Agriculture
1987	100.0	100.0	100.0
1988	96.1	101.9	98.0
1989	100.5	103.8	101.6
1990	94.9	105.8	98.5
1991	97.1	107.9	100.7
1992	103.6	110.0	105.7
1993	110.8	112.1	111.3
1994	111.3	114.3	112.3
1995	112.5	116.6	113.8
1996	114.2	118.9	115.8
1997	116.4	121.3	118.0
1998	122.4	123.6	122.8

Source: FIBGE

A second factor was the application of technologies developed by EMBRAPA (Brazilian Agricultural Research Enterprise), the government company responsible for agricultural research, which began to play a major role from the mid-Seventies onwards. The components of this new technology ranged from new strains specially suited to the agricultural frontier regions (particularly the *cerrado* scrubland environment) to supplementary cultivation techniques for these new varieties.

A third key element was undoubtedly the human factor. Agriculture became substantially more professional in this period. In the Sixties and Seventies, droves of farmers migrated from the South to other regions of the country, taking with them a certain amount of physical capital but, above all, human capital. They migrated to occupy land suitable for cultivation in these new areas. In both the Centre West and Northern regions these farmers from the South began to raise the standard of crop productivity, aided by land coming under cultivation for the first time and appropriate technology for tilling and cultivation (David, 1997). The change in relative prices triggered by the opening-up of the Brazilian economy substantially reduced the price of certain agricultural inputs and supplies. As we shall see further on, it also helped accelerate the pace of the absorption and application of these new technologies designed to improve crop productivity.

Increased productivity was not homogeneous, being more intense in some crops than in others. Table 6.7 shows rapid improvement in productivity for rice and maize, the most important staples consumed by the working class and the poorest segment of the population in Brazil. The productivity of

Table 6.7 Productivity Rating for Major Crops, 1986–98 (1986–88 = 100)

Year	Productivity					
	Cotton	Soya	Coffee	Cocoa	Maize	Beans
86–88	100.0	100.0	100.0	100.0	100.0	100.0
87–89	106.3	100.0	75.0	104.7	99.7	113.7
88–90	110.3	98.0	63.7	103.7	97.7	121.3
89–91	116.3	95.0	68.0	101.0	96.7	122.7
90–92	121.3	96.0	68.7	91.7	100.3	131.0
91–93	126.3	103.7	71.3	89.7	111.3	144.7
92–94	127.3	115.0	74.7	89.3	120.3	154.3
93–95	136.0	118.0	73.7	86.3	125.7	158.3
94–96	139.7	119.0	78.3	82.7	123.7	152.7
95–97	148.7	121.3	76.0	78.3	127.0	153.3
96–98	152.2	124.3	87.0	77.0	130.7	158.3

Source: FIBGE

maize increased from 100 in 1987 to 131 in the 1996–98 period. Productivity for cotton improved substantially, increasing about 52%. Soya, on the other hand, improved less than 30%.

Cash crops for export achieved less significant productivity gains than food crops sold on the domestic market. Two traditional export items, coffee and cocoa, actually saw their productivity ratings sink. By way of contrast, beans, always problematic as to productivity in the past, displayed a remarkable performance, with productivity improving 58% between 1987 and 1998 (see Table 6.7).

Analysis of the productivity ratings referred to above clearly demonstrates the superior performance of crops for domestic consumption in comparison with cash crops for export (for example cocoa and coffee). The implication of this trend is that Brazilian agriculture is now preferring to concentrate on meeting domestic demand rather than relying heavily on export markets.

The productivity ratings for livestock activities are even more significant than those for crop cultivation in the period from 1987 to 1998. The general productivity index for livestock – an average of the productivity ratings for cattle, poultry, swine, eggs and dairy produce – recorded growth of 23.6% in the period, a little higher than the 22.8% productivity gains in crop cultivation. Extraordinary growth in productivity (90.4%) was recorded in the swine-rearing sector. Gains in the dairy sector were also substantial (25.7%).

Adjustments in terms of productivity gains at the level of production units secured sustained growth in agriculture throughout the period but were achieved at the expense of rural unemployment and alterations to the

structure of agricultural enterprises. This development will be examined in the following section.

*Reduction in rural employment and structural changes in agricultural enterprises*

This is a point that should be pondered carefully and analysed in greater depth because the necessary cross-checking of the preliminary data from the Census is not yet available, so the information should be treated with some caution. Brazilian agriculture has adjusted to the series of setbacks experienced in the Eighties and Nineties, resorting to alternative forms of capitalization within the productive system itself. These have mainly been associated with sharp improvement in productivity, cost cutting and demobilisation of assets. One consequence has been mass unemployment, not merely confined to the laying-off of hired labourers but also affecting entire farming families. Other effects include a reduction in the number of production units and a drop in land prices, particularly after stabilization was achieved. This process worsens a predicament that has deep historical roots in Brazil's agriculture sector, which displays one of the worst distributions of income in Latin America.

The preliminary data for the 1996 Agriculture Census allow one to infer that employment in agriculture shrank 23% between 1985 and 1996 whereas the sector's aggregate product expanded 30% in the same period. The average productivity of labour thus increased more than the productivity of land during the adjustment period. Table 6.8 shows that the slump in the level of employment occurs in all the macro-regions of the country. Of the 5.5 million work posts lost, 4 million are the positions of those responsible for production units (and members of their families) when classified according to type of occupation. Furthermore, 4.1 million of the work posts forfeited were in units of less than 200 hectares. In other words, the brunt of the adjustment was borne by family agriculture units. The most significant drop among permanent employees (173,000) was registered in the Southeast, closely followed by the Northeast (164,000). Among temporary employees, the sharpest decline was again in the Southeast (420,000). Controversy regarding the 1996 Census is concentrated in the temporary labourer category. It is claimed that by switching the month for gathering data to September – a month in which there is traditionally little activity in agriculture – the Census has grossly underestimated the contingent of occupied labourers classified under this heading.

An alternative source of information about the economically active population in the rural sector is the PNAD (National Sample Household Survey). The data displayed in Table 6.9 based on this survey show that the economically active population in rural areas grows at a rate of 0.4% p.a., well below the urban rate of 2.5% p.a. The most significant information, however, is that growth in the rural population among those employed in agriculture is already negative (-0.5% p.a.) in the 1992 to 1995 period.

Table 6.8 Labourers Engaged in Agriculture by Category, 1985-95

Category	Year	Region					
		North	Northeast	Southeast	South	Centre-West	Brazil
Total Labourers Engaged	1985	2,478	10,442	4,738	4,490	1,247	23,395
	1995	1,878	8,211	3,441	3,383	1,018	17,931
	Variation (%)	1985/95	-24.2	-21.4	-27.4	-24.7	-18.3
Unremunerated Family Heads & Members	1985	2,234	8,38	2,593	3,642	785	17,641
	1995	1,606	6,645	1,984	2,782	591	13,608
	Variation (%)	1985/95	-28.1	-20.8	-23.5	-23.6	-24.7
Permanent Employees	1985	87	610	925	333	236	2,192
	1995	95	446	753	291	253	1,839
	Variation (%)	1985/95	9.9	-26.9	-18.7	-12.5	7.0
Temporary Labourers	1985	131	1,199	832	423	183	2,768
	1995	121	932	412	230	139	1,835
	Variation (%)	1985/95	-7.5	-22.2	-50.5	-45.5	-24.3
Partners	1985	9	106	285	53	16	469
	1995	14	60	172	37	7	290
	Variation (%)	1985/95	53.4	-43.8	-39.7	-29.8	-54.2
Others	1985	18	139	103	41	25	326
	1995	42	127	120	42	27	360
	Variation (%)	1985/95	136.1	-8.6	16.9	4.5	7.7

Source: FIBGE, Agricultural Census, 1996.

Non-agricultural activity in rural areas (3.5% annual growth) has compensated the loss of work posts in agriculture (Graziano, 1996).

The sharpest reduction in employment among the economically active population engaged in agriculture has been among rural workers who live in urbanized environments (for example those living on the outskirts of towns (-6.1% p.a.) or inside urban perimeters (-1.2% p.a.). The biggest growth rates among the unemployed have likewise been recorded in the rural zone (1.2% p.a.) especially on the outskirts of towns and cities (7.6% p.a.) and in small villages (3.2% p.a.). These areas concentrate groups of labourers with the most precarious employment in agriculture: day labourers and seasonal workers.

As a social policy measure to compensate for such a widespread social crisis, the government speeded up its agrarian reform programmes, settling



Table 6.9 Changes in Rural and Urban Economically Active Population 1992–95  
Percentage Composition and Growth Rates

Domicile Status	Growth Rates of Economically Active Population (EAP)									
	Total EAP		Occupied		Agricultural		Non-Agricultural		Unoccupied	
	1995 %	95/92 % rate p.a.	1995 %	95/92 % rate p.a.	1995 %	95/92 % rate p.a.	1995 %	95/92 % rate p.a.	1995 %	95/92 % rate p.a.
<b>Urban</b>	<b>76.4</b>	<b>2.5</b>	<b>75.2</b>	<b>2.7</b>	<b>26.6</b>	<b>-1.0</b>	<b>92.4</b>	<b>3.1</b>	<b>93.7</b>	<b>-0.6</b>
Urbanized	75.2	2.4	74.1	2.7	25.3	-1.2	91.3	3.1	92.6	-0.6
Non- Urbanized	1.2	5.1	1.2	5.2	1.3	3.0	1.1	6.2	1.1	2.7
<b>Rural</b>	<b>23.6</b>	<b>0.4</b>	<b>24.8</b>	<b>0.4</b>	<b>73.4</b>	<b>-0.5</b>	<b>7.6</b>	<b>3.5</b>	<b>6.3</b>	<b>1.2</b>
Urban Outskirts	0.8	2.4	0.8	2.0	0.5	-6.1	0.9	3.8	1.1	7.6
Villages	2.2	2.1	2.2	2.0	4.8	0.9	1.3	3.5	1.7	3.2
Rural	20.7	0.1	21.8	0.2	68.1	-0.5	5.5	3.4	3.5	-1.2
<b>Total</b>	<b>100.0</b>	<b>1.9</b>	<b>100.0</b>	<b>2.1</b>	<b>100.0</b>	<b>-0.6</b>	<b>100.0</b>	<b>3.2</b>	<b>100.0</b>	<b>-0.5</b>

Source: Graziano (1996)

Table 6.10 Rural and Urban Economically Active Population, 1992 and 1995

Domicile status	EAP Total		EAP Occupied		EAP Agricultural		EAP Non-Agricultural		EAP Unoccupied	
	1992	1995	1992	1995	1992	1995	1992	1995	1992	1995
<b>Urban</b>	<b>52,636</b>	<b>56,606</b>	<b>48,334</b>	<b>52,379</b>	<b>4,984</b>	<b>4,835</b>	<b>43,350</b>	<b>47,545</b>	<b>4,302</b>	<b>4,227</b>
Urbanized	51,880	55,749	47,626	51,573	4,763	4,594	42,863	46,979	4,253	4,175
Non- Urbanized	739	857	692	806	220	241	472	565	47	51
<b>Rural</b>	<b>17,333</b>	<b>17,532</b>	<b>17,061</b>	<b>17,249</b>	<b>13,515</b>	<b>13,320</b>	<b>3,546</b>	<b>3,930</b>	<b>273</b>	<b>283</b>
Urban Outskirts	541	580	503	533	103	85	400	448	38	48
Villages	1,521	1,617	1,452	1,540	855	878	597	663	70	77
Rural	15,271	15,335	15,106	15,176	12,558	12,356	2,549	2,819	165	159
<b>Total</b>	<b>69,969</b>	<b>74,138</b>	<b>65,395</b>	<b>69,629</b>	<b>18,500</b>	<b>18,154</b>	<b>46,895</b>	<b>51,474</b>	<b>4,574</b>	<b>4,510</b>

Source: Graziano (1996)

about 200,000 families in recent years. It also created a credit programme to support family agriculture, which already provides loans to 700,000 small farmers. Apparently, the most significant form of compensation was provided by social welfare reform subsequent to the resolutions of the 1988 Constituent Assembly which increased the minimum monthly pension

from half to one minimum wage. It also extended entitlement to retirement based on length of employment to all senior citizens who could prove they had been employed in rural labour in the past, regardless of whether they had contributed to the welfare system. The results are displayed in Tables 6.11 and 6.12. The number of new rural retirement pensions in the 1991 to 1995 period rose to almost 2 million. The unit value of these pensions more than doubled in real terms (converted into US\$) and coverage of the population at retirement age expanded to one-third – a remarkable increase. The social reparation dimension of these developments is all the more significant when one considers that impact has been far greater in states where rural per capita income is lowest, especially in the Northeast region.

*Table 6.11 Ranking and Evolution of Income in Rural Households and Among their Members in the States: 1991–93 (in US\$ dollars)*

States	Average Rural Household Income (RHI/N)		IRR/RHI (%)		Variation RHI/RHI	Variation IRR/RHI	Variation INRR/RHI
	1991	1993	1991	1993	93/91	93/91	93/91
Ceará	95	121.4	25.3	48.5	0.43	0.44	-0.01
Piauí	96	138.5	27.6	49.0	0.52	0.48	0.04
Paraíba	100	127.8	35.8	63.2	0.33	0.48	-0.15
Bahia	114	155.1	19.2	30.1	0.48	0.25	0.23
Rio Grande do Norte	122	175.7	26.2	39.6	0.73	0.42	0.31
Sergipe	129	156.0	19.0	38.3	0.20	0.27	-0.07
Pernambuco	130	118.7	22.4	55.8	-0.12	0.27	-0.39
Alagoas	130	135.4	17.8	34.7	0.06	0.19	-0.13
Maranhão	175	193.2	10.7	19.5	0.15	0.12	0.03
Goiás	185	260.4	13.0	17.9	0.66	0.17	0.49
Rondônia	187	-	7.2	-	-	0.11	-
Espírito Santo	188	205.6	10.5	23.9	0.22	0.19	0.04
Acre	198	-	17.2	-	-	0.25	-
Rio de Janeiro	202	222.9	17.0	23.1	0.17	0.10	0.07
Minas Gerais	205	219.2	12.0	25.0	0.14	0.17	-0.02
Paraná	205	335.6	12.2	20.9	0.53	0.20	0.34
Amazonas	212	-	11.3	-	-	0.12	-
Mato Grosso	231	294.3	8.1	11.4	0.68	0.11	0.57
Mato Grosso do Sul	231	294.3	11.6	20.7	0.29	0.15	0.13
Rio Grande do Sul	245	404.2	8.5	14.6	0.68	0.16	0.51
Santa Catarina	264	427.0	6.2	9.9	0.76	0.11	0.65
Pará	280	-	4.9	-	-	0.08	-
São Paulo	360	419.8	8.5	14.3	0.24	0.09	0.15
Federal District	519	743.1	14.2	17.5	0.76	0.17	0.59

Source: Delgado (1996)

Note: RHI = rural household income, IRR = income of retired rural labourers, INRR = income of non-retired rural labourers.

Table 6.12 Quantity and Value of Rural Benefits 1991-95

Year	Sum Total of Benefits (US\$ millions)	Total no. of Continuous Rural Benefits (CRB) *	Total no. of Rural Pensions **	Monthly Unit Value of CRB (US\$)	CRB/Total Population (%)	CRB/Retirement-Age Population (%)
1991	180.0	4 080.4	2 371.7	44.1	2.78	19.6
1992	234.4	4 976.9	3 051.0	47.1	3.30	23.9
1993	403.8	6 001.0	3 989.3	67.3	3.96	31.1
1994	484.6	6 359.2	4 307.2	73.9	4.14	32.3
1995	639.4	6 361.2	4 263.9	100.5	-	-

Source: Delgado (1996)

Notes: \* = Retirement pay, Pensions and Lifelong Monthly Maintenance Allowances; \*\* = strictly Old-Age Pensions.

### *Improvement in terms of trade*

An important element in sustaining post-reform growth in agriculture was the improvement in terms of trade for farmers. Agriculture adjusted to the process of opening up the economy, set in motion in the mid-Eighties with the deregulation of agricultural exports. Although freer trade – already consolidated in the Nineties – brought stiffer competition to the agricultural products and processed foodstuffs markets, it was the deregulation of the supplies and inputs market that had the greatest impact on agriculture. These markets were less competitive and absorbed more of the subsidies allocated to the agriculture sector in the period prior to the reforms. Greater exposure to foreign competition provoked a restructuring of terms of trade which, combined with increased productivity, produced greater purchasing power regarding agricultural inputs. This is the prime explanation for steady agricultural growth during this period of structural transformations. At the same time, it sets the limits to that growth.

From 1987 onwards – the period in which the economy was opened up – prices farmers received for their produce rose 30% in relation to the prices they paid for inputs and supplies. The Index of Prices Paid by farmers includes fertilizers and other inputs, plus remuneration for land, capital and labour. The improvement in terms of trade might have been far more impressive had it not been for the losses sustained by the livestock sector. While the crop sector saw 46% improvement in terms of trade between 1987 and 1998, the livestock sector sustained losses of almost 3%. Both the crop and livestock sectors experienced improved terms of trade between 1987 and

1994 when they peaked at 49% and 27%, respectively. From then on there was a worsening of terms of trade, the crop sector picking up only in 1997.

Virtually all the 20 crops analysed benefited from prices received being higher than prices paid. Increases varied considerably: 24% for maize, 62% for manioc, 65% for rice, 11% for soya and 139% for coffee. Only grapes, wheat and cocoa recorded losses in terms of trade of 23%, 30% and 6%, respectively. For all crops, 1994 was a high point in terms of relative prices. Recovery occurred in the following year for all but the crops that had recorded losses in terms of trade.

As already stated, the livestock sector sustained losses in terms of trade. Losses were concentrated in the poultry and dairy sectors. The latter lost almost 20% in its terms of trade from 1987 to 1988.

It can be inferred from the evidence presented that the opening-up of the economy has helped to eliminate imbalances in relative prices for agricultural produce, the trend being for prices of produce to outstrip prices of inputs. Only a few products (poultry and milk in the livestock sector, and cocoa, wheat and grapes in the crop sector) had more favourable terms of trade before free trade was established. The opening-up of the economy made for unfettered imports and exports of produce and supplies for agriculture, integrating it into international markets. This has served to improve terms of trade for most products. With a more homogeneous process of price formation, agriculture is no longer so sharply divided between traditional export products and products for domestic consumption.

Table 6.13 Evolution of Terms of Trade 1987-98

(1987 = 100)

Year	Productivity		
	Crops	Livestock	Agriculture
1987	100.0	100.0	100.0
1988	118.1	92.1	109.5
1989	93.4	96.9	94.6
1990	122.0	119.6	121.2
1991	120.1	108.9	116.4
1992	121.2	102.8	115.2
1993	133.2	120.4	129.0
1994	149.4	127.5	142.2
1995	128.8	100.1	119.3
1996	122.5	90.2	111.8
1997	139.9	98.5	126.2
1998	145.7	97.7	129.9

Source: FIBGE, elaborated by MBA.

*Increase in farmers' purchasing power*

The extent to which the opening-up of the economy has encouraged farmers can be gauged by a profit indicator. To assess profits we have formulated a purchasing power indicator obtained by multiplying the relative price index by the productivity index. According to this indicator, farmers' purchasing power increased 59% between 1987 and 1998. Growth in purchasing power was not steady, with downturns in 1989, 1995 and 1996 and rises in the remainder. The peak (42%) came in 1994, and the upward trend was restored as from 1996. Growth in the purchasing power of crop farmers derives from a combination of a 22% increase in productivity and a 31% improvement in the terms of trade index.

It is worth recalling that the growth observed in prices received for crops in general and domestic consumption crops in particular has given crop farmers strong encouragement and explains the expansion of agricultural output. Purchasing power in the crop sector grew much more than in the livestock sector. Purchasing power in crop cultivation rose about 78% for the purchase of productive resources. This improvement in the cost/benefit ratio was due to a 46% increase in relative prices and a 22% increase in productivity for crops between 1987 and 1998. The crop sector obtained greater gains in relative prices and comparable productivity when compared with agriculture as a whole.

Table 6.14 Terms of Trade for Select Crops 1987–98

(1987 = 100)

Year	Terms of Trade				
	Rice	Beans	Maize	Soya	Coffee
1987	100.0	100.0	100.0	100.0	100.0
1988	121.4	99.4	128.1	140.3	118.1
1989	95.1	110.8	98.2	84.8	93.4
1990	150.3	126.0	145.7	83.4	122.0
1991	173.3	111.7	143.9	102.5	120.1
1992	139.7	106.7	134.7	109.6	121.2
1993	157.3	141.9	158.0	121.3	133.2
1994	156.9	155.3	137.8	106.7	149.4
1995	132.0	101.9	127.2	99.6	128.8
1996	125.3	106.3	123.2	100.8	122.5
1997	146.9	108.2	112.5	122.9	139.9
1998	167.7	159.6	125.0	108.4	145.7

Source: CONAB, elaborated by MBA.

Table 6.15 Evolution of Purchasing Power of Crop and Livestock Sectors  
1987-98

(1987 = 100)

Year	Performance Ratings					
	Livestock Sector			Crop Sector		
	Terms of Trade	Productivity	Purchasing Power	Terms of Trade	Productivity	Purchasing Power
1987	100.0	100.0	100.0	100.0	100.0	100.0
1988	92.1	101.9	93.8	118.1	96.1	113.5
1989	96.9	103.8	100.6	93.4	100.5	94.0
1990	119.6	105.8	126.5	122.0	94.9	115.8
1991	108.9	107.9	117.5	120.1	97.1	116.7
1992	102.8	110.0	113.1	121.2	103.6	125.6
1993	120.4	112.1	135.0	121.2	110.8	147.6
1994	127.5	114.3	145.8	149.4	111.3	166.2
1995	100.1	116.6	116.7	128.8	112.5	144.9
1996	90.2	118.9	107.3	122.5	114.2	139.9
1997	98.5	121.3	119.5	139.9	116.4	162.8
1998	97.7	123.6	120.7	145.7	122.4	178.3

Source: FIBGE, CONAB, elaborated by MBA.

The livestock sector recorded losses of about 2% in terms of trade offset by a 23.6% increase in productivity (see Table 6.6), obtaining net gains of 21% in the 1987-98 period. By comparing the crop and livestock sectors, one can infer that increased productivity in livestock activities led to a reduction in the sector's sale prices that outpaced the fall in the price of the inputs purchased. In the case of crops, slightly lower productivity gains (21.3% for crops against 23.6% for livestock) were combined with increased sale prices and lower prices for inputs. This improved the terms of trade index for crop cultivation.

This improvement, measured in terms of productivity and enhanced terms of trade, empowers crop farmers employing high technology to find substitutes for the traditional rural credit scheme. A substantial switch in beneficiaries of this form of capitalization has undoubtedly occurred when compared with the previous policy framework in which the distribution of subsidized rural credit was the most important variable. Under this new system all farmers with below average productivity must be suffering decapitalization and will eventually be ejected from the sector.

#### *Impacts of macroeconomic instability*

In the first half of the Eighties the Brazilian economy was beset by a succession of macroeconomic shocks: imbalances in commercial transactions in

the wake of The 1979 oil crisis and world recession, two currency devaluations (December 1979 and March 1983) and two attempts to contain spiralling inflation by means of tight monetary policy and cutbacks in government spending (1981 and 1983). The agriculture sector was hard-hit by domestic recession, the sharp reduction in the volume of credit available (the prime source of subsidies) and the rise in transportation costs. The devaluation of the currency in 1979 failed to produce the changes envisaged in relative prices due to the rampant inflation that set in after domestic prices were indexed to the exchange rate and to past inflation. The second currency devaluation was accompanied by deep domestic recession. The slump in international commodity prices dampened the positive effect of the successful elimination of the trade deficit through incentives to boost exports (Barros and Manoel, 1992). After 1985 there was a sharp reduction in the real exchange rate, producing an apparent 'domestic bias' against agriculture in Brazil's macroeconomic policy.

Exchange-rate crises in the Brazilian economy were mitigated by funds supplied by the IMF and the World Bank in the early Eighties. This gave rise to lobbying of Brazil's economic authorities to change the country's agriculture policy. The justifications hinged on the argument that sectorial expenditure impaired control of government spending and that the absence of free trade threw relative prices in agriculture out of kilter. Concerted pressure on the government led to the implementation of reforms designed to deregulate markets and to wind down – sometimes gradually (coffee and sugar cane), sometimes abruptly (wheat) – the government's role as a regulator of agricultural markets.

In a high-risk macroeconomic environment, agriculture was stripped of the protection the government had previously afforded. It was now exposed to high commercial risk on the international market, a risk shared

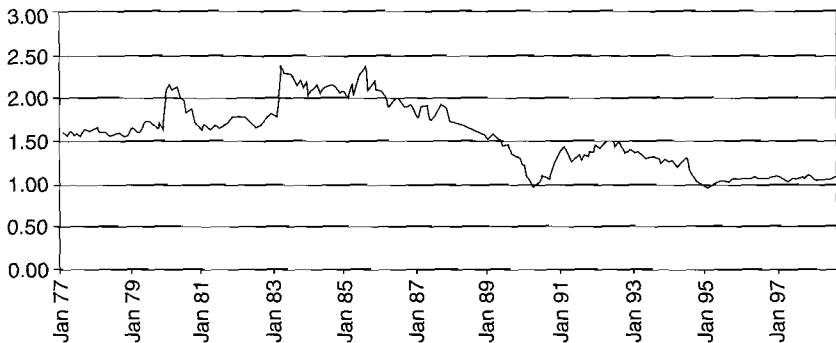


Figure 6.4 Evolution of Real Exchange Rate 1977-98  
(US Dollar/Real exchange rate deflated by wholesale price indexes)  
Source: FIBGE, elaborated by MBA.

by the agro-industrial complex and the farming community. This high degree of macroeconomic instability appears to have led the farming community to forfeit part of its profit margin to the agro-foodstuffs industry and to middlemen during the inflationary highs of 1982, 1985, 1987 and 1989. In the wake of price stabilization and the simultaneous consolidation of deregulation and economic integration in Mercosur after 1990, trade margins seem to have settled at a slightly lower level. Figure 6.5 shows the evolution of the price index applied to the farming community in relation to the index for urban consumer food prices.

As stated earlier, farmers obtained significant gains in purchasing power in relation to the cost of inputs and supplies. In the section above, we examined evidence that the farming community sustained slight losses in sales margins on the domestic market. An overvalued domestic currency probably also caused a loss of purchasing power in comparison with urban wages. Macroeconomic policy was apparently prejudicial to agriculture. However, there is reason to believe that a substantial increase in demand for food compensated for such losses. This is a very important point because we have yet to provide a satisfactory explanation for rising demand for food though we have already produced evidence that aggregate supply from the agriculture sector increased steadily.

We shall use the wages paid by the building industry in big cities as an indicator of urban wages to measure the evolution of purchasing power with regard to food consumption. The advantage of using building industry

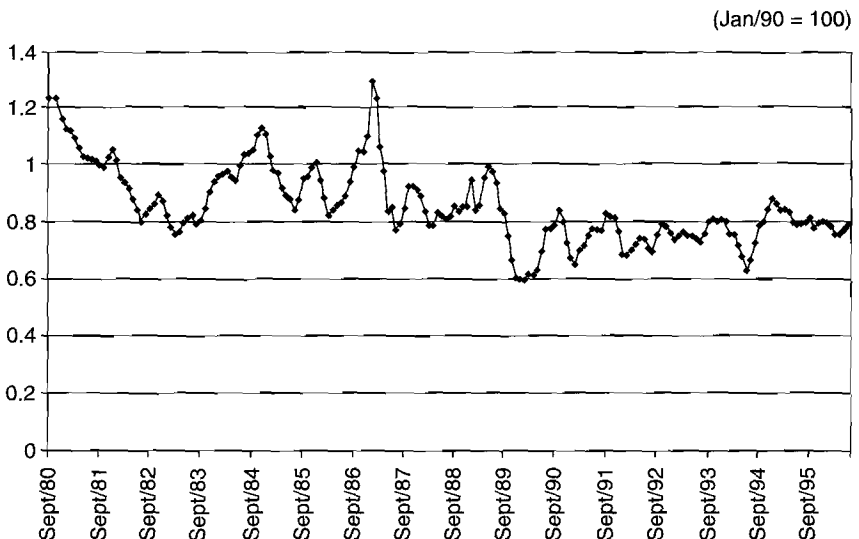


Figure 6.5 Evolution of Sales Margins 1980–96



wages as a reference is that workers in this sector are mostly poorly qualified, and their trades union organization is flimsy. This makes the building industry a sector of the urban labour market in which wages vary according to fluctuations in the level of aggregate demand. Another advantage of this wage indicator is that it reflects the predicament of a contingent of the population with low purchase power who spend a larger portion of their income on food. Figure 6.6 records the behaviour of this wage index in relation to a combined index for consumer food (*IPC-Alimentos*) and clothing (*IPC-Vestuário*) prices – concerning the latter, the fibres produced by the agricultural sector are also a major cost component.

The behaviour of this relative price index is particularly revealing as it records a more recent period, subsequent to the opening-up of the Brazilian economy to free trade, besides presenting a stronger growth trend, rising from 1.5 to 2.5. Put another way, the purchasing power of building industry wages in relation to food and clothing has risen more than 60% in the last decade. Were it not for a sharp drop in the level of urban employment, there would have been strong growth in the domestic food market, keeping growth in agricultural output above the general level of expansion in the Brazilian economy.

The establishment of free trade and the government's exchange policy provoked a radical transformation in relative prices. Food prices fell considerably in relation to wages for poorly qualified urban workers. This adjustment increased demand for food, matched by growth in aggregate supply in the rural sector, which had likewise benefited from a substantial reduc-

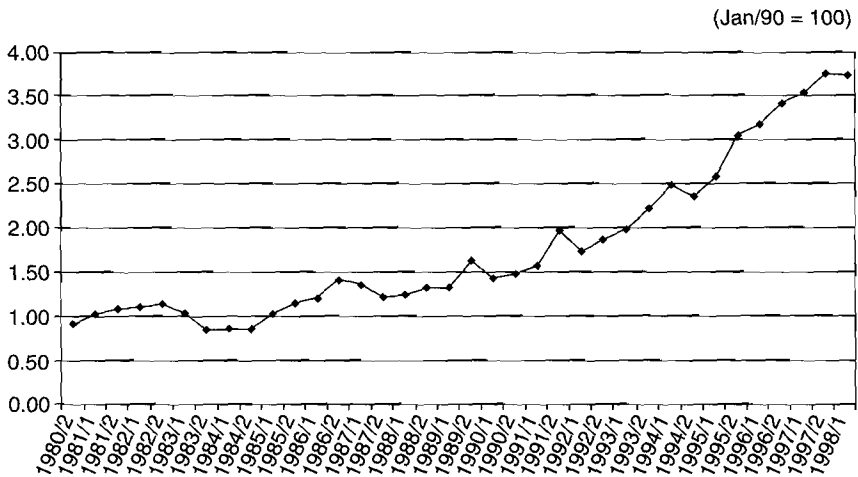


Figure 6.6 Evolution of Purchasing Power of Building Industry Wages 1980–97  
Source: FGV and FIBGE

tion in the price of inputs, allowing for widespread adoption of more modern technologies. The radical nature of these movements in relative prices, compounded by the running-down of government credit programmes, has severely affected producers of traditional technology and small-scale farm units, impairing their chances of survival in such a short space of time.

## Notes

- \* The authors acknowledge the assistance of Alexandre Lahoz and Leila Vieira at MBA.
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# 7

## Employment and Productivity in Brazil in the Nineties

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### I. Introduction

The Nineties have proved to be one of the major turning points in Brazilian economic history. Brazil started out the decade as an economy closed to international trade flows and capital, in which the State played a major role as a producer of goods and services, and with a trend toward growing inflation. As the decade progressed, it moved to become an open economy, reducing commercial protection and deregulating capital flows, while diminishing the role of the State as a producer of goods and services through privatization. This culminated in a stabilization programme based on an exchange anchor and supported by an opening-up of trade and the financial market.

These structural changes have strongly affected the pace and pattern of growth in the economy. Brazil was plunged into deep recession between 1990 and 1992 when the level of activity slumped and unemployment swelled. As from 1993, and more markedly after the stabilization plan was introduced in June 1994, this trend was reversed and growth resumed until 1997. The advent of the Asian crisis and the ensuing international financial crisis in mid-1998 interrupted the renewed spate of growth.

As could only be expected, these macroeconomic developments acutely affected the performance of the labour market. Indeed, the ripples continued to be felt as the decade drew to a close. The knock-on effects include a reduction in industrial employment and a higher proportion of workers employed in the informal sector of the economy, combined with increased real earnings and expansion of employment in commerce and the services sector.

However, the rise in the level of employment in commerce and the services sector – which offset the drop in industrial employment when stabilization was in its infancy, averting an increase in unemployment – began to level off in 1997. At the same time, the Asian crisis made it impossible to maintain output due to external restrictions. The outcome was a sharp increase in the rate of open unemployment as from the beginning of 1998.

This evolution of the Brazilian labour market in the wake of economic deregulation and stabilization raises a worrying prospect for the future in view of the change in demand for skilled labour, insufficient supply of such labour and the increase in long-term unemployment. If the country wants to avoid high rates of structural unemployment, it will have to adopt major reforms in its labour legislation to boost incentives for companies and employees to invest in qualification and training throughout workers' working lives.

The aim of this chapter is to analyse the performance of Brazil's metropolitan labour market in the Nineties. We shall examine the evolution of the level and structure of employment, real earnings and labour productivity in industry, commerce and services in addition to the level of unemployment. Based on the data provided by the Monthly Labour Survey (MLS) carried out by the Brazilian Geography and Statistics Institute (IBGE), we hold that the performance of Brazil's metropolitan labour market can only be explained by the hypothesis that significant productivity gains are occurring in the industrial and services sectors of the economy. Using the data for Law 4,923, we provide evidence that such productivity gains have indeed occurred, especially in the post-stabilization period.

Secondly, we examine changes in the structure of skills and qualification among workers employed in Brazil's metropolitan regions, where substantial improvement has occurred in this respect.

The chapter is divided into six sections. The next section describes the stylised facts of the behaviour of Brazil's metropolitan labour market throughout the Nineties. The following section explains this behaviour on the basis of a simple demand and supply model for labour. Section IV depicts the evolution of the marginal productivity of labour in the industrial and services sectors, taking hiring wages as a proxy for marginal productivity. This indicator is obtained from the Ministry of Labour's Law 4,923 deflated by the specific price index for each sector. Section V examines the evolution of the qualification structure in the Brazilian labour market between 1990 and 1996. Finally, section VI offers a number of conclusions.

## II. Stylized Facts

The performance of the Brazilian metropolitan labour market in the Nineties should be divided into two distinct subperiods. The first goes from 1990 to the stabilization of the economy in 1994. This subperiod was marked by deep recession, a surging rate of open unemployment and extremely high levels of inflation. This was when major structural changes took place, mainly as a result of the deregulation of trade. The second subperiod began in 1994 and extends to the present day. During this time, not

only was the rate of inflation reduced to genuinely low levels (in 1997 annual inflation was less than 5%), but output began to grow until 1997, since when it has stagnated.

Despite the great difference in macroeconomic performance in the two subperiods, in some aspects labour market performance has been homogenous. This is mostly due to the major structural changes that have been the hallmark of the period. In other words, those aspects of the operation of the labour market associated with the effects of structural changes (for instance the opening-up of the Brazilian economy, privatization and so on) have evolved in a similar fashion in both subperiods, although such transformations were far more intense in the first of the two. On the other hand, aspects of the operation of the labour market related to short-term macroeconomic performance (for example stabilization) have evolved in a clearly distinct manner from one subperiod to the other. The aim of this section is to observe the behaviour of the Brazilian labour market between 1990 and 1998.

## II.1 The 1990-94 period

When the decade began, the Brazilian economy was deep in recession. Following a period of rampant inflation in the late Eighties when prices increased as much as 80% a month, at the beginning of 1990 the government decreed a moratorium on domestic debt, which had a strongly recessive effect. The (deseasonalized) rate of open unemployment, which had stood at 4.0% in 1990, rose to 6% of the workforce in the second half of 1992, when recession was at its worst (see Figure 7.1).

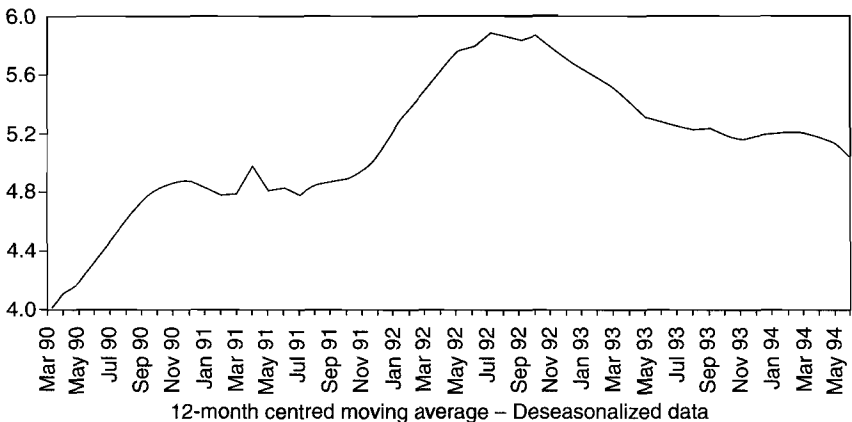


Figure 7.1 Unemployment Rate. Rate of Open Unemployment – MLS.

One important aspect that should be stressed is that, despite the deep recession, the increase in the rate of open unemployment was relatively moderate. At no point did the rate attain anything like the levels registered in the early Eighties (8% of the workforce). On the other hand, open unemployment – unlike in the previous period referred to – began to show signs of containing a major structural component: systematic reduction of industrial employment and higher rates of employment in commerce and services. These signs began to take clearer shape when economic growth resumed and the level of industrial employment continued to drop despite increased output. Empirical evidence presented below shows that unemployment is relatively unaffected by cyclical trends in output.

These two features are clearly detectable through observation of the pattern of unemployment in the three main sectors of economic activity in Brazil: industry, commerce and services. Figure 7.2 shows that the aggregate level of employment remained stagnant from April 1991 to the end of 1992, followed by a period of mild recovery that lasted until mid-1994.<sup>1</sup>

Recovery of the level of employment is visible in the commerce and services sectors while it continues to slide or remain stagnant in the industrial sector. Figures 7.3, 7.4 and 7.5 show the evolution of the level of employment in these three sectors during the period under examination. As can be observed from the graphs, the level of employment in industry fell about 10% during the recession and then levelled off when the economy began to recover in the last two quarters of 1992. In commerce, meanwhile, besides remaining stagnant throughout the recession, as from the end of 1992 the level of employment began to pick up. In the services sector, on the other hand, the level of employment increased steadily throughout the entire period. The evolution of the rate of open unemployment is therefore directly associated with the reduction in industrial employment.

Shrinking employment in industry stems from the establishment of unfettered trade and the increased competition ensuing from this structural

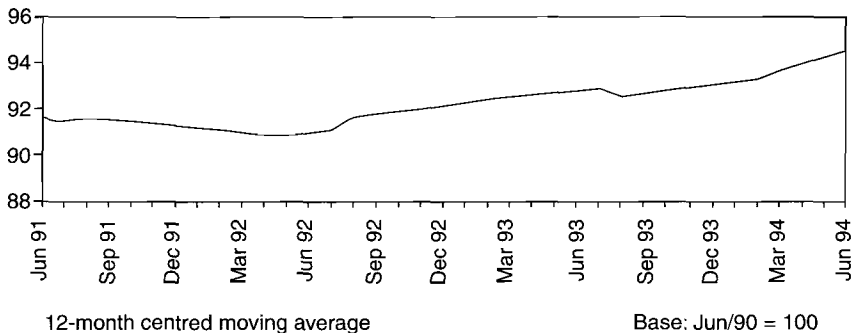


Figure 7.2 Employment. Brazil – MLS

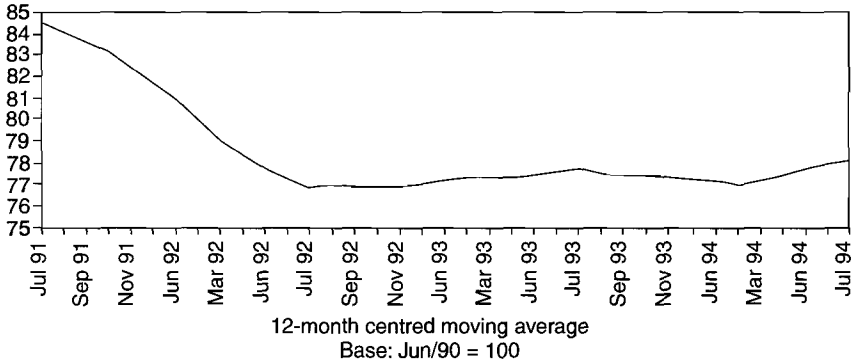


Figure 7.3 Employment in Industry – MLS

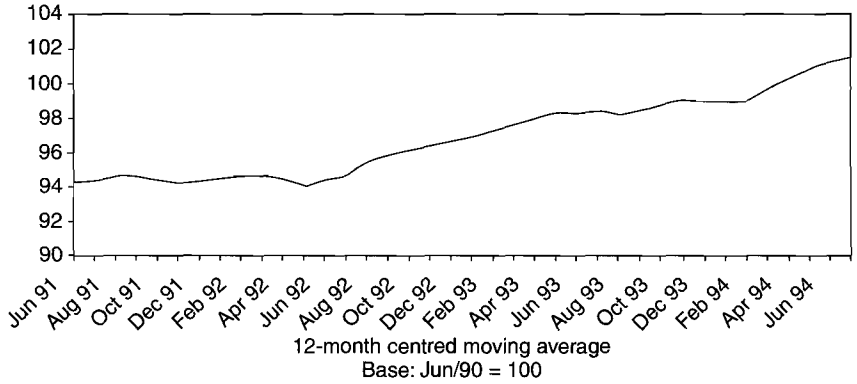


Figure 7.4 Employment in Commerce – MLS

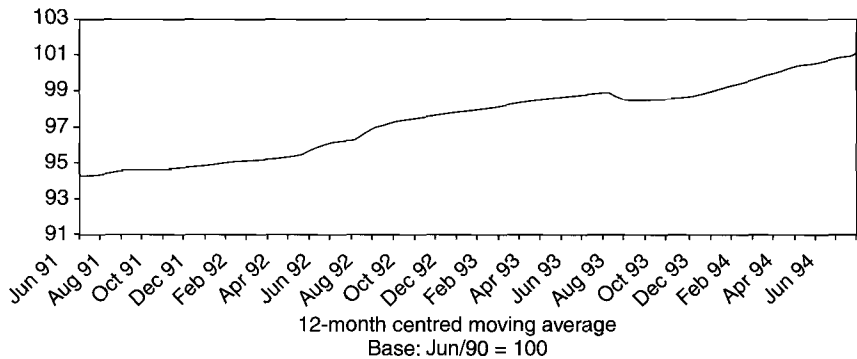


Figure 7.5 Employment in Services – MLS

change. The opening-up of the economy obliged Brazilian industry to introduce new technologies and new forms of labour organization designed to raise productivity in order to survive. The offshoot was a systematic reduction of industrial employment. As we shall see in the next subsection, this fact is confirmed by the pattern of industrial employment subsequent to stabilization when relatively rapid economic growth resumed.

To gauge how the sectorial structure of employment varied between two distinct periods, we shall employ a turbulence index, which can be defined as:

$$T = \frac{1}{2} \sum_{j=1}^m |p_{j1} - p_{j0}|$$

where  $p_{ji}$  is the proportion of employment in sector  $j$  in relation to total employment at an instant of time  $i$ .

Based on MLS data for 27 sectors of the economy, the turbulence index recorded the figures displayed in Figure 7.6 for a one-year timespan. This analysis uses the annual arithmetical averages for employment in each of these sectors. From the graph, it can be seen that there were acute structural alterations in the early Nineties associated with the switch from employment in industry to the services and commerce sectors.

Until 1990, rates of unemployment followed the pattern of production cycles fairly closely. Whenever the economy went into recession, unemployment surged, reverting to the low levels recorded at the end of the previous period of growth when the trough ended. This fluctuation in the rates of open unemployment suggested a high degree of flexibility in the Brazilian labour market (real wages and employment) in relation to the intensity of shocks the economy underwent. In the Nineties, the rate of unemployment has displayed a new growth trend not directly linked to output cycles. Moreover, a new component of structural change emerged at the beginning of the decade. This novelty has enhanced the importance of reallocation shocks with regard to unemployment.

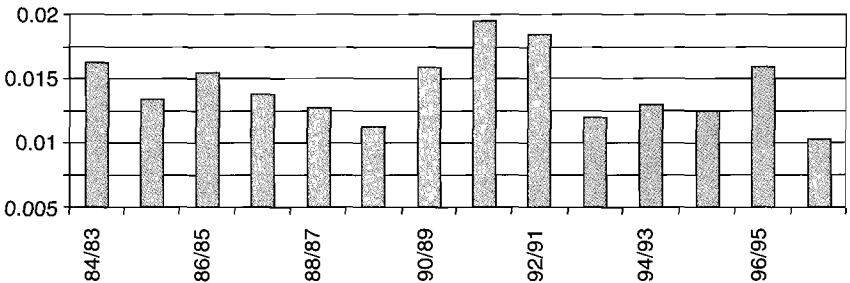


Figure 7.6 Turbulence Index - 1 Year



The effects of cyclical variations in output and of reallocation shocks are measured by estimating the rate of unemployment registered in Table 7.1. Unemployment is estimated by using the lagged rate of unemployment itself, variations in GDP (calculated by IBGE) as a proxy for variations in output, and a dispersion index<sup>2</sup> calculated on the basis of the rate of growth in the number of employees in 27 sectors of the economy, which records the effects of reallocation shocks. Seasonal dummies are also used to supplement these variables.

The data are quarterly and so the rate of unemployment used in these estimates is the quarterly arithmetical average of the monthly rates published by IBGE. The estimates are displayed in Table 7.1.

The results obtained show that the rate of unemployment does not vary much in relation to the lagged rate, as can be seen from the fact that the coefficient for this variable is close to one in the equations above. Equation (1) shows that the dispersion index is positively significant at 5%, as are the variations in output but with negative values.

Table 7.1 Dependent Variable: Unemployment

Variables	(1)	(2)	(3)
Unemployment <sub>t-1</sub>	0.97 (25.44)**	0.98 (25.52)**	0.92 (18.40)**
$\Delta$ GDP <sub>t</sub>	-10.02 (5.92)**	-9.01 (5.90)**	-
GDP <sub>t-1</sub>	-5.18 (3.34)**	-6.18 (4.17)**	-
Dispersion <sub>t</sub>	-0.001 (0.97)	-	-
Dispersion <sub>t-1</sub>	0.03 (2.08)**	-	-
Seasonal dummy <sub>1</sub>	0.15 (0.57)	0.46 (2.16)**	1.20 (4.95)**
Seasonal dummy <sub>2</sub>	0.75 (2.58)**	0.88 (3.73)**	0.52 (1.83)**
Seasonal dummy <sub>3</sub>	-0.008 (0.98)	0.38 (1.48)	0.07 (0.23)
Seasonal dummy <sub>4</sub>	-1.18 (4.24)**	-0.90 (3.96)**	-0.32 (1.14)**
Observations	58[83:3-97:4]	58[83:3-97:4]	59[83:2-97:4]
Jarque-Bera	0.78	1.13	0.45
R <sup>2</sup> adjusted	0.95	0.93	0.87
R <sup>2</sup> 0.93	0.93	0.88	

Notes: t-statistics are shown in brackets. \* and \*\* indicate that the coefficients are significant at 10% and 5%, respectively.

In equation (3) the unemployment rate is estimated solely in terms of its past value and the seasonal variations. Excluding output and reallocation shocks alters very little in terms of adjustment of regression, as can be observed from the very slight difference between  $R^2$  and  $R^2$  adjusted in equation (3), compared with the figures for equations (1) and (2).

The effect of reallocation shocks on unemployment in the early Nineties can be gauged from Figures 7.7 and 7.8 which trace the dual evolution of effective figures for unemployment and those forecast one period ahead by projecting equations (1) and (2) from 1983 to 1989. Models 1 and 2 represent, respectively, estimates that take into account or exclude the effects of sectorial shocks on unemployment.

The model that ignores the effects of sectorial shocks systematically underestimates the unemployment rate in the early Nineties. In other words, failing to allow for differing effects from one sector to another of the structural changes that took place at the beginning of the decade seriously impairs the capacity to predict unemployment. The explanation as to why these reallocation shocks should so strongly influence the aggregate unemployment rate may lie in the labour market's slowness to adjust to a new economic environment – a possibility explored in what follows.

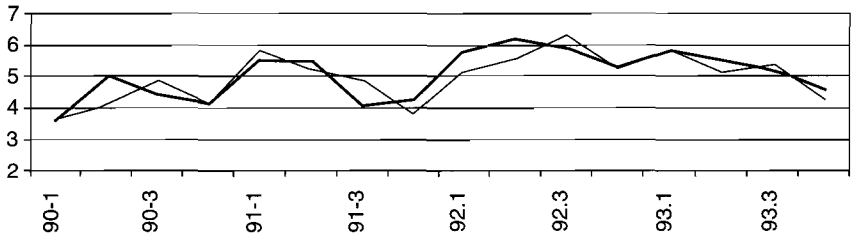


Figure 7.7 Unemployment Rate: Effective and Estimated by Equation 1

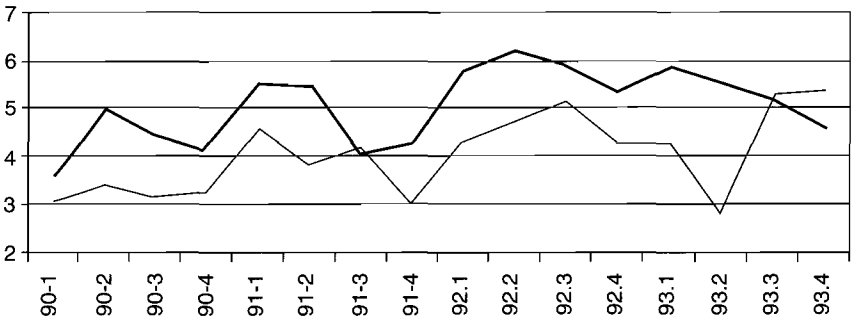


Figure 7.8 Unemployment Rate: Effective and Estimated by Equation 2

Real average earnings in the commerce and services sectors mirror the pattern of open unemployment throughout this period. Until mid-1992, real average earnings for workers in these sectors, deflated by the National Consumer Price Index (INPC), fell systematically, the trend being reversed when economic growth resumed and the rate of open unemployment began to drop at the end of 1992. This evolution demonstrates the relative flexibility of real wages in these sectors. The conclusion is that much of the labour market's adjustment to recession took the shape of a reduction in real earnings (see Figures 7.9 and 7.10), thus averting an even greater increase in unemployment.

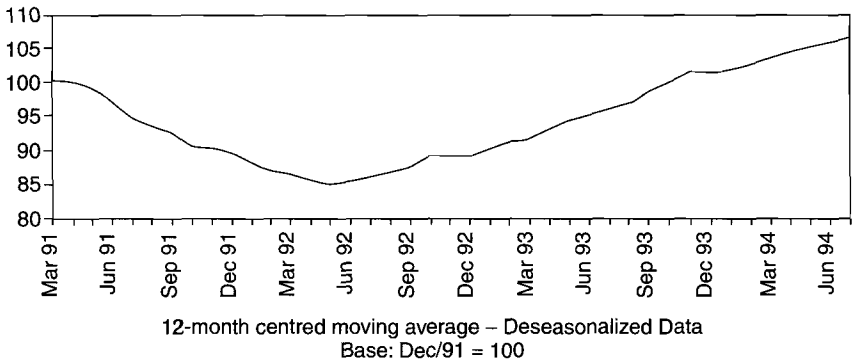


Figure 7.9 Real Average Earnings – Commerce (INPC Consumer Price Index)

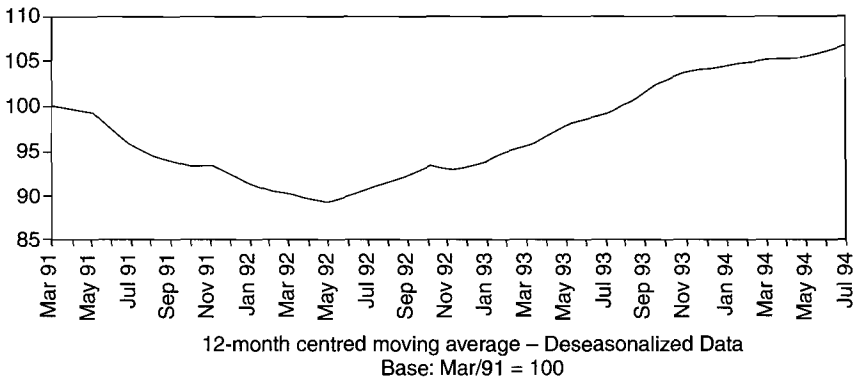


Figure 7.10 Real Average Earnings – Services (INPC Consumer Price Index)

By way of contrast, real earnings for workers in industry remained fairly constant throughout the recession, despite repeated reductions in industrial employment in the period (see Figure 7.11). This is partly due to the change in relative prices for tradable and non-tradable goods. As Figure 7.12 shows, the relation between the National Consumer Price Index (which includes both types of goods) and the industrial sector Wholesale Price Index (which reflects only the prices of goods for sale) displays a systematic downward trend until the end of 1993.

Figure 7.13 shows that, deflated by the consumer price index, real earnings for workers in industry remained constant whereas deflated by the industrial price index (that is, the real cost of labour) they sank substantially from the beginning of the decade until the end of recession in mid-1992 and then held level until the economy stabilized. In other words, throughout the period, income for workers and employers in the commerce and services sectors was effectively transferred to industrial corporations.

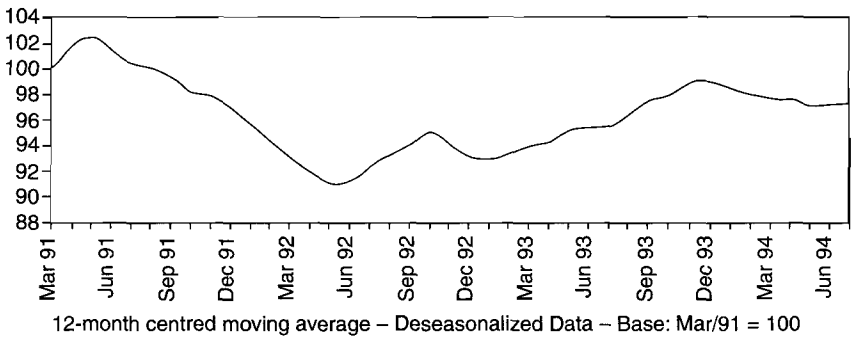


Figure 7.11 Real Average Earnings - Industry (IPA - IND Industrial Wholesale Index)

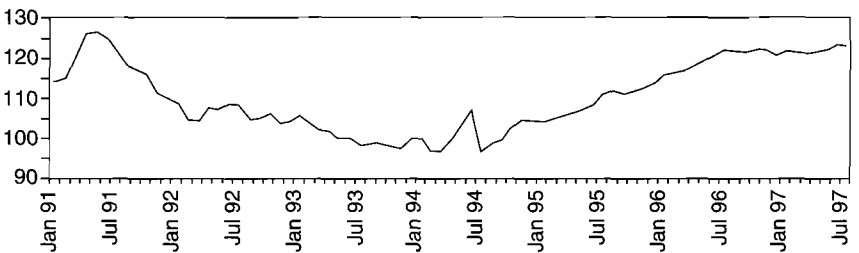


Figure 7.12 IPC - Fipe/IPA - Indústria (Base. Jan/94 = 100)

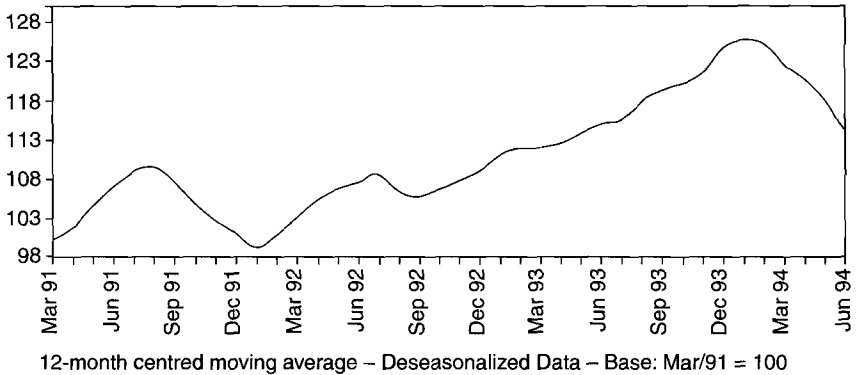


Figure 7.13 Real Average Earnings – Industry  
(IPC Consumer Price Index)

Thus, in terms of major labour market trends in this first subperiod, it can be stated that:

- a. employment in industry shrank while employment in the commerce and services sectors expanded, keeping pace with the level of economic activity;
- b. the rate of open unemployment tended to increase in the early Nineties due to recession but mostly because the labour market was slow to adjust to the structural changes that took place at the turn of the decade following the establishment of free trade. Once growth resumed in mid-1992, unemployment subsided slightly;
- c. finally, workers' real earnings in the commerce and services sectors rose inversely to the evolution of the rate of open unemployment. Concomitantly, the change in relative prices in favour of goods destined for sale (industrial goods, in particular) prevented industrial workers' real earnings from sliding, despite the fall in the level of employment. At the same time, the real cost of labour in this sector dropped significantly.

## II.2 The 1994–98 subperiod

The subperiod beginning in June 1994 features a major change in relation to the previous period: price stabilization. Increased competition and the adoption of an exchange anchor slashed inflation (which had risen to 40% a month in June 1994) to about 5% a year in 1997.

One of the main effects of the exchange anchor combined with the increased demand resulting from price stabilization itself was a change in the behaviour of relative prices in the Brazilian economy. The prices of

non-tradable goods rose faster than those of goods destined for sale, reversing the trend established in the previous subperiod. Meanwhile, the economy entered a new growth cycle and so the level of employment recovered.

By the beginning of 1995, the rise in the level of overall employment was sufficient to produce an abatement in the rate of open unemployment. Subsequently, in the wake of the Mexico crisis, the rate of open unemployment started to increase once more, becoming more acute in 1997 owing to stagnation in aggregate employment (see Figures 7.14 and 7.15).

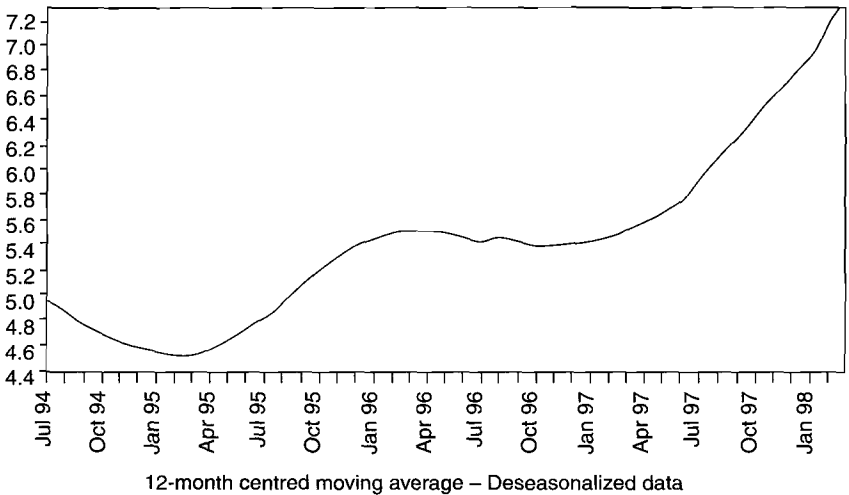


Figure 7.14 Open Unemployment Rate - MLS

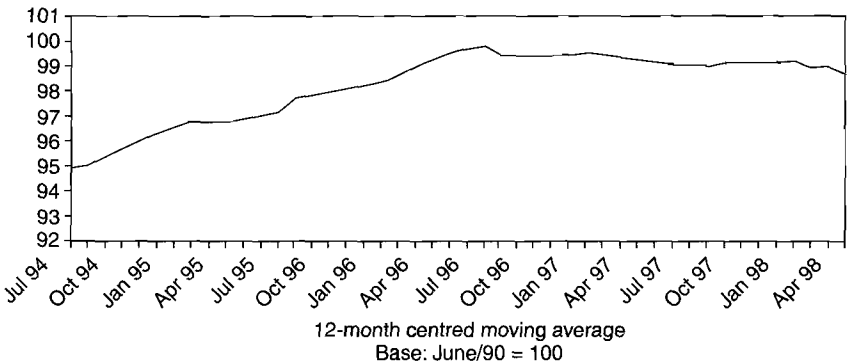


Figure 7.15 Employment - Brazil - MLS

Once again, the evolution of the level of employment in the three sectors of the economy analysed separately (Figures 7.16, 7.17 and 7.18) shows a similar pattern which is even clearer than the pattern visible at the begin-

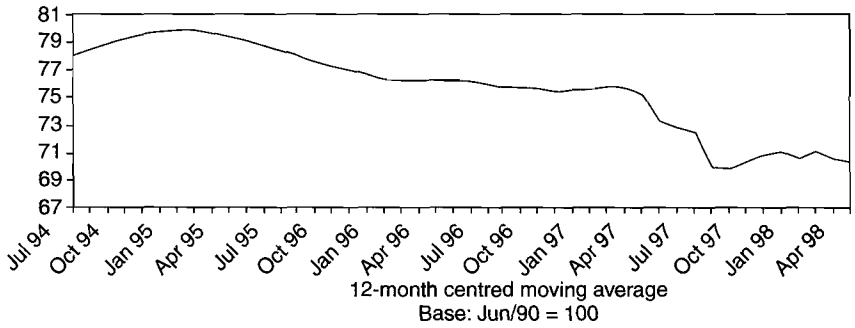


Figure 7.16 Employment in industry - MLS

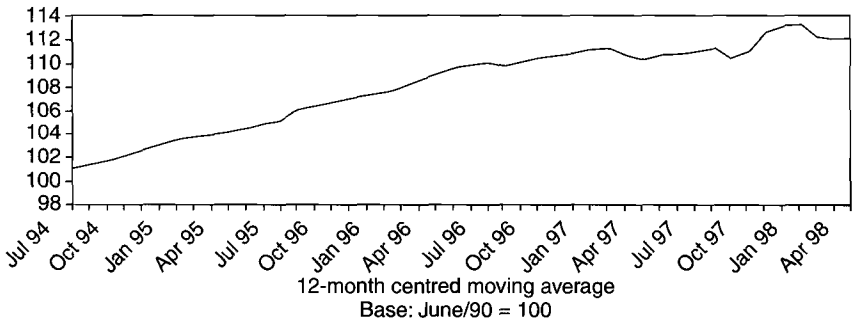


Figure 7.17 Employment in Services - MLS

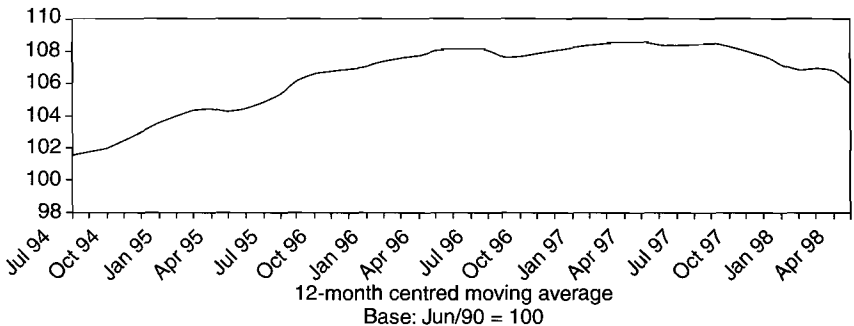


Figure 7.18 Employment in Commerce - MLS

ning of the decade (see Figures 7.3, 7.4, and 7.5). Industrial employment tends to diminish as from 1995, despite the growth in output, whereas employment in commerce and the services sector increases sharply until the end of 1996 when a clear trend toward stagnation sets in. Thus, in the immediate wake of stabilization, growth in employment in the commerce and services sectors more than compensates the slump in industrial employment. But this ceases to be the case as from 1997. The result is a clear upward trend in the rate of open unemployment from this point onwards, reaching a head in 1998 when the level of employment fell in both these sectors.

As the rate of open unemployment subsided, real earnings for workers in the commerce and services sectors rapidly picked up. However, another relevant phenomenon that should be taken into account is the change in relative prices favouring sectors producing non-tradable goods. As long as this change in relative prices persists (that is, until mid-1996), real earnings for workers in these sectors increased. At the end of the period, as the level of employment began to fall, the rate of open unemployment to rise and relative prices to cease favouring the products of these sectors, workers in commerce and the services sector began to suffer a systematic loss of real earnings.

In the industrial sector, despite the sharp fall in the level of employment, workers' real earnings increased until the end of 1998. The drop in the level of industrial employment was due to more intense deregulation of trade, the effect being heightened by the exchange anchor. Contrary to what had happened in the first subperiod, though, change in the behaviour of relative prices led the prices of non-tradable goods to rise faster than those of goods destined for sale following the stabilization of the economy and the adoption of an exchange anchor. This strongly boosted the real cost of labour in industry. Between mid-1994 and the end of 1997, the real cost of labour in industry rose 30 percentage points.

This conjunctural effect intensified the structural effect of more open trade on industrial employment, which fell even further. It was only in 1998, when the Asian crisis depressed the level of economic activity, that both real wages and the cost of labour in industry began to fall.

Estimates show that from 1994 onward the behaviour of the rate of unemployment begins to differ somewhat from the previous subperiod. Reallocation shocks and output begin to play a less important part than the structural component, which begins to assume a key role.

Figure 7.19 displays effective rates of unemployment and those forecast one period ahead projected by equation (1) as from 1995. It is clear from the graph that there is an increase in the rate of unemployment that cannot be explained by variations in output or reallocation shocks. The forecast rate is always lower than the effective rate recorded in the last two years.



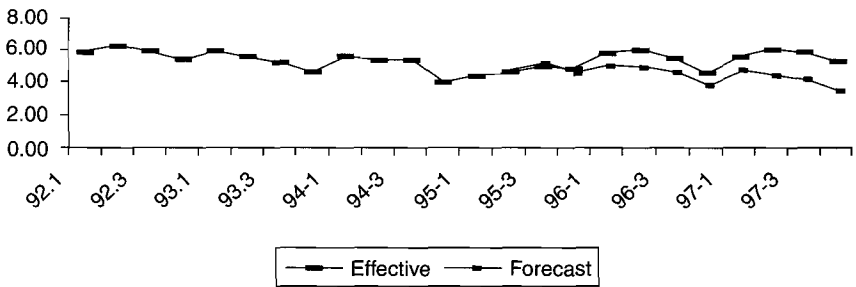


Figure 7.19 Forecast and Effective Rate of Unemployment

In brief, the 1994–98 subperiod was marked by an increase in workers' real earnings in every sector of economic activity, increased employment in the commerce and services sectors and declining employment in the industrial sector. The level of unemployment dropped immediately after stabilization occurred owing to an increase in demand brought about by the drastic reduction in the rate at which prices were rising. In the aftermath of the Mexico crisis it began to climb again.

### III. Stylized facts – an attempt at explanation

Having described the stylized facts of Brazil's metropolitan labour market in the Nineties, we can proceed to come to grips with these facts.

Coming to grips with stylised facts means being able to explain them on the basis of a consistent model for the operation of the labour market. The model we shall be using in this chapter is the straightforward model of supply and demand for labour. In this model, the basic underlying premise is that the demand curve is formed by corporate maximizing of profits. In the long term, this means that a company will only take on another worker if the value of the worker's productivity is the same as the cost of hiring him, or greater than that cost in the case of uncompetitive markets.

On the labour supply side, the traditional hypothesis is optimization in allocating the worker's time among the various options available. This generates an upward supply curve. For the purposes of the present chapter, we shall focus on the 1994–98 subperiod subsequent to the stabilization of the economy.

The hallmarks of this period are economic growth, increased employment and real earnings in the commerce and services sector contrasting with declining employment, rising real earnings and the higher real cost of labour in the industrial sector. Consequently, for it to be possible to explain this behaviour by means of a model of supply and demand for labour, the demand curves for labour would have to have turned upward in

both sectors. However, since industrial employment declined, the displacement of the demand for labour curve should have been accompanied by a displacement to the left of the supply curve for labour in this sector.

Figures 7.20 and 7.21 show the direction of the displacements of the supply and demand curves relating to supply and demand for labour in the industrial and services sectors in the period under examination that may explain the stylized facts described in the previous section.

Let us initially take the industrial sector. As we have seen, the three main stylized facts in this sector were the rise in real earnings, the increase in the real cost of labour and a reduction in the level of employment. This behaviour can only be explained by a model of supply and demand for labour if:

- a. the supply curve for labour has moved to the left while the demand curve has remained stable. In Figure 7.21 these movements are represented by the displacement of the demand curve for labour from  $S_0S_0$  to  $S_1S_1$ . The industrial labour market would then move from point a to point d in the figure.

Or,

- b. the demand for labour curve moved to the right, from  $D_0D_0$  to  $D_1D_1$ , at the same time as the labour supply curve was moving more than proportionally to the left. Point c in the figure.

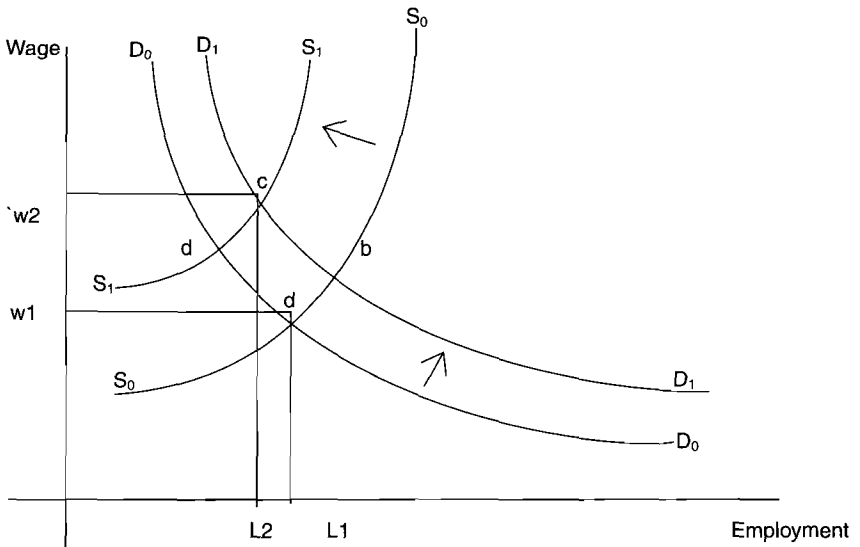


Figure 7.20 Industry

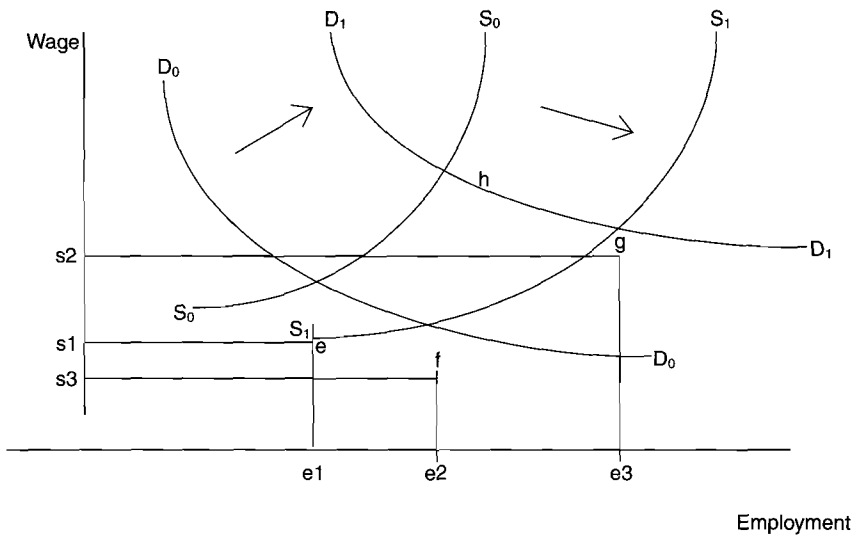


Figure 7.21 Services

Or,

- c. the demand curve for labour has moved left, from  $D_0D_0$  to  $D_1D_1$ , in conjunction with a more than proportional upward shift of the labour supply curve,  $S_0S_0$  to  $S_1S_1$ .

In all three cases, for it to be possible to explain the stylized facts described in the industrial sector labour market by using a labour supply and demand model, it is essential for the labour supply curve in the industrial sector to move to the left. In other words, the supply of labour in the industrial sector at each level of pay must have diminished.

Let us now turn our attention to the services sector. As in the previous section, the stylized facts to be explained are an increase in the level of employment, in real earnings and in the real cost of labour. Figure 7.21 shows the displacements of the supply and demand curves required to explain these facts on the basis of a supply and demand model for labour. This figure shows the following possibilities:

- a. a move to the right of the demand for labour curve, from  $D_0D_0$  to  $D_1D_1$ , with the supply curve remaining stable. Point **h** in Figure 7.21;

or,

b. a simultaneous displacement of the demand curve from  $D_0D_0$  to  $D_1D_1$ , and of the supply curve to the right from  $S_0S_0$  to  $S_1S_1$ , providing the demand curve moves more than proportionally to the labour demand curve. Taking point e as the starting point, the labour market would be moving towards point g in Figure 7.21;

or,

c. the demand curve for labour has moved to the right at the same time as a less than proportional move to the left of the labour supply curve in this sector.

In the services sector, therefore, the most important feature to stress is that for the stylized facts described to be explained on the basis of a labour supply and demand model, *it is essential for the demand for labour curve to move to the right*. Put another way, the value of the marginal productivity of labour must have increased throughout the period.

Given these possibilities, which combinations could have generated stylized facts in both sectors at the same time? The first possibility is that the industrial labour supply curve has moved to the left (from  $S_0S_0$  to  $S_1S_1$ ) while that for the services sector has remained stable (at  $S_0S_0$ ). At the same time, the services sector labour demand curve has moved to the right ( $D_0D_0$  in Figure 7.21) and the industrial sector demand for labour curve has remained stable (at  $D_0D_0$  in Figure 7.20). Combination (a, a).

For this combination to be capable of explaining the behaviour of Brazil's metropolitan labour market in the post-stabilization period, there should be a reduction in the proportion of the Population at Working Age in relation to the Economically Active Population. This is presuming that the supply of labour in the industrial sector has moved to the left and the supply of labour in the services sector has remained stable.

Table 7.2 shows the proportion of the labour force in Brazil's metropolitan population between 1991 and 1996. As can be observed, there is no

Table 7.2 Workforce Share Ratio 1991-96

Year	Share Ratio
1991 average	60.87
1992 average	59.51
1993 average	58.74
1994 average	59.26
1995 average	59.27
1996 average	59.56

Source: MLS/IBGE.

downward trend in this proportion in the 1994–97 period. On the contrary, if any trend were visible it would be a slightly upward trend.

Furthermore, in this combination, the productivity of labour in the industrial sector would have remained constant since the demand for labour curve would not have moved. As we shall see in the next section, there is strong evidence that this was not the case but rather that the productivity of labour in the industrial sector improved in this period. We can therefore discard combination (a,a) as a tenable explanation of the stylized facts described above.

However, if the industrial labour supply curve has moved leftwards (to  $S_1S_1$ ) and the share ratio has not diminished, the labour supply curve for the services sector must have moved to the right (to  $S_1S_1$ ). Put another way, the workers displaced from their jobs in the industrial sector instead of seeking new jobs in the same sector, have begun to offer their labour in the services sector. Since industrial jobs have higher productivity and better wages, this displacement seems hard to explain, in principle.

The displacement of workers can be explained by technological changes and, consequently, changes in the qualifications industry has been demanding in the post-stabilization period. Following the opening-up of the economy and the rising value of the local currency, new, more modern machinery and equipment was installed in Brazil's factories. This made many workers previously employed in industry 'unqualified' or made their qualifications seem unsuitable. Incapable of retraining, the only alternative for many of these workers was to seek employment in the services sector, which demands fewer qualifications than industry and where technological change is less frequent and less drastic. Thus, a reasonable explanation for this behaviour is that a sizeable portion of the workers displaced from jobs in the industrial sector by new technologies have decided to seek employment in the services sector, moving the labour supply curve in this sector to the right.

A second explanation is related to the change in relative prices. Following the adoption of the exchange anchor, relative prices changed drastically in favour of non-tradable goods, the price of services rising faster than industrial prices. As real wages incorporate the price of services, pressure on nominal wages is determined by these prices, whereas the price of industrial goods depends on the price of imported products. In other words, the real cost of labour began to outpace growth in real wages in industry.

Unable to raise their prices and, at the same time, unable to resist pressure from the workforce for nominal wage increases to offset the increased prices of services, employers were obliged to let the real cost of labour rise systematically throughout the period. Displacement of the labour supply curve merely reflected this disparity in the evolution of relative prices.

Nonetheless, if the (a,a) combination fails to explain the stylized facts satisfactorily and if the labour supply curve for the services sector moved to the right, any combination including hypothesis c for the services sector must be ruled out. This leaves the (b,b) and (c,b) combinations as feasible explanations for the facts. The (b,b) combination implies a leftward displacement of the labour supply curve in the industrial sector (from  $S_0S_0$  to  $S_1S_1$  in Figure 7.20) and a rightward displacement of the same curve in the services sector (from  $S_0S_0$  to  $S_1S_1$  in Figure 7.21) in conjunction with a move to the right in both sectors of the demand for labour curve (to  $D_1D_1$  in both figures). That indicates labour productivity gains in both sectors. In the case of combination (c,b), the movement of the labour supply curves would be the same and the demand for labour curve would move to the left in the industrial sector (from  $D_0D_0$  to  $D_1D_1$  in Figure 7.20) and to the right in the services sector (from  $D_0D_0$  to  $D_1D_1$  in Figure 7.21). In other words, labour productivity would improve in the services sector and decline in the industrial sector. These are the possible choices. The decision as to which to choose is an empirical matter to be analysed in the next section.

#### IV. Marginal Productivity versus relative prices

The displacements of the demand curve for labour in a particular sector may be related to the movement of two variables: variations in relative prices in the economy and/or variations in the marginal productivity of labour. To examine this, we must express the condition for a company to be maximizing profits:

$$w = ps \cdot Mgp$$

where:  $w$  = nominal wage  
 $ps$  = sector price  
 $Mgp$  = marginal productivity of labour in the sector

dividing both sides by the consumer price index, one obtains:

$$w/pc = ps/pc \cdot Mgp$$

$$\Delta(w/p) = \Delta(ps/pc) + \Delta Mgp$$

In other words, an increase (reduction) in the relative sector price in relation to the consumer price index will mean that, at the optimal point, the company will pay a higher (lower) real wage for the same marginal productivity of labour. Put another way, a change in relative prices in favour of (against) the sector implies a movement to the right (left) of the demand for labour curve.

A change in relative prices is a conjunctural factor that depends on the level of economic activity, on the one hand, and the exchange-rate policy, on the other. As services sector prices are more flexible than industrial prices, an increase (reduction) in the level of activity tends to increase (reduce) the services sector's relative prices in relation to the industrial sector. In this context, the displacement of the demand curve may be temporary owing to the reduced rate of economic growth.

Similarly, given the relative prices in the economy, the demand curve for labour will move if the marginal productivity of labour varies. Differently from relative prices, this is a structural factor associated with greater availability of physical and human capital in each branch of economic activity.

The demand curve for labour in the industrial sector or in the services sector may thus move to the right (left) for two reasons:

- a conjunctural factor – the sector's relative prices rising (falling) and/or;
- a structural factor – the marginal productivity of labour in the sector increasing (diminishing).

To what extent each of these factors is responsible for the movement is an empirical matter to be examined in this section.

One of the effects of the stabilization plan was a substantial change in relative prices favouring non-tradable goods (especially in the services sector) to the detriment of tradable goods (industrial goods in particular). Figures 7.22 and 7.23 show the evolution of the relation between consumer

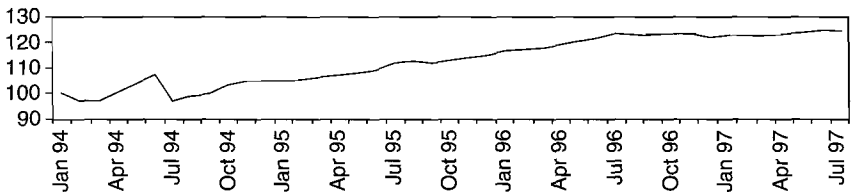


Figure 7.22 IPC-Fipe (Retail Price Index)/IPA-Industry (Wholesale Price Index)  
(Base: Jan/94 = 100)

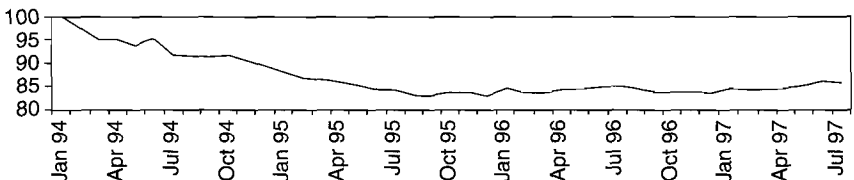


Figure 7.23 IPC-Fipe (Retail Price Index)/IPC Services (Services Price Index)  
(Base: Jan/94 = 100)

prices and industrial prices (Figure 7.22) and between consumer prices and services prices (Figure 7.23) from January 1994 to August 1997.

The graphs show that between January and July 1994 consumer prices and industrial prices varied at approximately the same rate. Following the stabilization of the economy in July 1994, industrial prices began to vary at a much slower pace than consumer prices in general until June 1996. During this span of time, consumer prices grew 23% more than industrial prices.

The opposite holds in the services sector. From January 1994 until August 1995 services sector prices rose above the average rate for prices in the economy. Between July 1994 and August 1995 the price of services rose 13% above the average for consumer prices.

These two indicators suggest that the demand for labour curve moved to the right in the services sector due to an increase in the relative prices for the sector (from  $D_0D_0$  to  $D_1D_1$  in Figure 7.21). That means workers' wage gains in this sector were partly due to this change in relative prices.

On the other hand, the change in relative prices to the detriment of the industrial sector implies a movement to the left of the demand for labour curve. This is an effect that may be short-lived since it is associated with the use of the exchange rate as an anchor to control the rate of inflation and with the surge in demand caused by stabilization itself. Changes in the exchange rate policy and/or a less dynamic level of economic activity would reverse this effect.

The second factor that may have generated displacements in the demand curves for labour in these two sectors is variations in the marginal productivity of labour. Marginal productivity of labour indicators are difficult to obtain. However, based on the premise that a company will only hire a new worker if his productivity is equal to or greater than the cost of hiring him, the evolution of the starting wages paid to workers in each sector, deflated by the sector's own price index, provides a proxy for gauging the marginal productivity of labour.

Statistics on starting wages are available for the formal segment of the Brazilian labour market based on data from Ministry of Labour Law 4,923. The evolution of these two variables shows that the hiring wage in both sectors follows a very similar pattern: a drop in the immediate aftermath of stabilization, between July and December 1994, and a significant increase from then onward. The initial drop probably reflects the inability of workers in these sectors to capitalize on short-term productivity gains.

In the case of the services sector, the sharper reduction in the hiring wage deflated by the sector's own price index likewise reflects the workers' inability to appropriate the rise in the sector's relative prices in the early phases of the stabilization process. Note that this is precisely the period in which these relative prices rose most sharply.

Nonetheless, the systematic rise in hiring wages from the beginning of 1995 to the present day is convincing evidence of major marginal produc-



tivity gains in both the industrial and services sectors of the Brazilian economy. If we take July 1994 as the point of reference, these gains were 25% in the industrial sector and 5% in the services sector.

In other words, the marginal productivity gains of labour in the industrial sector are more than sufficient to offset the change in relative prices that were detrimental to the sector. This implies a move to the right of the demand curve for labour in industry. Meanwhile, productivity gains in the services sector, in line with the change in relative prices, benefiting this sector suggest a move to the right also of the demand for labour curve in the services sector.

An alternative gauge of productivity gains is evolution in the level of qualifications in different sectors of the economy. Table 7.3 shows this evolution from 1989 to 1996.

The table depicts a clear improvement between 1989 and 1996 in the level of schooling among the workforce employed in the Brazilian economy. The percentage of workers with less than four years of schooling fell from 38% in 1989 to 31% in 1996 while the percentage of the workforce with more than eight years of schooling rose from 42% to 49%.

Table 7.4 shows how this increase in schooling was distributed among the different sectors of the economy (industry, commerce and services).

As can be observed from the table, the proportion of workers with more than eight years of schooling has increased in all three sectors of economic activity, the opposite occurring with the proportion of less educated workers. The industrial sector displays the biggest percentage increase (eight percentage points) whereas in commerce and the services sector the increase was six percentage points in a seven-year period. There was thus a general increase in the level of qualification of the labour force in Brazil in the period examined, from which one can surmise labour productivity gains.

Table 7.3 Evolution of Workforce Qualifications

Year	zero years of schooling %	0 to 4 years of schooling %	4 to 8 years of schooling %	8 to 12 years of schooling %	12 plus years of schooling %
1989	8	30	20	31	11
1990	8	29	21	32	11
1991	7	29	20	32	11
1992	7	29	20	33	11
1993	7	28	20	34	11
1994	6	28	20	34	11
1995	6	27	21	35	12
1996	5	26	21	37	12

Source: MLS/IBGE.

Table 7.4 Workforce Qualifications by Economic Sector

Years of Schooling	1989	1993	1996
<i>Industry</i>			
0 to 4 years	32%	28%	25%
4 to 8 years	24%	24%	24%
8 to 12 years	34%	38%	41%
12 plus years	10%	10%	11%
<i>Commerce</i>			
0 to 4 years	25%	23%	21%
4 to 8 years	23%	22%	22%
8 to 12 years	44%	47%	49%
12 plus years	8%	8%	9%
<i>Services</i>			
0 to 4 years	33%	31%	27%
4 to 8 years	21%	21%	22%
8 to 12 years	32%	34%	37%
12 plus years	14%	14%	15%

Source: MLS/IBGE

In conclusion, the analysis presented indicates that in the post-stabilization period the labour supply curve moved to the left in industry and to the right in the services sector. At the same time, the demand curves for labour moved to the right in both sectors. Therefore, in terms of explaining the stylized facts described in section II of this chapter, the (b,b) combination appears to be the most plausible option.

The data also suggest that a positive productivity shock has been under way in both the industrial and the services sectors of the Brazilian economy in this period. In this respect, the gains are greater in industry than in the services sector.

As marginal productivity gains are higher in industry than in the services sector, and as this is the key structural factor to explain long-term gains in earnings from labour, it would be logical to expect a widening of the gap in wages between these two sectors in the future. In the short run, the wage gap between these sectors has actually diminished due to changes in relative prices benefiting the services sector – a conjunctural factor that may be reversed when the level of activity slumps.

The effects of productivity gains on unemployment from 1995 onward are suitably portrayed by a trend included in the model as from this date using the same variables displayed in Table 7.1. The results show that the trend is significant at 10% in equation (1), recording the rise in unemployment as from 1995, which cannot be convincingly explained by variations in output or by reallocation shocks.

Table 7.5 Dependent Variable: Unemployment

Variables	(1)	(2)
Unemployment <sub>t-1</sub>	0.95 (25.02)**	0.97 (23.76)**
GDP <sub>t</sub> $\Delta$	-9.77 (5.91)**	-8.90 (5.52)**
GDP <sub>t-1</sub> $\Delta$	-4.82 (3.17)**	-6.10 (3.88)**
Dispersion <sub>t</sub>	-0.005 (0.33)	-
Dispersion <sub>t-1</sub>	0.04 (2.46)**	-
Seasonal dummy <sub>1</sub>	0.10 (0.40)	0.55 (2.50)**
Seasonal dummy <sub>2</sub>	0.68 (2.38)**	0.87 (3.49)**
Seasonal dummy <sub>3</sub>	-0.10 (0.30)	0.40 (1.48)
Seasonal dummy <sub>4</sub>	-1.23 (4.54)**	-0.88 (3.74)**
Trend	0.03 (1.95)*	0.03 (2.47)**
Observations	58[83:3-97:4]	60[83:3-98:2]
Jarque-Bera	1.11	2.87
R <sup>2</sup> adjusted	0.94	0.93
R <sup>2</sup>	0.93	0.94

Notes: t-statistics are shown in brackets. \* and \*\* indicate that the coefficients are significant at 10% and 5%, respectively.

Equation (2) provides the results of including data for the first quarters of 1998 as a way of attempting to explain the leap in the rate of unemployment as from January 1998. The estimate excludes the dispersion rate owing to the lack of data for these quarters. It is worth noting that the sharp increase in the unemployment rate in 1998 makes the trend even more significant since services and commerce prove incapable of compensating the slump in industrial employment.

## V. Implications for professional training and unemployment

The behaviour of Brazil's metropolitan labour market described in section III has serious implications for professional training in the country and for the pattern of unemployment. Firstly, we should ask how the professional training system should adapt to the new qualification requirements demanded by industry. Secondly, given the availability of resources in the system, we should consider two options: on the one hand, training newcomers to the labour market to meet the demands of these new occupations; and on the other, developing a system of retraining and requalification of workers being displaced from the industrial sector who can no longer find employment in industry.

The key question to answer is if the benefits to be obtained from requalifying and retraining these older workers justify the costs of this endeavour. The crux of the matter is these workers' capacity to compete on an equal footing with young people entering the labour market once retraining and

requalification have occurred. Young people have been made familiar throughout their education and training with new technologies without the drawback of having spent a large part of their professional lives using technologies that have since become obsolete.

Some analysts argue that it is extremely hard and expensive to retrain older workers. They have been qualified and trained in obsolete technologies and will have difficulty competing with newcomers in the labour market. If that is true, the professional training system should concentrate on qualifying those about to enter the labour market, using modern technology and new techniques for management and labour relations. That option, however, poses a serious problem of how to relocate older workers and avert an increase in the rate of structural unemployment in the economy.

A second important aspect is the reduction in the level of industrial employment. How should a labour qualification system treat a sector that has been shedding jobs in a drastic, systematic manner? How can one justify spending money to qualify workers for a sector that generates a marginal number of new jobs in a country where unemployment is becoming a serious bane? In this sense, it may be more efficient from the point of view of allocating resources to gear professional education institutions to training and qualifying workers for auxiliary services supporting industrial activity. Such services are vital to industry although the workers are not directly employed by industrial corporations.

The second conundrum raised by the results described above is how to deal with the problem of the rise in open unemployment in the Brazilian economy. Note that in other periods when open unemployment swelled it was in response to short-term cyclical movements. If the analysis presented is correct, the expansion of open unemployment in the current state of the Brazilian economy has a significant structural component. This is bound to lead to an increase in the rate of long-term unemployment. In other words, even when growth resumes, open unemployment will take longer to abate than in previous periods. This is already reflected in the average length of time in which workers remain unemployed (6 months in 1998 compared with 3.5 months in 1991) and in higher unemployment among heads of families.

This matter is directly related to the incentives Brazilian labour market regulations create for workers and companies. The crucial point to consider is that current legislation favours extremely short labour contracts discouraging cooperation between workers and corporations in the production process. Two factors should be considered.

First, when the economy is growing and the rate of unemployment is low, there is an incentive for workers to seek dismissal. This is because, should they be dismissed, workers receive compensation equivalent to one month's wages plus 40% of a fund (FGTS) built up on their behalf by the employer's company. For every year worked, the company deposits one

month's wages in the fund. This incentive is all the greater the lower the rate of unemployment and the easier it is to find a new job.

The second point is that a series of labour rights written into Brazil's constitution can only be negotiated in the Labour Tribunals after the worker has been dismissed. In other words, a worker who fails to receive all the rights to which he is entitled by labour legislation can seek redress in the Courts once he has been dismissed. He refuses to do so while he is employed for fear of being dismissed in reprisal. Once he has been fired, he submits his claims to a Labour Tribunal where the process of conciliation between workers and employers is similar to an individual negotiation. This encourages employers to pay such rights solely in the Courts and workers to prefer dismissal so they can receive at least part of the money they are entitled to. Therein may lie one of the explanations for the percentage of wage earners hired under no legal contract (an illegal practice) being over 25% of the workforce and on the rise in Brazil.

The outcome is very short-lived labour relations (approximately 33% of workers in the formal labour market in Brazil change jobs every year) hampering incentives to invest in human capital. Responsibility for training and qualification of workers thus rests squarely on the shoulders of the State. Owing to fiscal constraints, the investment the State can afford is insufficient to solve the problem of the mismatch between the qualification structure provided and the demand generated by structural changes. On the other hand, as nobody understands their needs so well as companies themselves, the type of qualification the State provides does not necessarily match corporate needs.

In this context, the solution would be to eliminate benefits granted to workers when they are dismissed. Unemployment pay should be maintained as should the fine for dismissal. The fine, though, could be better used to finance unemployment pay as opposed to being appropriated individually by the dismissed worker, as is the case at present. Secondly, negotiations concerning workers' rights should be transferred from Labour Tribunals to the shop floor by the Trades Unions. In that case, negotiations would precede dismissal. These two measures would increase the duration of labour contracts and encourage investment in specific training and qualification on the part of corporations and workers alike.

## **V. Conclusions**

In this chapter we have examined the performance of Brazil's metropolitan labour market in the 1990-98 period. We have demonstrated that the level of employment has declined in industry and expanded in the commerce and services sectors. Higher employment in these two sectors, however, has been insufficient to offset the fall in industrial employment.

The results of estimates have shown that transformations affecting the structure of the economy at the beginning of the Nineties produced an increase in unemployment in the early years of the decade because the labour market was slow to adjust, displacing workers from industry to services and commerce. Moreover, variations in output and reallocation shocks fail to explain the upsurge in unemployment following the stabilization of the economy.

Meanwhile, real earnings and the cost of labour have increased in every sector of the economy. We have shown that such developments can be explained by means of a model of supply and demand for labour if we suppose that the demand for labour curve has moved to the right in the services sector and the labour supply curve has moved to the left in industry. Since the rate of participation has basically remained constant, we conclude that the only plausible explanation lies in the displacement to the right of the labour supply curve in the services sector.

We have likewise shown that the data available register a major increase in the marginal productivity of labour in industry, which has been more than sufficient to compensate losses due to changes in relative prices emerging in the wake of economic stabilization. The demand curve for labour in industry has thus also moved to the right. On the other hand, the marginal productivity of labour in the services sector has also grown remarkably throughout the period, though at a lower rate than in industry.

Another relevant aspect examined in this chapter is the trend for growth in the rate of open unemployment emerging in 1997. It stems from the failure of the commerce and services sectors fully to compensate the loss of jobs in industry. This development suggests a trend toward increased structural unemployment in the Brazilian economy. To prevent this from happening, the authors propose changes to legislation governing the operation of the Brazilian labour market. The aim is to ensure that incentives for training and qualification are more evenly distributed among the State, companies and workers.

## Notes

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1. The data refer to the metropolitan regions of Belo Horizonte, Porto Alegre, Recife, Rio de Janeiro, Salvador and São Paulo. Unfortunately, a break in the sequence of data on the level of employment (PME/IBGE) occurred in January 1990. Consequently, especially as we are using 12-month moving averages, only the data from 1991 onward should be considered.
2. The correlation between reallocation shocks and unemployment was first estimated by Lilien (1982). Further details on the elaboration of the dispersion

index used here and on the effects of reallocation shocks on unemployment can be found in Reis (1999).

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# 8

## Distributive Effects of Brazilian Structural Reforms

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### I. Introduction

Brazil is not only a late-comer in terms of structural reforms and stabilization; major institutional changes observed during the last 11 years have not pointed towards the so-called New Economic Model (NEM). In particular, while all major Latin American economies were moving towards a sounder fiscal apparatus and more flexible labour regulation schemes, the Brazilian Constitution of 1988 introduced many obstacles to the NEM on both counts.

On the other hand, liberalization of international trade started with the Collor administration in 1990 and was intensified by the Cardoso administration in 1994. Similarly, domestic financial reforms, liberalization of the capital account and privatization were implemented rather late in comparison with the rest of the continent (but at least they are in line with the NEM).

The impacts of the reforms implemented by Collor and Cardoso on income distribution were dominated by changes in the macroeconomic environment (inflationary instability, deep recession, stabilization boom and external crisis). It is not a trivial exercise to gauge the impacts of economic reforms. For instance, the overlapping of the post-Constitution period with the period after the external opening of the economy does not allow us to identify which impulses were dominant for the fairly sharp increase in labour productivity (that is, the increased labour costs or the increased exposure to competition).

This chapter attempts to measure the evolution of income distribution and its determinants during the period of economic reforms. Our point of departure is to establish a few conceptual points: first, the movement towards reforms is not unidirectional in Brazil and many institutional changes have occurred simultaneously. This creates difficulties in the assessment of the distributive effects of specific reforms. Second, there has been a rather long delay before the idea of reform gains momentum in the country. Fernando Henrique Cardoso's first term in office (1995-98) will go



down as a period of consolidating stabilization rather than of implementing reforms. The peak of the first generation of reforms is only now becoming visible in Brazil. In this sense an analysis of the effects of Brazilian reforms on income distribution must include updated data and a prospective component. Third, the permanent decline in inflation observed after the *Real Plan* should be treated as an economic reform given its effects on economic behavior and institutions. Finally, the effects of macroeconomic fluctuations on Brazil's distributive variables are so prominent that they can not be left out of the analysis.

The chapter is divided into two parts: in the first part, long-term relations between reforms and income distribution are explored. The main empirical strategy pursued here is to establish comparisons between reform-related institutional characteristics and income distribution aspects at different points in time. The contrast between the situation observed before and after the reforms allows for tentative interpretations of causal relations between the reforms that were actually implemented and the distributive outcomes.

In order to set key dates for the implementation of reforms, we use indices of institutional reforms found in the literature (Morley *et al.* (1999) and Lora (1997)) and other types of evidence (section II.1). The main reforms measured are related to the following fields: trade, labour, tax, financial, capital account and privatization. The change of inflationary regime in 1994 is perceived as a separate reform.

On the income distribution side, we use information at the national level extracted from PNAD<sup>1</sup> household surveys to construct aggregate inequality measures (section II.2) and to apply standard decomposition techniques (section II.3). These exercises are performed for different definitions (income concepts, population concepts and inequality measures) calculated for the following years: 1976, 1985, 1990, 1993 and 1997. The 1976–90 period is used as evidence of the pre-reform period whereas the reform period (1990–97) plays a central role in the analysis. This reform period is divided in two parts: 1990–93, as an initial period of reforms with inflationary instability, and 1993–97, as a period for which the effects of the new round of reforms, including stabilization, are assessed.

At the end of the first part of the chapter, we attempt to study the impact of the economic reforms on the rich (section II.4). First, we analyse absolute income changes in the top 10% of the income distribution. At this point we also assess how the composition of this group changed during the reform period. Second, we assess the contribution of this group and the university graduates group to overall inequality.

The second part of the chapter explores PME<sup>2</sup> monthly household surveys to extract relations between movements of distributive variables, on the one hand, and economic reforms and macroeconomic fluctuations, on the other. It qualifies the effects of the 1994 stabilization on income distribution (section III.2). First, it takes advantage of the higher degree of

freedom afforded by PME in comparison with PNAD to choose dates before and after stabilization for comparing income distribution. For instance, PME allows us to measure the moment prior to the launching of the stabilization plan and compare it with the end of 1998, incorporating the effects of the adverse external shocks that have recently beset the Brazilian economy. Second, the fact that PME follows the same individuals over short periods of time allows us to qualify the nature of the changes observed in inequality. In particular, the longitudinal aspect of PME makes it possible to disentangle the effects of lower inflation rates on the temporal variability of earnings from those exerted on *sensu stricto* inequality measures (and its 'between groups' and 'within groups' components).

Given the occurrence of sharp macroeconomic fluctuations in the Brazilian case and the possibility of measuring various aspects of income distribution in a detailed manner with PME, the final part of the chapter attempts to isolate the distributive effects of macro shocks and policies. The possibility of constructing for the 1980–99 period monthly series of specially tailored variables according to individual and family records of PME allows us to apply standard time series techniques that capture the effects of macro variables on labour earnings distribution variables (section III.2). We analyse the correlation patterns between macro variables (unemployment, inflation, various types of exchange rates, interest rates and minimum wages) and distributive variables (aggregate inequality measures and mean earnings of different groups (by years of schooling, age, household status, sector of activity and working class<sup>3</sup>).

As usual, the chapter ends with a summary of the main conclusions (section IV). This section may be used as an executive summary.

## **II. Portraits of reforms and income distribution**

This section assesses the long-term impacts of reforms on income distribution in Brazil. It draws comparisons between reform-related institutional characteristics and income distribution aspects at different points in time. The contrasts between portraits observed before and after reforms were launched allows for tentative interpretations of causal relations between implemented reforms and distributive outcomes. We start by setting an economic background for the implementation of reforms. The second step is to identify key dates in terms of reform implementation. These points are used to study the effects of reforms on income distribution.

### **II.1 Analysis of reforms**

#### *II.1.1 Economic background*

Amongst Latin American countries, the experience of Brazil has been quite peculiar in the sense that reforms, and in particular trade liberalization,

only started a few years ago. Whereas other countries in the region started opening their economies in the early and mid-1980s, in Brazil the process started effectively in the early 1990s. With stabilization, the story is the same. Whereas Mexico started its stabilization process in the mid-1980s and Argentina in the early 1990s, in Brazil successful price stabilization was achieved only in 1994.

In the early 1990s two major changes took place: the opening of the economy and the launching of a successful stabilization plan in 1994. The structural changes introduced by the trade liberalization-cum-stabilization are so significant for explaining the macroeconomic environment and the dynamics of implementation of other reforms that the present analysis must inevitably focus on these events.

### *II.1.2 Stabilization*

Since at least the beginning of the 1980s inflation has been the central policy issue in Brazil. Three major stabilization efforts have been attempted since then: the Cruzado Plan in 1986, the Collor Plan in 1990 and the *Real* Plan in 1994. The first two plans failed. The *Real* Plan has been very successful in bringing down inflation and the prospects in this respect are very good even after the waves of external shocks that beleaguered the Brazilian economy in September 1997 (Asian crisis), September 1998 (Russian crisis) and the January 1999 exchange-rate fluctuation.

The *Real* Plan of 1994 differed from previous plans in at least two major ways. First, a very successful process of 'de-indexation' was based on the establishment of a transitory unit of account fully indexed to inflation. Second, the economy was considerably more open and the government was prepared to let the currency appreciate. As a consequence, imports played a key role as an adjustment variable between aggregate demand and domestic aggregate supply while the nominal exchange rate established a ceiling for prices, at least in the tradable sector.

The opening-up of the economy and the appreciation of the *real* are two central elements in what is so far deemed a very successful stabilization effort. Trade liberalization has helped stabilization and, at the same time, the government considers it a key element in the new development strategy.

### *II.1.3 Trade opening*

Apart from stabilization, the most important element of the reforms is the opening of the economy. Until 1990 Brazil was a very closed economy. This resulted from a deliberate strategy of import substitution and, due to the debt crisis in the 1980s, from the pressures to produce trade surpluses. Since the early 1990s the environment has changed. On the one hand, the international context has changed with the return of foreign credit. On the other, there is a widely shared view that the closedness of the economy and

the active trade and industrial policies of the 1980s were a hindrance to price stability and sustained growth.

The debt crisis of the 1980s imposed a severe external constraint on the Brazilian economy. The drastic reduction of foreign credit and the increase in interest service on external debt required large trade surpluses. The exchange rate became pegged to the rate of inflation and imports were gradually reduced with the adoption of both tariff and non-tariff barriers.

Since 1985 the trade surplus varied between US\$ 8 billions (1986) and US\$ 19 billions (1988). On average, between 1985 and 1994, it topped US\$ 10 billions. Trade surpluses were roughly sufficient to balance the current account until 1994.

Trade liberalization starts formally in the late 1980s but more effectively in the early 1990s. Its most dramatic effects took place after 1994, with the expansion of domestic demand and the appreciation of the *real*. There were two episodes of currency appreciation. The first, in 1989–90, is associated with the rapid acceleration of inflation and, to a certain extent, can be seen as ‘involuntary’. The second episode occurred in 1994–95, when the exchange rate was used as an instrument of the stabilization strategy. The government deliberately let the nominal exchange rate appreciate in order to increase the competitive pressure on the prices of tradable goods.

Until mid-1994 the average monthly trade surplus was around US\$ 1.1 billion. The surpluses turned into deficits in 1994. Imports of intermediary and capital goods increased about 150% between 1992–93 and 1995–96 while imports of consumption goods increased 300%. In the 1993–95 period GDP grew around 15%: comparing both rates gives an idea of the increase in the import coefficient.

#### *II.1.4 Dating reforms*

In order to measure the timing of reforms we use estimates found in Morley *et al.* (1999) and Lora (1997). The reforms are related to: trade policy, labour policy, taxes, financial deregulation, capital account and privatization. Each index is normalized to vary between 0 and 1, with one corresponding to a full reform or freedom from distortions or government intervention.

These indices provide a good comparative view of specific countries and present a good overview of the main relative trends. Figure 8.1 presents the simple average relative to five reforms (it excludes labour reforms). Brazil was more liberalized than other Latin American countries in the region at the beginning of the series, but its reform process stagnated during the Eighties. The average regional reform index rises by 50% during the 1970–90 period. In the late 1980s Brazil engaged in a serious catch-up effort. In a period of three years starting in 1988, the general Brazilian reform index rises 40%. The analysis of individual reforms reveals that financial, trade and tax reforms are the main determinants of this leap. The

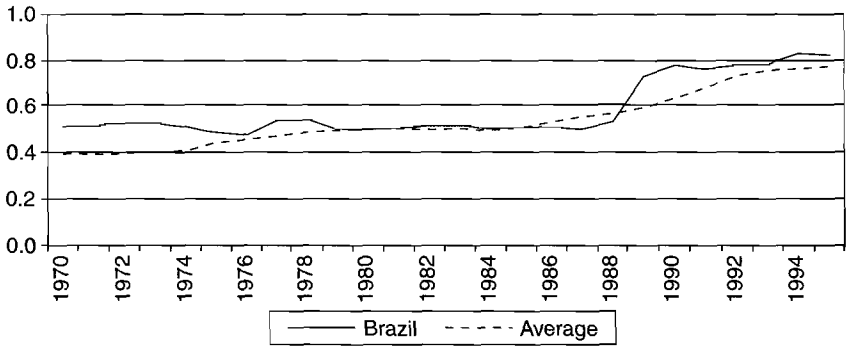


Figure 8.1 General Index of Reforms \*

Sources: Morley *et al.* (1999)

\*Excludes Labour Reforms

upward trend continues until the end of the period of analysis. The index rises from 0.74 to 0.81 in the last three years.

It is important now to make a few qualifications about the general reform index in Brazil for the present purposes. First, it gives equal weight to the different reforms considered, while some aspects of reforms are clearly more important. Trade liberalization is probably more important for income distribution purposes than other reforms considered. The trade reform index only incorporates tariffs while the elimination of quantitative restrictions beginning in 1990 was far more important. So if one were to incorporate these restrictions into the analysis, Brazil would be less liberalized before 1990 and the size of the leap observed in this year would be magnified.

A second problem of the general Brazilian index is to give zero weight to labour and social security reforms which have had fairly important distributive consequences.

A final related problem is that the general index does not consider the inflationary environment and its pervasive effects on income distribution either. The 1987–94 period was characterized by high and unstable inflation rates, which decisively influenced economic behaviour and institutions. As Table 8.1 shows, annual inflation rates that were 475% in 1991 reached a peak of 2,489% in 1993 falling to 9.1% in 1996. The coefficient of variation follows a similar movement: 3.86 in 1991, 20.03 in 1994 and 0.41 in 1996.<sup>4,5</sup> Once again, the result would be to neutralize at least in part the leap towards liberalization observed in 1988. By the same token, the permanent fall of inflation observed in 1994 after the *Real Plan* should be treated as a key economic reform.

In summary, our perception is that once the analysis takes into account the end of quantitative restrictions on international trade that occurred in

Table 8.1 Stabilization

	1991	1996	Peak Value	Date Peak	Source
Annual inflation rate level	475.10	9.10	2,489.10	1993	CPI – IBGE
Variability of monthly inflation rates <sup>1</sup>	3.86	0.41	20.03	1994	CPI – IBGE
Temporal real earnings variability <sup>2</sup>	0.1206	0.1060	0.1363	1994	PME Longitudinal
Nominal wage rigidity <sup>3</sup>	24.8	30.7	32.25	1995	PME Longitudinal

<sup>1</sup>Coefficient of variation within year

<sup>2</sup>Variance of Log real earnings across 4 consecutive months

<sup>3</sup>Percentage of fixed wages between 2 consecutive months

1990, the labour and social security counter-reforms observed in 1988 and the inflationary environment, two decisive dates for the implementation path of reforms in Brazil are 1990 and 1994.

## II.2 Temporal evolution of income distribution

The biggest advantage of the Brazilian case in this type of study is in terms of data availability. There is a long-established tradition with household surveys. We will focus our empirical analysis on two geographical dimensions: (a) at the national level; (b) for six main metropolitan areas. As we move from the national to the metropolitan level, the availability of updated data increases. We will use as basic data sources two household surveys: (i) PNAD 1976, 1981, 1985, 1990, 1993 and 1997; (ii) PME from 1980 onwards.

**PNAD (*Pesquisa Nacional de Amostras a Domicilio*)** – This is a national annual household survey performed in the third quarter that interviews 100,000 households every year. It has been conducted by IBGE (the Brazilian Geography and Statistics Institute) since 1967. PNAD underwent a major revision between 1990 and 1992, increasing the size of the questionnaire from 60 to 130 questions. The new questionnaire is available for 1992, 1993, 1995, 1996 and 1997.

The national coverage and the diversity of income sources are the main advantages of using PNAD, although the changes in the questionnaire demand some compatibility efforts and impose imperfections in the comparisons over time.

### II.2.1 *Income concepts and units of analysis*

We will work with two basic inequality measures: the Gini coefficient and the Theil-T. The popularity of the Gini coefficient and the fact that it

allows for incorporating null incomes into the analysis justify its use. The Theil-T is the central measure used here, given its exact decomposable property. PNAD will be our main data source in this study and the analysis covers the years: 1976, 1985, 1990, 1993 and 1997.

Income Concept	Population Concept			
	Occupied	Economically Active	Active Age	Total
Labour NH*				
Labour				
Individuals All sources				
Per Capita All sources				

We will work with the five pairs of population-income concepts using PNAD.

\* NH = Normalized by working hours.

We use as our benchmark value the Theil-T based on economically active and all income sources.<sup>6</sup>

### II.2.2 Temporal evolution of inequality

Tables 8.2.A and 8.2.B present the Theil-T and the Gini coefficient during the 1976–97 period across the different pairs of population-income concepts. The analysis of the temporal evolution of inequality reveals the following features:

(i) The 1976–85 period corresponds to the final years of the military regime: there is a fall in inequality in this period for all concepts used. Our benchmark measure (that is, Theil-T based on all income sources for the economically active population) falls from 0.825 to 0.72.

(ii) The 1985–90 period is characterized by the absence of reforms, rises in inflationary levels and increasing income volatility induced by successive failed stabilization attempts which produced a rise in inequality for all concepts analysed. Our basic inequality measure rises from 0.72 to 0.748 during this interval.

Looking at the period 1976–90 as a whole, our basic benchmark measure falls from 0.825 to 0.748. This downward trend is closely followed by broader inequality concepts, such as those based on the active age population and on total *per capita* income, while narrower measures based on occupied population show a slight upward movement. This contrast can be partially credited to the increase in female participation in labour markets, as the next section shows.

1990–97 is the most interesting period, due to the implementation of economic reforms. Our benchmark inequality measure (that is, economically active and all income sources) falls from 0.748 to 0.699. This downward movement is followed by all Theil-T measures except the one for the *per capita* all income sources concepts.

Table 8.2

## A – Theil-T Index – Brazil

Population Concept – Income Concept	1976	1985	1990	1993	1997
Occupied – Labour Income	0.795	0.702	0.800	0.771	0.686
Occupied – Labour Income Normalized by working hours	0.846	0.772	0.854	0.831	0.809
Economically Active – All Income Sources	0.825	0.720	0.748	0.793	0.699
Active Age – All Income Sources	0.850	0.745	0.782	0.791	0.710
Total – <i>Per Capita</i> All Income Sources	0.826	0.698	0.748	0.756	0.715

Source: PNAD/FIBGE

## B – Gini Coefficient – Brazil

Population Concept – Income Concept	1976	1985	1990	1993	1997
Occupied – Labour Income	0.595	0.590	0.600	0.596	0.578
Occupied – Labour Income Normalized by working hours	0.610	0.608	0.615	0.610	0.602
Economically Active – All Income Sources	0.603	0.595	0.605	0.601	0.583
Active Age – All Income Sources	0.609	0.604	0.618	0.600	0.587
Total – <i>Per Capita</i> All Income Sources	0.616	0.590	0.607	0.599	0.595

Source: PNAD/FIBGE

As explained in section II.1, the 1990–97 period of reforms can be further divided into two subperiods.

(iii) The 1990–93 period is characterized by the combination of high inflation and economic reforms: the direction of inequality changes is not robust across the different concepts used. For example, while our basic measure rises from 0.748 to 0.793, the inequality concept based on the occupied population–labour income concepts falls, while broader concepts present mild increases. The difference between broader and narrower inequality concepts may be explained by the reduction in the participation of young contingents in labour markets at the beginning of the decade, which partially compensates the effects of increased female participation observed in previous years.



(iv) The 1993–97 period is characterized by the combination of successful price stabilization and the intensification of economic reforms. There is a fall of inequality for all concepts used. For example, the measure based on economically active and all income sources falls from 0.793 to 0.699.

Overall, during the 1976–97 period there is a fall of all five population–income pairs of concepts for both inequality measures used. The average Theil-T index across concepts falls 12.6%. The same statistic for the Gini coefficient presents a fall of 2.87%. This result is interesting because during the 1976–93 period the inequality fall is not homogeneous across all population–income pairs used for both inequality measures. The average Theil-T index across concepts falls 4.83% in the 1976–93 period (38.3% of the total fall observed in the 1976–97 period). The same exercise applied to the Gini index yields similar results: a fall of 0.08%, corresponding to 28.9% of the total fall observed in the 1976–97 period. In other words, most of the reduction in inequality measures observed in Brazil in these 21 years took place in the last four years. We believe that this is mostly explained by the effects of the 1994 stabilization on income distribution. We will return to these issues in section III.1 of the chapter.

### II.3 Income distribution decompositions

This section attempts to identify the main structural determinants of Brazilian inequality. As we saw in the previous section, income distribution according to several concepts underwent various changes in recent years. It is necessary to go a step further and to quantify the determinants of this evolution. In searching for an association between inequality measures, on the one hand, and the availability, utilization, and return of different factors of production and personal characteristics on the other, we perform a standard inequality decomposition exercise:

#### Theil index decomposition

$$T = \sum \alpha_g \beta_g \text{Log } \alpha_g + \sum \alpha_g \beta_g T_g \quad (1)$$

where,

$\alpha_g = Y_g/\mu$  – Ratio between the mean income of group G ( $Y_g$ ) and overall mean income.

$\beta_g = n_g/N$  – Share of group G in the total population.

$T_g$  – Theil index of group G.

The first term of expression (1) corresponds to the ‘between groups’ component while the second term corresponds to the ‘within groups’ component. Table 8.3 identifies between and within groups components for the

following subgroups arbitrarily defined: gender, age, schooling, working class, sector of activity, population density and region.

The different classification criteria used in Table 8.3 can be aggregated in terms of variables related to human capital (education and age), physical capital accumulation (sector of activity and working class), personal characteristics subject to discrimination (gender and race) and location (demographic region and population density). Table 8.3 adopts this decomposition for both the economically active population and all income sources used as a benchmark. It illustrates the different arbitrarily chosen categories for each classification criterion used.

As a specific illustrative example, the decomposition of groups defined according to the educational attainment of individuals. In terms of the static picture presented for 1997 in the first three columns of the table, we see that the between group component accounts for 34.7% (0.243/0.699) of the total Theil-T index of 0.699.

The last three columns of Table 8.3 present the changes in these levels observed for 1997 when compared with the beginning of the economic reform period in 1990. Most of the inequality fall of  $-0.049$  ( $0.699 - 0.748$ ) observed from the perspective of different schooling categories is explained by the fall of the 'within' group component of  $-0.048$  ( $0.456 - 0.504$ ) whilst the 'between' groups component remained almost unchanged ( $-0.001$ ).

### *II.3.1 Gross rates of contribution*

The gross decomposition of the Theil index summarizes the relative importance of the 'between' groups term for the different criteria used in total inequality. Among all the variables considered, years of schooling and working classes are the variables that contribute most to total inequality. The explanatory power of both variables increased substantially during the whole period under analysis (Table 8.4.A): between 1976 and 1997, the gross contribution of years of schooling and working class for total inequality increased from 28.2% to 34.7%, and from 16.9% to 21.4%, respectively.

Age – taken here as a proxy for human capital accumulation due to the acquisition of experience – presents the third highest gross contribution to total inequality in 1997 but also an oscillating pattern over time. Between 1976 and 1990 its gross contribution increases from 8.1% to a maximum of 9.9% in 1985, but decreasing to 8.2% in 1997.

Gender classification presents the lowest gross contribution rate for total inequality and decreased almost monotonously between 1976 and 1997 from 4.6% to 2.7%. The variable sector of activity also presents a low contribution for total inequality even not considering its likely interactions with working class. The gross contribution of this variable decreased from 6.7% to 5.2% between 1976 and 1990 but it increased slightly to 5.6% in 1997.

Table 8.3 Theil-T Index Decomposition and Variation – Brazil

		1997			Diff. Between 97 and 90		
		Total	Between	Within	Total	Between	Within
Universe: Economically Active Population – All Income Sources							
Gender	Male	0.602	0.099	0.503	-0.071	-0.012	-0.059
	Female	0.097	-0.080	0.177	0.022	0.006	0.016
<b>Total</b>		<b>0.699</b>	<b>0.019</b>	<b>0.680</b>	<b>-0.049</b>	<b>-0.006</b>	<b>-0.043</b>
Race	Indigenous	0.000	0.000	0.000	0.000	0.000	0.000
	White	0.667	0.183	0.484	-0.028	0.003	-0.031
	Black	0.010	-0.131	0.141	-0.018	0.000	-0.017
	Yellow	0.022	0.014	0.008	-0.003	-0.002	0.000
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>		<b>0.699</b>	<b>0.066</b>	<b>0.633</b>	<b>-0.049</b>	<b>0.000</b>	<b>-0.048</b>
Age	Up to 24 years	-0.042	-0.079	0.038	-0.001	0.015	-0.016
	25 to 34 years	0.130	-0.014	0.144	-0.045	-0.022	-0.023
	35 to 59 years	0.536	0.146	0.389	0.006	0.003	0.003
	More than 60 years	0.076	0.005	0.071	-0.008	-0.004	-0.004
<b>Total</b>		<b>0.699</b>	<b>0.058</b>	<b>0.642</b>	<b>-0.049</b>	<b>-0.008</b>	<b>-0.040</b>
Schooling	0 Years	-0.030	-0.046	0.017	0.001	0.010	-0.009
	1 to 4 years	0.002	-0.096	0.098	-0.024	0.002	-0.026
	5 to 8 years	0.032	-0.054	0.087	-0.036	-0.011	-0.025
	9 to 12 years	0.177	0.050	0.127	-0.013	-0.018	0.006
	13 to 16 years	0.407	0.295	0.111	-0.007	-0.011	0.004
	More than 16 years	0.112	0.094	0.018	0.030	0.027	0.003
<b>Total</b>		<b>0.699</b>	<b>0.243</b>	<b>0.456</b>	<b>-0.049</b>	<b>-0.001</b>	<b>-0.048</b>
Working Class	Unemployed	0.001	-0.003	0.003	0.001	-0.002	0.002
	Public Servant	0.160	0.065	0.095	0.008	0.009	-0.002
	Formal Employee	0.137	-0.006	0.142	-0.057	-0.009	-0.048
	Informal Employee	-0.026	-0.083	0.056	-0.001	-0.003	0.002
	Self-Employed	0.140	-0.019	0.159	0.034	0.017	0.017
	Employer	0.293	0.204	0.089	-0.029	-0.009	-0.021
	Unpaid	-0.004	-0.009	0.005	-0.005	-0.008	0.003
	Not specified	0.000	0.000	0.000	0.000	0.000	
<b>Total</b>		<b>0.699</b>	<b>0.149</b>	<b>0.550</b>	<b>-0.049</b>	<b>-0.005</b>	<b>-0.044</b>
Sector of Activity	Agriculture	0.008	-0.056	0.063	-0.017	-0.001	-0.016
	Manufacturing	0.103	0.007	0.096	-0.018	0.004	-0.022
	Construction	0.015	-0.012	0.027	-0.008	-0.002	-0.006
	Public Sector	0.168	0.066	0.102	-0.031	-0.013	-0.018
	Services	0.405	0.036	0.369	0.025	0.014	0.011
<b>Total</b>		<b>0.699</b>	<b>0.039</b>	<b>0.660</b>	<b>-0.049</b>	<b>0.000</b>	<b>-0.049</b>

Table 8.3 (continued)

		Universe: Economically Active Population – All Income Sources					
		1997			Diff. Between 97 and 90		
		Total	Between	Within	Total	Between	Within
<b>Population Density</b>	<b>Metropolitan</b>	0.425	0.145	0.280	-0.032	0.002	-0.034
	<b>Urban</b>	0.286	-0.026	0.312	-0.023	-0.021	-0.002
	<b>Rural</b>	-0.012	-0.064	0.053	0.006	0.014	-0.008
<b>Total</b>		<b>0.699</b>	<b>0.055</b>	<b>0.645</b>	<b>-0.049</b>	<b>-0.004</b>	<b>-0.044</b>
<b>Region</b>	<b>South</b>	0.115	0.009	0.106	0.006	0.006	0.000
	<b>Southeast</b>	0.463	0.111	0.352	-0.017	0.018	-0.035
	<b>North</b>	0.020	-0.006	0.026	-0.015	-0.012	-0.002
	<b>Northeast</b>	0.035	-0.081	0.116	-0.010	-0.001	-0.009
	<b>Centre-West</b>	0.066	0.005	0.061	-0.013	-0.008	-0.005
<b>Total</b>		<b>0.699</b>	<b>0.038</b>	<b>0.661</b>	<b>-0.049</b>	<b>0.003</b>	<b>-0.051</b>

Source: PNAD

Table 8.4

## A – Gross Rates of Contribution Theil-T

Universe: Economically Active Population – All Income Sources

	1976	1985	1990	1993	1997
<b>Groups:</b>					
<b>Gender</b>	4.6%	4.9%	3.3%	3.5%	2.7%
<b>Age</b>	8.1%	9.9%	8.8%	8.0%	8.2%
<b>Schooling</b>	28.2%	32.0%	32.6%	30.3%	34.7%
<b>Working Class</b>	16.9%	22.3%	20.6%	18.7%	21.4%
<b>Sector of Activity</b>	6.7%	5.2%	5.2%	3.7%	5.6%
<b>Population Density</b>	9.7%	7.1%	7.9%	5.6%	7.8%
<b>Region</b>	5.9%	4.6%	4.7%	4.0%	5.4%

Source: PNAD

## B – Marginal Rates of Contribution Theil-T

Universe: Economically Active Population – All Income Sources

	1976	1985	1990	1993	1997
<b>Age</b>	7.1%	8.0%	6.8%	6.2%	5.9%
<b>Schooling</b>	25.7%	25.3%	26.0%	23.8%	26.4%
<b>Working Class</b>	9.2%	9.6%	8.7%	8.2%	8.7%

Source: PNAD

Similar behaviour is observed with regard to population density: falling from 9.7% to 7.9% between 1976 and 1990, and constant until 1997 (7.8%). Finally, the classification related to the five main Brazilian regions shows more stable behaviour, with a small decrease in its explanatory power between 1976 and 1997, from 5.9% to 5.4%.

### *II.3.2 Marginal rates of contribution*

In order to take into account the interactions between the different classifications and isolate the marginal impact of each variable once the other classifications were taken into account, we chose a smaller set of different classification criteria to be implemented simultaneously. The sum of the gross contribution of the 'between group' components of the three main variables (age, working class and years of schooling variables) is 64.6% of total inequality, while the gross effects of the other five variables correspond to less than 30% of total inequality. We will therefore be working with the interactions between age, working class and years of schooling variables as shown in Table 8.4.B.

The first point to note is that the sum of the marginal contribution of these three classifications to overall inequality in the first four years of the series is fairly stable and never below 41%, attaining a rather low value of 38.2% in 1993. A similar phenomenon is also observed when we use the sum of the gross contributions of the seven classification criteria: it obtains a value of 73.8% in 1993, well below the 80% figure in the other years. The low explanatory power of the 'between' groups components in 1993 may be credited to the high inflationary instability observed (which magnifies the 'within' groups components). We will return to this point in section III.1. For now we will not consider 1993 in the analysis of Table 8.4.B.

The marginal explanatory power of schooling (by far the most important variable) rises from 25.7% in 1976 to 26% in 1990, increasing to 26.4% in 1997. The marginal contribution of age (once years of schooling and working-class effects have been taken into account), decreases slightly from 7.1% in 1976 to 6.8% in 1990 and then decreases more sharply reaching 5.9% in 1997. Finally, the marginal working-class contribution decreases from 9.2% in 1976 to 8.7% in 1990 and remains at this level in 1997.

In summary, the 1990-97 period – characterized by the implementation of reforms in Brazil – presents an increase of the explanatory power of education, a decrease for age while the contribution of working class remained even, in the extreme points of the series.

### *II.3.3 Gross and marginal contributions: robustness analysis*

Table 8.5 allows us to test the difference of gross contribution rates across the five population-income pairs used for 1997. The comparison of the contribution rates for occupied population with and without controlling

Table 8.5 Rates of Contribution Theil-T - 1997

GROSS RATES					
Population Concept	Occupied	Occupied	Economically	Age	Total -
			Active		Per Capita
Income Concept	Labour NH <sup>1</sup>	Labour	All Sources	All Sources	All Sources
Groups:					
Gender	0.6%	2.7%	2.7%	3.3%	0.0%
Race	8.3%	9.4%	9.4%	8.5%	12.1%
Age	6.6%	7.8%	8.2%	7.3%	0.9%
Schooling	35.0%	34.6%	34.7%	36.0%	41.3%
Working Class	16.8%	21.0%	21.4%	19.8%	14.2%
Sector	5.9%	5.1%	5.6%	6.0%	10.2%
Population Density	6.9%	7.5%	7.8%	7.5%	11.1%
Region	4.0%	5.4%	5.4%	4.9%	8.3%
MARGINAL RATES					
Population Concept	Occupied	Occupied	Economically	Age	Total -
			Active		Per Capita
Income Concept	Labour NH <sup>1</sup>	Labour	All Sources	All Sources	All Sources
Groups:					
Age	3.9%	4.7%	5.9%	5.7%	2.8%
Schooling	26.6%	25.7%	26.4%	28.0%	34.9%
Working Class	5.6%	8.7%	8.7%	8.5%	5.3%

1. Normalized by Hours

working hours shows that the explanatory power attributed to gender, race and age reduces drastically (especially gender) once the effects of partial working hours are taken into account.

The comparison of individual concepts (for example, the economically active population) with family-based measures (represented by *per capita* income) according to the characteristics of the head of household shows that:

- (i) The contribution of gender and age falls from 2.7% to 0.0% and 7.3% to 0.9%, respectively.
- (ii) The gross contribution of race rises from 9.4% to 12.1%. This is explained by the high propensity of marriages within the same race groups.
- (iii) Similarly, classifications such as population density and region are also less subject to marriages of different sorts. This reinforces the contribution to inequality at the family level when compared to inequality measures at the individual level.

- (iv) The gross and marginal contribution of age decreases when one moves from individual to family level concepts. The marginal contribution falls from 5.9% to 2.8% when one moves from EAP to *per capita* concepts.
- (v) The gross and marginal contribution of years of schooling increases substantially when one moves from individual to family-level concepts, rising from 26.4% to 34.9%.
- (vi) In contrast, the marginal and gross contribution of working class falls from 8.7% to 5.3% when we move from EAP to *per capita* concepts.

## II.4 The impact of the reforms on the richest

### II.4.1 Aggregate absolute impact

In Brazil the richest 10% of individuals own nearly half of the aggregate *per capita* income. This subsection evaluates how this wealthy group performed during the reform period using standard poverty techniques applied to the analysis of individuals at the top of the income distribution.

In order to assess how the rich were affected during the 1990–97 post-reform period, we take the *per capita* income level roughly at the 90% figure for 1997. More precisely, we take individuals with *per capita* income above R\$ 500 at 1997 values, which corresponds to the 10.61% of the richest individuals in 1997, 8.61% in 1993 and 12.92% in 1990, according to Table 8.6. This table shows that there was an initial reduction (33%) in the number of rich people between 1990 and 1993. This process may be credited not only to the effects of the economic reforms implemented by the Collor Administration (such as the opening of the economy) which broke the monopoly power of the industrial elite – including both entrepreneurs and unionized workers – coupled to an aggressive but short-lived administrative reform which affected civil servants. The freezing of 80% of the means of payment (M4) affected wealthy groups more intensely.

During the second part of the 1993–97 reform period, there was a 23% increase in the number of the rich, but for the whole 1990–97 period the number of rich people actually fell by 17.9%.

Table 8.6 Wealth Indices

Wealth Line: R\$ 500,000			
	P0	P1	P2
	(%)	(%)	(%)
1997	10.61	12.99	58.71
1993	8.61	10.57	66.85
1990	12.92	16.39	90.79

Source: PNAD – IBGE

The evolution of the wealthy can also be captured by the mean distance of the *per capita* income of the rich with respect to a given wealth line. In other words, we calculate not only the size of the group defined as rich but the extension of their income flows as well. During 1990, the average income distance of the rich with respect to the poverty line amounted to 16.39%, which means that the rich average *per capita* income corresponds to 583 *reais* in 1997. It drops sharply in 1993 to 10.57% and finally recovers approximately half of the loss incurred in the 1990–93 period, reaching 12.99% in 1997.

#### *II.4.2 Profile of the impact of the reforms on the rich*

Table 8.7 also shows a profile of the wealthy. This profile allows for comparisons between the rich and the whole population according to the following characteristics.

- Household Characteristics: region, population density, dependency ratio, housing status, access to water, access to sanitation, access to electricity and access to refuse collection.
- Characteristics of Heads of Family: gender, race, age, schooling, immigration status, working class, employment tenure, enterprise size, sector of activity.

These profiles also compute standard FGT poverty indices<sup>7</sup> of the individuals *above* the arbitrary wealth line chosen and their contribution to these measures.

For 1997, the Southeast region (44% of the population) concentrated 60% of the rich (or 62%, if we take into account their distance from the wealth line). These statistics were quite similar in 1990 indicating that reforms did not affect the spatial distribution of wealth in Brazil.

In terms of population density, 18% of the population live in metropolitan areas. But these areas concentrate 39% of the rich and 47% of wealth.

As expected, the rich are over-represented among those with a dependency ratio equal to one: 29%, compared with 10% for the total population. The rich are also over-represented among those paying for their own house and those who pay rent. They are under-represented among those living in loaned premises as well as among those living in their own house without land property rights.

Access to public services such as water, sanitation, electricity and refuse collection is nearly universal among the rich but not so for the non-rich groups of Brazilian society. The biases stemming from gender, age and immigration status of the head of household among the rich are relatively small, while the race bias is quite impressive: 53% of households are headed by white individuals; for the rich this statistic reaches 82%.



Table 8.7 Wealth Profile – 1997

Wealth Line: R\$ 500,000		Contribution to Total Wealth								
Characteristics of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Total Region		155,627,427	242.65	10.61	12.99	58.71	100.00	100.00	100.00	100.00
	North	7,566,784	180.54	6.55	7.23	30.20	4.86	3.00	2.71	2.50
	Northeast	45,341,554	127.56	4.31	4.68	14.01	29.13	11.83	10.50	6.95
	Centre-East	10,769,715	264.26	11.43	15.61	96.04	6.92	7.45	8.32	11.32
	Southeast	68,126,103	313.05	14.59	18.52	87.30	43.78	60.17	62.38	65.09
	South	23,823,271	270.34	12.16	13.67	54.24	15.31	17.54	16.10	14.14
Zone	Metropolitan Core	28,004,399	428.35	22.77	34.09	163.72	17.99	38.60	47.21	50.17
	Metropolitan Periphery	18,652,518	249.41	9.27	9.69	68.30	11.99	10.46	8.93	13.94
	Large Urban	29,628,427	302.41	15.10	16.46	59.35	19.04	27.08	24.11	19.24
	Medium Urban	24,257,879	228.42	9.54	9.72	35.18	15.59	14.01	11.66	9.34
	Small Urban	23,310,326	153.81	4.46	4.51	18.76	14.98	6.29	5.19	4.79
	Rural	31,773,878	95.34	1.85	1.84	7.24	20.42	3.56	2.89	2.52
Dependency Ratio	1	16,164,540	550.54	29.33	48.80	289.84	10.39	28.70	39.01	51.27
	1<d=<1.5	23,361,120	351.68	17.41	19.24	71.96	15.01	24.62	22.23	18.40
	1.5<d=<2	34,885,439	274.46	12.36	13.21	48.67	22.42	26.10	22.79	18.58
	2<d=<3	33,734,418	175.55	5.83	5.72	19.63	21.68	11.90	9.54	7.25
	3<d=<4	21,829,495	148.64	4.65	4.54	16.31	14.03	6.14	4.90	3.90
	d>4	22,890,854	83.31	1.83	1.36	2.42	14.71	2.53	1.53	0.61
	Other/Not Specified	2,761,561	0.00	0.00	0.00	0.00	1.77	0.00	0.00	0.00

Table 8.7 Wealth Profile – 1997 (continued)

Wealth Line: R\$ 500,000		Contribution to Total Wealth								
Characteristics of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Housing	Own House already Paid with Own Land	99,802,985	247.55	10.96	13.59	64.08	64.13	66.22	67.09	69.99
	Own House already Paid without Own Land	8,638,718	133.64	3.67	5.53	37.40	5.55	1.92	2.36	3.54
	Own House Still Paid	9,270,837	372.92	19.57	24.16	85.67	5.96	10.98	11.08	8.69
	Rent	19,109,555	311.61	14.86	17.77	74.84	12.28	17.19	16.79	15.65
	Ceded	17,814,217	129.85	3.17	2.66	6.62	11.45	3.42	2.34	1.29
	Other	728,085	150.99	3.36	2.99	8.23	0.47	0.15	0.11	0.07
	Not Specified	263,030	257.89	8.10	18.00	268.15	0.17	0.13	0.23	0.77
Water	Canalized	126,630,268	284.56	12.97	15.88	71.41	81.37	99.46	99.43	98.96
	Not Canalized	28,740,940	57.91	0.24	0.24	0.87	18.47	0.42	0.34	0.27
	Other/Not Specified	256,219	255.49	7.88	17.92	274.58	0.16	0.12	0.23	0.77
Sanitation	Sewage System	60,056,979	366.74	18.70	23.78	108.33	38.59	67.97	70.63	71.20
	Concrete Cesspit 1	14,617,434	344.1	17.14	21.09	87.33	9.39	15.17	15.24	13.97
	Concrete Cesspit 2	18,604,745	223.20	8.55	8.84	35.67	11.95	9.62	8.14	7.26
	Rudimentary Cesspit	37,168,933	126.19	2.72	2.73	15.43	23.88	6.11	5.02	6.28
	Drain	3,179,433	100.26	0.99	0.83	1.24	2.04	0.19	0.13	0.04
	River or Lake	4,339,763	142.04	2.55	2.53	9.55	2.79	0.67	0.54	0.45
	Other	350,581	100.06	1.12	0.87	0.85	0.23	0.02	0.02	0.00
Not Specified	17,309,559	51.72	0.23	0.33	4.16	11.12	0.24	0.28	0.79	
Electricity	Yes	143,923,608	258.05	11.45	14.00	62.96	92.48	99.74	99.67	99.16
	No	11,440,615	48.61	0.18	0.16	0.53	7.35	0.12	0.09	0.07
	Other/Not Specified	263,204	257.31	8.52	18.20	267.97	0.17	0.14	0.24	0.77

Table 8.7 Wealth Profile – 1997 (continued)

Wealth Line: R\$ 500,000		Contribution to Total Wealth								
Characteristics of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	Average			Population			
				P0 (%)	P1 (%)	P2 (%)	P0 (%)	P1 (%)	P2 (%)	
Garbage	Collected Directly	103,304,297	303.61	14.28	17.31	78.49	66.38	89.33	88.45	88.73
	Collected Indirectly	11,854,587	245.26	10.31	14.97	64.91	7.62	7.40	8.78	8.42
	Burned	21,971,909	100.15	1.86	1.86	7.44	14.12	2.47	2.02	1.79
	Unused Plot of Land	16,529,644	65.04	0.58	0.53	1.24	10.62	0.58	0.43	0.22
	Other/Not Specified	1,966,990	110.07	1.84	3.29	38.60	1.26	0.22	0.32	0.83

Source: PNAD IBGE\*\*\*

Table 8.7 Wealth Profile – 1997 (continued)

Wealth Line: R\$ 500,000		Contribution to Total Wealth								
Head of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Total		155,627,427	242.65	10.61	12.99	58.71	100.00	100.00	100.00	100.00
Gender	Men	127,476,261	243.89	10.66	13.18	61.72	81.91	82.30	83.09	86.10
	Women	28,151,166	237.66	10.38	12.15	45.13	18.09	17.70	16.91	13.90
Race	Indigenous	240,718	125.46	2.26	1.05	0.98	0.15	0.03	0.01	0.00
	White	82,813,067	330.20	16.37	21.18	100.33	53.21	82.06	86.72	90.93
	Black	71,883,113	138.22	3.73	3.12	8.18	46.19	16.23	11.10	6.43
	Yellow	668,257	671.48	41.35	65.54	360.85	0.43	1.67	2.17	2.64
	Not Specified	22,272	175.51	6.72	1.61	0.39	0.01	0.01	0.00	0.00
Age	24 Years or Less	6,090,113	149.17	3.95	3.30	7.35	3.91	1.46	0.99	0.49
	25 to 44 Years	75,353,866	227.17	9.59	11.29	43.50	48.42	43.75	42.05	33.87
	45 to 64 Years	56,395,297	266.22	12.45	15.29	76.62	36.24	42.51	42.65	47.29
	65 Years or More	17,788,151	265.51	11.41	16.26	84.01	11.43	12.28	14.30	16.35
Years of Schooling	Less than 1 Year	32,566,084	87.37	0.81	0.58	2.02	20.93	1.60	0.93	0.72
	1 to 4 Years	31,961,631	126.36	2.49	1.65	4.61	20.54	4.82	2.61	1.61
	4 to 8 Years	47,030,711	186.32	5.47	3.98	9.80	30.22	15.57	9.26	5.05
	8 to 12 Years	31,890,847	341.70	17.56	16.52	70.63	20.49	33.91	26.06	24.65
	More than 12 Years	12,178,154	921.28	59.82	101.51	510.00	7.83	44.10	61.13	67.97
Immigration	No Immigrant	63,148,690	219.05	9.55	11.67	42.33	40.58	36.51	36.46	29.26
	0 to 5 Years	11,681,757	230.42	10.04	11.69	44.16	7.51	7.10	6.75	5.65
	6 to 9 Years	6,439,113	223.19	8.84	11.28	50.84	4.14	3.45	3.59	3.58
	More Than 10 Years	46,134,746	250.79	11.03	12.67	58.07	29.64	30.82	28.91	29.32
	Other/Not Specified	20,223,121	291.67	12.95	17.41	104.25	18.14	22.13	24.29	32.20

Table 8.7 Wealth Profile – 1997 (continued)

Wealth Line: R\$ 500,000		Contribution to Total Wealth								
Head of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Working Class	Inactive	27,548,418	231.52	10.26	10.65	33.79	17.70	17.12	14.50	10.19
	Unemployed	4,801,946	91.20	2.05	1.94	4.84	3.09	0.59	0.46	0.25
	Formal Employees	35,783,905	245.47	9.50	10.25	34.13	22.99	20.59	18.13	13.37
	Informal Employees	20,520,320	133.52	3.72	3.65	10.93	13.19	4.62	3.70	2.45
	Self-Employed	42,541,735	195.69	7.59	8.60	32.78	27.34	19.55	18.09	15.26
	Employer	8,211,702	698.78	40.30	70.96	522.55	5.28	20.03	28.82	46.96
	Public Servant	13,136,777	378.25	21.10	24.26	78.36	8.44	16.78	15.76	11.27
	Unpaid	3,061,738	127.50	3.89	3.56	7.47	1.97	0.72	0.54	0.25
	Other/Not Specified	20,886	70.91	4.01	0.80	0.16	0.01	0.01	0.00	0.00
Employment Tenure	0 Years	32,350,364	210.69	9.04	9.35	29.49	20.79	17.71	14.96	10.44
	1 Years or More	19,308,095	184.73	6.68	6.93	21.72	12.41	7.81	6.62	4.59
	1 to 3 Years	23,380,174	225.14	8.72	10.25	45.36	15.02	12.35	11.83	11.61
	3 to 5 Years	13,340,239	248.03	9.71	12.28	52.69	8.57	7.84	8.10	7.69
	More than 5 Years	66,249,243	282.23	13.50	17.81	90.48	42.57	54.13	58.33	65.60
		Other/Not Specific	999,312	110.08	2.62	2.73	6.63	0.64	0.16	0.13
Enterprise Size	1	2,293,312	460.07	26.48	32.62	112.53	1.47	3.68	3.70	2.82
	2 to 5	11,266,094	317.90	16.24	20.95	92.12	7.24	11.08	11.67	11.36
	6 to 10	5,523,207	333.26	15.24	23.41	157.32	3.55	5.10	6.39	9.51
	>11	934,794	1503.79	72.27	211.72	2,451.17	0.66	4.09	9.79	25.08
		Other/Not Specified	135,610,020	220.34	9.26	10.21	34.32	87.14	76.06	68.44

Table 8.7 Wealth Profile – 1997 (*continued*)

Wealth Line: R\$ 500,000		Contribution to Total Wealth								
Head of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Sector of Activity	Agriculture	29,740,290	103.64	2.54	3.12	17.97	19.11	4.56	4.59	5.85
	Manufacturing	18,465,354	265.42	11.29	13.20	81.16	11.87	12.62	12.05	16.40
	Construction	12,999,652	171.71	4.19	4.62	17.84	8.35	3.29	2.97	2.54
	Services	49,398,856	318.54	15.17	19.74	93.24	31.74	45.36	48.23	50.40
	Public Sector	12,658,127	394.69	21.46	27.48	103.71	8.13	16.45	17.20	14.37
	Other/Not Specified	32,365,148	210.61	9.35	9.35	29.48	20.80	17.71	14.96	10.44

Source: PNAD – IBGE

The importance of the explanatory power of human capital is impressive: 7.83% of the population has 12 or more years of schooling while among the rich this share corresponds to 44%.

In terms of the specific human capital acquired through job tenure, 43% of the total population declared to be headed by an individual with five or more years of experience in the present job. For the rich this statistic rises to 54%. In other words, most of the rich indicated that they did not change jobs during the reform period, thus preserving and enhancing their stock of specific human capital.

Finally, the working class and sector of activity of the household heads reveals that the rich were over-represented in the public sector, services and among employers in 1997. The increase in the degree of over-representation among employers is the most noticeable change.

#### II.4.3 Exercises in inequality decomposition

Following Sam Morley's suggestions and based on his work (Morley (1999)), this sub-section evaluates how much of the changes in inequality observed from pre-reform to post-reform years comes from changes at the top of the distribution. We perform this exercise in two ways: for the richest 10% and for the group with university-level education.

#### II.4.4 The top 10%

Table 8.8 shows the details, which allow for the evaluation of how the share of the overall Theil due to the 10% changed over time. This is defined as the 'between' groups total Theil index plus the 'within' group Theil

Table 8.8 Decomposition Theil-T Index – Brazil

Universe: Economically Active Population – All Income Sources

	1976			1985			1990		
	Total	Between	Within	Total	Between	Within	Total	Between	Within
10+	1.002	0.812	0.189	0.866	0.752	0.114	0.883	0.763	0.119
90-	-0.177	-0.297	0.120	-0.146	-0.288	0.141	-0.135	-0.288	0.153
<b>Total</b>	<b>0.825</b>	<b>0.515</b>	<b>0.309</b>	<b>0.720</b>	<b>0.464</b>	<b>0.256</b>	<b>0.748</b>	<b>0.475</b>	<b>0.273</b>
	1993			1997					
	Total	Between	Within	Total	Between	Within			
10+	0.957	0.794	0.162	0.858	0.740	0.118			
90-	-0.164	-0.295	0.130	-0.159	-0.287	0.128			
<b>Total</b>	<b>0.793</b>	<b>0.500</b>	<b>0.293</b>	<b>0.699</b>	<b>0.453</b>	<b>0.246</b>			

index for the richest 10% as a percentage of the total Theil index. For instance, in 1990 the percentage contribution of the top 10% is  $(0.475 + 0.119)/0.748 = 74.9\%$ . This evidence demonstrates that it is the differences within the top group and between this group and all the others that are mainly responsible for the high levels of inequality in Brazil. Of these two sources of inequality, the differences in average income are by far the most important component.

While the absolute contribution of the rich to total inequality is extremely high, there is not much evidence to suggest it has increased over the period of reforms. In the 1990–93 period this contribution for the economically active population has risen from 79.5% to 83.5%, falling to 81.7% in 1997. The contribution of the top 10% according to population in active age displays a similar movement rising from 84.8% to 87.7% between 1990 and 1993 and falling to 85.9% in 1997. The *per capita* concept displays a similar pattern in the reform period; the only difference is that the fall observed in 1993–97 more than compensates the rise observed in 1990–93. The contribution of the top 10% to inequality rises from 59.5% to 66.2% between 1990 and 1993 and then drops to 57.2% in 1997.

#### *II.4.5 University graduates*

The contribution of university graduates is shown in Table 8.9. One of the reasons for this breakdown is the evidence that growth is increasingly skill-intensive and that there has been a rise in the skill-differential between the university group and the rest of the labour force. The idea is to evaluate how much this increased differential has contributed to changes in inequality over the period. In addition, we can look at changes within the university group to see whether the new economic model has created a subgroup of winners, which should be reflected as a rise in the ‘within’ groups Theil indices.

The rise in the contribution of the university group to overall inequality was so great that it completely offsets favourable trends among the remainder of the population. If one looks at the ‘within’ group Theil indices for the non-university group, one can see what inequality would look like and how it would have changed over the period.

Morley (1999) determined how much of the rise in the university contribution comes from the increase in the skill differential, how much comes from the change in the size of the university group, and how much comes from increased variance within the university group itself. Is the rising university component of inequality due to growth having raised the return of all university graduates relative to everyone else, is it due to the new economic model having created a sub-group of big winners among the university group, or is it mainly because the size of the group is increasing? In Brazil the contribution of university graduates to total inequality is far lower than elsewhere in spite of the fact that its skill differential is by far the highest in the region. Looking at Table 8.9, the reason is that the frac-



Table 8.9 Percent of Total Variance Explained by University Grads – Brazil

Universe: Occupied – Labour Income Normalized By Hours

	Pop Share	Y Share	Theil	Within	Between	Total	Percent of Contrib. Univ.	Skill Diff.
<b>1976</b>								
Univ. Grad	0.0032	0.0272	0.3600	0.00979	0.05848			
Rest	0.9968	0.9728	0.7840	0.76268	-0.02373			
<b>Total</b>	1.0000	1.0000		0.77247	0.03475	0.80722	5.52%	8.8
<b>1990</b>								
Univ. Grad	0.0071	0.0485	0.4326	0.02100	0.09332			
Rest	0.9929	0.9515	0.7932	0.75467	-0.04057			
<b>Total</b>	1.0000	1.0000		0.77567	0.05275	0.82842	8.90%	7.13
<b>1997</b>								
Univ. Grad	0.0083	0.0567	0.4100	0.02323	0.10857			
Rest	0.9917	0.9433	0.7645	0.72114	-0.04713			
<b>Total</b>	1.0000	1.0000		0.74437	0.06144	0.80581	10.51%	7.14

Source: PNAD – Morley (1999)

tion of the labour force with university education is so small, that it simply does not carry much weight in any inequality computations.

This illustrates an important point, and a serious one for those seeking a reduction in inequality. As Morley (1999, p. 10) puts it:

As Brazil gradually improves its education profile, the percentage of university graduates in its labour force is going to rise. If nothing else changes, that improvement is going to increase inequality. Look again at the calculations for occupied labour for 1976 for Brazil. The total Theil was 0.81, university graduates made up only 0.3% of the adult population, and they earned 8.8 times as much as the non-university group. To show how this works, suppose that over time the university group expands until it accounts for 5% of the labour force. If the wage differential stays at 8.8, the group will have about 31.5% of total income. Holding the within group Theils constant at their 1976 levels, we can calculate the hypothetical distribution with this better educated labour force. It turns out to be a full twenty points higher than the 1976 distribution. For countries with very small university educated population, raising the share of the university graduates in the labour force is regressive over a large range or for a very long time unless it is accompanied by a significant decline in the skill differential. In the Brazil case, to hold the overall Theil constant at its 1976 level when the university population share grows to 5%, one would have to cut the skill differential in half (from 8.8 to 4.2). The reason that countries have this problem is that a small favoured group (the university graduates) expands relative to the rest of the population. That is regressive, until the group gets big enough to be representative of the population as a whole.

#### *II.4.6 Rates of return to schooling*

This sub-section complements the previous one assessing the changes observed in the rates of return to schooling during the reform period. The continuous movement of active age individuals towards higher years of schooling brackets combined with the trend towards technological progress based on highly skilled workers generates ambiguous effects on the rates of return to education (Table 8.10.A and B).

In the 1990–97 period the rate of return to primary and secondary education levels falls while the rate of return to university-degree level rises steeply. Overall, calculations based on more disaggregate categories show that the average rate of return for each additional year of schooling falls from 18% to 17%.

### **III. Dynamic aspects of income distribution**

The second part of the chapter explores PME monthly household surveys to extract relations between movements of distributive variables, on the

Table 8.10

A – Returns to Schooling (basis: 0 years of education)

Universe: Economically Active Population – All Income Sources					
Years of Schooling	1976	1985	1990	1993	1997
0	1.00	1.00	1.00	1.00	1.00
1–4	1.88	1.77	1.80	1.65	1.70
4–8	2.59	2.26	2.24	1.91	2.05
8–12	4.01	3.80	3.75	3.24	3.35
12–16	10.11	9.79	9.26	8.35	8.48
16+	17.67	17.35	14.99	14.75	16.12

Source: PNAD

B – Population Composition (%)

Universe: Economically Active Population – All Income Sources					
Years of Schooling	1976	1985	1990	1993	1997
0	24.4	18.2	15.5	14.9	12.9
1–4	43.7	38.6	35.2	37.4	33.0
4–8	18.5	22.1	24.2	23.3	25.4
8–12	9.0	14.3	17.1	17.0	20.3
12–16	4.1	6.3	7.3	6.8	7.6
16+	0.3	0.4	0.7	0.7	0.8

Source: PNAD

one hand, and economic reforms and macroeconomic fluctuations, on the other. It first provides a description of the PME data used. We argue that PME allows higher degrees of freedom in choosing representative pre- and post-stabilization dates. At the same time, PME's longitudinal aspect allows us to refine the inequality decomposition exercises performed in section II.3, with PNAD, thus qualifying the effects of the 1994 stabilization on income distribution. The remainder of this section aims to isolate the distributive effects of macro shocks and policies using standard time-series techniques.

### III.1 Reforms, stabilization and income distribution

**PME (*Pesquisa Mensal do Emprego*)** This monthly employment survey is carried out in the six main Brazilian metropolitan regions by IBGE. It has covered an average of 40,000 households monthly since 1980. PME presents detailed information on personal and occupational characteristics of all household members. This allows us to perform standard inequality

decomposition analysis. PME's large sample size combined with its high frequency also allows us to construct monthly time series on earnings distribution at a reasonably detailed level of disaggregation.

PME replicates the US CPS (Current Population Survey) sampling scheme attempting to collect information on the same dwelling eight times during a period of 16 months. More specifically, PME attempts to collect information on the same dwelling during months  $t$ ,  $t+1$ ,  $t+2$ ,  $t+3$ ,  $t+12$ ,  $t+13$ ,  $t+14$ ,  $t+15$ . This short-run panel characteristic of PME allows us to infer a few dynamic aspects of reforms regarding income distribution.

### *III.1.1 An updated assessment of inequality*

Despite its geographical and income concept limitations, PME is more suitable than PNAD to provide a detailed picturing of the effects of macroeconomic shocks (price stabilization in particular) on income inequality in Brazil. First, the peak of inflation was reached by mid-1994, just before the launching of the *Real* Plan. Unfortunately, there was no PNAD in 1994 so PNAD-93 (dating from September) used in sections II.2 and II.3 is not the ideal proxy for the inequality level prior to stabilization. PME is more suitable for this purpose. For example, the first line of Table 8.11. A. shows that the Theil-T index for labour earnings for the population that was always occupied during four observations in 1994 was 11% above the corresponding one for 1993 (0.79 against 0.71). Similar comparisons using Gini coefficient indices shown in the first line of Table 8.11.B indicate that the values found for 1994 were 4.3% above the values found for 1993 (0.62 against 0.59).

Second, the various external shocks that hit the Brazilian economy in September 1997 (Asian crisis), August 1998 (Russian Crisis) and January 1999 (*Real* Devaluation Crisis) should be incorporated into the analysis. Otherwise, we would have an over-optimistic view of the trends of Brazilian income distribution and its relation to economic reforms (in particular, the opening of the economy). In this sense, PNAD-97 (September – the most recent nationwide survey available) can be perceived only as a (broad) picture, just before the new waves of external shocks hit the Brazilian economy.

The comparison between PME data gathered in 1996, 1997 and 1998 provides evidence on the effects of the Asian Crisis on Brazilian income distribution. The first line of Table 8.11.A shows that the Theil-T index for labour earnings for the population that was always occupied during four observations went from 0.533 in 1996 to 0.545 in 1997 and to 0.547 in 1998: the upward inequality movement occurred before the bulk of the effects of the Asian Crisis were felt. At the same time, the upward trend observed between 1996 and 1998 is not confirmed by the Gini coefficient series presented in Table 8.11.B.

Table 8.11 Inequality and the Earnings Measurement Interval

A							
THEIL-T INDEX							
Population Concept – Income Concept	1985	1990	1993	1994	1996	1997	1998
Always Occupied – Month by Month	0.504	0.651	0.709	0.787	0.533	0.545	0.547
Always Occupied – Mean Earnings	0.448	0.580	0.551	0.646	0.497	0.508	0.512
B							
GINI COEFFICIENT							
Population Concept – Income Concept	1985	1990	1993	1994	1996	1997	1998
Always Occupied – Month by Month	0.520	0.566	0.592	0.618	0.527	0.530	0.527
Always Occupied – Mean Earnings	0.496	0.541	0.529	0.566	0.510	0.514	0.512
C							
THEIL-T INDEX			GINI COEFFICIENT				
Population Concept – Income Concept	1993	1997	1998	1993	1997	1998	
Once Occupied – Month by Month	0.915	0.746	0.753	0.6666	0.6142	0.6137	
Once Occupied – Mean Earnings	0.703	0.653	0.660	0.5955	0.5810	0.5806	
D							
GINI COEFFICIENT							
Population Concept – Income Concept	1993	1997	1998				
Active Age Individuals – Month by Month	0.8021	0.7634	0.7688				
Active Age Individuals – Mean Earnings	0.7599	0.7431	0.7490				

Source: PME

One could argue that given the rise of unemployment rates observed after January 1998, most of the effects of the 1997 Asian Crisis were not felt by the occupied population. Nevertheless, the first line of Table 8.11.C shows that the Gini coefficients for the group of active age individuals were almost constant between 1997 and 1998.

One could extrapolate this exercise to make inferences about the possible effects of the Russian crisis on income distribution, not yet fully incorporated into the data. The effects of the latest devaluation crisis are harder to predict.<sup>8</sup>

### *III.1.2 PME's longitudinal aspect and inequality comparisons*

We have also decided to incorporate PME data because its longitudinal aspects provide relevant insights into what has happened to inequality in Brazil in recent years, especially allowing for pre- and post-stabilization inequality comparisons. We have used the micro-longitudinal aspect of PME in two alternative ways: first, the four consecutive observations of the same individuals were treated independently before the inequality measures were assessed; second, we considered earnings average over four months before the inequality measures were calculated. The Theil-T is decomposed as follows: Month by Month Theil-T equals Mean Earnings Theil-T plus Individual Earnings Over Time Theil-T. In other words, the difference in the levels of inequality measures between month by month and average over four months is explained by the variability component of individual earnings over the four-month period.

The main result here is that the fall of month-to-month inequality measures observed after the fall of inflation in 1994 drastically overestimates the fall of inequality when one compares it with mean earnings over four months. A comparison of the two lines in Table 8.11.A indicates that for the always occupied population the month-by-month Theil-T indices fell from 0.709 in 1993 to 0.545 in 1997. The Gini coefficient time series in Table 8.11.A present a fall from 0.592 to 0.530 in that period. The fall of inequality measures based on mean individual earnings over four months is much smaller than in the case of monthly earnings. Theil-T falls from 0.551 to 0.508 between 1993 and 1997 while Ginis fell from 0.529 to 0.514. Similar results were obtained for two other population concepts, such as the active age population and individuals occupied at least once in four consecutive observations, as shown in Tables 8.11.C and 8.11.D.

The greater fall of traditional inequality measures on a monthly basis in comparison with measures on a four-month basis is explained by the fall of the individual volatility measures following the sharp decline in inflation rates observed in this period. In sum, stabilization produced more stable earnings trajectories (that is, lower temporal inequality (in fact, volatility) of individual earnings). On the other hand, the observed fall of inequality *stricto sensu* was much smaller than inequality measures based on monthly measures would have suggested.

In sum, the post-stabilization fall in inequality for the group of population always occupied is much higher on a monthly basis (as traditionally used in Brazil) than when one uses mean earnings over four months. The

fall of Theils and Ginis is two to four times higher when one uses the former concept.

Another way of looking at the effects of inflation and stabilization is to note that most of the fall in inequality measures is attributed to the within groups component, especially in the month-by-month inequality measures. Table 8.12 presents a disaggregate view of these components for the population always occupied in four consecutive observations for changes between 1993 and 1997. Table 8.13 summarizes this information in terms of the gross and marginal contribution of different groups' characteristics. For example, in the case of the month-by-month income concept presented in part B of Table 8.13, during 1993 the sum of the marginal contributions of the between groups component relative to schooling, working class and age (that is, the three main characteristics) explains only 31.5% of total inequality. This statistic rises to 42.3% in 1997, which corresponds to a 34.3% increase of relative contributive power to total inequality. In the case of the corresponding measures based on mean earnings over four months presented in Table 8.13.A, the relative rise of explanatory power is 12%. These results seem to confirm the idea that the explained share of total inequality tends to increase as we approach the permanent income concept.

Overall, the main point of this section is that most of the monthly earnings inequality fall observed after stabilization may be credited to a reduction of earnings volatility and not to a fall in the permanent income inequality (or *sensu strictu* inequality).

### III.1.3 Other distributive impacts of stabilization<sup>9</sup>

Apart from reducing the volatility of earnings as discussed in the previous subsection, stabilization also produces *true* redistributive impacts.

*Reduction of the inflation tax.* The inflation tax results from the fact that some agents are not able to protect part of their financial wealth from inflation. During the period of high inflation in Brazil government bonds were indexed to inflation and were very liquid. Agents who kept bank accounts were able to protect their financial wealth from inflation by using government bonds as a *store of value*. The low income group did not have bank accounts and therefore could not protect their cash balances from inflation. There were other forms of protection which the low income group could use: anticipating consumption and buying building materials, for example. As inflation increased over the 1980s, these forms of protection became widespread. However, since these forms of protection were partial, low income group families kept paying the inflation tax. As inflation fell from an average monthly rate of 45% to 2% in 1994, there was an income gain following the reduction in the inflation tax. This gain

Table 8.12 Variation of Theil-T Index – Between 1993 and 1997

		Universe: Longitudinal Data – 4 Observations – Always Occupied					
		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
<b>Gender</b>	<b>Male</b>	-0.043	-0.006	-0.037	-0.131	-0.006	-0.125
	<b>Female</b>	0.000	0.003	-0.003	-0.033	0.003	-0.037
<b>Total</b>		<b>-0.043</b>	<b>-0.003</b>	<b>-0.040</b>	<b>-0.164</b>	<b>0.003</b>	<b>-0.161</b>
<b>Age</b>	<b>Up to 24 years</b>	-0.006	0.003	-0.009	-0.019	0.003	-0.023
	<b>25 to 34 years</b>	-0.049	-0.019	-0.030	-0.085	-0.019	-0.066
	<b>35 to 59 years</b>	0.011	0.021	-0.010	-0.057	0.021	-0.078
	<b>More than 60 years</b>	0.001	0.002	-0.001	-0.002	0.002	-0.005
<b>Total</b>		<b>-0.043</b>	<b>0.007</b>	<b>-0.050</b>	<b>-0.164</b>	<b>0.007</b>	<b>-0.171</b>
<b>Schooling</b>	<b>0 Years</b>	0.004	0.006	-0.002	0.001	0.006	-0.005
	<b>1 to 4 years</b>	-0.014	0.010	-0.024	-0.034	0.010	-0.044
	<b>5 to 8 years</b>	-0.017	-0.009	-0.008	-0.041	-0.009	-0.033
	<b>9 to 12 years</b>	-0.053	-0.038	-0.015	-0.087	-0.038	-0.049
	<b>13 to 16 years</b>	0.015	0.028	-0.013	-0.021	0.028	-0.049
	<b>More than 16 years</b>	0.022	0.021	0.000	0.019	0.021	-0.003
<b>Total</b>		<b>-0.043</b>	<b>0.019</b>	<b>-0.062</b>	<b>-0.164</b>	<b>0.019</b>	<b>-0.183</b>
<b>Working Class*</b>	<b>Public Servant</b>	0.014	0.010	0.003	-0.003	0.010	-0.013
	<b>Formal Employee</b>	-0.130	-0.071	-0.059	-0.184	-0.071	0.113
	<b>Informal Employee</b>	0.003	-0.002	0.005	0.000	-0.002	0.003
	<b>Self-Employed</b>	0.026	0.007	0.019	0.017	0.007	0.010
	<b>Employer</b>	0.026	0.031	-0.005	0.016	0.031	-0.015
	<b>Not specified</b>	0.018	0.033	-0.015	-0.011	0.033	-0.045
<b>Total</b>		<b>-0.043</b>	<b>0.009</b>	<b>-0.052</b>	<b>-0.164</b>	<b>0.009</b>	<b>-0.173</b>



Table 8.12 Variation of Theil-T Index – Between 1993 and 1997 (continued)

		Universe: Longitudinal Data – 4 Observations – Always Occupied					
		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
<b>Sector of Activity*</b>	<b>Agriculture</b>	0.003	0.001	0.002	0.003	0.001	0.002
	<b>Manufacturing</b>	-0.068	-0.029	-0.039	-0.094	-0.029	-0.065
	<b>Construction</b>	0.002	0.002	0.000	-0.002	0.002	-0.005
	<b>Public Sector</b>	0.022	0.018	0.003	0.003	0.018	-0.015
	<b>Services</b>	0.012	0.011	0.001	-0.040	0.011	-0.051
	<b>Not specified</b>	-0.014	-0.005	-0.009	-0.034	-0.005	-0.029
<b>Total</b>		<b>-0.043</b>	<b>-0.002</b>	<b>-0.041</b>	<b>-0.164</b>	<b>-0.002</b>	<b>-0.162</b>
<b>Region</b>	<b>Rio de Janeiro</b>	0.018	0.018	0.000	0.004	0.018	-0.014
	<b>São Paulo</b>	-0.005	0.012	-0.017	-0.041	0.012	-0.053
	<b>Porto Alegre</b>	0.037	0.013	0.023	0.016	0.013	0.002
	<b>Belo Horizonte</b>	-0.058	-0.022	-0.036	-0.090	-0.022	-0.068
	<b>Recife</b>	-0.036	-0.018	-0.018	-0.049	-0.018	-0.031
	<b>Salvador</b>	0.001	0.001	0.001	-0.005	0.001	-0.005
<b>Total</b>		<b>-0.043</b>	<b>0.004</b>	<b>-0.047</b>	<b>-0.164</b>	<b>0.004</b>	<b>-0.168</b>

Source: PME

\* Individuals that changed status are classified as Not Specified

Table 8.13

A – Gross and Marginal Rates of Contribution Theil-T

Universe: Longitudinal Data – 4 Observations – Always Occupied Mean Earnings Across 4 Months														
	GROSS							MARGINAL						
	1985	1990	1993	1994	1996	1997	1998	1985	1990	1993	1994	1996	1997	1998
<b>Groups:</b>														
<b>Gender</b>	6.5%	4.4%	3.7%	3.4%	3.6%	3.5%	3.4%							
<b>Age</b>	9.7%	8.7%	7.1%	6.7%	9.1%	9.2%	9.0%	10.4%	7.0%	6.3%	5.7%	6.9%	7.1%	7.6%
<b>Schooling</b>	34.5%	35.8%	32.2%	30.7%	37.5%	38.7%	37.8%	31.5%	30.7%	28.8%	26.8%	32.5%	33.2%	33.1%
<b>Working Class*</b>	10.7%	10.5%	9.2%	11.0%	11.8%	11.8%	12.2%	5.2%	4.5%	5.4%	6.3%	5.7%	5.2%	5.8%
<b>Sector of Activity*</b>	3.4%	2.7%	2.2%	2.3%	1.7%	2.0%	2.1%							
<b>Region</b>	1.6%	2.0%	3.2%	7.0%	4.9%	4.3%	3.3%							

Source: PME

\* Individuals that changed status are classified as Not Specified

Table 8.13 (continued)

B – Gross and Marginal Rates of Contribution Theil-T

Universe: Longitudinal Data – 4 Observations – Always Occupied Month by Month Labour Earnings														
	GROSS							MARGINAL						
	1985	1990	1993	1994	1996	1997	1998	1985	1990	1993	1994	1996	1997	1998
<b>Age</b>	9.7%	8.7%	7.1%	6.7%	9.1%	9.2%	9.0%	10.4%	7.0%	6.3%	5.7%	6.9%	7.1%	7.6%
<b>Gender</b>	5.8%	4.0%	2.9%	2.8%	3.4%	3.3%	3.2%							
<b>Age</b>	8.6%	7.8%	5.5%	5.5%	8.4%	8.6%	8.5%	9.3%	6.2%	4.9%	4.7%	6.4%	6.6%	7.1%
<b>Schooling</b>	30.6%	31.0%	25.0%	25.2%	34.9%	36.1%	35.4%	27.9%	27.4%	22.4%	22.0%	30.2%	30.9%	31.0%
<b>Working Class*</b>	9.5%	9.3%	7.2%	9.0%	11.0%	11.5%	4.6%	4.0%	4.2%	5.2%	5.3%	4.8%	5.4%	
<b>Sector of Activity*</b>	3.0%	2.4%	1.7%	1.9%	1.6%	1.9%	2.0%							
<b>Region</b>	1.4%	1.8%	2.5%	5.8%	4.5%	4.0%	3.1%							

Source: PME

\* Individuals that changed status are classified as Not Specified

was significantly more important (10%) for low income families than for middle and high income families (1%).

*Changes in relative prices.* The *Real Plan* is part of the family of 'exchange-rate-based stabilization' plans in which the exchange rate plays an important part in imposing a ceiling for the prices of tradable goods. The prices of non-tradable goods do not suffer directly from the opening of the economy and the appreciation of the exchange rate. Hence there is a change in relative prices against the tradable sectors and in favour of the non-tradable sectors. Low income workers are concentrated in some of the non-tradable sectors, notably personal and social services. In the labour market, they are concentrated among the informal wage earners and the self-employed. On the educational scale, they are concentrated among the less educated. Hence, there are reasons to believe that the change in relative prices has had important redistributive effects.

### **III.2 Macro determinants of income distribution: a time series approach**

The possibility of constructing monthly series of specially tailored variables according to individual and family records of PME for the 1980-99 period allows us to apply standard time series techniques to capture the effects of macro variables on labour earnings distribution variables.

All the variables included in the regression are expressed as logs, so the coefficients can be read directly as elasticities. We analyse below the partial correlation patterns between macro variables (unemployment, inflation, various types of exchange rates, interest rates and minimum wages) and the following endogenous variables:

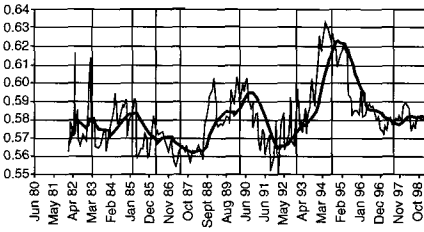
- a) Gini coefficient of labour earnings.
- b) Mean earnings.
- c) Mean earnings of different groups by Years of Schooling, Age, Household Status, Sector of Activity and Working Class.

Most of the series discussed above are presented in Figure 8.2.A to H.

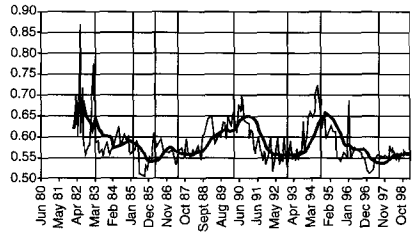
#### *III.2.1 Income distribution determinants*

The option adopted here was to centre the analysis on the whole active age population (including individuals with null incomes) during the 1982-96 period. The fact that some relevant variables related to the exchange-rate regime are only available for this period explains this choice. In terms of inequality measure, we chose the Gini coefficient since, as opposed to the

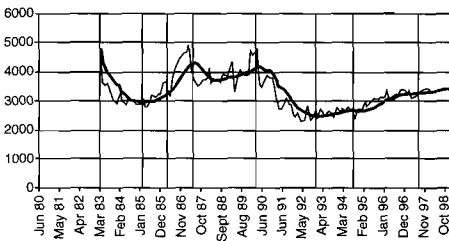
A – Gini Coefficient  
(Universe: Active Age Population – Total Labour Earnings)



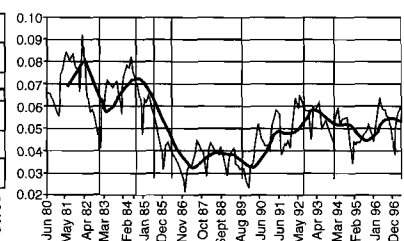
B – Theil-T Index  
(Universe: Active Age Population – Only Positive Labour Earnings)



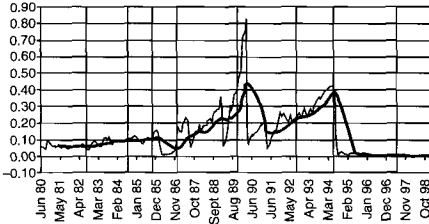
C – Average Earnings  
(Universe: Active Age Population)



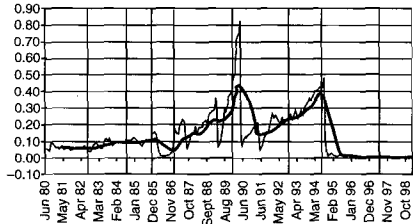
D – Unemployment Rates



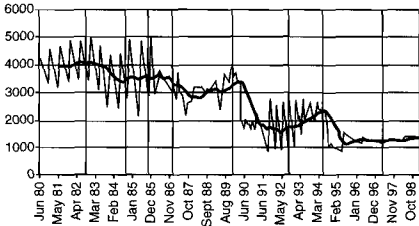
E – Inflation Rates



F – Real Interest Rates



G – Minimum Wages



H – Real Exchange Rate

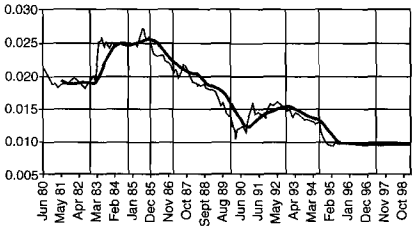


Figure 8.2

*Table 8.14* Partial Correlation Signs Between Macro Variables and Inequality Measures Concept: Active Age Population – Labour Earnings

	Unemployment Rate		Inflation Rate		Real Exchange Rate I		Real Interest Rate		Minimum Wages		R <sup>2</sup>
Gini	0.025	2.88	0.004	2.45	-0.064	-6.53	0.072	1.02	-0.003	-0.19	37%
Mean Earnings	-0.416	-11.38	-0.045	-6.51	-0.038	-0.89	-0.824	-2.78	0.323	6.57	68%

Theil-T, it can incorporate null incomes into the analysis. Table 8.14 presents the central equation to be analysed here, with the Gini as the dependent variable.<sup>10</sup> We also analyse the effect of each macro variable in isolation on mean earnings (also in Table 8.14) and on mean earnings of different socio-economic groups (Table 8.16.A to E).<sup>11</sup> The purpose of this last exercise is to identify the winners and losers of specific macroeconomic innovations (both exogenous shocks and domestic policies). Heuristically, this part can be perceived as the time series counterpart of the inequality decomposition analysis developed in section II.3.

### III.2.2 *Unemployment*

The unemployment rate variable attempts to capture the effects of the level of activity on earnings inequality. The effect is positive. For simplification we will omit from the analysis references to statistically significant variables and deal instead with variables that are not significant at conventional confidence levels. Table 8.14 shows that the coefficient on the Gini indices equals 0.025. This table also shows that the effects on mean earnings is equal to -0.42. This means that (as expected) higher unemployment is correlated with a worsening of inequality.

Table 8.16 allows us to analyse the unemployment effects on mean earnings of different labour market segments. As the economy slows down, less skilled workers are strongly affected, as can be perceived in all categories analysed:

*Years of Schooling.* The unemployment elasticity is -0.45 for illiterate active age individuals and -0.42 for workers with more than 12 years of schooling. The intermediary skill groups are much like this former group but overall the elasticities are not statistically different one from another.

*Age.* The elasticity for less experienced workers (between 15 and 25 years) is -0.56 against -0.49 for workers above 60 years of age. The intermediary age groups are much like this latter group.

*Household Status.* The elasticities for sons (-0.52) are higher than those found for Heads (-0.44) and Spouses (-0.43).

*Table 8.15* Partial Correlation Signs Between Macro Variables and Inequality Measures Concept: Active Age Population – Labour Earnings (data in logarithms)

		Unemployment Rate		Inflation Rate		Real Exchange Rate I		Real Interest Rate		Minimum Wages		R <sup>2</sup>
<b>Gini (1982–96)</b>	<b>All Earnings</b>	0.025	2.88	0.004	2.45	-0.064	-6.53	0.072	1.02	-0.003	-0.19	37%
	<b>Only Positive Earnings</b>	0.004	0.49	0.004	3.17	-0.029	-2.96	0.040	0.57	-0.001	-0.38	15%
<b>Gini (1982–98)</b>	<b>All Earnings</b>	0.051	2.41	0.011	4.46	-0.168	-6.64	0.093	0.49	0.087	3.22	28%
	<b>Only Positive Earnings</b>	0.002	0.23	0.003	3.45	-0.026	-2.81	0.035	0.50	0.030	2.95	16%
<b>Theil (1982–96)</b>	<b>Only Positive Earnings</b>	0.014	0.58	0.015	3.31	-0.130	-4.70	0.037	0.18	0.087	2.88	21%
<b>Theil (1982–98)</b>	<b>Only Positive Earnings</b>	0.025	1.09	0.010	3.80	-0.131	-4.78	-0.005	-0.03	0.126	4.26	20%

Source: PME

Table 8.16 A – Partial Correlation Signs Between Macro Variables and Mean Earnings By Years of Schooling

Universe: Active Age Population – Labour Earnings											(Period: 1983–96 – Data in Logs)
	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R <sup>2</sup>
<b>0 Years</b>	<b>-0.45</b>	<b>-12.32</b>	<b>-0.04</b>	<b>-6.10</b>	<b>0.06</b>	<b>1.36</b>	<b>-0.81</b>	<b>-2.73</b>	<b>0.23</b>	<b>4.62</b>	<b>68%</b>
<b>0 to 4 Years</b>	<b>-0.45</b>	<b>-12.14</b>	<b>-0.06</b>	<b>-7.89</b>	<b>0.10</b>	<b>2.31</b>	<b>-1.10</b>	<b>-3.64</b>	<b>0.27</b>	<b>5.33</b>	<b>72%</b>
<b>4 to 8 Years</b>	<b>-0.45</b>	<b>-11.11</b>	<b>-0.05</b>	<b>-7.12</b>	<b>0.19</b>	<b>3.98</b>	<b>-0.91</b>	<b>-2.77</b>	<b>0.28</b>	<b>5.20</b>	<b>73%</b>
<b>8 to 12 Years</b>	<b>-0.46</b>	<b>-11.87</b>	<b>-0.05</b>	<b>-7.27</b>	<b>0.15</b>	<b>3.31</b>	<b>-0.83</b>	<b>-2.66</b>	<b>0.34</b>	<b>6.55</b>	<b>75%</b>
<b>More Than 12 Years</b>	<b>-0.42</b>	<b>-10.67</b>	<b>-0.05</b>	<b>-6.19</b>	<b>0.00</b>	<b>0.09</b>	<b>-0.75</b>	<b>-2.35</b>	<b>0.33</b>	<b>6.21</b>	<b>66%</b>

OBS: (a) Small numbers correspond to t-statistics (b) Constant and seasonal dummies omitted

## B – Partial Correlation Signs Between Macro Variables and Mean Earnings By Age Brackets

Universe: Active Age Population – Labour Earnings											(Period: 1983–96 – Data in Logs)
	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R <sup>2</sup>
<b>15 to 25 Years</b>	<b>-0.56</b>	<b>-15.63</b>	<b>-0.05</b>	<b>-7.95</b>	<b>0.14</b>	<b>3.44</b>	<b>-0.42</b>	<b>-1.43</b>	<b>0.36</b>	<b>7.33</b>	<b>80%</b>
<b>25 to 45 Years</b>	<b>-0.43</b>	<b>-13.26</b>	<b>-0.06</b>	<b>-9.84</b>	<b>0.02</b>	<b>0.49</b>	<b>-0.46</b>	<b>-1.76</b>	<b>0.35</b>	<b>7.93</b>	<b>76%</b>
<b>45 to 60 Years</b>	<b>-0.45</b>	<b>-11.94</b>	<b>-0.07</b>	<b>-9.25</b>	<b>-0.16</b>	<b>-3.69</b>	<b>-0.55</b>	<b>-1.81</b>	<b>0.35</b>	<b>7.03</b>	<b>69%</b>
<b>More than 60 Years</b>	<b>-0.49</b>	<b>-9.29</b>	<b>-0.07</b>	<b>-7.44</b>	<b>-0.03</b>	<b>-0.42</b>	<b>-0.98</b>	<b>-2.31</b>	<b>0.41</b>	<b>5.77</b>	<b>62%</b>

OBS: (a) Small numbers correspond to t-statistics (b) Constant and seasonal dummies omitted



Table 8.16 (continued)

C – Partial Correlation Signs Between Macro Variables and Mean Earnings  
By Household Status

Universe: Active Age Population – Labour Earnings

(Period: 1983–96 – Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R <sup>2</sup>
<b>Head</b>	<b>-0.44</b>	-11.65	<b>-0.05</b>	-7.52	<b>0.03</b>	0.69	<b>-0.85</b>	-2.77	<b>0.32</b>	6.39	71%
<b>Spouse</b>	<b>-0.43</b>	-12.62	<b>-0.06</b>	-8.94	<b>-0.30</b>	-7.73	<b>-0.54</b>	-1.98	<b>0.27</b>	5.91	74%
<b>Son or Daughter</b>	<b>-0.52</b>	-13.72	<b>-0.05</b>	-6.97	<b>0.06</b>	1.30	<b>-0.74</b>	-2.41	<b>0.32</b>	6.33	74%
<b>Other Relatives</b>	<b>-0.49</b>	-12.17	<b>-0.05</b>	-6.18	<b>0.02</b>	0.44	<b>-0.74</b>	-2.29	<b>0.32</b>	5.88	70%
<b>Non-Family Member</b>	<b>-0.47</b>	-6.96	<b>-0.02</b>	-1.82	<b>-0.03</b>	-0.39	<b>-0.10</b>	-0.17	<b>0.16</b>	1.76	36%
<b>Domestic Servant</b>	<b>-0.34</b>	-7.31	<b>-0.07</b>	-7.44	<b>0.01</b>	0.20	<b>-1.19</b>	-3.10	<b>0.07</b>	1.17	47%
<b>Collective Dwelling Res</b>	<b>-0.47</b>	-6.96	<b>-0.09</b>	-6.84	-0.09	-1.20	<b>-0.97</b>	-1.77	<b>0.52</b>	5.75	55%

OBS: (a) Small numbers correspond to t-statistics (b) Constant and seasonal dummies omitted

Table 8.16 (continued)

## D – Partial Correlation Signs Between Macro Variables and Mean Earnings By Sectors of Activity

Universe: Occupied – Labour Earnings

(Period: 1983–96 – Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R <sup>2</sup>
<b>Services</b>	-0.37	-10.99	-0.05	-7.62	-0.10	-2.62	-0.75	-2.75	0.29	6.40	66%
<b>Commerce</b>	-0.46	-12.61	-0.05	-7.89	-0.07	-1.56	-1.06	-3.59	0.28	5.80	70%
<b>Public Sector</b>	-0.42	-9.63	-0.06	-6.98	0.06	1.22	-1.05	-2.99	-0.22	3.82	59%
<b>Construction</b>	-0.51	-13.04	-0.05	-6.52	0.04	0.78	-0.93	-2.95	0.24	4.59	69%
<b>Manufacturing</b>	-0.25	-7.69	-0.04	-7.01	0.01	0.26	-0.62	-2.39	0.32	7.40	67%
<b>Mining</b>	-0.03	-5.58	-0.03	-2.76	0.01	0.23	-0.35	-0.81	0.23	3.29	43%
<b>Others</b>	-0.30	-5.95	-0.03	-2.78	-0.06	-1.04	-1.27	-3.11	0.31	4.53	46%

OBS: (a) Small numbers correspond to t-statistics (b) Constant and seasonal dummies omitted

## E – Partial Correlation Signs Between Macro Variables and Mean Earnings By Working Class

Universe: Occupied – Labour Earnings

(Period: 1983–96 – Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R <sup>2</sup>
<b>Formal Employees</b>	-0.24	-7.56	-0.05	-7.64	0.06	1.58	-0.73	-2.87	0.30	7.03	69%
<b>Informal Employees</b>	-0.42	-11.71	-0.05	-7.84	-0.04	-0.95	-0.99	-3.44	0.16	3.40	64%
<b>Self-Employed</b>	-0.62	-16.56	-0.05	-7.05	-0.24	-5.51	-0.98	-3.27	0.23	4.68	77%
<b>Employer</b>	-0.59	-13.63	-0.05	-6.04	-0.31	-6.21	-0.72	-2.07	0.35	6.13	72%

OBS: (a) Small numbers correspond to t-statistics (b) Constant and seasonal dummies omitted

*Sector of Activity.* The elasticity for manufacturing workers ( $-0.25$ ) is lower than that found for construction ( $-0.51$ ) and services ( $-0.37$ ) workers.

*Working class.* Similarly, the elasticity for formal employees' unemployment ( $-0.24$ ) is lower than that found for informal workers (illegal employees ( $-0.42$ ) and the self-employed ( $-0.62$ ).

It is interesting to note that when one uses the sample of occupied workers the results related to schooling, age and household status referred to above are reversed. This may be explained by the fact that low-wage workers are more easily displaced during recessions (and/or conversely more easily hired during booms).

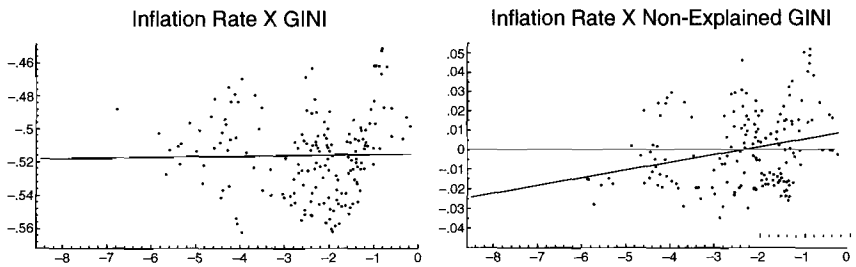
*Inflation.* Higher inflation often leads to a worsening of income distribution. However, the elasticities found here for inflation rate are in general much lower than those found for unemployment. The elasticity for the Gini coefficient inflation is  $0.004$  while the mean earnings inflation elasticity is  $-0.05$ . Figure 8.3.A shows that the elasticity of the Gini in relation to inflation is zero. This exercise can be understood by means of a simple Phillips curve rationale: if higher inflation buys lower unemployment then the effect of the fall of unemployment on inequality can offset the direct inequality effect of higher inflation.

One interpretation for the positive partial elasticity of the Gini coefficients in relation to inflation is that earnings at the bottom of the distribution are less perfectly indexed. This interpretation is not confirmed by the analysis of the elasticities of the different groups classified by years of schooling, age, working class and sector of activity. The elasticities for low income groups such as the uneducated, young, spouses or sons, service sector or civil construction workers and informal employees are not statistically different from those estimated for the entire population.

An alternative explanation for the partial positive effects of inflation on earnings dispersion is measurement problems regarding earnings volatility. This is consistent with the evidence presented in section III.1 where we show that stabilization reduces inequality in the 'within' groups component and not the 'between' groups component (which is affected by relative earnings levels).

*Real Interest Rates.* Higher interest rates do not lead to higher inequality (the coefficients are positive but not statistically different from zero). One interpretation is that once the contractionary effects of higher interest rates are taken into account through the unemployment variable, there is no residual to be explained. A complementary explanation is that since PME does not capture financial income, the positive effect of higher interest on high income individuals that have access to financial applications is not taken into account (Neri (1990)). As Figure 8.3.B shows, the pure Gini inter-

A – Correlation Patterns Between Inflation Rate and Gini



B – Correlation Patterns Between Real Interest Rate and Gini

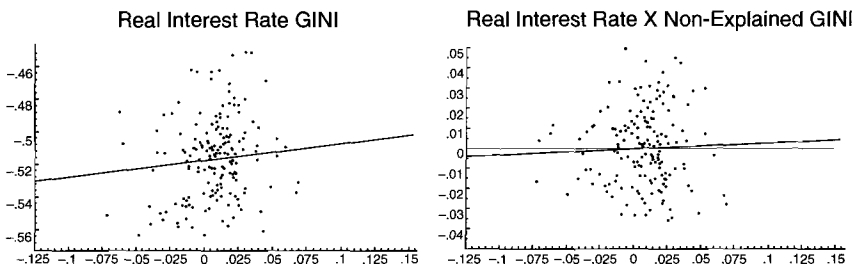


Figure 8.3

est rate elasticity is positive while the partial regression exercise shows that this correlation disappears when we take into account the other variables belonging to the basic regression estimated.

However, higher interest rates lead to lower mean aggregate incomes with an elasticity equal to  $-0.82$ , even when one controls for unemployment.

*Minimum Wages.* The partial elasticity of the Gini with regard to minimum wage is null. This result is somewhat surprising, given that the pure elasticity of the Gini with regard to the minimum is negative. According to standard economic theory, a rise in the minimum wage should increase unemployment, which is positively related to the Gini.<sup>12</sup> One possible solution to this puzzle is that higher minimum wages diminish unemployment.

The effect of the minimum wage on mean earnings is positive. Partial elasticity corresponds to 0.32.

*Exchange Rate.* Table 8.14 shows that an appreciated exchange rate is positively correlated with Gini coefficients, the elasticity being  $-0.064$ . The impact of exchange rates on *per capita* income is not statistically different from zero.

#### IV. Conclusions

This chapter has endeavoured to measure the evolution of income distribution and its determinants during the period of economic reforms. The chapter was divided in two parts: the first and main part of the chapter explored long-term relations between reforms and income distribution; the second part explored relations between movements of distributive variables, on the one hand, and economic reforms and macroeconomic fluctuations, on the other.

The main empirical strategy pursued in the long-run part of the chapter was to establish comparisons between reform-related institutional characteristics and income distribution aspects at different points in time. The contrasts between the picturing before and after reforms allowed for tentative interpretations of causal relations between the reforms and the distributive outcomes.

In order to set key dates in terms of reform implementation, we used indices of institutional reforms. The two main institutional changes observed in the Brazilian case were the opening of the economy and stabilization. The two turning points identified in the implementation of reforms in Brazil were 1990 and 1994.

On the inequality side, in the 1976–90 period the basic benchmark measure used based on the economically active population falls from 0.825 to 0.748. This downward trend is closely followed by broader inequality concepts such as those based on the active age population and on total *per capita* income while narrower measures based on occupied population show a slight upward movement.

1990–97 is the most interesting period, owing to the implementation of economic reforms. Our benchmark inequality measure falls from 0.748 to 0.699. This downward movement is followed by almost all inequality measures.

The 1990–97 period can be further divided into two subperiods. The 1990–93 subperiod is characterized by the combination of high inflation and economic reforms; the direction of inequality changes is not robust across the different concepts used. For example, while our basic measure rises from 0.748 to 0.793, the inequality concept based on the occupied population–labour

income concepts falls. The 1993–97 subperiod is characterized by the combination of successful stabilization and the intensification of economic reforms. The result is a fall of inequality for all concepts used. For example, the benchmark measure falls from 0.793 to 0.699.

Overall, the average Theil-T index falls 4.83% in 1976–93 (38.3% of the total fall observed in 1976–97). The same exercise applied to the Gini index yields similar results: a fall of 0.08% in 1976–93, corresponding to 28.9% of the total fall observed in 1976–97. In other words, the main part of the reduction in inequality measures observed in Brazil during the 21 years considered took place in the last 4 years, after stabilization.

The next step was to identify the main structural determinants of the evolution of Brazilian income using standard inequality decomposition exercises with respect to variables related to human capital (education and age), physical capital accumulation (sector of activity and working class), personal characteristics subject to discrimination (sex and race) and location (demographic region and population density).

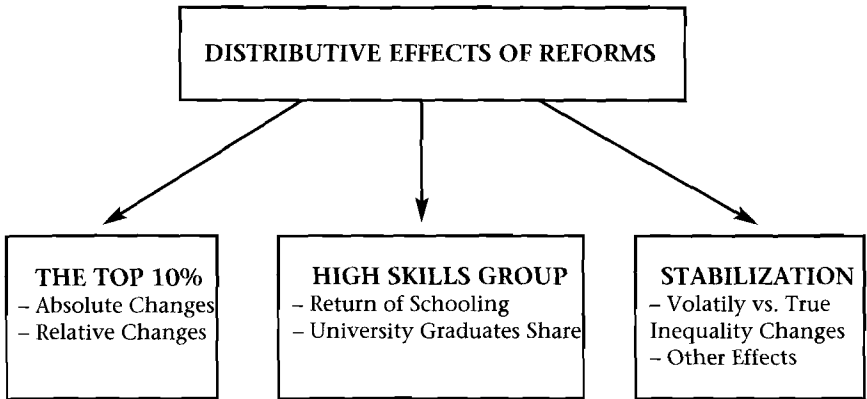
The gross decomposition of the Theil index summarizes the relative importance of the between groups term for different criteria used in total inequality. Among all the variables considered, years of schooling and working classes contribute most for total inequality. The explanatory power of both variables increased substantially during the whole period under analysis. Between 1976 and 1997, the gross contribution of years of schooling and working class for total inequality increased from 28.2% to 34.7%, and from 16.9% to 21.4%, respectively.

In order to take into account the interactions between the different classifications to obtain an idea of the marginal impact of each variable once the other classifications are considered, we chose a smaller set of different classification criteria. Since the sum of the gross contribution of the between group components of the three main variables (age, working class and years of schooling variables) is 64.6% of total inequality while the gross effects of the other five variables is residual (amounting to less than 30% of total inequality) we worked with the interactions between the former group of variables.

The marginal explanatory power of schooling – by far the most important variable – rises from 25.7% in 1976 to 26% in 1990, and to 26.4% in 1997. The marginal contribution of age (once years of schooling and working class were taken into account), decreases slightly from 7.1% in 1976 to 6.8% in 1990 and then to 5.9% in 1997. The marginal contribution of working class decreases from 9.2% to 8.7% in 1990 and remains at these levels in 1997.

In brief, the 1990–97 period presents an increase in the explanatory power of education, a decrease for age while working class remained at the same level in the extreme points of the series.

The chapter stresses three channels by which reforms have affected income inequality:



First, we attempted to study the impact of the economic reforms on the rich. We evaluated the absolute income changes in the top 10% of the income distribution assessing how the composition of this group changed during the reform period. The share of individuals with *per capita* incomes above that required to classify them among the richest 10% in 1997 fell 17.9% in the reform period of 1990–97 (a combination of a 33% fall in 1990–93 and a 23.9% rise in 1993–97).

We also assessed how much of the changes in inequality observed between the pre-reform and post-reform years comes from changes in the group of the 10% richest individuals. While the absolute contribution of the 10% richest people to total inequality is extremely high in Brazil, there is not much evidence to suggest that it has increased over the period of reforms. In 1990–93 this contribution in the case of the economically active population rose from 79.5% to 83.5% then fell to 81.7% in 1997.

The second channel considered here is the skill differential between the high schooling group and the rest of the labour force. One of the reasons why this breakdown is of interest is the evidence that growth is increasingly skill-intensive. The analysis of the profile of the 10% richest stresses the importance of the explanatory power of human capital: 7.83% of the population has 12 or more years of education, while the share of this group among the rich corresponds to 44% (61% when one takes into account the extension of rich group income). This last statistic was 53% in 1990, indicating a sharp effect of the reforms on the composition of the rich, favouring highly educated groups. In the period of reforms (1990–97), the rate of return to primary and secondary education levels fell while the rate of return on university degrees rose steeply.

The third distributive channel emphasized here is the effect of stabilization on inequality measures, especially those operating through changes in the volatility of individual income. We used the micro-longitudinal aspect of PME in two alternative ways: first, the four consecutive observations of the same individuals were treated independently. Second, we took earnings average over four months before inequality measures were calculated. The difference in levels between month-by-month and average over four-months inequality measures is explained by the variability component of individual earnings over the four month period.

The main result obtained is that the fall of monthly inequality measures observed after the decline in inflation in 1994 drastically overestimates the fall of inequality based on mean earnings over four months: monthly-based Theil-T indices fall from 0.709 in 1993 to 0.545 in 1997 while four-month-based Theil-T falls from 0.551 to 0.508 in the same period. The greater fall of traditional monthly inequality measures in comparison with four-month-based measures is explained by the fall of the individual volatility measures observed produced by the sharp fall of inflation rates recorded in this period.

In sum, the post-stabilization fall of inequality measures is two to four times higher on a monthly basis (traditionally used in Brazil) than when one uses mean earnings over four months. Another way of looking at these effects of stabilization on inequality measures is to note that most of the fall of the inequality measures is attributed to the within groups component in the monthly inequality measures. Overall, the main point here is that most of the monthly earnings inequality fall observed after stabilization may be credited to a reduction of earnings volatility and not to a fall in permanent earnings inequality.

Finally, section III.2 took advantage of the possibility of constructing monthly series of specially tailored variables according to individual and family records of PME and applied standard time series techniques capturing the effects of macro variables on distribution variables. We analysed the correlation patterns between macro variables (unemployment, inflation, exchange rates, interest rates and minimum wages) and distributive variables (aggregate inequality measures and mean earnings of different groups (by years of schooling, age, household status, sector of activity and working class)). The exercise aimed at identifying the winners and losers of specific macroeconomic changes. In general, the correlations between macro variables and income distribution variables follows standard textbook predictions. The main lesson here is to stress the close association between macroeconomic fluctuations and income distribution variables in Brazil. Without taking into account such factors one may fail in assessing the distributive impacts of structural reforms.



## Notes

- \* DIPES/IPEA
  - \*\* PUC-Rio
1. National Household Sampling Survey.
  2. Monthly Employment Survey.
  3. By working class we mean the following categories: formal employees, informal employees, self-employed workers and employers.
  4. Perhaps the most beneficial consequence of stabilization is that real earnings temporal variance of logs measured at an individual level over four consecutive months falls from 0.1363 in 1994 to 0.106 in 1996 (Table 8.1). The sharp reduction of volatility observed had direct consequences on the level of social welfare but it creates additional difficulties to measure inequality.
  5. On the other hand, the level of nominal wage rigidity, measured by the proportion of fixed nominal wages between two consecutive months was augmented from 24.8 in 1991 to 32.25 in 1995 (Table 8.1). In this sense, inflation greased the wheels of the labour market, in the sense that frequent (and costly) nominal adjustments induced by inflation did not allow real wages to depart too much from equilibrium values. In this sense, one consequence of stabilization was to swell the demand for labour reforms that would reinstate the level of wage flexibility lost.
  6. This income concept includes labour earnings, transfers, rents and interest rate payments.
  7. We use FGT poverty indices, using the degree of poverty aversion equal to 0, 1 and 2, that is  $P^0$ ,  $P^1$  and  $P^2$ , respectively. The general formula of the FGT index is given:

$$P^\alpha = \frac{1}{n} \sum_{i=1}^q \left( \frac{Z - Y_i}{Z} \right) \quad (1)$$

where

$n$  = number of individuals in the population,

$q$  = number of individuals below the poverty line

$Z$  = the poverty line

$Y_i$  = income of individual  $i$

$\alpha$  = degree of poverty aversion

8. PNAD/98 data will only be available at the beginning of 2000.
9. This sub-section summarizes the results found in Amadeo and Neri (1997).
10. A robustness analysis of the different coefficients found using alternative periods (1982-96 versus 1982-98), income concepts (individual versus family *per capita*), population concepts (all versus those with positive earnings) and inequality measures (Gini versus Theil-T) is presented in Table 8.15.
11. In the case of sector of activity and working class we used the universe of occupied individuals, instead of the economically active population.
12. One could explore a similar effect through the inflationary effects of the minimum wage, however Figure 8.3 shows that the pure correlation between inflation and the Gini is null.

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