Regional Inequality and Structural Changes

Lessons from the Brazilian Experience

Eduardo A. Haddad

REGIONAL INEQUALITY AND STRUCTURAL CHANGES

For my father

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Preface

The role of regions in the economic development process is gaining more attention in the last few years. Regional issues are being rediscovered by economists, especially those interested in international trade theory. Krugman (1991a) suggests that one of the best ways to understand how the international economy works is to start by looking at what happens *inside* nations. The location of production and consumption in space should not be ignored. As Frankel (1998) observes, most of international trade research in the past has ignored the geographic dimension. International trade models, whether empirical or theoretical, whether based on small-country or large-country assumptions, and whatever else their attributes, tended until recently to have one curious thing in common: they treated countries as disembodied entities that lacked a physical location in geographical space.

Recent changes in the world economy are having direct effects on the Latin American countries. Transformations induced by technological changes are responsible for a new world order, in which global competition plays a major role; the opening of markets is a process that is occurring in many countries in the region, and has brought about significant impacts on their productive structures. As these countries present internal heterogeneity in their resources allocation, these impacts are perceived differently across regions within these national economies.

The liberalization process of the 1990s in Latin America resulted in the increase and diversification of trade in the region. Brazil, as a major player, strengthened its insertion into the world economy through the adoption of strategies for opening up markets adopting new production technologies, complemented recently by the creation of a broadly-based stabilization plan. The latter plan has been a familiar strategy for Latin-American countries: it involves monetary and fiscal reforms, and privatization processes that stimulate private investment and inflow of foreign capital, spurred by interest rates that are more attractive than those of other international markets (Arocena, 1995).

In this context, issues related to structural changes in the economy, such as those involving the complexity of new international trading agreements (e.g. Mercosul, AFTA, WTO) and their impacts on the Brazilian economy, deserve special attention. Brazil's economy, like many developing countries, is not homogeneous internally, presenting strong variations across regions, sectors, and income groups. Consequently, macro policy

changes have differential regional impacts, as well as differential impacts on producers and consumers. Thus, as Higgins and Savoie (1995) argue, the designing of policies to assure good performance of national economies requires thorough understanding of the behavior of the regional economies of which they are composed, and formulating specific policies for each region on the basis of that understanding.

The discussion of regional and sectoral impacts of alternative strategies of regional development in the present macroeconomic context of the Brazilian economy has often lacked a formal analytical framework. Hence, if policy analysis is to be based on sound, consistent economic data, it is important that an analytical framework be developed to provide this capability. Accordingly, the primary analytical focus of this book is to build an interregional computable general equilibrium model (ICGE) for the Brazilian economy. The model is to be used to capture the role of interindustrial and interregional relations in the economic development process through the evaluation of the regional impact of different economic policies. The use of this modeling approach is very relevant to the Brazilian case as well as to the analysis of similar economic issues in other developing countries. Its ability to handle detail – both in terms of its disaggregation level and in terms of its theoretical specification – is useful for the analysis of the evolution of Brazil's productive structure. The choice of the policy simulations to be carried out is heavily motivated by both theoretical and historical relevance in the Brazilian case. Recent contributions to this debate, raised by Azzoni (1995, 1996) and Zini Jr. and Sachs (1996), on the pattern and direction of regional income convergence in Brazil in the new cycle of economic growth, are considered in the context of macroeconomic, sectoral and structural policies, and their differential impacts on the patterns of regional imbalances. The theoretical framework to support the analytical results is rooted in alternative theories used to explain regional inequalities in the economic development process.

Plan of the Book

The remainder of the book is organized as follows. Chapter 1 introduces a brief discussion of the dynamics of regional inequality, followed by an historical review on the process of spatial formation of the Brazilian economic territory. Attention is directed to three issues: the pattern

followed in the evolution of regional imbalances; social distributive dimensions of regional growth; and the spatial impacts of macroeconomic, structural and sectoral policies.

Chapter 2 discusses recent developments in the field of regional modeling, focusing on CGE models built for sub-national territories. Initially, a stylized interregional general equilibrium model of a private ownership economy is formally introduced. The purpose is to show the essential structure of an interregional bottom-up CGE model, from a theoretical perspective. Following that, some issues in regional and interregional modeling are analyzed, with emphasis on those related to CGE modeling, relevant to the Brazilian model.

The theoretical structure of the Brazilian Multisectoral And Regional/Interregional Analysis Model (B-MARIA) is presented in Chapter 3. The functioning mechanisms of the model are delineated and some of the contributions to regional modeling are highlighted. Technical details have been considered in such a way that the model can be adapted to a large group of developing economies.

Chapter 4 provides a comparative analysis of the economic structure of the regional setting adopted in the analysis. The interregional input-output table, especially built for the calibration of the model, is used, and traditional input-output methods are used in an attempt to uncover similarities and differences of the regional economies.

B-MARIA is used in Chapter 5[1] for supporting the discussion of alternative strategies of regional development in the present macroeconomic context of the Brazilian economy. Simulations are carried out in this part of the study, showing the regional impacts of different economic policies. Different instruments of public policy are used to demonstrate the flexibility of the model to give support to decision-makers in relation to strategies for the economic development of the country. Theoretical and historical relevance to the Brazilian case motivates the choice of policies to be analyzed. Attention is directed to three different issues: the effects of trade liberalization (tariff reductions), reductions in transportation costs reflecting changes in a specific component of the so called *Custo Brasil*

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[1] Chapter 5 is partly based on a paper that will appear in *Oxford Development Studies*, and another paper that was presented at the International Workshop on "Theories of Regional Development", in Uddevalla, Sweden, in June 1998, and will appear in a volume with the proceedings of the meeting.

(factor productivity growth in the transportation sector), and the regional impact of a development project (new investments in the automobile sector). A thorough discussion of the issues is added, emphasizing their significance to regional development in Brazil, in accordance with the theories considered in Chapter 1, and theoretical aspects of the fields of international trade, regional economics (location theory), and economic development (industrialization policies).

Finally, Chapter 6 presents the main conclusions of this book, as well as provides policy implications drawn from the study. The future agenda for research is also outlined in the last chapter; this agenda can eventually be extended to other developing countries.

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I am also grateful to Prof. Bill Williamson, who served as a member of my committee, and, although he began advising me after I was well into the research, gave me much insight, constructive criticism and guidance. James Dinsmoor, at the IADB, was not only my mentor at the Bank but also my friend, whose belief in my work gave me the confidence necessary to complete my Ph.D.

After receiving my Ph.D., I was engaged in post-doctoral research, from January to December 1998 at the University of Oxford. I would like to thank Prof. Leslie Bethell, Prof. Edmund Amann, and Prof. Bill MacMillan for their support.

In November 1998, in a meeting of the *Regional Science Association International* in Santa Fe, New Mexico, USA, Prof. Walter Isard easily persuaded me to try to publish my Ph.D. dissertation. I am very grateful for his encouragement and also his comments on an early draft of the dissertation.

Currently, back to Brazil, I have undertaken research and teaching duties at FIPE at the University of São Paulo. I would like to express my gratitude in particular to Professors Carlos Azzoni and Evaldo Comune for their advice and support.

Some other people deserve my gratitude: Prof. Joaquim Guilhoto, for invaluable assistance, who first stimulated me in the field of CGE modeling and kindly shared his research with me; Prof. Michael Sonis, who has greatly inspired and encouraged me with his vast knowledge; the staff at the Centre of Policy Studies and the IMPACT Project at the Monash University, Australia, especially Professors Matthew Peter, Ken Pearson, Peter Dixon and Brian Parmenter, who gave great support during my stay at that institution and, after I returned, provided the technical assistance to the development of B-MARIA; Prof. Eric McVittie, who read Chapter 2 and with whom I had insightful discussions on the research; and the staff and friends at REAL, the Department of Economics and the Department of Geography at UIUC, the CBS and FIPE.

Last but most importantly, I would like to acknowledge the wonderful support I received from my family. My father, to whom this book is dedicated, has always been the source of inspiration to my life, serving as a great role model for me. As an economics professor, I would like to thank him for his suggestions and constructive criticism on the argument and

1 Regional Development and Regional Inequality: An Overview of the Brazilian Economy

The present configuration of Brazil's economic space is heavily rooted in the development path followed by the country since colonial times. The uneven distribution of wealth in the Brazilian territory is characterized by a high concentration of resources in the Center-South portion of the country. In the classification adopted in B-MARIA, in which the regional setting consists of three different regions – North, Northeast, and Center-South (Rest of Brazil), the latter comprises the more dynamic regions of the Southeast and South, as well as the Center-West (Map 1.1).[1] This classification, heavily constrained by data availability, considers the Southeast, South and Center-West regions as a single region, precluding the analysis of each of these regions individually. However, the regional delimitation still offers a great range of analytical possibilities focusing on the less developed regions of the North and Northeast Brazil.

The degree of regional inequality in Brazil can be gauged from Table 1.1 below, which shows the proportion of the average per capita output of each region to the national average per capita output. While the Northeast presented, in 1994, an average per capita output 50% below of the national average, and the North reached only 68.0% of the national average, the other regions, especially the Southeast, showed indicators substantially above the national average.

These differences in regional wealth are accompanied by impressive differences in regional social indicators as well, which can be summarized by the *poverty incidence indicator* estimated by IPEA: in 1990, 40.9% of the population in the Northeast were considered to be indigent, in contrast to 13.9% in the North, 12.4% in the Southeast, 18.1% in the South, and 16.1% in the Center-West (Guimarães Neto, 1995).

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[1] In B-MARIA, the North includes the following states: Acre, Amazonas, Pará, Rondônia, Roraima, Amapá, Tocantins, and Mato Grosso.

Map 1.1   Regional Setting in B-MARIA
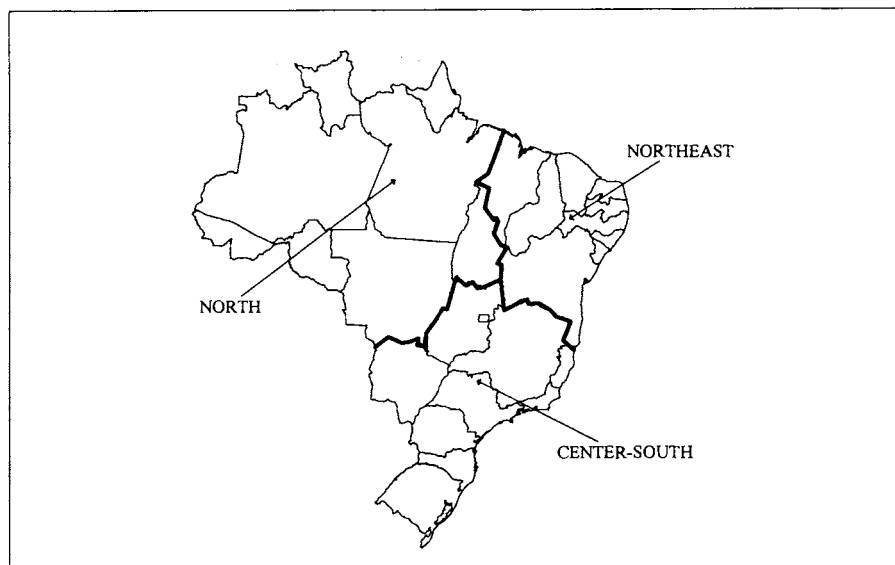
Table 1.1   GDP and GRP per capita: Brazil and Regions, 1994 (R$)

	GRP/GDP per capita	% of national
North	2299.94	68.0
Northeast	1635.13	48.4
Southeast	4490.83	132.9
South	3983.42	117.8
Center-West	3650.90	108.0
Brazil	3380.14	100.0

Source: IPEA/DIPES

A more recent study, commissioned by UNO, provides further insights into this issue. The estimates of the *Human Development Index* (HDI) for the Brazilian states and regions reveal other aspects of regional inequality in the country. The HDI[2] is a new way of measuring development which

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[2] The HDI is a composite of three basic components of human development: longevity, knowledge and standard of living. Longevity is measured by life expectancy. Knowledge is measured by a combination of adult literacy (two-third weight) and mean years of schooling (one-third weight). Standard of living is measured by purchasing power, based on real GDP per capita adjusted for the local cost of living (purchasing power parity, or PPP). The HDI

combines indicators of life expectancy, educational attainment and income. One way the use of the HDI has been improved is through disaggregation. Using disaggregated HDIs at the national and sub-national levels, for instance, helps highlighting the significant disparities and gaps among regions. Table 1.2 presents the HDI values for Brazil and its macro regions for the period 1970-1996, and Table 1.3 shows the progress of its dimensions over time.

Table 1.2   **Human Development Index:**
Brazil and Regions, 1970-1996

	1970	1980	1991	1996
North	0.425	0.595	0.676	0.727
Northeast	0.299	0.483	0.557	0.608
Southeast	0.620	0.795	0.832	0.857
South	0.553	0.789	0.834	0.860
Center-West	0.469	0.704	0.817	0.848
Brazil	0.494	0.734	0.787	0.830

Source: UNDP (1998)

Table 1.3   **Dimensions of the Human Development Index:**
Brazil and Regions, 1970/1996

	Life Expectancy		Education		Income	
	1970	1996	1970	1996	1970	1996
North	0.484	0.706	0.567	0.777	0.223	0.697
Northeast	0.323	0.658	0.433	0.714	0.142	0.452
Southeast	0.532	0.730	0.702	0.875	0.625	0.966
South	0.588	0.753	0.688	0.870	0.384	0.957
Center-West	0.516	0.726	0.614	0.860	0.277	0.959
Brazil	0.461	0.710	0.611	0.825	0.411	0.954

Source: UNDP (1998)

Throughout the period, it is clear that all the regions presented improvements in their HDI values. However, the relative situation did not change, with the North and Northeast regions showing performances

sets a minimum and a maximum for each dimension and then shows where each country or region stands in relation to these scales – expressed as a value between 0 and 1.

systematically below the national average. The analysis of the evolution of the dimensions of the HDI in the regions reveals an overall improvement. It is interesting to notice that the income component for the less developed regions (North and Northeast) more than tripled in the 1970-1996 period, but income continued to be the dimension with the greatest differential to the other regions. Nevertheless, the other two dimensions, life expectancy and education, which represents closely the human capital in the regions, still offers significant gaps among regions.

This chapter includes two other sections. The next section introduces a brief discussion of the dynamics of regional inequality, followed by an historical review of the process of spatial formation of the Brazilian economic territory.

Economic Development and Regional Inequality

Economic development is spatially unequal everywhere. At the national level, it is always possible to identify more developed and less developed regions. In general, almost all socio-economic indicators of development apply in the same direction; leading economic regions present higher standards of economic and human development.

The description of the patterns of regional inequality and the process of economic development has been the focus of attention of prominent economists (e.g. Myrdal, 1957; Hirschman, 1958; Williamson, 1965; Alonso, 1968; and more recently, Krugman, 1991b; and Barro and Sala-i-Martin, 1995). It is agreed that, at the early stages of the development process, growth is, in the geographical sense, necessarily unbalanced. Because of agglomeration externalities, there can be little doubt that an economy, to lift itself to higher income levels, must and will first develop within itself one or several regional centers of economic strength (Hirschman, 1958, p. 183). Historical evidence confirms these hypotheses, be it verified for developed or less developed countries (Williamson, 1965). In some cases, it dictates the directions of regional policies. For instance, the concept of growth poles (Perroux, 1955), worldwide utilized in the formulation of regional development projects, is based on the conflictive idea that the "cake" has to grow before it can be split.

In the analysis of regional disparities, it is usually assumed that the regional dualism is initially determined by geographical and historical *accidents*. Thus, the initial pattern of regional concentration encountered in different countries depends on particularly favorable natural conditions for

the economic activities concentrated in a given location which give the specific region competitive advantage at a certain period of time.

Myrdal (1957) and Hirschman (1958) were interested in the interregional interactions derived from the growth process in a region and their implication to national development. Once growth takes place in one locality, the interaction of two different forces will determine the movements of the national economy towards/against regional inequality. First, there will be a tendency towards inequality. Given the initial dualistic setting, expansion of the rich region increases inequality through migration, capital movements and trade. Selective migration takes place, draining skilled labor force from the poor regions; capital also tends to migrate to the growing regions, driven by higher rates of return connected to agglomeration economies; regional specialization in manufacturing goods in the expanding region, protected by tariff barriers, creates a deterioration of the terms of trade unfavorable to the peripheral area, generating recurrent interregional trade deficits.

These effects were called by Myrdal "backwash" effects, also characterized by Hirschman as "polarization" effects; they work in a cumulative way in a process of circular causation, and might be strengthened through the interplay of non-market forces as well. Actions by the government can also contribute towards regional inequality. If government policy is intended to maximize national growth, the regional allocation of public investments will be concentrated in the rapidly developing region, in order to meet the demands for public infrastructure by the private sector. In addition to direct investment in social overhead capital, the favored regions tend to benefit from implicit regional policies carried out by the central government.[3] This has been the case of protectionism policies that benefit the growing industrial regions, precluding the poor regions from the consumption of similar goods from abroad, at lower prices.

The second force has beneficial effects to the backward areas. The "spread" effects, also denominated "trickling-down" effects, operate as positive spillovers of the expansion from the centers of economic growth to the other regions. Regional integration might arise from the regional division of labor; as the peripheral regions supply the central regions with agricultural products and raw materials, conditions for growth start to be created in the former from the income generated in those sectors. Thus, the spread effects from a center of industrial expansion to the other localities

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[3] These are essentially macroeconomic or sectoral development policies whose differential regional effects depend on the regional economies' structures under consideration.

and regions, operating through increased demands for their products and in many other ways, weave themselves into the cumulating social process by circular causation in the same fashion as the backwash effects, in opposition to which they set up countervailing changes (Myrdal, 1957, pp. 43-44).

However, more important as a growth stimulator in the less developed regions is the action taken by the government. The trickling-down effects generated by market forces are very unlikely to overtake the polarization effects in the early stages of the development process. The lack of economic infrastructure that facilitates the flows of goods, such as transportation and communications, represents an obstacle for the operation of the forces for the centrifugal spread of economic expansion in developing countries. Free play of market forces in those countries, thus, has an inherent tendency to create regional inequalities. In this case, deliberate economic policy comes into play to correct this situation. The interference by the state, in order to reverse regional inequality, takes the form of provision of social overhead capital for the physical integration of the regional markets, tax incentives, and, in some cases, direct investments in productive plants.

The interaction of the adverse and favorable direct economic repercussions from the rich regions to the poor ones will determine the direction of regional inequality in the national economy. Empirically, Williamson (1965) did not reject the long-run hypothesis that the early stages of national development generate increasing income differentials, as the spread effects are very weak. Somewhere during the course of development, as the forces for the centrifugal spread are strengthened due to improved transportation and communication systems, and higher levels of education, for instance, the disequilibrating tendencies diminish, causing a reversal in the pattern of interregional inequality. Thus, instead of divergence in interregional levels of development, convergence becomes the rule, with the backward regions closing the development gap between themselves and the already industrialized areas.

As far as the effects of business cycles are considered, industrialized regions are more affected by changes in the path of economic growth, i.e., boom periods are led by the dynamic sectors in those regions, which are also more intensively affected by recession periods. If during a boom period the relative strength of the spread effects increases, the emergence of the depression period drives regional inequality down, as the poor regions are less susceptible to the cyclical changes and have received stimuli to grow in the previous period. Even though depression decreases

the strength of the spread effects, its pervasive effects are felt less intensively by the lagging regions, which benefit from a less integrated economic structure. This fact suggests a cyclical pattern of regional concentration, with short run implications, where the differential behavior of the regions lies on the differential intensity of the expansion/depression phases on those economies.[4]

The circularity story was recently reinforced by Krugman (1991b), embodied in a simple yet rigorous model. More important than providing new ideas to the debate on the emergence of regional inequalities, his work brought up the attention of mainstream economics to issues neglected for a long time, with some exceptions, by the profession.[5]

Finally, the subject of regional inequalities has returned to the stage under the impact of the New Growth Theory. The incorporation of growth-determining factors endogenous to the regions (e.g. human capital, information, R & D, institutions) helps to explain the pattern of regional growth, emphasizing the role of such non-traditional locational factors in determining differential regional growth. Economic growth is not constrained by decreasing returns to capital and, therefore, there is a possibility for regional inequality to increase over time. Using this framework, many country studies proliferated in the last years trying to analyze the problem of convergence and divergence of regional income levels over time. The results challenge the traditional inverted U-shaped hypothesis, showing that regional disparities have increased in mature economies (e.g. Amos, 1989; Barro and Sala-i-Martin, 1995). Studies for the Brazilian economy (Azzoni, 1995; Zini Jr. and Sachs, 1996) point to a recent convergence of regional income without any reliable indication of its future trend. In the next section, the path of regional inequality in Brazil is examined in the light of historical developments and the theoretical background outlined above.

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[4] See, for instance, Guimarães Neto (1996) for empirical evidence in the Brazilian case. The study shows that, up to the 1980s, whenever the Brazilian economy experienced rapid growth, the Northeast followed the increasing trend, but at a slower pace, increasing regional imbalances; in recession periods, the adverse effects were felt less intensively by the Northeastern economy.

[5] In general, the rediscovery of the spatial dimension by economists has greatly ignored the work developed in the field of Regional Science. Some of the contributions of researchers in the field are documented in Malecki (1991) and Higgins and Savoie (1995); other sources of information are the specialized academic journals.

Regional Inequality in Brazil

The process of spatial formation of the Brazilian economic territory can be divided into four different stages. First, as early as the colonial times until the first decades of the twentieth century, development was based on the external linkages of the regional economies through international trade. Before the sources of economic growth became internalized with the industrialization process, economic growth was induced by exports of primary products. Regional growth was constrained by the availability of export commodities. Internal linkage effects would not expand further than the surroundings of the production and commercialization geographical centers.

At that time, the pattern of regional concentration was determined by the location of primarily export-oriented products, in these regions. Alternate growth cycles benefited the regions where the production of export commodities took place; they included the sugar cycle in the Northeast, the gold and the coffee cycles in the Center-South, and the rubber boom in the North. However, the historic shifting of favored economic regions came to an end in the early years of the twentieth century, when the emerging industrial sector in the Center-South of the country established its position as the leading region of Brazil's economy (Baer, 1995).

In general, it is assumed that geographical and historical facts determine the initial concentration pattern in a country. In the case of Brazil, it can be argued that the facts determining the North-South dualism took place in the late nineteenth century. As Denslow (1978) observes, the economic differences between the Northeast and South of Brazil could not be easily perceived in the 1870s. At that time, the economy of the Northeast was heavily based on the exports of sugar and cotton, while the South depended on its coffee exports. Export revenues in both regions were very similar.

In an open economy depending on external linkages derived from trade of a few primary products, as was the case of Brazil in the last century, external exogenous shocks dictated the trends of national growth. At the regional level, the export composition, or more precisely, the leading regional export products – sugar and cotton, in the Northeast, and coffee, in the South – were strongly subject to the fluctuations in the international markets. In addition, supply-side considerations were somehow important to determine the spurt in coffee exports *vis-à-vis* the relative stagnation of the Northeastern exports.

From 1840 to 1910, coffee demand increased by an average of almost 5% per year. Increases in demand for coffee in the last half of the last century and the first decade of this century were accompanied by supply responses from Southern producers. British investments in infrastructure, the better human capital of the European immigrants, and the technological progress in the sector established Brazil as the main world supplier of coffee. The weight of coffee in the country's exports increased dramatically bringing prosperity to the producing region; the incoming revenue was decisive in speeding development and finance industrialization in the region. Moreover, trade policies carried out in the last years of the nineteenth century included a serie of currency devaluation and tariff protection, benefiting coffee exporters and the incipient manufacturing sector in the São Paulo area (see Baer, 1965).

On the other hand, the development in the Northeast lagged behind in that period. Sugar production faced competition of substitutes (sugar beets) and, more strongly, competition of Caribbean cane sugar, that took over the U.S. market. Regional production, hampered also by the decrease in international prices, did not follow the new technological developments of the sector, resulting in declining shares in international markets; sales shifted towards national markets in the South. World demand for cotton almost stagnated in the last decades of the nineteenth century, and the producers in the South of the United States, with better technology and lower internal transportation costs, dominated the main markets in Britain. The production of the Northeast shifted towards the markets of the South, where a protected textile industry emerged. By the turn of the century, internal trade became an important component in the uphold of the productive structure of the Northeast.

In the first decades of the twentieth century, regional dualism was already established in the Brazilian economy. Estimates from the *Inquérito Industrial*, for the year 1907, show that the Southeast accounted for 58.2% of the total industrial output; the Northeast had a share of 16.7%, and the North 4.3%. In 1900, the population shares for the Southeast, Northeast, and North were, respectively, 44.5%, 39.0%, and 4.0%.

The second stage in the process of spatial economic formation in Brazil is characterized by an increasing share of the industrial sector in the GDP. Industry became the leading growth sector, bringing about important structural changes in the economy. However, the Southeast was the main beneficiary from the industrialization process, which contributed to a higher degree of regional concentration. This is a transitional period in which the economy, primarily agricultural and based on the coffee sector,

with a relatively high degree of free trade, embarked on a path of inward-oriented growth, with a rigid control of the external transactions. Until the 1930s, agriculture was still the leading sector of the economy, presenting higher rates of growth. Spurts of industrial growth were common in the three decades preceding World War II; by the early 1930s, the industrial sector already presented consistent higher rates of growth, leading the national economic development.

Regional equity was not part of the country's development agenda, and central government policies contributed to worsen regional imbalances. In the 1920s, the formulation of coffee support policies, whose main beneficiaries were the producing regions of the South, represented one of the main government actions. In one of the first attempts at planning in Brazil, in 1942-43, the Cooke Mission provided the first analysis, for policy purposes, of the Brazilian economy from a regional point of view. Efforts should be concentrated in the South, so that spread effects would operate towards the other regions (Baer, 1965, 1995). That seems to agree with the implicit beliefs of policy-makers in the import substitution industrialization era.

When import substitution industrialization expanded, especially in the post World War II period, the regional distribution of income in the country became more concentrated. In the 1950s, the focus of attention of the central government was the development of the industrial sector in the Center-South in order to solve balance-of-payments problems and promote an industrial complex. It harmed the less developed regions of the country, which subsidized somehow the industrialization process. By facing protection walls, these regions were constrained to the consumption of the more expensive manufactures produced in the South. In the case of the Northeast, which continued to depend on its exports of primary products to generate foreign trade surplus, an artificial deterioration of its terms of trade was imposed by its interactions with the Center-South, characterizing an income transfer towards the latter (see Furtado, 1963, and Baer, 1965, 1995).

Efficiency concerns were translated into government actions in the period. For instance, the main goal of the *Plano de Metas* (1956-60) was to increase the rate of industrialization of the country, and it did not contain any explicit regional concern. The net result was to accentuate the regional concentration of the economic activities in the Southeast (Maimon *et al.*, 1977). The country grew at high rates in the period, providing an example in which the choice of investment in the leading sector of the economy, i.e. the choice of maximizing national development, may tend to increase still

further the degree of regional inequality. By the end of the 1950s, regional disparities reached a critical level, calling the attention of the government to the less favored regions, especially to the Northeast. In 1960, the Southeast's share in the national population was 43.7%, and its share in the national income 62.8%; Northeast's share in the national income was only 14.8%, with 31.7% of the Brazilian population living in the region.

The period from the early 1960s to the 1980s represents the third stage of the economic spatial formation of Brazil. The explicit concern of public authorities with regional imbalances was manifested in actions such as direct investments in regional development projects and tax incentives in the poorer regions of the country. These efforts helped to reverse the regional concentration trend, promoting more development in the North, Northeast and Center-West.

Before 1960, the economic base of the North relied only on rubber production as the source of external linkages. The rubber boom in the last decades of the nineteenth century gave some push to the development of the Amazon region. However, international competition resulted in the loss of almost its entire share of the world market. Since then, regional production, lagged technologically and locationally, survived from the low revenues from its rubber exports. In the 1960s, motivated by the appropriation and access to natural resources, and the occupation of the territory, public authorities began to give more attention to the region. Federal government intervention in the 1970s, in the form of tax and financial incentives to the private sector, public investments in infrastructure (especially roads connecting the region with the rest of the country), and direct investments of state enterprises, was crucial to the development of dynamic spaces in the region. Even though environment degradation and income distribution worsening accompanied the regional economic growth, the issue of regional equity achieved positive results. The regional share in the national GDP increased from 2.16% in 1970, to 4.36% in 1985. In the same period, population share moved from 3.87% to 5.54%; GDP per capita grew from 44.7% of national average, to 73.64%.

Azzoni (1995) shows that the states of the North and Northeast experienced increasing differentiation in terms of per capita income in the last decades. In the case of Brazil's North, growth in the region was eminently uneven across space. Three dynamic areas, which benefited directly from government intervention, can be identified (Buarque *et al.*, 1995). First, the western agricultural pole in Rondônia, an area characterized by a recent population settlement whose production is oriented to the regional and national markets, became viable after the

access to the cheap lands was facilitated by public investments in infrastructure in the region, especially in roads. Second, following the basic orientations of the regional policies to the Amazon region in the late 1960s, which determined the creation of development poles and the establishment of population settlements in the region, a free trade zone was created in Manaus. The industrial sector benefited from huge tax incentives and was responsible for a spectacular growth in the 1970s and 1980s. Today, the *Zona Franca de Manaus*, as it is known, presents an industrial profile heavily concentrated in the electric and electronic sectors oriented to the domestic markets outside the region, especially to the Southeast. Finally, the third dynamic area in the region is located in the state of Pará. Even though the state has a mixed economy, with relatively strong agricultural and industrial sectors, the mining-metal complex of Carajás represents its most dynamic center. The existence of natural resources in the region, valuable in international markets, attracted heavy government investments in infrastructure, in a first stage, and, later, direct investments by public enterprises in the development of an economic complex which induced growth in the region. These three areas were the main sources of economic growth in the North in the 1970s and 1980s, and in the case of Carajás and Manaus, structural changes accompanied growth, in that the share of the industrial sector in the North's GRP increased from 15.1%, in 1970, to 39.8%, in 1985.

In the Northeast, government intervention contributed to growth by providing the region with artificial locational advantages in the form of tax and financial incentives. Direct investments of state enterprises also were carried out in the region, especially in intermediary goods (petroleum refining and chemicals).

Segmented regional spaces also appeared in the region, strengthening the dual character of the economy; areas of intense modernization coexist with traditional economic structures, reluctant to technical changes. On one hand, the Northeast encompasses dynamic regional poles developed from private investments reinforced by government incentives, as well as from government investments; they include the petrochemical complex of Camaçari, the textile and clothing pole in Fortaleza, the mining-metal complex of Carajás, in Maranhão, which also encompasses part of the Brazil's North, and scattered areas of modern agriculture. On the other hand, the sugar cane and cocoa plantations represent areas resistant to changes, incorporating traditional methods of land cultivation with low standards of productivity (Araújo, 1995).

It is important to point out that the redistributive role the government played through the federal fiscal system was a common practice in the 1970s and 1980s. As is apparent from Tables 1.4 and 1.5 below, the regional shares of the central government revenues in the poorer regions were recurrently smaller than the shares of central government expenditures in those regions. These figures suggest an effective redistribution of public funds to the North and Northeast over the period.

Table 1.4   Brazil: Regional Shares of Central Government Revenues

	1970	1975	1980	1985	1991
North	1.4	1.5	1.7	2.2	2.3
Northeast	10.0	8.2	7.2	8.3	9.9
Center-South	88.6	90.3	91.1	89.5	87.8

Source: SUDENE, Boletim Conjuntural, August 1996, p. 397

Table 1.5   Brazil: Regional Shares of Central Government Expenditures

	1970	1975	1980	1985	1991
North	3.2	2.5	3.0	3.5	3.6
Northeast	13.4	10.9	10.3	10.4	11.2
Center-South	83.4	86.6	86.7	86.1	85.2

Source: SUDENE, Boletim Conjuntural, August 1996, p. 400

The pioneering efforts by Rolim *et al.* (1996) provide a more complete interpretative scheme on interregional flows in Brazil, based on available statistics on trade balance, government accounts, investments by the public sector, and savings. The preliminary results for 1985 are summarized in Table 1.6, and reinforce the character of interregional government transfers suggested above. Even though the analysis covers only one year, it can give a rough idea on how interregional flows were oriented in the years preceding 1985. The repeated pattern of government fiscal transfers depicted in Tables 1.4 and 1.5, together with the estimates of interregional and international trade balances for the Northeast and North in the same period, support the following generalization of the results presented in

Table 1.6.[6] The North and Northeast presented trade deficits recurrently over the period. In the case of the Northeast, the perennial interregional trade deficits were partially compensated by international trade surpluses, indicating a transfer of foreign exchange earnings to other regions of the country. The continual overall interregional trade deficits of these two regions had to be financed by public and/or private savings, so that the conditions for macroeconomic balance were met.[7]

The conjecture, taking 1985 as a typical year, is that the transfers of federal resources to the Northeast, for instance, had to be greater than the trade gaps in order to compensate the interregional flows of private capital oriented towards other regions. Even though the figures show a net outflow of private capital from the Center-South, less aggregated figures, for 1985, show a tendency of net private capital gains to the states of São Paulo and Rio de Janeiro, as well as the Center-West. The orientation of public capital to the less developed regions has often been offset by the flight of private capitals. Rolim *et al.* (1996) argue that this represents the synthesis of bad allocation of government funds from the point of view of an efficient regional policy. However, it might be argued, based on the previous discussion, that government transfers to the North and Northeast, during the 1970s and early 1980s were necessary to build the social overhead capital in those regions in order to strengthen the potential spread effects from the Center-South and create self-reinforcing mechanisms in the regions to generate their own sustainable growth. In other words, government transfers might have achieved a greater relevance in the less developed regions by creating the necessary infrastructure to foster development and attract, in a second moment, private investments to directly productive activities. This hypothesis would be better tested by looking at estimates of investments in the region; if it is somehow relevant, the relation between the share of public investments in the target region to the share of public investments in the country should show an increasing trend during the 1970s with an inflection point after the necessary time for

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[6] The Northeast presented a recurrent surplus in the international trade balance in the period: 1970 (US$229 M); 1975 (US$796 M); 1980 (US$707 M); 1985 (US$1,692 M). In the same period, the North achieved repeated deficits: 1970 (-US$27 M); 1975 (-US$173 M); 1980 (-US$312 M); 1985 (-US$55 M). Even though estimates for interregional trade flows are not systematically available, it is acknowledged that the Northeast presents historically deficits in relation to the rest of the country (Araújo, 1995).

[7] This condition establishes that income inflows should equal outflows, in equilibrium. Thus, if a region presents trade deficit with the rest of the country and the rest of the world, in equilibrium, it has to be compensated by net inflows of resources from government expenditures and/or private investments (see Rolim *et al.*, 1996).

the economic infrastructure to have matured. From the estimates for the Northeast, however, an increasing path in the share of public investment in the region, compared to the national average, is apparent from 1973 to 1989 (Figure 1.1). Even though there seems to be a declining tendency towards the national average in the first years of the1990s, empirical evidence to support the conjecture on the existence of a change in gears is very weak.

**Table 1.6   Interregional Flows by Regions, 1985
            (in Cr$ billions)**

	North	Northeast	Center-South
1. Interregional trade balance	-2016	-13071	15088
2. International trade balance	-207	4383	56573
3. Government current account balance	4208	13651	-117273
4. Government capital account balance	2269	16874	80470
5. Allocation of government resources (3+4)	6477	30525	-36803
6. Private capital flows (1+2+5)	4254	21873	34898

Source: Rolim *et al.* (1996)

Hence, in the three first stages identified here, there was clearly a pattern delineated, initially, by increasing spatial concentration, followed by a reversion in this tendency in the last decades, as can be seen from Figure 1.2. It should be mentioned, however, that the decrease in regional inequality has been accompanied by a remarkable increase in the concentration of both intraregional and personal income distribution in those regions, in the same period (Azzoni, 1995 and 1996).

Finally, the fourth stage encompasses deep structural changes in the Brazilian economy. After 1988, with the *new* Constitution, the central government was hampered by a profound loss in its revenues to the state and municipal governments. Nevertheless, the fiscal crisis reached all levels of government, decreasing their financial capability for carrying out new investment ventures. The lack of investment in economic infrastructure increased the average cost of production; producers were facing increasing costs due to the inefficient mechanisms of trade and transportation, which lagged technologically. A new paradigm of development had to be defined, in the context of increasing globalization, high rates of inflation in the country, and the fiscal crisis of the State. In 1994, the Brazilian government introduced a so-far successful stabilization

program in order to stop inflation. This action, together with trade liberalization measures introduced since the early 1990s, made the country more attractive to foreign investments again. Direct investments in high linkage industries, such as the automobile sector, increased in the last years. Brazil is now going through a new expansion cycle, whose directions should be analyzed carefully.
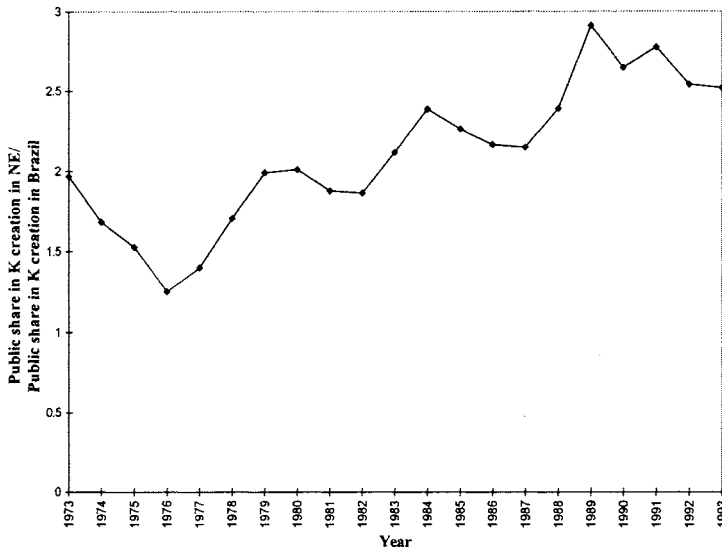
Source: SUDENE, Agregados Econômicos Regionais, 1996 and FIBGE, Anuário Estatístico, several years.

Figure 1.1   Northeast: Ratio of the Public Share in Regional Investment to the Public Share in National Investment for Capital Creation: 1973-1993

Estimates of regional shares in the GDP for the period 1985-1994 show an unchanged picture in the decade. North's share oscillated slightly around its average 4.75%, the same occurring to the Northeast (average of 14.10%) and the Center-South (81.15%) [Table 1.7].[8] Regional inequality, as measured by the Williamson's coefficient, also presented a stable behavior (Figure 1.2).

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[8] Disaggregated estimates for the Center-South show that there was a gain of approximately 2% for the Center-West, in the period, in the same proportions of the loss of the Southeast (Lavinas *et al.*, 1997).

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