

**NATIONAL URBANIZATION STRATEGIES  
AND URBAN POVERTY IN BRAZIL:  
AN ANALYSIS OF VARIATIONS  
IN THE URBAN HIERARCHY**

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**Background to Recent Urban Policy Initiatives in Brazil**

In 1964, the populist coalition led by President Goulart was replaced by a diverse group which included military officers, conservative domestic industrialists, and technocrats. More than just a manifestation of elites for a more centralized form of state organization, the coalition led by Castello Branco installed an authoritarian/bureaucratic regime based on a corporatist view of political control. Corporatism in its classic manifestation is based on the theory that the political community is formed of a number of diverse economic and functional groups from which it follows that the representation of the individual citizen or his participation in government should be based not on the territorial location of his home but on the functional group of which, by job or profession, he is a member [3].

Goulart's government had been incapable of producing a clear and coherent political program. Included in his coalition were labourers, socialists, social democrats, and liberals [2]. The resulting mixture of philosophies impeded the development of practical and workable policies [15]. In truth, it was an overabundance of social demands on the government and the incapacity of existing policies and institutions to deal with them that led to the coup d'état against the Goulart government.

From an economic perspective, one of the main causes was the net decline in gross national product in 1963. By this time it be-

came clear that the import substitution model had failed, and in order to deal with the loss of income related to the decline in exports and the increase in imports of capital goods, as well as the pressure emanating from the rural and urban sectors for a better standard of living, the federal government was forced to resort to deficit financing [1]. The result was that inflation rose to 140 percent in the quarter prior to the coup. Furthermore, the Goulart government was incapable of attracting investment and thus reviving industrial development. One of the main objectives of the new regime headed by General Castello Branco was the systematic attempt to mobilize the key factors of production, labour and capital, and thus re-establish the basic conditions for the advance of capitalism in the context of a reactivation of the economy, as well as for the exclusion of certain sectors from the political decision-making process [5]. Economically, the strategy had as an objective a reorientation of the income and wealth distribution so as to favour capital formation and to encourage the consumption of durable goods. Implicit in this strategy was reduction in real terms in the level of salaries (even with the growth of productivity) as well as incentives for the increase in exports so as to relieve the balance of payments pressures [1:22].

These policies were developed from what has already been termed a corporatist perspective which favoured the representatives of capital over those of labour. Recent commentators have called this corporatist alliance the *tripe* or three legs because it included as its core three dominant institutions: the military, the technocrats, and foreign multinationals [14]. In line with this strategy, parliamentary institutions were largely suspended, although the forms were maintained [11]. With the resulting transfer of power from the democratic institutions to the bureaucratic technocrats, the normal political dialogue was completely subordinated to the needs of an efficient public administration [6].

#### Urban Policy from a Corporatist Perspective

Urban policy viewed from the corporatist perspective of the regime which took power in 1964 can be seen as a mechanism for the provision of certain public goods. Since public goods are distinguished by the twin characteristics of their public character and their indivisibility, the role of the state in providing them is seen as being paramount [7:4]. From this perspective, urban policy can be seen as having two quite different impacts; i.e., on production and on consumption.

From a productive standpoint, the corporatist view of government emphasizes the importance of generating the capital neces-

sary for the expansion of the capitalist economy. In this sense, urban policy is seen as a means of developing the productive capacity of the state [8]. Ultimately this objective was to be achieved by concrete means such as the creation of urban infrastructure, housing, industrial districts, and even state firms. Subsidies and incentives to firms in the private sector were also to be encouraged. These types of policies were seen not only as creating additional employment but also as a means of reducing costs to firms in the private sector [8:10].

From a consumption perspective, urban policy furnishes the capital necessary for the construction and maintenance of public goods. It is widely accepted that because these goods are not the source of private profit they will not be provided by the private sector; yet they are required by the private sector to maintain a capitalist state [12].

In very general terms, these were the ideological bases of the urban policy which was developed subsequent to the revolution of 1964. We can in turn distinguish two phases in the implementation of this general policy. The first phase (1964-1974) was characterized by concerted attempts to subordinate all economic and social questions to the accumulation of capital in certain key urban sectors. The second phase was characterized by policies which were an attempt to overcome spatial disparities through the creation of a number of newly created agencies. It was at this time that the National Commission for Urban Development (CNDU) was formed. We turn now to the policies initiatives of this first stage and examine the spatial effects of this development approach.

#### Sectoral Development and Urban Growth in Brazil

The development policies which characterized the first phase served to encourage a trend that had already become evident; i.e., the concentration of urban population in the larger metropolitan regions. An examination of Table 1 clearly indicates that the relative growth of Brazilian metropolitan areas was under way in the period 1950-1970, with five of the nine metropolitan areas already accounting for 20 percent of their state's population. By 1980 the number had increased to six. Overall in 1980 nearly 30 percent of Brazil's population was concentrated in the nine metropolitan areas. Although not as high as many developing countries with high levels of primacy, 30 percent nevertheless represented a doubling from the 1950 figure. This increased concentration was clearly abetted by the urban bias that permeated the policies of the newly installed regime.

**Table 1**  
**PERCENTAGE OF STATE POPULATION RESIDING**  
**IN METROPOLITAN AREAS: 1950-1980**

Metropolitan Area	1950	1970	1980
Belem, Para	25.1	31.7	29.3
Fortaleza, Ceara	14.8	23.8	29.8
Recife, Pernambuco	23.1	34.7	38.1
Salvador, Bahia	8.6	15.3	18.6
Belo Horizonte, Minas Gerais	6.2	14.0	18.9
Rio de Janeiro, R.J.	70.3	80.0	79.8
Sao Paulo, S.P.	28.8	26.0	50.2
Curitiba, Parana	14.5	11.8	18.9
Porto Alegre, Rio Grande do Sul	14.6	22.9	28.7
Brazil	17.6	26.1	29.0

Source: Censo Demografico do Brasil, 1950, 1970, 1980.

Although only a partial indication, the Banco Nacional de Habitacao (BNH) or National Housing Bank, one of the major instruments created by the government to promote the creation of urban infrastructure, has released figures which clearly indicate the high degree of spatial concentration of its investments (Table 2). The BNH is responsible not only for investments in housing but also for the development of transportation, water, and sanitation systems, and general urban development. Of the total amount invested by the BNH in water and sanitation systems during this period, nearly 85 percent went to the metropolitan regions; 46 percent of the total invested went to Sao Paulo alone, the other eight metropolitan areas dividing up the remaining 39 percent.

A similar story is reflected in the figures provided by the Banco do Brasil, the major provider of domestic industrial development financing (Table 3). Metropolitan regions received 48.1 percent of the total which was invested between 1972-1975, and again Sao Paulo received the major share, or 22.5 percent. This highly concentrated form of investment helps to explain why Sao Paulo's rate of growth has been so rapid, accounting as it does for 17 percent of the total national population growth and fully 45 percent of the nation's net migration [9].

The pattern of investment described above is not without its consequences. One of the most serious aspects of the problems faced by Brazilian cities is the widespread prevalence of poverty. According to World Bank guidelines, which define poverty as an income which is less than one third of the national per capita income, a large percentage of wage earners in Brazil fall into that

**Table 2**  
**PERCENTAGE DISTRIBUTION OF INVESTMENTS**  
**BY THE NATIONAL HOUSING BANK (BNH)**  
**BY METROPOLITAN AREA AND TYPE:**  
**1972-1976**

Metropolitan Area	Urban Development	Transport	Water Sanitation	Housing
Belem			.08	2.8
Fortaleza	.8		.5	2.3
Recife	5.1		8.1	6.7
Salvador	5.4		10.4	3.4
Belo Horizonte	3.3		5.5	2.5
Rio de Janeiro	10.7	47.0	4.9	12.5
Sao Paulo	25.4	53.0	46.0	.5
Curitiba	.3		4.6	3.7
Porto Alegre	.4		4.9	6.6
Metropolitan Regions	51.4	100.0	84.9	41.0
Brazil	100.0	100.0	100.0	100.0

Source: Banco Nacional Desenvolvimento, 1972-1976.

**Table 3**  
**PERCENTAGE DISTRIBUTION OF INDUSTRIAL**  
**INVESTMENTS BY THE BANCO DO BRASIL, 1972-75**  
**(average annual percentage)**

Metropolitan Area	Percentage of National Total	Percentage of State Total
Belem	.59	75.00
Fortaleza	1.82	57.39
Recife	9.20	92.09
Salvador	1.48	64.42
Belo Horizonte	2.44	41.81
Rio de Janeiro	6.29	64.83
Sao Paulo	22.52	59.34
Curitiba	1.02	27.68
Porto Alegre	2.69	38.07
Metropolitan Areas	48.10	
Brazil	100.0	

Source: Banco do Brasil.

category. Scattered information gleaned from a variety of sources indicates that the percentage of families living in absolute poverty ranged from 55 percent in southern cities (e.g., Curitiba) to 77 percent in Recife in the northeast. The same pattern is also observable in the smaller urban areas, with the percentage of families living in poverty ranging from 38 percent in Florianopolis to as high as 70 percent in Natal. The preliminary results available from the 1980 census do not show any improvement in the situation. If anything there has been a deterioration if the income distribution data are taken into account [9:22]. According to Table 4, the share of income going to the top decile of the population has increased to over 50 percent, while the proportion going to the lowest quintile has decreased. These are disappointing statistics for anyone who had expected an improvement, but to be expected given the thrust of the government's policy. In the next section, we will examine in a systematic way the variations in the income distribution as it relates to the varying levels of the Brazilian urban hierarchy. An examination of income distribution data is deemed important because this ultimately is the form in which development policies impact on the population of a country. In Brazil the overall income distribution, as we have seen, has progressively deteriorated, but no one has yet examined what the impact of this process has been on the settlement system. The hypothesis being investigated here is that the pattern of income distribution will be related to the pattern of investment or resource allocation alluded to in the previous section.

Table 4  
INCOME DISTRIBUTION BY CENSUS YEAR: BRAZIL

Income Class	1960	1970	1980
Twenty Percent Poorest	3.9	3.4	2.8
Fifty Percent Poorest	17.4	14.9	12.6
Ten Percent Richest	39.6	46.7	50.9
Five Percent Richest	28.3	34.1	37.9
One Percent Richest	11.9	14.7	16.9

Source: [9].

### The Need for a Comparative Framework

In Brazil information on socio-spatial systems is available in increasing quantity and detail for specific places and populations; thus it is possible to examine the impacts of an urban policy — a possibility not often available in a Third World context. More specifically, the income distribution characteristics of three categories of spatial units will be analysed using preliminary census information available from the 1980 census. Included are the nine metropolitan areas, twenty-two middle-sized cities, and a sample of microregions, which in the Brazilian Census approximate what we would refer to as homogeneous nodal regions having some lower order city as their focus.

The Brazilian Census provides income distribution data, which is the monthly average gross income obtained in a person's usual employment for the month of August, 1980. In the case of persons who did not work in August the figure reported was for the last month in which the individual worked. In the case of variable monthly income, the figure used was the average income earned over the last twelve months.

Since the data reported are preliminary, not all cities were reported. Included in this analysis were the nine metropolitan areas, twenty-two middle-sized cities, and forty-five microregions drawn from all parts of the country. Table 5 describes the distribution of these units by the major regions of Brazil recognized by IBGE, the Brazilian statistical agency.

One of the most important uses for this income distribution data is the monitoring of information flows and the exploration of data sources to identify existing problems. This diagnostic activity requires comparison of observations with expectations based on some standard or benchmark, which for the purpose of this analysis is the country as a whole. Data analysis in this context leads to descriptive statements that identify the nature of the differences that exist; hence similarities and differences are noted and examined in an attempt to achieve greater clarity and specificity about the variation of the income distribution in the Brazilian hierarchy. A major objective of this type of analysis is therefore the comparison of patterns for the specific cities under consideration against the national pattern.

The framework for analysis which is proposed is drawn from Tukey, a statistician, who has long emphasized the need for exploratory rather than confirmatory analyses [17]. Tukey has proposed that this type of analysis be guided by a reasonable hypothesis which provides an initial basis for summary comparisons and that the framework permit detailed exploration of the data from different perspectives to ensure that the information is

in the data and not in the technique or particular configuration of the analysis.

Table 5  
DISTRIBUTION OF CITY TYPES BY MAJOR REGION

Regions		Metropolitan Areas	Micro-regions	Middle-Size Cities	Total
Central West	Frequency	0	7	3	10
	Percent	0.00	7.37	3.16	10.53
	Row Percent	0.00	70.00	30.00	
	Col. Percent	0.00	10.94	13.64	
North	Frequency	1	7	5	13
	Percent	1.05	7.37	5.26	13.68
	Row Percent	7.69	53.85	38.46	
	Col. Percent	11.11	10.94	22.73	
Northeast	Frequency	3	19	6	28
	Percent	3.16	20.00	6.32	29.47
	Row Percent	10.71	67.86	21.43	
	Col. Percent	33.33	29.69	27.27	
South	Frequency	2	12	2	16
	Percent	2.11	12.63	2.11	16.84
	Row Percent	12.50	75.00	12.50	
	Col. Percent	22.22	18.75	9.09	
Southeast	Frequency	3	19	6	28
	Percent	3.16	20.00	6.32	29.47
	Row Percent	10.71	67.86	21.43	
	Col. Percent	33.33	29.69	27.27	
Total	Frequency	9	64	22	95
	Percent	9.47	67.37	23.16	100.00

The analysis was developed on a TRS-80 microcomputer, since this technology, even in developing countries, is an increasingly available and affordable option. This allows for the replication of this study in developing countries utilizing a readily available and affordable option. Furthermore, the analysis is relatively simple and makes no demands for specialized statistical skills. It is also possible to use computer graphics and thus enhance the system's ability to communicate information to the non-specialist.

The starting point for the analysis is a simple display of the raw data in a cross-classification table or matrix. This Basic Data Matrix is organized so that the geographic subdivisions of analysis are arrayed as rows in the matrix and the variables as columns in the matrix. The marginal row and column contain the respective column and row total counts. These counts are used as the

basis for calculating relative frequencies. Figure 1 provides an overview of the various types of information matrices which are included in the system. In the discussions that follow the numbers in parentheses refer to the individual matrices depicted in Figure 1.

The joint probability of observing that an individual family is in a given income class and that he lives in a particular city is given by dividing the appropriate entity in the table by the total number of entities in the area. In other words, the Joint Probability Matrix is generated by dividing all elements ( $n_{ij}$ ) of the Basic Data Matrix by the total number of entities ( $n_{ab}$ )  $P(a_i, b_j) = n_{ij}/n_{ab}$ . If the marginal row and column are also divided by the total population, then the simple or Marginal Probabilities are generated. These give the probabilities that an entity is classed in a given subarea:  $P(a_i) = n_{ai}/n_{ab}$  and  $P(b_j) = n_{bj}/n_{ab}$ .

Since our concern is with the specific city having a particular income distribution, we will examine the probability that an individual within a given city has a particular attribute or that an individual with a given income is found in a particular city. Thus we are interested in conditional probability statements. These conditional probabilities can be computed by taking the Joint Probability Matrix (2) and dividing each element  $P(a_i)$  to get the Horizontal Conditional Probability Matrix (3). Each row of the matrix gives a profile of that city:  $P(b_j/a_i) = P(a_i, b_j) / P(a_i)$   $j = 1, \dots, \beta$ .

Similarly, if one is focusing on the second of these concerns, the probability that an individual with a given attribute is in a particular city, then the elements of the columns of the Joint Probability Matrix  $P(a_i, b_j)$  can be divided by the corresponding element of the marginal row  $P(b_j)$ , to calculate the Vertical Conditional Probability Matrix (4). The columns of the matrix each provide a profile of the spatial distribution of the income class associated with that column:  $P(a_i/b_j) = P(a_i, b_j) / P(b_j)$   $i = 1, \dots, \alpha$ . In this paper, however, we will not be utilizing this particular measure. We will focus rather on the differences that exist among the different cities included in the analysis.

These three Probability Matrices provide the basic information for the analysis. Each row of the Horizontal Conditional Probability Matrix and each column of the Vertical Conditional Probability Matrix is a profile of the city or of a specific income class. Summarizations of these distributions are possible using any number of descriptive statistics. These are presented in Figure 1 as 3a and 4a. Various measures of central tendency, such as the mean and the standard deviation, are possible indicators of the properties of these distributions.

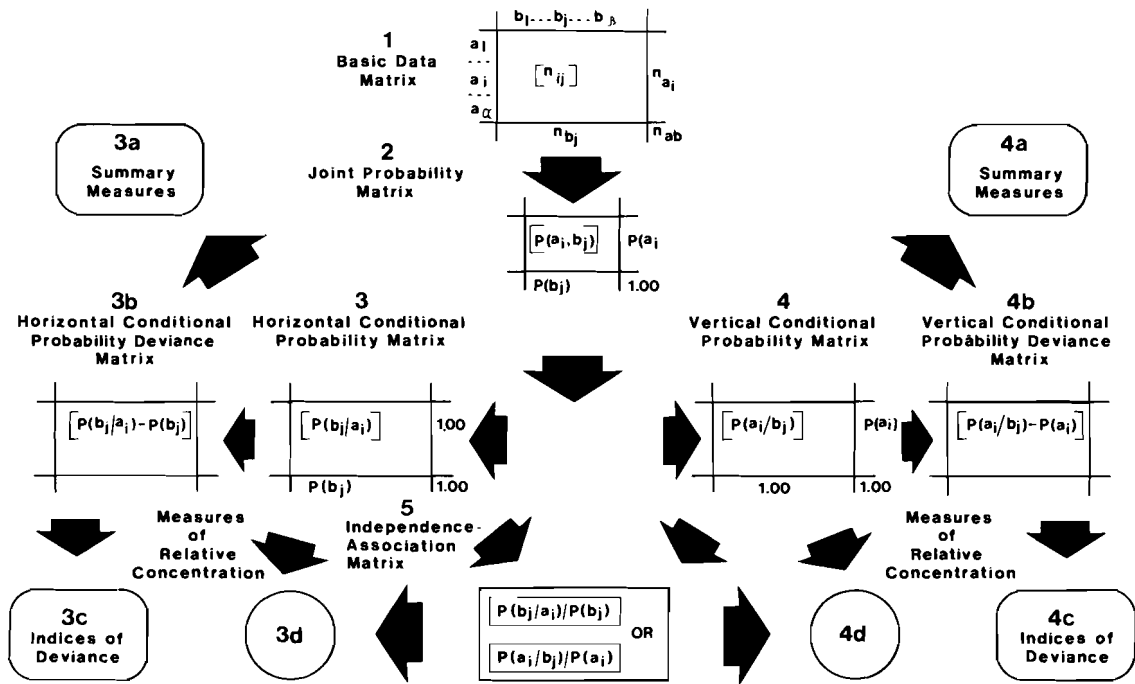


Figure 1  
BASIC STRUCTURE OF THE FRAMEWORK

One approach to comparing each conditional probability distribution with the marginal probability distribution is to take the linear difference between the two distributions for each of the respective elements. For the Horizontal Conditional Probability Matrix this difference is calculated by subtracting the respective marginal probability value from the conditional value:  $P(b_j/a_i) - P(b_j)$   $j = 1, \dots, \beta$ .

The result is the Horizontal Conditional Probability Deviance Matrix (3b). Each row represents the deviance between the distribution for a particular subarea and the distribution for the entire area. Several different types of summary measures can be generated to reduce this pattern of deviance to a single measure for each row. In this paper use will be made of the index of dissimilarity because of its ability to measure the difference between areal distributions. Its interpretation is also simple in that the smaller the value, the greater the degree of association between the city's value and the national totals. The index does not, however, distinguish between distributions that are lower than national averages and those that are higher. Recourse must in those cases be made to the original conditional probability values.

The conditional probability distribution and the marginal distribution can also be compared by taking the ratio between their elements. Each element of the Horizontal Conditional Probability Matrix is divided by the corresponding Marginal Probability:  $P(b_j/a_i) / P(b_j)$   $j = 1, \dots, \beta$ .

The result of this operation is a matrix, the Independence/Association Matrix (4). The elements of the matrix can be considered as a measure of relative specialization. A value greater than 1.00 indicates a greater than average concentration of the particular characteristic in that category. Conversely, a value of less than .5 would indicate conditional probability values half those of the marginal probabilities. Measures of relative concentration such as the coefficient of variation can be derived for each Horizontal and each Vertical Conditional Probability distribution. Their place in the framework is indicated by the elements "Measures of Relative Concentration" (3d) and (4d) respectively.

#### Analysis of Selected Elements

Table 6A displays the information for the Horizontal Conditional Probability Matrix and Table 6B and 6C give the Deviance Matrix and the Independence/Association Matrices respectively. Clearly much could be said about the information contained in these tables. In comparing the values contained in Deviance Matrix (Table 6B), the index of dissimilarity has been used to focus on

those metropolitan regions that have patterns that are most dissimilar from the overall national pattern. The national pattern in this case is represented by the income distribution for the country as a whole, which obviously includes urban and rural populations.

Table 6A  
HORIZONTAL CONDITIONAL PROBABILITY MATRIX  
BRAZILIAN METROPOLITAN AREAS

Metropolitan Area	Region	Income Distribution Classes*				
		<2	2-3	3-5	5-10	>10
Belem	N	67.86	12.44	10.26	5.61	3.82
Fortaleza	NE	78.15	7.64	6.40	4.68	3.13
Recife	NE	75.38	8.99	7.21	4.98	3.44
Salvador	NE	66.82	11.50	10.06	7.09	4.52
Rio de Janeiro	SE	50.51	15.59	14.89	10.49	8.51
Sao Paulo	SE	48.89	16.74	16.42	11.58	6.37
Curitiba	S	63.18	13.21	11.13	7.29	5.19
Porto Alegre	S	55.12	15.49	13.54	9.19	6.66
Belo Horizonte	SE	66.58	12.56	10.32	6.25	4.29
Brazil		66.75	11.74	10.28	6.88	4.33

\*Minimum salary classes as defined by IBGE.

Table 6B  
DEVIANCE MATRIX  
BRAZILIAN METROPOLITAN AREAS

Metropolitan Area	Region	Income Distribution Classes*					Index of Dissimilarity
		<2	2-3	3-5	5-10	>10	
Belem	N	1.11	0.70	-0.03	-1.27	-0.51	1.81
Fortaleza	NE	11.39	-4.11	-3.89	-2.20	-1.20	11.39
Recife	NE	8.63	-2.75	-3.08	-1.91	-0.89	8.63
Salvador	NE	0.07	-0.24	-0.23	0.21	0.19	0.47
Rio de Janeiro	SE	-16.24	3.84	4.61	3.61	4.18	16.24
Sao Paulo	SE	-17.86	5.00	6.13	4.70	2.03	17.86
Curitiba	S	-3.57	1.47	0.85	0.41	0.85	3.57
Porto Alegre	S	-11.64	3.74	3.25	2.31	2.33	11.64
Belo Horizonte	SE	-0.17	0.82	0.04	-0.63	-0.05	0.85

\*Minimum salary classes as defined by IBGE.

One could say that the dissimilarity index in Table 6B directs attention to Sao Paulo and Rio de Janeiro as being the most dissimilar of the metropolitan areas. This pattern of deviance strongly supports the hypothesis that the investment policies of the BNH

and the Banco do Brasil presented earlier are clearly reflected in the difference among the metropolitan areas. The two metropolises of the Northeast, Recife and Fortaleza, are well below the national averages. The metropolitan areas of Sao Paulo, Rio, and Porto Alegre, on the other hand, have dissimilarity indices which clearly indicate the large concentration of higher income individuals in those cities. The other four metropolises have dissimilarity values which approximate the national averages.

Some of the differences that are apparent in the Deviance Matrix, however, obscure the relative importance of these extreme values. The Association Matrix (Table 6C) provides added insight into these situations. For example, the large negative deviations for Rio and Sao Paulo in the first income class turn out to be less important in relative terms than the smaller absolute proportions in the two highest income groups, with values of 1.52 and 1.96 for Rio and 1.68 and 1.47 for Sao Paulo. These values clearly highlight the fact that high income earners are present in proportions which are twice what they are for Brazil as a whole.

Table 6C  
ASSOCIATION MATRIX  
BRAZILIAN METROPOLITAN AREAS

Metropolitan Area	Region	Income Distribution Classes*				
		<2	2-3	3-5	5-10	>10
Belem	N	1.02	1.06	1.00	0.82	0.88
Fortaleza	NE	1.17	0.65	0.62	0.68	0.72
Recife	NE	1.13	0.77	0.70	0.72	0.79
Salvador	NE	1.00	0.98	0.98	1.03	1.04
Rio de Janeiro	SE	0.76	1.33	1.45	1.52	1.96
Sao Paulo	SE	0.73	1.43	1.60	1.68	1.47
Curitiba	S	0.95	1.13	1.08	1.06	1.20
Porto Alegre	S	0.83	1.32	1.32	1.34	1.54
Belo Horizonte	SE	1.00	1.07	1.00	0.91	0.99

\*Minimum salary classes as defined by IBGE.

The northeastern metropolises, on the other hand, have significantly higher proportions in the lowest income level, with Fortaleza and Recife having 17 percent and 13 percent more in this lowest group. These figures take on added significance since, according to a recent World Bank study, the highest per capita food costs in Brazil were in the Northeast. Perhaps for this region physical shelter and clothing may not be essential to physical survival because of the generally temperate climate. Nevertheless,



concentration of income in the lowest class combined with much higher average food costs may mean that the poorest families need to allocate so much of their income to nutritional survival that the opportunity cost in terms of other important goods and services, particularly health and sanitation services and transportation to job opportunities, may be very high.

The pattern for the middle-sized cities is revealing in other respects. Unfortunately the preliminary census results upon which these analyses are based include only 22 of the nearly 140 that the Conselho Nacional de Desenvolvimento Urbano (CNDU) assigns to this category [10]. Nevertheless the 22 do provide a representative sample for this class of settlements in Brazil. The dissimilarity index in the Deviance Matrix (Table 7B) clearly highlights the important distinction between the Northeast and the South. The dissimilarity indices for the three middle-sized cities of the Northeast (Sao Luis, Natal, Teresina) are even more marked than they were for the comparisons made at the metropolitan region level. The Northeastern cities in some cases have dissimilarity values which twice exceed the values for the metropolitan areas of the Northeast. The Association Matrix (Table 7C) clearly shows that these middle-sized cities have values which are atypical of middle-sized cities generally. These values are even more significant when one takes into account that the labour force participation rate for northeastern middle-sized cities is 31 percent, which compares with 36 percent for Brazil as a whole and 42 percent for the cities of the Southeast. This suggests that the cities of the Northeast not only have lower wages and higher living costs but that they also have fewer jobs. The outmigration of over 2,200,000 people from the Northeast is thus easily understandable, with most of these migrants being absorbed within the state of Sao Paulo. Of the total net migrants during the last intercensus period, 45 percent were destined for that state.

The final level of the hierarchy chosen for this analysis covers the microregions that have been defined by the IBGE, the Brazilian statistical agency. Microregions are compiled from municipios, which are the basic political units of the Brazilian federation. The municipios are grouped in such a way as to provide as nearly homogeneous a functional unit as is possible. For this portion of the analysis a sample of microregions from all the major regions has been selected. The microregions from the Northeast are taken from the states of Piaui and Pernambuco. Piaui is a state which has as its focus the valley of the Parnaiba, along which are found the major cities. However, in the recent past the traditional axis of development has received some competition from the construction of the Belem/Brasilia highway, which has oriented some

development along its right of way. Pernambuco, on the coast, is the traditionally large producer of sugar cane of the region, and this is where Recife is located, the principal metropolitan area of the Northeast. It has been designated by the federal government as the principal focus of industrialization policies for the northeast, and that policy has been promoted by SUDENE which is headquartered in that city. The microregions for the other regions were selected from the state of Amazonas, having a frontier agricultural development focus, for the north; the central west is represented with microregions taken from the state of Mato Grosso do Sul, which exhibits a similar type of development as Amazonas; for the south, microregions were selected from the state of Santa Catarina, which has a tradition of resource development combined with some manufacturing.

Table 7A  
HORIZONTAL CONDITIONAL PROBABILITY MATRIX  
BRAZILIAN MIDDLE-SIZED CITIES

City	Region	Income Distribution Classes*				
		<2	2-3	3-5	5-10	>10
Porto Velho	N	65.30	14.93	10.19	6.37	3.21
Rio Branco	N	65.76	14.76	10.07	6.26	3.14
Boa Vista	N	67.64	14.16	9.63	5.69	2.87
Macapa	N	67.12	14.32	9.74	5.88	2.94
Manaus	N	58.00	14.86	12.61	8.45	6.08
Sao Luis	NE	88.71	5.58	3.14	1.59	0.99
Teresina	NE	82.50	6.63	4.87	3.25	2.74
Natal	NE	79.62	7.88	5.73	4.45	2.33
Joao Pessoa	NE	80.90	8.01	5.62	3.42	2.06
Maceio	NE	79.92	8.55	5.80	3.65	2.08
Aracaju	NE	72.21	10.24	8.05	5.45	4.04
J. D. Fora	SE	66.44	12.61	10.37	6.27	4.30
Vitoria	SE	65.80	14.05	9.43	6.50	4.22
Campos	SE	62.52	12.74	11.18	7.59	5.97
Campinas	SE	51.09	16.16	15.73	10.95	6.06
R. Preto	SE	48.99	16.72	16.39	11.55	6.34
Santos	SE	48.46	16.88	16.56	11.70	6.40
Londrina	S	64.04	12.96	10.88	7.09	5.03
Florianopolis	S	62.28	15.64	11.69	6.45	3.94
Campo Grande	CW	63.71	13.26	10.65	6.69	5.69
Cuiba	CW	66.38	12.50	10.09	6.07	4.95
Goiania	CW	68.33	11.81	9.41	6.31	4.15

\*Minimum salary classes as defined by IBGE.

Table 7B  
DEVIANCE MATRIX  
BRAZILIAN MIDDLE-SIZED CITIES

Metropolitan Area	Region	Income Distribution Classes*					Index of Dissimilarity
		<2	2-3	3-5	5-10	>10	
Porto Velho	N	-1.45	3.18	-0.10	-0.51	-1.12	3.18
Rio Branco	N	-0.99	3.02	-0.21	-0.62	-1.19	3.02
Boa Vista	N	0.88	2.42	-0.65	-1.19	-1.46	3.30
Macapa	N	0.37	2.57	-0.55	-1.00	-1.39	2.94
Manaus	N	-8.76	3.11	2.32	1.57	1.75	8.76
Sao Luis	NE	21.95	-6.16	-7.15	-5.30	-3.35	21.95
Teresina	NE	15.75	-5.12	-5.41	-3.63	-1.59	15.75
Natal	NE	12.87	-3.87	-4.56	-2.43	-2.01	12.87
Joao Pessoa	NE	14.15	-3.74	-4.67	-3.46	-2.28	14.15
Maceio	NE	13.16	-3.19	-4.49	-3.23	-2.25	13.16
Aracaju	NE	5.46	-1.50	-2.24	-1.43	-0.29	5.46
J. D. Fora	SE	-0.32	0.87	0.08	-0.61	-0.03	0.95
Vitoria	SE	-0.95	2.30	-0.86	-0.39	-0.11	2.30
Campos	SE	-4.23	0.99	0.89	0.71	1.63	4.23
Campinas	SE	-15.67	4.42	5.45	4.07	1.73	15.67
R. Preto	SE	-17.76	4.98	6.10	4.67	2.01	17.76
Santos	SE	-18.29	5.13	6.28	4.82	2.06	18.29
Londrina	S	-2.72	1.21	0.59	0.21	0.70	2.72
Florianopolis	S	-4.47	3.90	1.40	-0.43	-0.39	5.30
Campo Grande	CW	-3.04	1.52	0.36	-0.19	1.36	3.23
Cuiba	CW	-0.37	0.76	-0.19	-0.81	0.62	1.37
Goiania	CW	1.57	0.06	-0.88	-0.57	-0.19	1.64

\*Minimum salary classes as defined by IBGE.

Table 7C  
ASSOCIATION MATRIX  
BRAZILIAN MIDDLE-SIZED CITIES

City	Region	Income Distribution Classes*				
		<2	2-3	3-5	5-10	>10
Porto Velho	N	0.98	1.27	0.99	0.93	0.74
Rio Branco	N	0.99	1.26	0.98	0.91	0.72
Boa Vista	N	1.01	1.21	0.94	0.83	0.66
Macapa	N	1.01	1.22	0.95	0.85	0.68
Manaus	N	0.87	1.26	1.23	1.23	1.40
Sao Luis	NE	1.33	0.48	0.30	0.23	0.23
Teresina	NE	1.24	0.56	0.47	0.47	0.63
Natal	NE	1.19	0.67	0.56	0.65	0.54
Joao Pessoa	NE	1.21	0.68	0.55	0.50	0.47
Maceio	NE	1.20	0.73	0.56	0.53	0.48
Aracaju	NE	1.08	0.87	0.78	0.79	0.93

Table 7C (cont.)

City	Region	Income Distribution Classes*				
		<2	2-3	3-5	5-10	>10
J. D. Fora	SE	1.00	1.07	1.01	0.91	0.99
Vitoria	SE	0.99	1.20	0.92	0.94	0.97
Campos	SE	0.94	1.08	1.09	1.10	1.38
Campinas	SE	0.77	1.38	1.53	1.59	1.40
R. Preto	SE	0.73	1.42	1.59	1.68	1.46
Santos	SE	0.73	1.44	1.61	1.70	1.47
Londrina	S	0.96	1.10	1.06	1.03	1.16
Florianopolis	S	0.93	1.33	1.14	0.94	0.91
Campo Grande	CW	0.95	1.13	1.03	0.97	1.31
Cuiba	CW	0.99	1.06	0.98	0.88	1.14
Goiania	CW	1.02	1.01	0.91	0.92	0.96

\*Minimum salary classes as defined by IBGE.

In Tables 8A-8C we have chosen not to list each of the 64 microregions but rather group them by major regions with the mean value indicated for each of the indices. In examining these tables, one can see that the trends that were established for the two previous levels maintain themselves. For the northeastern microregions, the income distribution deteriorates dramatically from even the lower levels associated with the middle-sized cities. For this group the dissimilarity index value averages 22.7. Clearly again, it is the lowest income groups that have proportions which are significantly above the national values. The Association Matrix (Table 8C) indicates that for some microregions the middle income categories have only 30 percent of the marginal totals. The values for the microregions of the Southeast, on the other hand, have maintained their standing with little or no deterioration of their standing.

Table 8A  
HORIZONTAL CONDITIONAL PROBABILITY MATRIX  
BRAZILIAN MICROREGIONS

Region	Income Distribution Classes*				
	<2	2-3	3-5	5-10	>10
Central West	69.9	11.3	8.8	5.2	4.5
North	75.1	11.1	7.2	4.0	2.4
Northeast	89.4	4.1	3.0	1.9	1.3
South	65.6	14.7	10.8	5.5	3.0
Southeast	54.5	15.2	14.6	9.9	5.5

\*Minimum salary classes as defined by IBGE.

Table 8B  
DEVIANCE MATRIX  
BRAZILIAN MICROREGIONS

Region	Income Distribution Classes*					Dissimilarity Index
	<2	2-3	3-5	5-10	>10	
Central West	3.2	-3.8	-1.4	-1.6	.2	3.68
North	8.3	-6	-3.0	-2.8	-1.8	9.20
Northeast	22.7	-7.5	-7.2	-4.9	-2.9	22.7
South	-1.1	2.9	.6	-1.2	-1.2	4.1
Southeast	-12.2	3.5	4.3	3.0	1.2	12.2

\*Minimum salary classes as defined by IBGE.

Table 8C  
ASSOCIATION MATRIX  
BRAZILIAN MICROREGIONS

Region	Income Distribution Classes*				
	<2	2-3	3-5	5-10	>10
Central West	1.04	.96	.86	.76	1.04
North	1.12	.94	.70	.58	.57
Northeast	1.34	.35	.29	.28	.30
South	.98	1.25	1.05	.81	.71
Southeast	.81	1.29	1.42	1.44	1.28

\*Minimum salary classes as defined by IBGE.

Table 9 shows the average values for the dissimilarity index for the major regions of Brazil by settlement type. We have already indicated that the dissimilarity index for the state of Sao Paulo has little variation. The marked drop for this indicator in the Northeast is paralleled to a certain extent by continuous declines for the north and central west macroregions. In the South region, however, the decline from the middle-sized city to the microregion level of the hierarchy is not significant. Clearly the state of Sao Paulo is unique in maintaining an income distribution which varies little as one moves down the urban hierarchy. This suggests that the significantly higher proportion of government investment which the Sao Paulo region has enjoyed has also been largely diffused to the other levels of the urban hierarchy and that it is possible that a city-system centered on Sao Paulo has emerged.

Table 9  
AVERAGE VALUES OF THE DISSIMILARITY INDEX  
FOR MAJOR REGIONS OF BRAZIL

Region	Metropolitan Regions	Middle-Sized Cities	Microregions
Central West	-	2.07	3.68
North	1.8	4.2	9.20
Northeast	6.8	13.8	22.71
South	7.6	4.0	4.05
Southeast	11.6	9.8	12.20

### National Urbanization Strategy and the Cidades de Porte Medio Program

Earlier in the paper, allusion was made to a second phase of urban policy development in Brazil. This second phase was based on the realization that the recent urbanization trends have introduced serious distortions in the urban structure and spatial organization. These changes, it was argued, exacerbated problems of poverty, underemployment, and severe infrastructural difficulties in Brazil's urban structure as well as creating disparities both within and between regions. Formulation of an explicit urban strategy began with the preparation of the II Plano Nacional Desenvolvimento (II PND) for the period 1975-79, and the urban strategy introduced there is still in the process of being put into operation in the III PND.

The II PND introduced two major complementary lines of policy in its overall strategy to improve the structure and efficiency of the urban system. First the system of metropolitan areas was to be consolidated and measures taken to prevent further concentration of population and economic activity in the Southeast region, particularly in Rio de Janeiro and Sao Paulo. The second objective of the II PND is to reinforce the incipient trend that became evident in the 1960s by strengthening the second tier of the urban structure, the middle-sized cities. This program, known as the *Cidades de Porte Medio* (CPM) or middle sized cities program, is based on the realization that this category of settlements has shown strong growth since 1960. Although the metropolitan areas have continued to grow at impressive rates, the categories of "Agglomerados" and "municipios com mais de 100,000 habitantes" have also exhibited impressive growth, with 4.8 and 3.9 geometric rates respectively. The innovative significance of the CPM of the II PND is that it represents the first deliberate attempt to formulate an urbanization strategy and introduce the

requisite institutional framework and policy instruments for its implementation. The CPM program is supposed to complement the federal government's policy efforts in metropolitan areas by promoting infrastructure provision, income and employment creation, and social services in the second level of Brazil's urban structure - the approximately 200 cities with between 50,000 and 500,000 inhabitants. The program provides financing for projects proposed by the cities in three basic categories: (a) urban infrastructure (such as water supply, sanitation, housing, transport, community facilities, and trash collection); (b) employment and income creation (industrial parks, technical and managerial assistance, manpower training); (c) municipal finances and administration (cadastral surveys, information systems, equipment, institutional diagnoses, training, and so forth). In order to permit projects to be developed, the program has also financed planning and feasibility studies. Through positive interventions in the economic and social systems of the secondary cities, the program aims to avoid or reduce the high social costs of rapid unplanned urbanization that have been encountered in the metropolitan regions. At a more global level, it is hoped that the program will contribute to the reorientation of migratory flows away from the major metropolitan regions.

Although it is unrealistic to place too great an emphasis on the migration diversion impact of the CPM program, it is nevertheless true that medium-sized cities have had significant growth according to the 1980 census data. At present growth rates, many will have populations of over a million in 20 years. Thus the program is seen as strengthening an existing trend and providing necessary infrastructure and employment in anticipation of this future growth. The CPM program is intended also to redistribute resources in favour of smaller cities and their poorer inhabitants. At the local level, it is hoped that the program will have a direct positive effect on urban poverty through the expansion of infrastructure, services, and employment available to low income groups. Finally, the program is meant to have an important impact on the financial, technical, and administrative capabilities of the selected cities. At the financial level, federal resources for the CPM program are passed to the cities as grants. However, the cities are obliged to recover the costs of project investments from the final beneficiaries, thus in theory ensuring that a flow of funds is available at the local level to replicate the initial investment program. At the technical administrative level, the Conselho Nacional de Desenvolvimento (CNDU), the executing agency, works closely with municipal and state agencies to develop local technical capacity to prepare and execute projects and to identify and correct deficiencies and bottlenecks in the local administration.

## Conclusion

It is generally acknowledged that the alleviation of economic and social ills in the long term will only occur when the unemployment and underemployment problem of the peripheral regions are resolved. Clearly the provision of adequate infrastructure is a necessary condition to the achievement of the full employment goal. For instance, only 53 percent of the households in Brazil have municipally supplied water in the home [9:23]. Certainly it is an area which is being addressed in the CPM program. The question is not whether it is necessary but rather whether it is a sufficient incentive for promoting growth in the peripheral regions. However, even in the area of infrastructure provision, several factors have caused the initial operation of the CPM program to fall short of its objective. Bringing urban infrastructure to a dispersed urban population is very costly when compared to the cost of providing public services in large metropolitan areas. There is the further argument that investment in infrastructure in middle-sized cities makes them for a time marginally attractive and as a result increases immigration, which in time reduces the city to the level it was before the investments were made, if not worse. Since nearly 200 cities in Brazil qualified for the program, which had limited funding (\$US 200 million), it was necessary to limit the program to an initial eight cities. This level of funding can only be considered at best as providing demonstration cases.

Another observed problem relates to the objective of encouraging coordinated urban planning. Since the planning and project implementation was to be achieved by sectoral agencies, coordination is an important component. Unfortunately administrative capabilities of this type are a rare commodity, generally speaking, and when one adds the constraint of relatively backwater cities in a developing country the problem assumes important dimensions indeed. As a result, projects have lagged because of this deficiency. In many developing countries budgets have been known to lapse simply because of scarcity of these skills in the regions which are most in need of them. The development of adequate human resources as well as the incentives for keeping them in the areas where they are needed is therefore a critical need. Since the CPM program made definite requirements on the cities for submitting their own plans, expertise in the cities was required. In some cases it was necessary to establish planning agencies from the various sectoral specialists in the city administration. As a result the initial plans lacked both the context of individual city development strategies and the appropriate level of technical analysis.

Another problem relates to the target group - the urban poor. In a country where the poor have little or no political representation, no system existed for focusing projects on the urban poverty group. This was especially true in cases involving employment generation programs. Examples of ill-conceived programs based on a lack of understanding of the requirements of this group were numerous. Another variant of this problem was the development of infrastructure projects for middle-class areas. Attempts to introduce labour intensive approaches to infrastructure projects were resisted, although the World Bank had assembled considerable expertise in this area.

Clearly, employment generation programs have to be given priority because they alone are capable of resolving the problems associated with socioeconomic disparities. In the absence of jobs being created in the peripheral regions, the response is likely to be outmigration to the cities that are likely to provide employment. As already indicated, in the intercensal period nearly 70 percent of the interstate migration was accounted for by the two states of Sao Paulo and Rio de Janeiro. Furthermore fully 50 percent of the outmigration from the Northeast went to Sao Paulo alone, with Brasilia and Mato Grosso accounting for another 17 percent. Some analysts feel that a reasonable case can be made for leaving the prevailing migration pattern alone. The higher productivity of a metropolis like Sao Paulo rests on the well-known concepts of economies of scale, specialization advantages, complementarity among industries, reduced transportation costs, high market potential, infrastructure utilization, and the generation and diffusion of innovations. Furthermore, evidence suggests that the relative productivity of big cities is even higher in developing countries [13; 16]. If nothing else, these arguments offer a useful corrective against an overly enthusiastic recommendation of costly and ineffective dispersion policies.

The development of a national spatial strategy in lesser developed countries, however, does have a place as long as the policy objectives are clearly defined. The deceleration of metropolitan growth by the stimulation of decentralized manufacturing capacity seems to be a valid basis for a decentralization policy. The favoured sites for expanding manufacturing can draw upon industrial location theory. Here also growth pole theory can be of use, since it draws attention to a broader interpretation of agglomeration economies than implied by the technological externalities associated with functional poles. In other words, urbanization economies and the spatial concentration and agglomeration of population and economic activities are the most efficient ways of organizing resources in space. Thus the manner in which to distribute efficiently infrastructure, social services, and indeed people

in space becomes an important concern for spatial policymakers. This requires a conception of development which is national in scope and attempts to integrate sectoral with regional policies.

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