Review of Income Distribution Data: Brazil

by

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This paper has two major objectives: first, to summarize the statistical sources of information available for studying the Distribution of Income in Brazil (Section I); then, to offer our personal interpretation of the causes which have led to the increase in inequality as shown by the results of the 1970 census when compared with income figures for 1960 (Section II).

Before going into the analysis of the data, I will present a brief summary of the main studies on income distribution done to date on Brazil. We will eventually comment again on some of these papers as we discuss specific aspects of data.

The first two papers that allowed a comparison of the changes in the Brazilian income distribution in the sixties were those of Hoffman and Durante[1]. They were concerned with the statistical estimates of income shares and different concentration indexes, like Gini and Theil, by sectors, regions and for the overall economy. Their results showed that the Gini coefficient increased from 0.48 in 1960 to 0.57 in 1970. Fishlow[2] presented a more sophisticated analysis, which not only provided additional statistical estimates of income distribution but it also discussed factors behind the observed changes. He used a decomposition of the Theil index to measure the contribution of education, age, sector and region to total inequality. These factors explained more than half of observed inequality, and among all education and age were the more important ones. Fishlow also presented a profile of the Brazilian poverty population (as of 1960).[3] Contrary to the United States situation, he found that poverty in Brazil is directly linked to low levels of productivity particularly in the rural sector. As to the causes for increasing inequality Fishlow emphasized the non-intentional distributional effects of some aspects of the Brazilian economic policy

after 1964, especially the stabilization policy of the 1964/67 period which led to a decline in the real minimum wage. In 1973, Langoni presented a detailed computation of income shares (deciles) by sectors and by regions (six in 1960 and ten in 1970), besides re-estimating income profiles by conventional measures (Gini, Theil Variance of logs, Coefficient of Variance).[4] He also examined the factors behind the increase in inequality during the last decade, but the concern was with the long run distributional consequences of the economic development process, rather than focusing on specific policy measures.[5]

Using a regression technique, Langoni estimated the marginal contribution of education, activity, region, age and sex for the overall variance of income, both for 1960 and 1970. For 1970 occupational status (employer, self-employed, employee) was also included as proxy for access to ownership. The main results of this study are summarized in Section II of this paper.

Recently two more articles, by Fishlow and Langoni,[6] reviewed the issue of what caused the increased inequality bringing in additional pieces of empirical evidence in support of each one's own hypothesis.

I

The Empirical Basis

The first purpose of this paper is to survey the most important sources of data that can be used for analyzing Income Distribution in Brazil. There are three main sources of data: the Demographic Census, published by the Brazilian Institute of Geography and Statistics (IBGE),[7] the Income Tax data, published by the Ministry of Finance,[8] and the 2/3 Law data published by the Ministry of Labour.[9] Each of these has different coverage

and may be used to achieve specific objectives of the analysis. We are going to describe the characteristics of each source of data and to point out briefly the ways in which these data have been analyzed in studies published about income distribution in Brazil.

II DEMOGRAPHIC CENSUS

Qualitative evaluation

The most important set of data concerning income distribution in Brazil is that presented in the Demographic Census, published by IBGE. Their importance is directly related to their coverage, which is essentially complete for the entire population living in different sectors and regions of Brazil.

Furthermore, the data refer to income (including, in principle, distributed profits, interest and rents) as distinct from just wages and salaries, to which the 2/3 Law data refer.

The first Demographic Census to present information on income was that of 1960. With the publication of the 1970 Census it was possible to analyze changes in the income distribution over time. In both years, the income scale is divided into eight classes (two of them open), and data on the number of people in each class are presented. This creates the usual problem of estimating the average income within each bracket, especially for the open-ended classes. In any case, it is important to note that the Census data can be used to get income profiles for two different points in time (1960 and 1970), to evaluate the trend in the degree of income inequality, and (what is more relevant for some purposes), to analyze the basic factors behind these changes.

The unit of observation is the individual in 1960 and both the individual and his family in 1970. Family income is the more appropriate concept in analyzing welfare and consumption but not necessarily to study the determinants of income. Nevertheless in the Brazilian case the change from the individual to the family income concept has practically no effect on the standard aggregate measures on inequality.[10]

The Census classifies the population over 10 years of age into two basic, mutually exclusive and exhaustive categories: the first consist of those considered "not economically active" (NEA).[11] The second category represents the "economically active" (EA) population, subclassified by eight basic sectors according to its usual occupation in the year before the Census date (September 1st).[12] Just to give an idea of proportion, in 1970 Brazil had 36,459,037 of NEA population, and 29,545,293 of EA population, out of a total population of 93,204,379. The classification above is important because, as we should expect, only for the NEA and EA groups does the Census present the relevant data for income. Even for these subgroups (NEA and EA) we must further deduct 2,775,255 EA persons which are classified as "without income," and 710,315 that did not declare their income.

Therefore the subgroup of the population for which it is possible to estimate income profiles consists of 62,518,760 persons. Furthermore it is important to realize that the NEA fraction is characterized by great heterogeneity, and that the data on income for it are probably especially distorted. This explains why most of the studies that have used these data to estimate income profiles have concentrated solely on the EA population.[13]

The exclusion of persons "without income" from the analysis of the individual income distribution may be justified supposing that a great proportion of these persons live from monetary and non-monetary income transfers that take place within the family unit. In fact, an analysis of this group strongly suggests this possibility: 86% are in the primary sector (15% in the tertiary and only 1% in the secondary); 66% are less than 21 years old; 93% have completed at most the primary education cycle and 41% are in fact illiterate.[14] The strong concentration in the primary sector and the lower age cohorts confirms the idea that the majority of the people classified as "without income" are members of the family labor force, receiving their wages in the form of goods and services (mainly food and housing).[15]

Another test of the hypothesis above is the comparison between the proportion of individuals without income in the total of EA population, with the proportion of <u>families</u> without income. In 1970 this proportion was 9.5% among individuals, and only 0.71% among families, giving additional support to our hypothesis.[16] Thus, the most convenient way of taking into account those classified as "without income" is to work directly with family income.[17]

The Demographic Census also contains other important information which allows one to move from a simple statistical estimation of income profiles towards an analysis of the contribution of some systematic factors to the total variance of income. Most of these variables are considered in the so-called human capital approach to income distribution: education, age, sex, migration status. Others (like sector and region) are related to the general theory of economic development, which emphasizes the existence

in a dynamic setting of productivity differentials among factors of the same qualifications. These variables also may be used as a proxy for technological differences in the production structure as well as in the natural availability of factors. Finally, occupational status (employee, employer, self-employed) allows one to enlarge the framework to capture some of the effects of physical capital on the distribution of income. The Census also contains information on marital status, weekly hours of work, fertility, etc. which may be used directly or indirectly in the analysis of income distribution.

Of course, these data have many limitations. Most of them are related to the definition of income and are not at all specific to the Brazilian data. In fact, these limitations are so common and may introduce so large a distortion between measured and real income that they led Lydall in his classic work to restrict himself to what he called a "standard distribution," which includes only employees in the urban sector working full time and in regular employment.[18] As will be clear from the discussion below, it is very difficult to evaluate "a priori" the net effect which all factors taken together have on the estimates of income inequality. It is nevertheless important to list these main factors that cause differences between measured and real income in order to have an idea of their likely importance in the specific case of Brazil.

Factors limiting the usefulness of the Demographic Census data.

These factors are the following:

1) exclusion of implicit incomes from the Demographic Census measures;
2) difficulty of measuring non-contractual incomes correctly;
3) problems caused by regional differences in the cost of living;
4) treatment of taxes and public services;

5) variance of working hours.

Implicit income basically includes flows of goods and services that do not have a direct monetary counterpart. The most important component in the Brazilian case is self-consumption in agriculture. But it is important to realize that even in other sectors direct transfers of food and housing also constitute an important fraction of people's income.[19] Of course, in a more refined measure, we should also take into account the direct flow of services from housing, capital gains on fixed and financial assets, and even the services of some durable goods like automobiles, refrigerators, etc.

The inclusion of self-consumption and transfer of goods and services would result in an increase of real income that benefits disproportionally the lower income group. With respect to the services from ownership of housing, some durable goods and capital gains, the expected impact is exactly the opposite. It is difficult, therefore, to know what would be the net effect of adjusting for all these factors on the measures of income inequality.

However, for the Brazilian case some direct estimates of the influence of particular factors on such measures have been calculated. The available evidence, for example, indicates that the ratio of self-consumption to pure monetary income moves monotonically from 1.2% in the highest decile to 79.6% in the lowest one. When self-consumption is taken into account, the share of the highest 10 percent of families is reduced from 44.2 to 43.1%, while that of the lowest half is increased from 12.9 to 14.1%. In terms of concentration indexes, the variance of the income (a measure of relative inequality) was reduced by 20.6% while the Theil

index of concentration fell by 13% and the Gini index remained practically constant.[20] These results also point out the importance of working simultaneously with a variety of inequality measures.

With respect to non-contractual income, there are two different trends. For that fraction of the total represented by income from capital, it is clear that the underestimation of it is greater at higher than at lower income levels, leading to an underestimation of the true degree of inequality. By contrast, with respect to labor earnings, the expected result is quite ambiguous. There is certainly an underestimation of non-contractual earnings in the high income groups, especially among blue collar workers and entrepreneurs. But in Brazil such income is also important for some occupations that are clustered around the lower end of the income scale (like waiters, janitors, taxi drivers, etc.). Again the net redistributive effect of taking all these factors into account is very hard to evaluate since the greater proportion of this last group may be more than compensated for by the higher average income of the first one.

Cost of living differences within the country also introduce a bias in the direction of overestimating the overall measures of inequality. In the urban sectors in which the cost of living is higher, there is also a greater concentration of individuals in the higher nominal income classes, relative to the agricultural sector. Consequently, when we aggregate monetary incomes without correcting for this factor, we are necessarily overestimating the degree of inequality in total incomes.

This same overestimation of urban income will appear when regional data are used to estimate the total profile if, as in the Brazilian case, there is a strong positive correlation between the share of urban income in total regional income and the level of regional income per capita.

This increases the weight in the aggregate income profile of precisely those regions in which the bias described above is of greater magnitude.

To the extent that cost of living differs among income groups this aggregation bias may be either offset or reinforced. If due to changes in the composition of expenditures, differences in the cost of living between urban and rural areas are greater exactly among the upper income classes, the distortion caused by sectoral aggregation is still bigger than the one suggested before. If sectoral differences in the cost of living are smaller for the upper income groups the suggested bias is reduced.

Another difficulty in measuring income based on the Brazilian Demographic Census is the fact that it neither allows us to deduct for taxes in general, nor for direct taxes (in principle, direct income transfers from the government are included). We know that disposable income is a more relevant variable for consumption or investment decisions than total income. To the extent that the overall tax system in Brazil is progressive, total inequality is probably overestimated. On the other hand, this is a problem that affects most studies of income distribution. In addition, we must recognize that serious difficulties of assessing the ultimate incidence of various kinds of taxes would still exist even if data on the taxes directly paid by different groups were fully available.

Direct taxes are certainly progressive, at least on the basis of the 1970 estimates.[21] Furthermore, the value-added taxes are significantly higher for durable and luxury goods relatively to consumption goods like food, medicines and so on, suggesting that indirect taxes are probably not regressive.

As we should expect, our measured income does not take into account the indirect transfer of government services through education, health service, housing, transportation, etc. The net redistributive effect of the inclusion of such government expenditures is much more difficult to evaluate in the Brazilian case. Housing and health services are subsidized when used by the lower income classes. Education is in a very peculiar situation since it is subsidized at both extremes -- primary schooling and university, the first having a progressive effect and the second, a regressive one. Transportation and urban expenditures have in general, a regressive effect because charges for these services are generally significantly below marginal costs, while the benefits of the services themselves are concentrated in the upper income groups.[22]

The last limitation concerns the differences in earnings that reflect only voluntary variation in hours of work.[23] It is clear that there are many persons who simply prefer to work part time, in order to benefit from additional hours of either leisure or non-market activities like studying and working within the family unit (e.g., taking care of children). Because leisure or other kinds of implicit income are not included in our conventional income measures, this would contribute an artifical increase in our estimates of inequality. The problem is still more complex because it is very difficult to know what proportion of part time employment is the result of a voluntary choice (in which case we should expect that the sacrifice of monetary income was compensated by additional hours of "leisure") and what proportion is in fact the consequence of limitations imposed by the labor market (underemployment).

A first indication is simply to look into the age-sex composition of part-time workers. A high proportion of men from 25-35 years of age and with university education would strongly suggest the predominance of voluntary decisions. If this were true, the best alternative for income distribution analysis would seem to be to estimate separately the inequality coefficients of the full-time and part-time groups. In the latter case, real income would be underestimated by the exclusion of the monetary counterpart of leisure. On the other hand, if the age-sex-education characteristics do not suggest voluntary choice, the part-time group should be kept in the sample.

In the case of women this problem is still more difficult because imperfections in the labor market (discrimination) usually do not allow their full-capacity utilization. Nevertheless, from the empirical viewpoint, it is more reasonable to suppose that for married women part-time work implies a voluntary decision due to the greater value of their alternative work within the family unit (especially because child care is highly time-intensive). For single women who are not studying it is more probable that part-time work is in fact one of the different forms of underemployment. For the still younger age groups (14-20 years) school attendance is probably the most relevant empirical criterion for assessing the degree of "voluntariness" involved in part-time employment.

The Demographic Census gives information on weekly hours of work, and some of the analysis suggested above may be done with Census data. But because the income measures do include income from capital, it is not possible, of course, to think in terms of standardizing for hours of work.[24]

For Brazil, it is possible to know from the National Household Survey (PNAD), how many part-time workers would prefer to work full time.[25] The results show that, in general, the decisions are voluntary. Among the categories presented in the survey, the highest fraction of people willing to work additional hours was 20% for the category of women in the Northeast agriculture. Independent of region or sector, the greatest number of positive answers were among women. However, the data do not allow us to distinguish between married and single women and among the married, between those with and without children.

In short, because it is reasonable to suppose that at least some of the variance of hours of work of the Brazilian labor force is voluntary, the Demographic Census estimates will not, ceteris paribus measure the real degree of inequality.[26]

A factor of a different nature that could also be taken into account, in this discussion about the limitations of empirical studies of income distribution, is the use of current instead of permanent income. The use of simple measures of current income undoubtedly overestimates the overall inequality if one accepts the idea that permanent income is the relevant variable for consumption decisions. In fact, since transitory income is by definition not positively correlated with permanent income, the variance of permanent income must be less than the total variance of conventionally measured income.[27]

Evidently, it is impossible to get even an approximate measure of permanent income from Census data. Just to illustrate the importance of transitory components in the measures of inequality, for the United States, working with three-year income instead of the monthly one as given by Census data, reduces the Gini coefficient from 0.40 to 0.35.[28] To the

extent that there is a positive correlation between changes in the rate of growth, and the fraction of total income represented by less stable, more transitory sources (usually of a non-contractual nature), we should expect this kind of bias to be relatively greater in rapidly growing, dynamically changing economies. This, of course, would increase the differences in inequality measures of such countries relatively to those (underdeveloped or developed) whose growth processes are less volatile, and would probably also distort regional comparisons within the country if there are significant differences in regional rates of growth. All these factors seem to be relevant in the Brazilian situation.

As we said, it is practically impossible to estimate "a priori" the net effect of all these distortions on the income profile. It is possible, however, that the consequences are quite similar to those observed in the specific case of self-consumption, i.e., a great impact on the income level (which in general is underestimated) but a relatively smaller effect on the measures of inequality themselves. Furthermore, to the extent that the main interest of analysis is in the changes of the distribution of income over time, the Census data are quite reliable: the 1960 and 1970 data are strictly comparable, even in their errors and limitations, with exception, of course, for changes in various unmeasured components such as imputed income.

Estimates for 1960 and 1970.

For Brazil there are estimates for 1960 and 1970 made by: CEPAL-ILPES,[29] Hoffman, Durante, Fishlow, Langoni.[30] In general, these studies presented the estimates of the share of each group in the total income together with different measures of concentration -- the more common being the Gini and Theil indexes. The income profiles were estimated by sectors

(primary, secondary and tertiary) and by regions (six in 1960, and up to ten in 1970).

Tables 1, 2 and 3 summarize the main results. The striking features of these Tables are the great similarities in the results, especially if we realize that there were significant differences among the various sources both in terms of methodology and of coverage of data.[31] Some, like Durante and Fishlow, have used a combination of mid-point for closed classes with log-normal, and Pareto for respectively the first and last open classes. Langoni has estimated directly from a sample of the 1970 Census the average income in each class and projected back for 1960 based on the relation between this average and the limit of income classes. Duarte and Hoffman have included the "non-economically active population," while Fishlow and Langoni did not.

Thus for 1960, Hoffman found that the share in total income of the two highest income groups was 25%, very close to the estimate made by Langoni 22.4% and quite close to the 25.8% found by Fishlow. Similarly, for 1970, Langoni found that the richest 1% had 14.6% of the total income while Duarte found 17.5%. These small divergences, however, do not alter the main conclusion that arises from the comparisons between the 1960 and 1970 estimates, that there was a clear trend towards increasing inequality of the distribution of income. Furthermore, the increase in inequality is significant only for the urban sector. For the primary sector, it is impossible to talk unambiguously of greater inequality since the Lorenz curves cross each other.[32]

TABLE 1

Brazil 1960

DIFFERENT ESTIMATES OF INCOME DISTRIBUTION

(CENSUS DATA - INDIVIDUAL INCOME)

INCOME CLASSES	PERCENTAGE OF POPULATION				PERCENTAGE OF INCOME			AVERAGE INCOME (Cr$ of 1960 per month).		
	1[a]	2[b]	3[a]	4[b]	1[a]	2[b]	3[a]	1	2	3
2.10	25.3	24.8	26.1	24.8	5.2	5.0	5.2	1.2	1.2	1.3
2.11...3.30	17.1	17.1	16.9	17.1(58.75)[c]	7.7	7.7	7.0	2.6	2.7	2.7
3.31...4.50	13.1	13.2	12.3	13.2(14.45)	8.9	8.6	7.4	4.0	3.9	3.9
4.51...6.00	15.2	15.2	15.4	15.2(8.84)	13.8	13.2	12.3	5.2	5.2	5.2
6.01..10.00	16.7	16.8	16.2	16.7(9.13)	21.3	21.4	20.0	7.5	7.60	8.0
10.01..20.00	9.2	9.3	9.6	9.3(5.46)[d]	20.7	21.1[d]	22.2	13.2	13.5[d]	15.0
20.01..50.00	2.9	3.6[d]	3.0	3.6(3.37)[d]	14.8	23.0[d]	16.4	29.4	38.4[d]	35.0
50.01	0.5		0.6		7.6		9.4	87.9		108.7
TOTAL								5.9	6.0	5.5

Observations: a - does not include those "without income,"
b - includes those "not economically active" with income; values in parenthesis correspond to estimates based on Log-Pareto Functions.
c - adjusted value until Cr$ 3.30.
d - correspond to the class of Cr$ 20.00 and more.
e - do not exist these estimates in the CEPAL/ILPES study.

Sources:
1. Langoni, Distribucao da Renda, op.cit.
2. Hoffman, Contribuicao, op. cit.
3. Fishlow, "Brazilian Size Distribution," op. cit.
4. CEPAL/ILPES, La Distribucion del Ingreso, op. cit.

TABLE 2

BRAZIL 1960 - DIFFERENT ESTIMATES OF INCOME DISTRIBUTION

(CENSUS DATA - INDIVIDUAL INCOME)

PERCENTILE	PERCENTAGE OF INCOME[a]			AVERAGE INCOME (Cr$ of 1960 per month)		
	1	2	3	1	2	3
20-	3.49		4.18	1.028		1.272
50-	17.72	17.69		2.087	2.111	
10	7.66	7.49		4.507	4.469	
10	9.41	9.03		5.538	5.388	
10 (80-)	10.85 (45.64)	11.31 (45.52)	(35.04)	6.388 (3.357)	6.749 (3.395)	(2.666)
10	14.69	15.61		8.650	9.315	
10+(20+)	39.66 (54.35)	38.87 (54.48)	(64.96)	23.348 (15.999)	23.914 (16.254)	(19.767)
5+	27.69	27.35	44.04	32.602	32.641	53.605
1+	12.10	11.72	28.05	71.277		170.712
TOTAL	100.00	100.00	100.00	5.887		6.086
Gini	0.499	0.488	0.555			

a: values in parentheses refer to the cumulated percentiles.

Sources: 1 - Langoni, Distribuicao da Renda, op. cit.
2 - Hoffman includes those not economically active with income; Contribuicao, op. cit.
3 - CEPAL/ILPES includes those not economically active with income; La Distribucion del Ingreso, op. cit.

TABLE 3

BRAZIL - 1970

DIFFERENT ESTIMATES OF INCOME DISTRIBUTION

(CENSUS DATA - INDIVIDUAL INCOME)

PERCENTILE	PERCENTAGE OF INCOME		AVERAGE INCOME (Cr$ of 1970 per month)	
	1	2	1	2
50-	14.91	13.74	85	75
10	5.91	6.25	168	171
10	7.37	7.20	210	197
10	9.57	9.63	272	263
10	14.45	14.83	411	405
10+	47.79	48.35	1,310	1,322
5+	34.86	36.25	1,984	1,982
1+	14.57	17.77	4,147	-
TOTAL	100.00	100.00	282	273

Sources: 1 - Langoni, Distribuição da Renda, op. cit.

2 - Duarte, "Aspectos da Distribuçao," op. cit.

I.2 THE 2/3 LAW DATA

The second important source of data for analyzing income distribution in Brazil is the 2/3 Law.[33] The first advantage is exactly the periodicity of the publication which allows an analysis of changes over time in the income profiles, at least from 1968 on.

The coverage of this survey is, however, limited. The 2/3 Law refers only to the salaries of registered workers employed in the industrial and service sectors. It does not take into account agricultural workers in general and fails to consider those not registered or self-employed in the urban sector. Furthermore, because Brazil's minimum wage law applies to the workers covered by the 2/3 Law, the earnings profile estimated from these data will be automatically truncated by this limit in its lower portion.

According to the 2/3 Law data, the total number of workers receiving salaries in the urban sector was 6,158,843 in 1970. By contrast, according to the Census data, the economically active population of this same sector was a total of 15,634,650 persons. These numbers leave no doubts as to the more complete coverage of the Census.

Thus it should not cause any surprise to observe (See Table 4) that the 2/3 Law data present a higher average income level and a smaller degree of inequality than do the corresponding estimates from the Demographic Census. The 2/3 Law sample simply excludes a large fraction of low income people (those with salary below the minimum wage) and at the same time leaves out of consideration precisely those components of total income which have "a priori" the more unequal distribution: income from property and the "mixed" remuneration of the self-employed.[34]

Other qualitative differences between the Demographic Census and the 2/3 Law data become evident when we look at Table 5. There we compare some basic characteristics of each sample, breaking it down further into the 30% of the population with the lowest income (30 -) and the remaining 70% (70 -). In addition, to make the comparison more consistent, we have included in the Census data only those employees working on the urban (secondary and tertiary) sectors.

Thus the respective proportions of illiterates, women, persons below 20 years of age and persons working in the North-Northeast region (exactly the less developed regions) are significantly greater in the Census than in the 2/3 Law. For example, the proportion of illiteracy among the urban employees is 13% according to the Census versus 4% found in the 2/3 Law. The female fraction is of 32% according to the Census in contrast with 20% found in the 2/3 Law.

These differences are still more important when we look into the group that made up the 30% with lower incomes. Based on the Census the proportion of illiterates in this group is 25%, four times greater than the estimate given by the 2/3 Law (6.5%); the proportion of women is 58% in contrast with 26% found in the 2/3 Law. The fraction of persons under 20 years of age is 40%, or twice the value found by the 2/3 Law; and finally the proportion of persons in the North-Northeast region (36%) is three times greater than the equivalent estimate given by the 2/3 Law. This suggests that for some subgroups the two samples become quite heterogeneous, the differences between the two sources tending to diminish as we move toward higher levels of education, toward older cohorts, and toward regions of higher per capita income.

TABLE 4

BRAZIL - 1970

COMPARISON OF THE DISTRIBUTION OF INCOME ESTIMATED FROM DIFFERENT SOURCES

PERCENTILE	PERCENTAGE OF INCOME			AVERAGE INCOME (Cr$ of 1970 per month)			RELATIVE INCOME (in relation to the median income)		
	D.C.	IT.	2/3 L.	D.C.	IT.	2/3 L.	D.C.	IT.	2/3 L.
1+	14.10	10.50	8.69	3,976	9,692	3,394	26.19	17.09	13.95
5+	34.06	26.96	24.73	1,920	4,975	1,930	12.65	8.77	7.93
10+	46.47	39.02	36.36	1,309	3,600	1,419	8.63	6.35	5.83
10	15.14	15.73	15.40	426	1,451	601	2.81	2.56	2.47
10	9.95	10.91	10.88	280	1,006	424	1.85	1.77	1.74
10	7.21	8.40	8.51	203	775	332	1.34	1.37	1.36
10	6.17	6.77	6.89	174	625	268	1.14	1.10	1.10
10	5.02	5.62	5.70	141	519	222	0.93	0.91	0.91
10	3.81	4.72	4.94	107	435	192	0.71	0.77	0.79
10	3.00	3.85	4.34	85	355	169	0.56	0.63	0.70
10	2.05	2.94	3.96	58	271	155	0.38	0.48	0.64
10-	1.16	2.02	3.02	33	186	118	0.21	0.33	0.48
75-	33.03	39.39	42.43	124	484	221	0.82	0.85	0.91
25+	66.96	60.61	57.57	755	1,853	899	4.97	3.94	3.69

	AVERAGE INCOME	MEDIAN INCOME	GINI	THEIL
D.C.	282.	152.	0.56	0.66
IT.	922.	566.	0.48	0.46
2/3 L.	390.	243.	0.44	0.37

Observations: D.C. = demographic census; IT. = income tax; 2/3 L. = 2/3 Law

Sources: Langoni, Distribuição da Renda, p. 273, Table A2.1.

TABLE 5

BRAZIL - 1970

COMPOSITION OF EMPLOYEES IN THE URBAN SECTOR (in %)

PERCENTILE	EDUCATION					SEX	
	ILLITERATE	PRIMARY	LOWER SECONDARY	UPPER SECONDARY	UNIVERSITY	MALE	FEMALE
Total D.C.	13	55,5	14	10	4	68	32
2/3 L.	4	69	15	8	4	60	20
30- D.C.	25	59	9.0	2.5	0.2	42	58
2/3 L.	6.5	79	10.5	2.6	0.9	74	26
70+ D.C.	79	76	15.5	13	6.0	79	21
2/3 L.	2.5	65	17	10	5.5	82	17

	REGION						
PERCENTILE	I - IV	V	VI	VII	VIII	IX	X
Total D.C.	19.30	11.66	17.42	32.27	5.15	10.29	3.90
2/3 L.	6.40	8.72	29.01	40.55	3.40	8.96	2.89
30- D.C.	36.13	15.77	9.83	20.04	4.78	8.24	5.19
2/3 L.	11.50	11.98	27.40	29.20	4.40	11.90	3.57
70- D.C.	12.00	9.91	20.67	27.51	4.54	9.07	3.30
2/3 L.	4.24	7.32	29.71	45.42	2.97	7.70	2.59

	AGE					
PERCENTILE	< 19	20-29	30-39	40-49	50-59	60 and more
Total D.C.	17	35	23	15	7	2.5
2/3 L.	10	40	26	15	6	2.0
30- D.C.	40	30	13.8	8.8	5	2.6
2/3 L.	23	43	17.6	9.8	4.7	1.4
70+ D.C.	7.5	37	27.5	17.6	7.7	2.4
2/3 L.	4.4	39	30	17.6	6.7	2.0

Source: Langoni, Distribuição da Renda, p. 275, Table A2.2.
Regions: I-IV - North-Northeast according to SUDENE; V- Minas Gerais - Espirito Santo; VI- Rio de Janeiro - Guanabara; VII- São Paulo; VIII- Paraná; IX- Santa Catarina - Rio Grande do Sul; X- Mato Grosso Goiás, Distrito Federal.

These results not only help us to understand the differences found in the estimates of income distribution based on each source of data, but also emphasize that only the Census data are able to reflect that fraction of the labor force that, due to its qualitative characteristics combined with market imperfections, does not have access to employment of permanent character. Nevertheless due to large yearly variance of the income of this group, it is very difficult to assess its true value which suggests that there are some components of underestimation left in the Census results.

Despite their limited coverage, the 2/3 Law data have some interesting features. From a purely empirical viewpoint they allow a much more detailed breakdown of the urban sector of the Brazilian economy than that available in the Demographic Census.[35] They also permit, as we have said before, a yearly comparison of earnings profiles and estimates further disaggregated by states or regions.[36] Although the definition of income is less comprehensive, there is a clear gain in terms of quality since the data are directly transcribed from information on the firm's payrolls.[37] And finally, since earnings represent a large fraction of total income in Brazil the value of the data is further enhanced.[38]

From a methodological viewpoint the data are also rich. For example, the earnings concept is much more suitable for the use of human capital theory, whose relevance has already been tested in the Brazilizn case, using the Demographic Census data.[39]

Furthermore, the 2/3 Law data give information on hours of work, making it possible to assess their influence on the variance of income and, of course, allowing one to use a more standardized measure of earnings (salary per hour). There is also information on age, sex and

education levels. Combining cross-section estimates with time series, allows an interesting analysis of the effect of Brazil's rapid growth rate on the skill content of the labor force used in the different sectors of the economy. In particular, by analyzing separately the modern and traditional sectors it may be possible to evaluate indirectly the effect of changes in technology on relative wages, the absorption of labor and the rate of skill substitution.

I.3 INCOME TAX DATA

The third important source of data for analyzing income distribution in Brazil is the income tax statistics published by the Ministry of Finance.[40] The great advantage of these data over those of the 2/3 Law and even of the Census is the coverage given to that fraction of income represented by returns from physical capital. Not only does the control exercised by the income tax office suggest that this information is much more reliable and complete than that found in the Census,[41] but what is also very important, the data permit a very clear breakdown of income from labor and income from capital. This separation is possible because of the "cedular" scheme used in the Brazilian income tax Law. By this scheme, the individual is obliged to declare separately the amount of income represented by interest, rents, profits, earnings and mixed income (the remuneration of the self-employed).[42]

Of course, the possibility of measuring the inequality of the distribution of each one of these different sources of income is very important for the understanding of the behavior of the total profile. We made such estimates for the year of 1970 confirming the hypothesis that income from physical human capital is more unequally distributed than income from human capital.[43]

This source of data can also be used to measure the impact of the income tax structure on the inequality of income. In other words, as corollary the data allow us to measure the effective degree of progressivity of the income tax in Brazil. Langoni made such estimates, showing that the effective tax changes from 0.11% in the fifth decile to a maximum of 18% in the richest 1%.[44] Obviously these data, like those of the 2/3 Law, also allow yearly estimates of the distribution of income.

The tax data, however, also have some drawbacks. The most obvious one is that the estimated profiles are truncated in their lower portion by the minimum level of gross income established by law in order to obligate the individual to fulfill the declaration of income. Because of this, in 1970, the sample excluded automatically the majority of persons receiving less than Cr$ 5,040 per year.[45] Furthermore, the income tax is relatively more comprehensive with respect to income from the urban sector. There are many difficulties in getting reliable information from the agricultural sector. Thus in 1970, the total number of persons presenting income declarations was only 7,040,781, representing 27% of the economically active population, and with 45% of that portion being located in the urban sector.

Given all these factors it is not a surprise, as shown in Table 6, that the average income and the inequality measures estimated by the income tax data should be respectively higher and lower than corresponding estimates based on Census data.

For 1970, it was possible to generate from the Census data a truncated income profile for the urban sector of the Brazilian economy in order to make it more comparable (in terms of coverage) to the income tax data. This adjusted profile included only those persons with income greater

than the average income of the lowest 1% of the income tax sample. The results are presented on Table 6.

As we may see immediately in terms of inequality, there is a virtual coincidence between the two profiles: the richest 1% get 11% of the income reflected in the adjusted Census profile and 10% of that covered by the income tax data. For the lowest 10% these same proportions are respectively equal. However, in terms of levels there is a clear tendency for the average income based on the Census to be substantially lower than that derived from the income tax source. The underestimation although it clearly increases with the income level is found at all levels, confirming our earlier suggestion that non-contractual incomes are important in both extremes of the distribution.

An interesting conclusion from this comparison is that the inequality measures are more insensitive to changes in absolute income levels than one might suspect off-hand. Similar results had been found with the analysis of the impact of self-consumption in the agriculture sector and can be further confirmed if one compares the 2/3 Law estimates with the salary estimates from the income tax sample (Table 7). Since the 2/3 Law does not handle multiple employments, the direction of change is what should be expected both with respect to level and concentration indexes.

These results of course suggest that we may use our relative income measures with a reasonable degree of confidence despite all qualitative limitations that we have pointed out in the course of this paper.

TABLE 6

BRAZIL - 1970

COMPARISON OF DEMOGRAPHIC CENSUS (URBAN SECTOR) WITH INCOME TAX

PERCENTILE	PERCENTAGE OF INCOME		AVERAGE INCOME (Cr$ of 1970 per month)	
	D.C.*	IT.	D.C.*	IT.
1+	11.48	10.51	5,472	9,692
5+	28.98	26.96	2,900	4,975
10+	40.96	39.02	2,049	3,600
10	14.79	15.73	740	1,451
10	10.09	10.91	505	1,006
10	7.76	8.41	388	775
10	6.20	6.77	310	625
10	5.36	5.62	268	519
10	4.27	4.72	213	435
10	3.89	3.85	195	355
10	3.56	2.94	178	271
10-	3.12	2.02	156	186
75-	38.96	39.39	259	484
25+	61.03	60.61	1,221	1,853

	AVERAGE INCOME	MEDIAN INCOME	GINI	THEIL
D.C.*	500.	300.	0.48	0.48
IT.	922.	566.	0.48	0.46

(*) Include only those with income greater than Cr$ 148, - per month.

Source: Langoni, Distribuição da Renda, op. cit., p. 49, Table 2.2.

TABLE 7

COMPARISON OF THE DISTRIBUTION OF SALARIES FROM THE INCOME TAX WITH THE ONE FROM 2/3 LAW

PERCENTILE	PERCENTAGE OF SALARIES		AVERAGE SALARY (Cr$ per month)		RELATIVE SALARY	
	IT*	2/3 L	IT*	2/3 L	IT*	2/3 L
1+	8.71	8.69	6,627.	3,394.	13.16	13.95
5+	24.53	24.73	3,730.	1,930.	7.41	7.93
10+	36.67	36.05	2,789.	1,419.	5.54	5.83
10	16.26	15.40	1,236.	601.	2.46	2.47
10	11.36	10.88	864.	425.	1.72	1.74
10	8.84	8.51	672.	332.	1.33	1.36
10	7.24	6.89	550.	268.	1.09	1.10
10	6.10	5.70	465.	222.	0.92	0.91
10	4.50	4.94	380.	193.	0.75	0.79
10	3.89	4.34	295.	169.	0.59	0.70
10	2.79	3.96	212.	155.	0.42	0.64
10	1.84	3.02	139.	117.	0.28	0.48
75-	40.98	42.43	415.50	221.	0.82	0.91
25+	59.02	57.57	2,316.92	899.	3.56	3.69

	AVERAGE SALARY	MEDIAN SALARY	GINI	THEIL
IT*	760.	503.	0.47	0.41
2/3 L	390.	243.	0.44	0.37

(*) Observation: refers only to the "cedula" C (income from employee)

Source: Langoni, Distribuição de Renda, op. cit.

I.4 THE EMPIRICAL BASIS: SUMMARY AND CONCLUSIONS

The Demographic Census, the 2/3 Law Data, and Income tax data do not exhaust the possibilities for analyzing income distribution in Brazil. There are a variety of regional surveys, especially family budget studies that also may be used for the analysis of income distribution.[46] Recently, IBGE has undertaken a household survey with special emphasis on income distribution. The survey results are currently in the process of publication.

We have concentrated on the analysis of some general limitations of the conventional measures of income common to almost any kind of data, and specifically on the advantages and disadvantages of each of the three sources listed above.

The discussion of the different factors that introduce distortions between measured and real income, such as non-contractual income, implicit income, public services and taxes, current "versus" permanent income, cost of living differences, hours of work, etc., made it quite clear that one cannot know "a priori" the net effect of all these factors in terms of inequality.

On the other hand, some empirical tests suggest that the measures of relative income and concentration are, in general, less sensitive to sizeable changes in absolute income that one would imagine, reinforcing the necessity for the development of new relatively more sensitive measures.

With respect to the improvement of the quality of data, it is worthwhile to take into account that the IBGE has recently broadened the scope of their quarterly household surveys, some of which have been designed specifically to deal with expenditure and income. These surveys are more

careful in the measurement of income, trying for example to include non-monetary income, and to differentiate more income brackets. The measurement of real income will also be significantly improved once the regional cost of living index project of Getulio Vargas Foundation, already underway, bear its fruits.

Once this new statistical basis is available it will be possible to improve the quality of measurement of income profiles. However, the existing data, with all drawbacks, can also be very useful in providing insights for a discussion of the causes lying behind observed changes. In the second part we summarize some of the basic results of our previous research on this subject.

II

An Increase in Inequality, 1960-1970 = Why?[47]

II.1 THE CONTROVERSY

The whole controversy surrounding the problem of income distribution in Brazil originated with the publication of the 1970 Census data, which pointed to an increase in inequality when compared with income figures for 1960, as shown in Section I.

This was interpreted at first as a serious flaw in the development model set up in Brazil arter 1964. Some commentators went still farther, claiming that the increase in inequality had not been an unforeseen and undesirable consequence of the economic policies of this period, but rather a deliberate governmental goal. This interpretation had as a corollary the idea that such concentration was instrumental in ensuring the very success of the model.[48]

According to this line of reasoning, only through an increase in income concentration was it possible to reach the levels of capital accumulation needed to accelerate and sustain economic growth. This was said to be the positive effect on the supply side. On the other hand, greater concentration was also supposed to have had a beneficial impact on the demand for durable goods, ensuring the existence of a vigorous domestic market for products that constitute one of the most dynamic sectors of the economy.

All criticism directed at the economic policies implemented after 1964 soon tended to focus on the issue of income distribution, and some people went so far as to see in the increased concentration a sign of the coming end of the "Brazilian capitalism."

My purpose here is to show that the catastrophic outlook sketched in the foregoing paragraphs finds no support in economic theory or empirical evidence.

Let us take, for instance, the argument that concentration was necessary to ensure the success of the development model adopted, insofar as it accounted for an adequate expansion of the demand for durable goods. The fallacy here consists in identifying developmental problems with problems relating to the insufficiency of aggregate demand, in an unwarranted application of the Keynesian model. Economic development is basically a supply problem, in other words a problem of increasing the productive capacity. In the case of private investment, which is essentially endogenous in character, all decisions relating to an increase in production depend upon a number of variables, among which future expectations concerning demand trends certainly play an important role. The behavior of the

demand, however, is signalled by a change in relative prices (in this case by an increase in relative prices), which makes it profitable to invest in a given branch of activity. Therefore, any investment decision presupposes the implicit assumption that the demand will grow adequately. In developing countries there are many opportunities for profitable investment, that is, many activities with a large potential market. The true limitation is given by the difficulty to finance the expansion of productive capacity, due to the disorganization of the capital market. (I prefer to speak of disorganization, rather than insufficiency, because the Brazilian experience has shown that a vast, yet unexploited reserve of personal savings exists, provided appropriate incentives are given, as it occurred with the introduction of saving accounts in Brazil). This is proved by the higher profitability of investments in physical capital in developing countries vis-a-vis the more industrialized economies, which accounts, incidentally, for the flow of international capitals to underdeveloped areas.

In our case, the demand for durable goods would normally benefit from the growth process, not only because of the high income elasticity of such products, but especially because many people could not afford to buy these goods for the first time. No doubt, the growing demand for durable goods was greatly enhanced by the existence of an efficient financing mechanism. Nevertheless, insofar as such financing was not subsidized, but corresponded to relatively high interest rates, it constituted an extremely important instrument for the redistribution of consumption. In other words, since interest rates on consumer credit were not subsidized, no artifical incentives existed for higher income

groups to use such credits in an excessive way. Therefore, what actually happened was that a part of the personal savings of higher income groups - that part which was invested in bills of exchange - has been used to finance the consumption of the middle class, which is thus given a faster access to the durable goods market. Hence, contrary to some interpretations, the demand for durable goods can grow at a fast pace because: first, the real income of all strata of the population has been rising (see Tables 1, 2,3) and, secondly, the credit mechanisms recently created have led to a redistribution of consumption in favor of lower income groups.[49]

Nonetheless, it would be a clear exaggeration to attribute all the dynamism of the economy to this credit mechanism. (In 1972, consumer loans accounted for a mere 12% of all loans made through the financial system). Indeed, the role of public investments, relatively autonomous by their very nature, and of private investments induced by the introduction of export incentives was extremely important. Quite obviously, these two investment activities do not depend upon the behavior of domestic demand, and consequently are not associated with any particular pattern of income distribution. It is reasonable to assume that these have been the key elements that enabled the Brazilian economy to overcome the depression of the years 1963-66. The private sector, benefitting from a climate of political stability and from the control of inflation, responded swiftly to the growth expectations thus created, being helped, in the first stages, by the existence of a certain margin of unused capacity.

Summing up, the increase in the production of durable goods should be viewed as a consequence of accelerated growth, rather than as its main cause.

The other argument - to the effect that concentration was necessary because of its positive impact on the aggregate rate of saving - is equally devoid of merit. To begin with, there are serious doubts as to the magnitude of the increase in savings, so that it would be very risky, and politically inviable, to base economic decisions on such an assumption.

This is particularly so in Brazil, where governmental savings and savings by the enterprises are relatively more important than personal savings. Moreover, in terms of the impact on the growth rate of the economy, the relevant factor is not the increase in the savings rate per se, but rather the way the additional savings are distributed among investment alternatives of varying social productivity. (It is worth noticing the case of Argentine, where a high level of aggregate savings - over 22% - has been associated with a modest growth of the product, under 4% a year). Thus, it is possible that not all of any positive increment in savings resulting from the transfer of income from the lower to the higher income groups will be channelled to investments of high social productivity. Finally, it is always possible to increase aggregate saving by increasing the overall progressiveness of the tax system, obtaining, as a side-effect, an improvement in the income distribution of income. In this case, the public sector would be responsible for applying such resources, directing them to sectors with a high social rentability.

In short, the arguments based on the aggregate demand and the level of savings cannot be used to demonstrate that the increase in concentration constituted a deliberate goal of the Government, or that it was a necessary condition for the success of the Brazilian development model.

II.2 THE CAUSES OF THE INCREASE IN INEQUALITY

Before offering my own analysis of the problem, it is worth repeating that, until now, all the empirical evidence about the increase in inequality is based on the comparison of income distribution figures relating to two years only, 1960 and 1970. This empirical limitation suffices to show that there is little ground for ascribing the responsibility of all that happened during the decade to a set of policies introduced after 1964 - and especially to one of its aspects, the wage policy.

This becomes still more evident when one recalls that until 1964 Brazil went through a period of accelerating inflation; as it is well known, inflation is a very regressive form of taxation, penalizing lower income groups disproportionately.

Moreover, account should be taken of the negative effects of the slow-down in economic growth after 1960, which culminated in the depression of 1963-64 and lasted until 1967. In a recession, the increases in unemployment are not uniformly distributed among the various categories of labor. On the contrary, unskilled workers who make up the lower income strata are more severly hit.

Therefore, even if no detailed study of the decade is undertaken, it is obvious that any analysis of the relationship between economic policies and changes in the distribution of income should take into consideration the contribution of all factors in all periods, trying to weigh the positive and negative effects of each factor in every stage. In the absence of empirical evidence or theoretical support, the choice of the wage policy as the cause of all that happened during the decade is, to say

the least, highly arbitrary.[50] In the Brazilian case to understand the changes in the income distribution, it is necessary to look into the fundamental characteristics of the economic development process. Three basic ideas stand out:

i) in the case of Brazil, the increase in inequality is closely linked to the behavior of the labor market;

ii) the increase in inequality is a consequence (and not the cause) of the classical changes brought about by the process of economic development in the long run; in particular, it is associated with the re-allocation of labor between sectors (from the primary to the urban sector), and regions (from the less developed to the more developed ones), as well as with the qualitative improvement of the labor force, especially in terms of educational standards and age composition. It is worth noticing that the degree of inequality is higher in the urban sector than in the primary sector, in the dynamic regions than in those that exhibit a low growth rate, and among individuals with higher education than among illiterate people;

iii) the different stages of economic development are associated with different degrees of inequality, the inequality being greater at times of accelerated gorwth, such as we had in Brazil in the years 1967-70.

The relevance and consistency of this latter hypothesis about the relationship between the acceleartion of growth and the increase in inequality can be easily verified. The skills of the labor force vary substantially depending upon the sector where it is employed. For instance, the proportion of illiterate workers in the primary sector reached 53% in 1970, while in the urban sector it did not exceed 14%. Even within the urban sector as a whole, there are important differences among the various subsectors; in the textile sector, 87% of the labor force had finished primary school; in the chemical and pharmaceutical sector 46% of all workers had an education level above the primary. Given the different intensity in the use of skilled labor in the various sectors of the economy, even if economic growth were to be well balanced, (that is, even if all sectors grew at the same rate), there would necessarily occur an increase in wage dispersion during the stage of acceleration,[51] reflecting in essence the differences in the relative scarcity of each kind of manpower. Thus, the supply of unskilled labor is relatively elastic, while that of skilled labor is rather inelastic. In effect, the increase in inequality is enhanced by the fact that economic growth is never perfectly balanced: some sectors do grow at a higher rate than others, and those that grow faster are exactly the ones using a larger proportion of skilled manpower. In other words, the technology employed in the dynamic sectors is not only capital-intensive, but is also intensive in the use of skilled labor. During the last decade, the agriculture sector grew at an average rate of 3.5% a year, while the urban sector expanded by 6% a year. Within the urban sector itself, there is a clear tendency for the so-called "modern" industries - those which use skilled

labor intensively - to grow faster than traditional industries. As a matter of fact, in the period 1967-70 the transport equipment sector expanded at the average yearly rate of 32.6%, the machinery sector by 22.7%, and the chemical products sector by 15.6%; on the other hand, the textile industry grew by 7.4% a year, the food products sector by 8.3%, and the clothing sector by 1.7% (civil construction constituted a major exception, having grown at the average yearly rate of 14.4% thanks to the special incentives granted to the sector). This unbalanced growth, which is inherent to the process of economic development, induces a dispropo~tionate increase in the demand for skilled labor, thus causing the salaries of this category of workers to grow faster than those of unskilled labor.

It is worthy emphasizing that, as long as the economy keeps growing at a fast pace, it will be practically impossible to prevent more qualified individuals from benefiting of such "quasi-rents." The basic difficulty stems from the system of formal schooling, which cannot respond promptly to market needs because of institutional limitations mainly related to the rigidity of curricula, and the minimum duration of courses. Nevertheless, as the growth rate declines, the demand for skilled workers will continue to grow, but at a slower pace and, what is more important, in a more predictable way. Ac the same time, past investments in human capital undertaken through the formal education system will start bearing fruit in the form of a larger supply of skilled manpower, gradually reducing the reserve of unskilled labor. Eventually, all these forces will succeed in normalizing the labor market, so that the wage dispersion based upon differences in skill will be a more precise reflection of productivity differentials.

This hypothesis is supported by the following facts:

i) the degree of inequality in the urban sector is much greater than in the primary sector; in 1970, for instance, the Gini index stood at 44% in the primary sector, as against 57% in the urban sector;

ii) within the urban sector itself, the degree of inequality is higher in the modern subsectors characterized by high salaries (such as the automobile industry, with a Gini index of 42%) than in the low-salaried traditional industries. (Such as civil construction, with a Gini index of 34%);

iii) the only substantial increase in inequality during the decade occurred in the urban sector, the most dynamic segment of the economy; indeed, the Gini index for the secondary sector increased by 20%, in contrast of 14% in the tertiary sector and a mere 3% in the primary sector;

iv) from a statistical point of view, the contribution of the differences in educational level for explaining the inequality in the distribution of income increased by 33% between 1960 and 1970. On the other hand, among all variables taken into account, education was by far the most important one for explaining individual differences in income; in 1970, its contribution to overall inequality stood at approximately 13%, as against 2.1% for the variable occupational situation, (employer, employee, self-employed) which may be regarded as a measure of access to ownership;[52]

v) ongoing research by Jose Julio Senna at Getulio Vargas Foundation has already found that education explains 34% of the variance of individual hourly-wages and 62% of the differences in average wages among various subsectors of the Brazilian industry in 1970;

vi) the greater importance of wages in explaining the increase in inequality vis-a-vis income from property can be further illustrated by three sets of figures: first, wage income as a percentage of total income rose from 49% in the period 1947-49 to 55% in the years 1967-69; secondly, access to ownership is significant only in the primary sector, and the share of this sector in national income fell from 29% in 1960 to 19.6% in 1970; moreover, this was the only sector where no increase in inequality could be clearly established (the Lorenz curves crossed each other); third precisely for S. Paulo, the fast-growing state, it was found the greater regional increase in inequality. Furthermore, according to newly available income tax data, the share of income from capital fell from 16.6% to 12.8% in Sao Paulo between 1968 and 1971, period that coincides with the phasis of growth acceleration;[53]

vii) recent figures point inequivocally to an increase in the degree of inequality in the urban sector exactly during the stage of acceleration. The Gini index for urban workers rose from 39% in 1967 to 44% in 1970.[54]

In short, all the evidence available suggests that the main cause of the increase in inequality observed in Brazil lies in the imbalances of the labor market during the stage of accelerated growth. As a matter of fact, this is a predictable trend observed in all economies. The only necessary condition is that a reasonably well-defined dichotomy between non-skilled and skilled labor as well as between modern and traditional sector exists within the economy - a common feature of most developing countries.[55]

It should be made quite clear that I have no intention of justifying the present distribution of income in Brazil. There is general consensus, which I entirely share, that the actual distribution is far from being considered an optimum one despite all difficulties surrounding a clear and precise definition of the optimal income profile.

What we have shown is that there is no meaning in trying to attribute all responsibility for the increase in inequality that occurred during the decade to one single aspect of the economic policies carried out after 1964. In our view, the acceleration of growth induces an increase in inequality, which, however, cannot be used as an indicator of welfare, since in a period of disequilibrium the conventional measures of distribution have little meaning.

For instance, the best distribution of income in Brazil is to be found among illiterate rural workers in the Northeast: the Gini index for this group stood at approximately 37%, very close to the estimated value for the distribution of income in the United States in 1965.

On the other hand, an accurate interpretation of what acutally occurred is essential as a guide for future policies designed to correct the observed distortions. The basic criterion in the choice of such policies should be the enlargement of opportunities. And there is no better means to this end than fast growth, especially because of its significant impact on the level of employment. The problem lies in drawing up policies that, without losing sight of this basic goal, can carry the economy to the stage of sustained development while minimizing the imbalances on the various markets, and particularly on the labor one.

II.3 IMPLICATIONS FOR FUTURE RESEARCH

No doubt, there remain many questions to be answered and they may constitute guidelines for a research agenda. These basic topics may be summarized as the following:

(1) What is the proportion of the Brazilian population for which there is a potential demand for demographic controls? What is the relative importance of economic factors such as real income relative price of controls, access to health services in restricting the implementation of family planning? Is it possible to identify sub-groups of the population by the quickness of their response to exogenous stimulus for family planning? A study along these lines would be extremely helpful to establish an optimal strategy for a population policy for Brazil that balances efficiency of results with political feasibility.

(2) Besides the effects of minimum-wage law in a general equilibrium context, what are its consequences in terms of changes in relative income and employment for both the covered and the uncovered sectors? Despite the well known drawbacks, minimum wage legislation is probably

the most publicized instrument of income redistribution in developing countries, especially by politicians. Up to now there is no serious empirical study about the net social effect of minimum wage legislation upon the welfare of the Brazilian labor force. On the one hand, the rapid increase of the urban labor force coupled with wage policy has a direct effect upon the relative level of remuneration. On the other hand, the growing "modern" sector makes the minimum wage lose its importance in the determination of <u>average</u> wages in the industrial sector.

(3) To what extent do wage differentials determine the magnitude of rural/urban migration?

This migration feeds unemployment and underemployment of unskilled labor in large cities. In spite of some projects recently initiated,[56] we know very little about migrant behavior, and particularly, the various migration stages from origins to the Brazilian Southeast region. A better knowledge of the migration process will permit the evaluation of the potential effects of measures aimed at the eradication of poverty in rural areas, which in turn will permit the assessment of the effects of these policies on urban labor markets and wage levels.

(4) Estimates on the distribution of public expenditures and incentives by income classes and socio-demographic groups are crucial if one is willing to say something about the degree of progressiveness or regressiveness of government fiscal policy. This topic is particularly relevant in Brazil due to the increasing importance in recent years of social public expenditures in education, housing, sanitation facilities, health, and social security.

Besides, changes in the present scheme of fiscal incentives seem to be called for. The basic goal should be to transfer a larger share of benefits from capital to labor in the form of a higher level of employment and productivity gains. This could be done, for instance, if enterprises could write off social security costs for some period of time. One of the most serious distortions of the present incentive system is that it does not differentiate by the level of capital or labor intensity. The Northeast, in particular, has suffered higher capital intensity of the plants established in that region with the consequent effects of this on levels of employment.

(5) Our brief analysis confirmed the widely-held view that education is an extremely powerful tool for redistributing opportunities. Nevertheless, more studies would have to be made on the effects of formal, informal and non-formal education on social mobility.[57]

It has been emphasized that conventional measures of income distribution may hide important changes in the social structure. It would be interesting to relate shifts in inter-occupational status to the amount of formal education, specific training (or post-formal) and job experience. It is particularly important to analyze these changes both in a traditional/modern breakdown as well as with respect to regional differences.

(6) Lastly, Brazil has recently experienced a shift from the last stages of import substitution industrialization (ISI) to export promotion of manufactured goods. Some studies have already emphasized the comparative advantage Brazil enjoys for some capital intensive goods,[58] but the effects on income distribution have not been assessed.

FOOTNOTES

1. João C. Duarte, "Aspectos da Distribucão da Renda em 1970," (Piracicaba: Brazil, mimeo, 1971); and, Rodolfo Hoffman, Contribuição à Análise da Distribuição da Renda e da Posse da Terra no Brasil," (mimeo, 1971, Universidade de São Paulo-Piracicaba, Tese de Livre Docência à Escola de Agricultura).

2. Albert Fishlow, "Brazilian Size Distribution of Income," American Economic Review, Vol. 62, (May 1972), pp. 391-402.

3. Ibid, p. 398.

4. Carlos G. Langoni, Distribuição da Renda e Desenvolvimento Econômico do Brasil, (Rio de Janeiro: Expressão e Cultura, 1973).

5. Ibid, especially chapters 4, 5 and 8.

6. Albert Fishlow, "Brazilian Income Size Distribution - Another Look," preliminary draft, mimeo (1973); and, Carlos G. Langoni, "Distribuicão da Renda: Resumo da Evidencia," Dados, No.11, (1973), pp. 81-121.

7. Instituto Brasileiro de Estatística, Tabulacões Avancadas do Censo Demográfico, VII. Recenseamento Geral, 1970, (Rio de Janeiro: IBGE, July 1971).

8. Centro de Informacões Econômico - Fiscais (CIEF), Ministério da Fazenda, Brasilia.

9. Ministério do Trabalho, Lei dos 2/3.

10. The Gini index changes from .56 to .57 and the Theil index from .66 to .65. See Langoni, Distribuição da Renda, p. 36, Table 1.2.

11. NEA includes students, prisoners, pensionists, persons doing housework without remuneration, and persons living exclusively on income from capital.

12. These sectors are: agriculture, industry, commerce, transportation-storage, social activities, public administration, other activities.

13. For the 1970 estimate, Fishlow and Langoni used the EA population. See Fishlow "Brazilian Size Distribution," op. cit.; and, Langoni, Distribuição da Renda, op. cit. Duarte used the sum of EA and NEA population; see Duarte, "Aspectos da Distribuicão," op. cit.

14. Langoni, Distribuicão da Renda, p. 72.

15. In fact, the Census defines persons without income as those that "help the work of the family or work in religious and beneficent institutions, or were looking for job for the first time." See IBGE, Tabulações Avançadas, p. XVII.

16. Langoni, Distribuição da Renda, p. 23.

17. Fishlow has tried to impute values to the income of this group, taking into account some of their demographic characteristics mentioned before. See Fishlow, "Brazilian Size Distribution," p. 398-402.

18. Harold Lydall, The Structure of Earnings, (London: Oxford University Press, 1968), p. 60.

19. A good example is the situation of domestic servants.

20. See Langoni, Distribuição da Renda, p. 28. These data are not from the Demographic Census, but from a special sample of the Brazilian agricultural sector: See Langoni and Dias, "Avaliação Econômica do Serviço de Extensão Rural," Convenio ABCAR-IPE, (mimeo 1971).

21. The behavior of the effective income tax rate, according to the share of each group in the total income is presented in Langoni, Distribuição da Renda, p. 49, Table 212.

22. Only recently it is becoming more common in Brazil to have toll system for roads (like Rio-São Paulo) or bridges (the new Rio-Niterói).

23. On this point we will follow closely Lydall, The Structure of Earnings, op. cit.

24. Such standardizations are, however, possible with the 2/3 Law data.

25. Instituto Brasileiro de Estatística, Pesquisa Nacional de Domicílio, 2º Trimestre 1963, (Rio de Janeiro: IBGE, 1970). This is a quarterly survey which is done yearly from 1968 on, based on a sample of 50,000 households.

26. Unless voluntary unemployment is highly correlated with income, we should expect in general, an overestimation of the real degree of inequality. In fact in a recent work, Shultz showed that in the United States "in 1969 all men with income exhibit income inequality three times as great as those with a full-time job for 50 to 52 weeks." See T. Paul Schultz, Long Term Changes in Personal Income Distribution: Mythologies, Facts and Explanation, (Rand Corp., preliminary draft, November 1971). A similar though not strictly comparable exercise for Brazil reveals a tendency in the same direction but not nearly as strong. When part-time workers (defined as those working less than 40 hours per week) are compared with all other workers, the indexes of inequality of the part-time groups are invariably greater: Gini: .51 vs. .44; Theil: .53 vs..37; variance of logs: .79 vs. .49.

27. See Milton Friedman, A Theory of the Consumption Function, (Princeton University Press, 1957). Of course we are also supposing that permanent income is measured as some sort of a weighted average.

28. See Irving B. Kravis, The Structure of Income: Some Quantitative Essays, (University of Pennsylvania Press, 1962), p. 275. Of course this evidence should not be interpreted as implying that incomes averaged over varying periods will be distributed more equally the longer the period over which they are averaged. Szal showed that after the effects of transitory income no longer significantly affect average income (approximately a period of six years), even average incomes diverge over time in the U.S. Richard Szal, Cohort Dynamic Aspects of the Long Run Distribution of Income: An Analysis, (Unpublished Ph.D. dissertation, Duke University, 1973).

29. CEPAL/ILPES, La Distribucion del Ingreso en Brasil, (Rio de Janeiro: mimeo, April 1970).

30. Hoffman, Contribuicão, op. cit.; Duarte, "Aspectos da Distribuicão," op. cit.; Fishlow, "Brazilian Size Distribution," op. cit.; Langoni, Distribuição da Renda, op. cit., pp. 58-63.

31. The only exception is the Cepal-Ilpes estimate for 1960 in which there is a clear overestimation in the degree of inequality. The Gini index for 1960 calculated in this study is 0.555 in contrast with 0.499 found by Langoni, or .488 found by Hoffman.

32. Lorenz curves by sectors and by regions are presented in Langoni, Distribuição da Renda, pp. 65, 69, 71 and 171.

33. These data are published yearly by the Centro de Documentação e Informática do Ministério do Trabalho. The name "2/3 Law" is due to article 360 of the Consolidated Labour Law (CLT) that obliges any firm in Brazil to have at least 2/3 of Brazilian workers. In order to enforce the law, all industrial and commercial firms have to complete a questionnaire giving information about their labour force. At present, the questionnaire is answered by some 700,000 firms. The date of reference is April of each year.

34. It is important to emphasize that the 2/3 Law data take into account only the employee's earnings on a salary basis. Even though the basic questionnaire asks for the inclusion of participation in profits (column 20), the way in which it is answered make it impossible to account correctly for this item. Usually the answers are based on a simple transcription of the firm's payroll on April 25, of each year, and profit participation does not appear on these payrolls.

35. In fact, the basic questionnaire lists fifty-four activities, divided between industry, commerce, the financial sector, transportation, communication, health-education and other services.

36. Langoni has estimated the distribution of earnings based on the 2/3 Law in 1970 separately for industry, commerce, and some industrial sub-sectors like food, civil construction, textile, mechanics-electronics, automobiles; Distribuicão da Renda, p. 50. Hoffman presented yearly estimates from 1967 to 1971 total of Industry and the sum of Commerce and Services, "Consideracões sobre a Evolução Recente da Distribuição da Renda no Brasil," Research Paper No. 13, Universidade de São Paulo, (Piracicaba, 1973).

37. Another advantage is that the number of classes of salaries is up to 17 in contrast to 8 found in the Demographic Census.

38. The exact proportion is difficult to estimate. Based on the National Accounts, we estimated the average labour's share for the 1960-1970 period as 57% of GDP. The best estimate is the one based on income tax returns, although the coverage is more limited. According to this source in 1971, the share of salaries in total declared income was 68%.

39. See Langoni, Distribuicão da Renda, Chapter 5. Jose Julio Senna is presently working (at Getulio Vargas Foundation) on the application of the Mincer-Chiswick kind of model to Brazil using the 2/3 Law data. See Jacob Mincer and Barry R. Chiswick, "Time Series Changes in Personal Income Inequality in the U.S. From 1939, with Projections to 1985," Journal of Political Economy, 1973.

40. Ministério da Fazenda, Centro de Informacões Econômica - Fiscais (CIEF). These data cover the years from 1969 on, and are published in the Anuário Estatístico. For 1969, the results are given in 15 classes, for each of which the number of contributors and the sum of their incomes is presented.

41. Recall that the 2/3 Law takes into account only wages and salaries.

42. The Law is more complex and the "cedular" are in fact seven since there is a further breakdown between interest from public assets and other types of interest and between profits in general and profits from agriculture.

43. For example, the Theil index for salaries was .41, while that for interest was 2.15. Of course, the contribution of each source of income to total inequality will depend, additionally, on the share of each one in the total. Langoni, Distribuição da Renda, p. 47. Other estimates of concentration indices for aggregate income based on the income tax data are presented by George Kingston and Lucia Kingston, "A Distribuição da Renda no Brasil, 1960-1970," Revista Brasileria de Economia, Vol. 26, (Rio de Janeior: Oct.-Dec. 1972).

44. Langoni, Distribuicão da Renda, p. 49, Table 2.2.

45. Not everybody was excluded because the law obligates those whose gross income is lower than Cr$ 5,040 in 1970 to declare if they had some assets, for example, stocks, houses with more than 100 square meters of floor space, automobiles, etc.

46. A good example is the study of Clovis de Vasconcellos Calvacanti, "A Renda Familiar e por Habitante na Cidade de Recife," Pesquisa e Planejamento, Vol. 2, (July 1972).

47. Part of this section has been already published in Conjuntura Econômica, Vol. 27, (Sept. 1973), English translation "Income Distribution and Economic Development in Brazil." (Banco Nacional de Habitaçao (BNH), Information Office, 1974)

48. See, Celso Furtado, Analise do "Modelo" Brasileiro, (Rio de Janeiro; 1972), and M.C. Tavares and J. Serra, "Beyond Stagnation: A Discussion on the Nature of Recent Development in Brazil," in James Petras, (ed.) Latin America: From Dependence to Revolution, (Willey, 1973).

49. Fishlow has shown that for the Brazilian case the aggregate income elasticity remains practically constant as a consequence of the sectoral redistribution of income as well as the observed changes among social groups within the urban or rural classes. See Fishlow, "Another Look," op. cit.

50. See Tavares and Serra, "Beyond Stagnation," op. cit., and, to a lesser extent, A. Fishlow, "Some Reflections on post 1964 Brazilian Economic Policy," in Alfred Stepan (ed.), Authoritarian Brazil, (Yale University Press, 1973).

51. See, H. T. Oshima, "The International Comparison of Size Distribution of Family Incomes, with Special Reference to Asia," Review of Economics and Statistics, Vol. 66 (Nov. 1967).

52. For the four preceding points made here, see Langoni, Distribuicão da Renda, op. cit., various chapters.

53. Langoni, "Distribuicão e Desenvolvimento -- Evidencia Adicional," Conjuntura Economica, (Nov. 1974), pp. 102-104.

54. Hoffman, Consideracões," op. cit., Table 1, Appendix 1.

55. Felix Paukert has presented empirical evidence supporting the old Kuznets idea that income is better distributed at low and higher income levels and more inequal precisely in the transition stage from under-development to development: see Felix Paukert "Income Distribution at Different Levels of Development: A Survey of Evidence," International Labour Review, (August/September 1973) especially graphic 1, p. 119.

56. The "Serviço Federal de Habitacão e Urbanismo" (Serfhau) together with the ILO is sponsoring studies on the effects of changes in employment and income distribution on internal migration.

57. See, F.H. Harbison, "The Education-Income Connection," (paper prepared for the Princeton-Brookings Income Distribution Study, November 1974).

58. See a recent article by Thomas C. Lowinger, "Import Substitution, Export Promotion, and the Structure of Brazil's Protection," in Journal of Development Studies, Vol. 10, (April - July 1974).